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New York State
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Volume 68 / Part I

JANUARY 1–JUNE 15

1968

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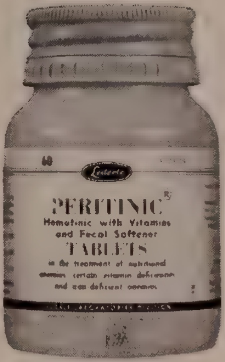

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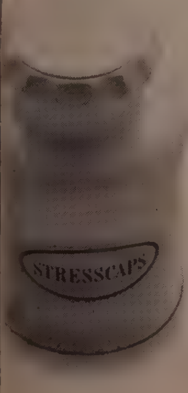

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Call to the annual convention

The annual convention of the Medical Society of the State of New York takes place this year at The Americana in New York City from February 11 to 15, 1968.

The convention will form the core of a cluster of important medical events, and it is hoped that many can plan to take in the "whole show."

On Saturday, February 10, preceding the opening of the convention, there will be an all-day symposium on "Medical Aspects of Sports" at The Americana, cosponsored by the Medical Society of the State of New York, the New York State Public High School Athletic Association, and the Health, Physical Education, and Recreation Association.

General sessions during the meeting will cover the subjects of arteriosclerosis, genetics, pulmonary diseases, and data processing in medicine. Two combined programs will be of particular interest this year. The Sections on Dermatology and Obstetrics and Gynecology will present the subject of "Dermatological Conditions of the Vulva" and the Sections on Industrial Medicine and Surgery and Medical-Legal and Workmen's Compensation Matters will present a program on the "Problem-Patient Employe."

On Thursday afternoon, February 15, there will be an important symposium cosponsored by the Medical Society of the State of New York and the American Geriatrics Society on the "Implications of Aging" to biology, medicine, sociology, theology, and government.

The day following the annual meeting, Friday, February 16, the seventh annual Medical Communications Day, jointly sponsored by the NEW YORK STATE JOURNAL OF MEDICINE and the Metropolitan New York Chapter of the American Medical Writers' Association, will be held at The Americana.

This brings together writers, editors, and publishers in the medical field. The theme for this year's meeting is "Ethics and Medical Communications."

The scientific and technical exhibits will be opened this year on Sunday, February 11, at 12:00 NOON. This is a new departure and will appeal to those who budget their time to the full.

We promise crisp weather, with or without precipitation.

A pride of home

Though the doctors of New York State have given support to Physicians' Home throughout the years, there is still a surprising degree of misinformation current about its nature. Physicians' Home is not, as many believe, a part of the Medical Society of the State of New York, although a close association has always been maintained between the two organizations.

Physicians' Home was incorporated in 1919 as a membership corporation with the aim of "rendering financial and other assistance to aged and indigent physicians, their wives, widows, and needy minor children." In carrying out this objective, a physical home was soon found to be impractical; in addition, experience showed that the beneficiaries, most of them well on in years, were healthier and happier when left in their own familiar surroundings. For many years, therefore, the sole function of Physicians' Home has been to extend financial assistance to its "guests" to a degree that enables them to live in their previous environments with dignity and in security.

All doctors and their dependents are eligible for aid provided that the doctor has been a member in good standing of the Medical Society of the State of New York for ten consecutive years. No formal application is required and the necessary preliminaries are conducted promptly and discretely. In emergencies, the Executive Committee has authorized immediate assistance over the telephone on the basis of information supplied by friends or confreres of the recipient.

Management of the Corporation is by a Board of Directors, each member serving for a three-year term. Between board meetings, the Executive Committee consisting of the officers and some board members, conducts the affairs. The assets of the Corporation are in the custody of five trustees who serve staggered five-year terms. All officers and trustees serve without pay.

The Home purchases necessary legal, financial, and accounting advice and services on a fee basis. There is only one paid employee who has served as Executive Secretary for a number of years. The title is a euphemism for office manager, social worker, typist, clerk, and whatever else is necessary to make the office function. The Executive Secretary maintains close personal contact with the guests who consider her an advisor and friend.

The income of the Corporation is derived principally from the physicians of the Medical Society of the State of New York who support it with membership contributions of $10 or more per year or through voluntary assessments paid with their county medical society dues. Additional amounts are contributed by the Woman's Auxiliary to the Medical Society of the State of New York and by other medical organizations. Contributions usually fall short of the amount needed for beneficial aid and the difference is made up from income earned by the investment of endowed funds. These funds have accumulated from bequests made by physicians and interested laymen and the interest earned contributes substantially to the ability of the Home to extend assistance. Although endowments and bequests are accepted from any source, only physicians who are members of the Medical Society of the State of New York are solicited for contributions.

From a mere handful in 1919 the number of guests rose to 105 in 1966. During the same period beneficial aid increased from about $2,000 to $149,000. Physicians' Home has never failed to respond to a plea for assistance from an eligible person.

In spite of this great increase in responsibility and activity on the part of the organization and in spite of repeated attempts to disseminate the story of Physicians' Home among the doctors of the State, the number of contributors in any single year has never exceeded 20 per cent of the membership of the State Medical Society. Certainly, if the doctors were better informed about the nature and purposes of Physicians' Home they would support it in greater numbers.

The plight of physicians and their dependents who have outlived their contemporaries, their good health, and their financial resources can be truly heartbreaking. Our traditions and professional pride require that they receive necessary aid from within the ranks of the profession rather than from public charities or welfare programs. This is the mission of Physicians' Home, and every single doctor in the State should consider it his obligation to contribute regularly.

It is all too easy, in the words of the French proverb, to have just sufficient fortitude to bear the suffering of others.—George Himler, M.D.

Ovulen®-21

Each tablet contains ethynodiol diacetate 1 mg., mestranol 0.1 mg.

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by weekdays...not "cycle days"

Whether it be "shopping day," "bridge day" or "housecleaning day," a woman is accustomed to thinking in terms of days of the week rather than in "cycle days." Ovulen-21 lets her remember her natural way. Once established, her starting day is always the same day of the week . . . because it is fixed at three weeks on – one week off and is independent of withdrawal flow.

The same Ovulen in the same low dosage . . . with the same low incidence of side effects and the same high degree of protection against pregnancy.

Note: Ovulen remains available in the familiar round Compack for those women who may wish to continue to use the traditional 20-day schedule. Specify Ovulen-21 to assure each new patient of the advantages of the new *three weeks on—one week off* schedule. She might appreciate your budget-minded authorization for a six-month supply (five Refills).

Indication — For oral contraception.

Contraindications — Thrombophlebitis or a history of thrombophlebitis or pulmonary embolism, liver dysfunction or disease, known or suspected carcinoma of the breasts or genital organs and undiagnosed vaginal bleeding.

Warnings — Discontinue medication pending examination if sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine occurs. Discontinue if papilledema or retinal vascular lesions occur. Since the safety of Ovulen in pregnancy has not been established, rule out pregnancy before a patient who has missed two consecutive menstrual periods continues the tablets. Consider the possibility of pregnancy at first missed withdrawal flow if recommended schedule has not been followed. The active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this to the infant has not been determined.

Precautions — The pretreatment physical examination should specifically include the breasts, pelvic organs and a Papanicolaou smear. Endocrine and possibly liver functions tests may be affected by Ovulen. It is recommended that such tests be repeated two months after stopping the medication if their results were abnormal in a woman taking Ovulen. Pre-existing fibroids may enlarge under the influence of estrogen-progestin preparations. Because Ovulen may cause some degree of fluid retention, patients with epilepsy, migraine, asthma, cardiac or renal dysfunction, which might be influenced, require careful observation.

Ovulen should be used with caution in patients with a history of cerebral vascular accident. If breakthrough bleeding occurs adequate diagnostic measures are indicated in women with undiagnosed vaginal bleeding. Observe carefully patients with a history of psychic depression and discontinue the medication if depression recurs to a serious degree. Any possible influence of prolonged Ovulen administration on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. Observe diabetic patients carefully during Ovulen use since a decrease in glucose tolerance has occurred in a few such patients. Physicians should be alert to the earliest manifestations of thrombophlebitis and pulmonary embolism since such conditions occasionally occur in patients taking oral contraceptives. Use Ovulen judiciously in young patients in whom bone growth is not complete because of the effects of estrogens on epiphyseal closure. Age is no absolute limiting factor, although Ovulen use may mask the onset of the climacteric. Pathologists should be advised of Ovulen administration when relevant specimens are submitted.

Side Effects — The following adverse reactions have been observed in varying incidence in patients taking oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), changes in weight (increase or decrease), changes in cervical erosions and secretions, suppression of lactation when used immediately post partum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals and mental depression. Although the following side effects have been reported in users of oral contraceptives no cause and effect relationship has been established: post-treatment anovulation, premenstrual-like syndrome, changes in libido, changes in appetite, symptoms of cystitis, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption and itching. Thrombophlebitis, pulmonary embolism and neuro-ocular lesions have occurred in users of oral contraceptives; a cause and effect relationship has been neither established nor disproved. The following laboratory results may be altered by oral contraceptives: Bromsulphalein® and other hepatic function tests—increased; coagulation tests, including prothrombin, Factors VII, VIII, IX and X—increased; thyroid function—increase in protein-bound iodine and butanol extractable protein-bound iodine and a decrease in T^3 values; metyrapone test and pregnanediol determinations.

Dosage and Administration — One tablet of Ovulen-21 daily for 21 consecutive days beginning five days after the onset of a menstrual flow (the first day of menstruation is counted as day 1), then discontinue for one week. Begin subsequent 21-day courses on the eighth day after the last tablet was taken in the preceding cycle. Continue this three weeks on—one week off schedule whether or not withdrawal flow has begun, flow has ceased or the patient has experienced spotting or breakthrough bleeding.

If one tablet is missed take it as soon as remembered; take the next tablet at the usual time. If two consecutive tablets are missed double dosage for the next two days; then resume the regular schedule. If three tablets are missed start a new tablet cycle on the eighth day after the last tablet was taken. Possibility of ovulation increases with each successive tablet missed. *Postpartum administration:* Non-nursing mothers may begin Ovulen immediately after delivery. Nursing mothers may begin after lactation is well established.

Before prescribing see Detailed Product Information.

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regimen

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Warnings: Acute anaphylaxis (may prove fatal unless promptly controlled) is rare but more frequent in patients with previous penicillin sensitivity, bronchial asthma or other allergies. Resuscitative (epinephrine, aminophylline, pressor amines) and supportive (antihistamines, methylprednisolone sodium succinate) drugs should be readily available. Other rare hypersensitivity reactions include nephropathy, hemolytic anemia, leucopenia and thrombocytopenia. In suspected hypersensitivity, evaluation of renal and hematopoietic systems is recommended.
Precautions: In suspected staphylococcal infections, perform proper laboratory studies including sensitivity tests. If overgrowth of nonsusceptible organisms occurs (constant observation is essential), discontinue penicillin and take appropriate measures. Whenever allergic reactions occur, withdraw penicillin unless condition being treated is considered life threatening and amenable only to penicillin. Penicillin may delay or prevent appearance of primary syphilitic lesions. Gonorrhea patients suspected of concurrent syphilis should be tested serologically for at least 3 months. When lesions of primary syphilis are suspected, dark-field examination should precede use of penicillin. Treat beta-hemolytic streptococcal infections with ful therapeutic dosage for at least 10 days to prevent rheumatic fever or glomerulonephritis. In staphylococcal infections, perform surgery as indicated.
Adverse Reactions: (Penicillin has significant index of sensitization): Skin rashes, ranging from maculopapular eruptions to exfoliative dermatitis; urticaria; serum sickness-like reactions, including chills, fever, edema, arthralgia and prostration. Severe and often fatal anaphylaxis has been reported (see "Warnings").
Composition: Tablets—125 mg. (200,000 units), 250 mg. (400,000 units), 500 mg. (800,000 units); Liquid—125 mg. (200,000 units) and 250 mg. (400,000 units) per 5 cc.

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1. Bradley, J. E., *et al.*: J. Pediat. *38*:41 (Jan.) 1951.
2. Bradley, J. E.: Mod. Med. *20*:71 (Oct. 15) 1952.
3. Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. *65*:311 (Feb.) 1953.

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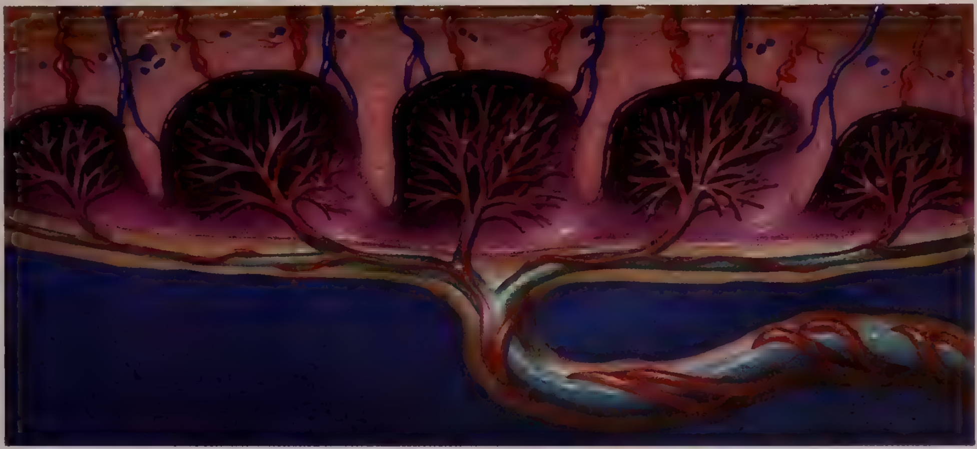


this issue: the cold in pregnancy...

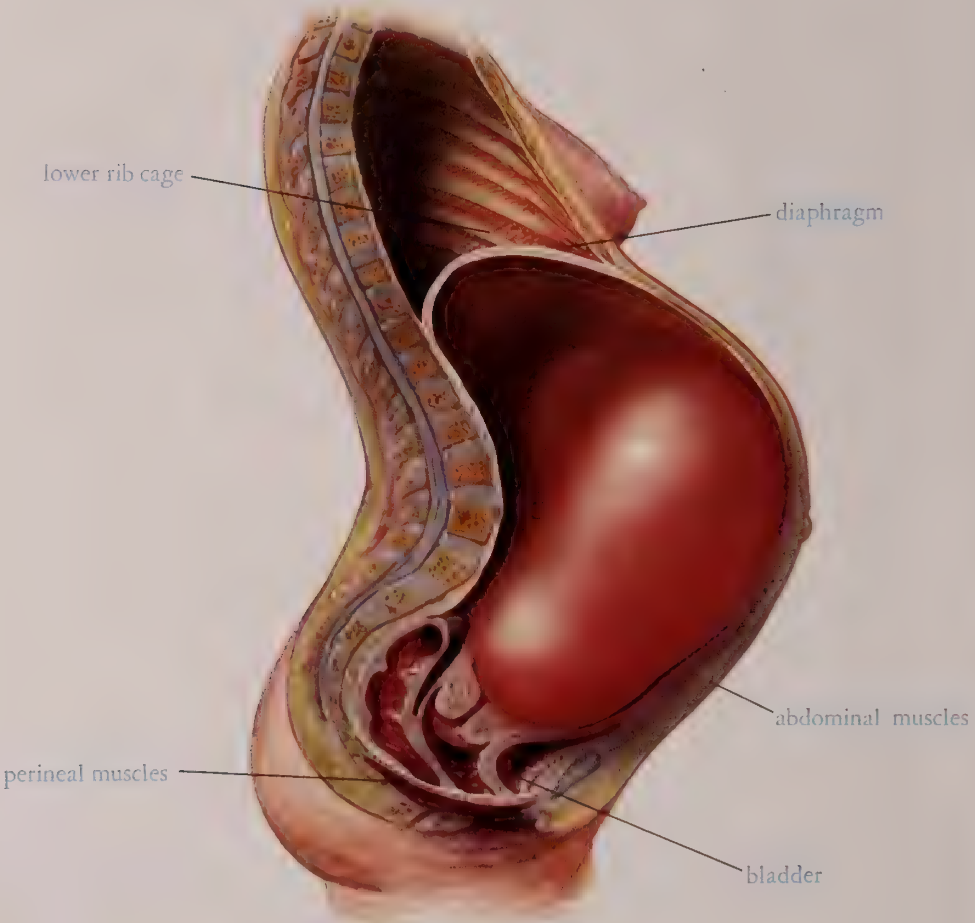
The cold in pregnancy

Frederick W. Goodrich, Jr., M.D.
Senior Obstetrician and Gynecologist, Lawrence and Memorial Hospital, New London, Connecticut

Since pregnancy and the common cold are both ubiquitous, it is not surprising that they often occur at the same time in the same patient. Incidence figures are hard to come by, but the chances are very good that any given pregnant woman will have a cold at some time during the nine months of her gestation. When she does, she will tell you that it is the worst cold she ever had. It seems to last longer and the symptoms are more distressing than they are in the non-pregnant.

For purposes of this discussion, the common cold is considered to be the well-known symptom complex which includes sore throat, stuffy nose, and a cough. Febrile states or extension of the disease process into the lower respiratory tree are not part of the common cold and will not be included in this discussion.

The clinical picture of a cold in pregnancy can be confused by a long-known physiological phenome-



non. Kiesselbach's area in the nose (on the anterior part of the nasal septum above the intermaxillary bone) becomes engorged, apparently due to hyperemia induced by the increased estrogen level which accompanies pregnancy. The amount of congestion can vary in degree from woman to woman. Some have very little congestion, others will have occasional nosebleeds from this area, still others will have symptomatic congestion to the degree that they will complain of having a "chronic" or constant cold.

Less well recognized is the occurrence of this type of hyperemia in any part of the nasopharyngeal mucosa, again in varying degree. Such swelling often produces a postnasal drip which, the patient will state, is present only when she is pregnant. Patients who do not have symptomatic congestion ordinarily, will find that when they do get a cold, the symptoms last much longer than those of a cold usually do. Occasionally, this hyperemia is responsible for closure of the medial end of the Eustachian tube; such patients will complain of "plugging" of the ears. Inspection of the ear drum will show a depression which confirms the presence of Eustachian closure rather than wax in the canal which is the patient's diagnosis. Symptoms related to this physiological congestion are more apt to occur in heavier smokers or those who have a history of allergic rhinitis, just as are the symptoms of the common cold. And when the cold does occur in pregnancy, the symptoms are worse because of the underlying congestion.

The pregnant woman with a cold is miserable for other reasons, dependent somewhat on her parity and the length of her gestation. As parity increases, so also does the relaxation of the abdominal and perineal musculature. The uterus, lying against a slack abdominal wall, and bearing down on relaxed perineal muscles, acts like a piston when the patient coughs, sneezes, or even blows her nose, pushing down on the bladder. Stress incontinence during colds is almost the rule.

As the length of gestation increases, so does the size of the uterus. As it grows, it pushes the abdominal contents above it and elevates the diaphragm. This results eventually in a lateral displacement of the lower rib cage, often to a point at which the patient will complain of soreness in this area. If such a

(Concluded on following page)

From a continuing study on nasal congestion...

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2 HR. AFTER TRIAMINIC
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timed to work while your patient does

A study begun in 1966 by the Department of Otolaryngology, Greater Baltimore Medical Center, has accumulated evidence that documents the effectiveness of Triaminic's timed-release action in the treatment of nasal congestion.

With its balanced formulation of an oral nasal decongestant and two antihistamines, Triaminic effected partial or complete relief in more than 82% of the 85 subjects treated. Clearing nasal obstruction. Reducing turbinate swelling. Making breathing easier.

It's a comforting thing to know that Triaminic really works.

Triaminic® *timed-release tablets*

Each timed-release tablet contains:

Phenylpropanolamine hydrochloride	50mg.
Pyrilamine maleate	25mg.
Pheniramine maleate	25mg.

Side effects: Occasional drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness or gastrointestinal upsets. Precautions: The patient should be advised not to drive a car or operate dangerous machinery if drowsiness occurs. Use with caution in patients with hypertension, heart disease, diabetes or thyrotoxicosis.

(Advertisement)

patient has a cold, the coughing and sneezing will exaggerate this soreness. The diaphragmatic restriction caused by the enlarging uterus also makes breathing more difficult, particularly when the patient lies down. A cold compounds this difficulty.

Treating a cold in pregnancy requires two additional considerations. The patient should be told that the symptoms may last longer lest she become discouraged, and she should be reassured that the treatment will not damage the fetus. Although there are still some women who seem blissfully ignorant regarding matters of health (and these need to be cautioned not to take medication recommended by friends), most of our maternity patients are aware of the thalidomide tragedy. These women need constant reassurance that the symptoms of a cold can be treated, and that the medication is safe. Fortunately, many of the drugs which are of benefit have been in use long enough and widely enough so that such a statement can be offered. Occasionally one encounters a patient who is so anxious to avoid medication that she is extremely reluctant to take anything at all. Since cold is self-limited, it seems reasonable enough to give such a patient the choice and not to force drugs on her if she is obviously afraid of taking them.

The most distressing symptom of the common cold is the nasal congestion. This can be mitigated by the use of a decongestant which will help reduce the postnasal drip and the coughing caused by it. The kind of a cough which is described as a "tickling" in the throat and which is apt to occur when the patient goes to bed is usually due to nasopharyngeal congestion rather than inflammation in the lower respiratory tract.

There are many cough mixtures available. Most contain an antihistamine, a decongestant, and a cough "suppressant." Should cough suppression be desirable, it is important to remember not to use both a decongestant tablet and such a cough mixture as the patient would be getting a double dose of the decongestant. With some patients, the placebo effect of a cough syrup may be important and a liquid preparation might be substituted for an oral tablet.

For a sore throat, candy drops or lozenges at frequent intervals are soothing. It is not only unnecessary but unwise to use antibiotic lozenges or drops. The use of antibiotics in an uncomplicated cold is contraindicated and should be scrupulously avoided.

In summary, a cold in pregnancy is more severe and longer lasting. The treatment of the symptoms with local and systemic decongestants will make the patient more comfortable.

Apparently the cold is so common in pregnancy that it has received very little attention in the literature. References are almost non-existent and the few which are available add little to the common knowledge, are out-dated, or are not helpful. Thus the usual bibliography is not appended.

Relieve his sniffles,
her concern, and about
half your phone calls.
Tell her to get
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Each teaspoonful (5 ml.) contains:

Phenylpropanolamine hydrochloride	12.5 mg.
Pheniramine maleate	6.25 mg.
Pyrilamine maleate	6.25 mg.

For nasal congestion you can bring quick, lasting comfort to your little patients with Triaminic Syrup. You may occasionally encounter these side effects: drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness or gastrointestinal upsets. Precautions: the possibility of drowsiness should be considered by patients engaged in mechanical operations requiring alertness. Use with caution in patients with hypertension, heart disease, diabetes, or thyrotoxicosis.

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Convention Schedule

162nd Annual Convention

MEDICAL SOCIETY OF THE STATE OF NEW YORK

February 11 through 15, 1968

The Americana
New York City

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House of Delegates

The annual meeting of the House of Delegates of the Medical Society of the State of New York will be called to order at 2:00 P.M. on Sunday, February 11, 1968, in the Georgian Ballroom of The Americana in New York City.

In accordance with Chapter II, Section 3, of the Bylaws, the House will assemble according to the following schedule:

Sunday, February 11, 2:00 P.M.
Tuesday, February 13, 2:00 P.M.
Wednesday, February 14, 9:00 A.M. and 2:00 P.M.
Thursday, February 15, 9:00 A.M.

At the last adjourned session (Thursday, February 15, 9:00 A.M.) the election of officers, councillors, trustees, and delegates to the American Medical Association will take place in accordance with Chapter III, Section 1, of the Bylaws.

GEORGE HIMLER, M.D.,
Speaker
WALTER T. HELDMANN, M.D., *Secretary*

162nd Annual Meeting

The 162nd Annual Meeting of the Medical Society of the State of New York will be held on Wednesday, February 14, 1968, at 8:00 P.M. in the Imperial Ballroom of The Americana, New York City.

FREDERICK A. WURZBACH, JR., M.D.,
President
WALTER T. HELDMANN, M.D., *Secretary*

Registration

Registration for *delegates* will be held in the foyer of the Georgian Room, third floor of The Americana, on Saturday, February 10, from 12:00 NOON to 6:00 P.M. and on Sunday, February 12, after 9:00 A.M.

General registration for *State Society members and guests* will take place in Albert Hall, The Americana, Sunday, February 11, from 9:00 A.M. to 5:00 P.M., Monday, February 12, through Wednesday, February 14, from 8:30 A.M. to 5:00 P.M., and Thursday, February 15, from 8:30 A.M. to 12:00 NOON.

Exhibits

Scientific Exhibits will be located in Albert Hall.

Scientific Motion Pictures will be shown in the Motion Picture Theatre in Albert Hall.

Technical Exhibits will be located in Albert Hall.

Exhibits will be on view Sunday, February 11, from 12:00 NOON to 5:00 P.M.; Monday through Wednesday, February 12 through February 14, 9:00 A.M. to 5:00 P.M.; and Thursday, February 15, from 9:00 A.M. to 12:00 NOON.

Scientific Program

General Sessions will be held Monday, Tuesday, and Wednesday, February 12, 13, and 14, at 2:00 P.M., and Thursday, February 15, at 9:00 A.M.

Section Meetings will be held Monday, February 12, through Thursday, February 15, at time and place scheduled for each meeting.

Dinner Dance

The Dinner Dance will be held in the Imperial Ballroom, second floor of The Americana, on Wednesday, February 14, at 8:00 P.M., preceded by the President's Reception at 7:00 P.M.

Tickets should be ordered in advance from the Medical Society of the State of New York, 750 Third Avenue, New York, New York 10017. Subscription is $20 per person.

Woman's Auxiliary

See page 50 for program.

1968 ANNUAL CONVENTION

Scientific Program

Chairman
BERNARD J. PISANI, M.D., New York
Associate Chairmen
WILLIAM J. GRACE, M.D., New York
VAUGHAN C. MASON, M.D., New York
P. FREDERIC METILDI, M.D., Monroe
WILLIAM B. RAWLS, M.D., New York
JOSEPH R. WILDER, M.D., New York

CHAIRMEN OF SECTIONS AND SESSIONS

GENERAL SESSIONS

Monday, February 12, 1968, 2:00 P.M.

Versailles Terrace, Second Floor

WILLIAM B. RAWLS, M.D., *Presiding*

This symposium is under the auspices of the American Therapeutic Society's Continuing Educational Program in Practical Therapeutics in conjunction with the Manhattan Chapter of the American Academy of General Practice. It is supported, in part, by a grant-in-aid from E. R. Squibb & Sons. Approved for two hours, Category II credit, by the American Academy of General Practice.

Symposium and Panel Discussion:

ARTERIOSCLEROSIS

1. Modern Concepts
ALBERT N. BREST, M.D., Philadelphia, Pennsylvania (*by invitation*)
Associate Professor of Medicine, Hahnemann Medical School

2. Diagnostic Procedures of Angiography and Scanning
NORMAN E. CHASE, M.D., Yonkers
Professor of Radiology, New York University School of Medicine

3. Hypertension and Present Concepts of Treatment
RAY W. GIFFORD M.D., Cleveland, Ohio (*by invitation*)
The Cleveland Clinic Foundation

4. Surgery of the Heart: Especially Concerning Implantation Procedures
FRANK C. SPENCER, M.D., New York City
Professor and Director of Surgery, New York University Medical Center

5. Surgery of Peripheral Circulation
EDWARD A. EDWARDS, M.D., Boston, Massachusetts (*by invitation*)
Senior Associate Surgeon, Peter Bent Brigham Hospital

Panel Discussion
A. WILBUR DURYEE, M.D., New York City, *Moderator*
Professor of Clinical Medicine, New York University School of Medicine
The above speakers

Tuesday, February 13, 1968, 2:00 P.M.

Versailles Terrace, Second Floor

VAUGHAN C. MASON, M.D., *Presiding*

Symposium and Panel Discussion:

MEDICAL GENETICS

KURT HIRSCHHORN, M.D., New York City, *Moderator* (*by invitation*)
Professor of Pediatrics (Genetics); Chief, Division of Medical Genetics, Mount Sinai School of Medicine

This field of human genetics has advanced at an ever-increasing pace over the past ten years. Cytogenetics has provided us with a great deal of information about the relationship of chromosome abnormalities and congenital malformations, abnormal sexual development, abortions, and neoplasia. Biochemical genetics has elucidated a variety of inborn errors of metabolism and their relationship to diseases, mental retardation, and drug sensitivity. The application of recent genetic findings to clinical situations is becoming more and more essential, and an understanding of these applications is necessary for all physicians dealing with these diseases, which make up an ever-increasing proportion of clinical material.

Cytogenetics
ORLANDO J. MILLER, M.D., New York City (*by invitation*)
Associate Professor of Obstetrics and Gynecology, College of Physicians and Surgeons of Columbia University

Biochemical Genetics
BERT LADU, M.D., New York City (*by invitation*)
Professor and Chairman, Department of Pharmacology, New York University School of Medicine

Clinical Genetics
HAROLD NITOWSKY, M.D., New York City (*by invitation*)
Professor of Pediatrics, Albert Einstein College of Medicine of Yeshiva University

Wednesday, February 14, 1968, 2:00 P.M.
Versailles Terrace, Second Floor

P. Frederic Metildi, M.D., *Presiding*

Symposium and Panel Discussion:

PULMONARY DISEASES

Harold A. Lyons, M.D., Brooklyn, *Moderator*
Professor of Medicine, State University of New York Downstate Medical Center; Director, Pulmonary Disease Division, Kings County Hospital Center

Pulmonary Neoplasms
Philip Rubin, M.D., Rochester
Professor of Radiology, University of Rochester School of Medicine and Dentistry

THE NEW YORK STATE TRUDEAU SOCIETY LECTURE

Pulmonary Infections
Sponsored by the New York Trudeau Society
Donald B. Louria, M.D., New York City
Associate Professor of Medicine, Cornell University Medical College

Asthma and Allied Disorders
John Condemi, M.D., Rochester
Assistant Professor of Medicine, University of Rochester School of Medicine and Dentistry

Chronic Obstructive Pulmonary Diseases
Theodore H. Noehren, M.D., Buffalo
Consultant, Chest Diseases, Roswell Park Memorial Institute; Clinical Associate Physician, Buffalo General Hospital

Thursday, February 15, 1968, 9:00 A.M.
Versailles Terrace, Second Floor

Symposium and Panel Discussion:

DATA PROCESSING IN MEDICINE

The panel will review the accomplishments to date in New York State and other important areas and discuss the problems of education in medical data processing.

William A. Bauman, M.D., New York City, *Moderator*
Assistant Clinical Professor of Pediatrics, College of Physicians and Surgeons of Columbia University; Director, Medical Data Processing, Presbyterian Hospital

Computer Education in a Medical Environment
William A. Bauman, M.D., New York City

Computers and Patient Data Handling
Robert K. Ausman, M.D. Buffalo (*by invitation*)
Director, Health Research, Roswell Park Memorial Institute

Computers in Industrial Medicine
William J. Burke, M.D., Yorktown Heights
Medical Director of Personnel, International Business Machines Corporation; Consultant in Medicine, Phelps Memorial Hospital, North Tarrytown

Mind-Body Interaction in Experiments on Sleep and Dreaming
Arthur Shapiro, M.D., Brooklyn
Professor of Psychiatry, State University of New York Downstate Medical Center and Director, Psychophysiology Laboratory

Computer Aids to Clinical Decisions
Ralph L. Engle, Jr., M.D., New York City
Associate Professor of Medicine, Cornell University Medical College and Director, Computer Project

SECTIONS

All papers read before the Society by members become the property of the Society. The original copy of each paper shall be left with the Secretary of the Section or Session.

Discussers should have their remarks typed and should hand them to the Secretary.

Section and Session meetings shall begin promptly at the hour specified.

Executive Session—*The first order of business, election of officers. "To participate in the election of any section, a member must register with such section."*—BYLAWS, CHAPTER XII, SECTION 3

SECTION ON
Allergy

Chairman....DAVID MERKSAMER, M.D., Kings
Vice-Chairman ....VICTOR COHEN, M.D., Erie
Secretary........SAMUEL BLOOM, M.D., Kings
Delegate.....ROBERT B. BEEDE, M.D., Oneida

Thursday, February 15/9:00 A.M./Versailles Ballroom, Second Floor

1. Clinical-Immunologic Mechanisms in Drug Allergy

BERNARD B. LEVINE, M.D., New York City (*by invitation*)
Assistant Professor of Medicine, New York University School of Medicine

2. Allergic Reactions to Stinging Insects

PHILIP J. TORSNEY, JR., M.D., Red Bank, New Jersey (*by invitation*)
Assistant Physician, Presbyterian Hospital and Vanderbilt Clinic, New York City

3. Role of Antibodies in Allergic Disease

JOHN T. CONNELL, M.D., New York City
Attending Physician, Institute of Allergy, Roosevelt Hospital

4. Vascular Allergy

JOSEPH HARKAVY, M.D., New York City
Consultant in Allergy, The Mount Sinai and Montefiore Hospitals

Questions and Answers

SECTION ON
Anesthesiology

Chairman......EDITH R. KEPES, M.D., Bronx
Vice-Chairman ....
WILLIAM B. MCCAFFERTY, M.D., Schenectady
Secretary..SOLOMON G. HERSHEY, M.D., Bronx
Delegate.....VICTOR J. TOFANY, M.D., Monroe

Tuesday, February 13/2:00 P.M./Versailles Ballroom, Second Floor

1. THE FIRST E. DEAN BABBAGE, M.D., MEMORIAL LECTURE
Anesthesiology as an Interdisciplinary Contributor

ALBERT M. BETCHER, M.D., New York City
Professor of Anesthesiology, Mount Sinai School of Medicine

Introduced by RICHARD AMENT, M.D., President, The New York State Society of Anesthesiology

2. Effect of Pain Relief on Arterial Blood Gas Values During Labor

GERTIE F. MARX, M.D., The Bronx
Associate Professor of Anesthesiology, Albert Einstein College of Medicine of Yeshiva University

ANGELITO S. MACATANGAY, M.D., The Bronx (*by invitation*)
Resident in Anesthesiology, Jacobi Hospital

ALBERT V. COHEN, M.D., The Bronx (*by invitation*)
Resident in Obstetrics and Gynecology, Jacobi Hospital

HAROLD SCHULMAN, M.D., The Bronx (*by invitation*)
Assistant Professor of Obstetrics and Gynecology, Albert Einstein College of Medicine of Yeshiva University

Arterial blood was obtained from a brachial or radial artery of women in active labor prior to the administration of routine analgesics (meperidine with or without promethazine) and again after analgesia was established (ten minutes after intravenous injection and thirty minutes after intramuscular injection). All samples were collected anaerobically into heparinized glass syringes and stored at 4 C. until analyzed. Oxygen and carbon dioxide tension and pH determinations were made at 38 C. within sixty minutes using radiometer electrodes and a radiometer model 27 read-out.

Women who were hypo- or hyperventilating during contractions prior to the administration of pain-relieving drugs had greatly improved oxygen and carbon dioxide tensions after analgesia was effected.

Discussion: M. FINSTER, M.D., New York City
Assistant Professor of Anesthesiology, Col-

lege of Physicians and Surgeons of Columbia University

3. The Effect of Preanesthetic Medication on the Oxygenation of Arterial Blood in Patients with Cardiac Disease and Its Use in Predicting the Need for Postoperative Ventilatory Assistance

BARBARA LIPTON, M.D., New York City
Associate Clinical Professor of Anesthesiology, Mount Sinai School of Medicine

Thirty-seven adults with advanced acquired and acyanotic congenital heart disease were studied prior to open or closed cardiac surgery. Premedication with a combination of morphine, secobarbital, and belladonna drugs facilitated arterial and venous cutdowns under adequate local analgesia. Respiratory rates remained above 15 per minute. Blood samples were drawn while the patients breathed room air. Brachial or radial intra-arterial pressures remained within 10 mm. Hg of preoperative ward pressures. Lowered arterial oxygen pressure was noted in 11 patients with mitral valvular disease and moderate to severe elevation of pulmonary artery pressure. Nine of these patients required postoperative ventilatory assistance beyond forty-eight hours.

There was no predictable relationship between the type and degree of sedation and alteration of arterial oxygen pressure; but patients with mitral lung disease and pulmonary hypertension showed decreased arterial oxygen pressure after light premedication. The arterial oxygen pressure after premedication may help predict the need for prolonged postoperative ventilatory assistance.

Discussion: ELLIOTT JACOBSON, M.D., The Bronx
Associate Anesthesiologist, Montefiore Hospital and Medical Center; Assistant Professor of Clinical Anesthesiology, Albert Einstein College of Medicine of Yeshiva University

4. Ventilation After Open-Heart Surgery

DERYCK DUNCALF, M.D., The Bronx
Attending Anesthesiologist, Montefiore Hospital and Medical Center; Associate Professor of Clinical Anesthesiology, Albert Einstein College of Medicine of Yeshiva University

HERBERT L. FRANK, M.D., The Bronx
Assistant Anesthesiologist, Montefiore Hospital and Medical Center; Instructor in Clinical Anesthesiology, Albert Einstein College of Medicine of Yeshiva University

Occasionally, patients who have undergone open-heart surgery and who are being mechanically ventilated breathe asynchronously with the ventilator. In an attempt to elucidate the causes of asynchronous breathing, the mode of ventilation was standardized in this group of patients. After the initial setting of the ventilator, minute volume was increased when arterial carbon dioxide pressure exceeded 45 mm. Hg and was decreased when the arterial carbon dioxide pressure fell below 25 mm. Hg. Arterial blood gas analysis revealed wide variations in oxygen tension. Asynchronous breathing was encountered in only 2 out of 30 patients.

Discussion: STANLEY W. WEITZNER, M.D.' Brooklyn
Visiting Anesthesiologist, Kings County Hospital Center; Associate Professor of Anesthesiology, State University of New York Downstate Medical Center

5. Basal Narcosis for Repair of Cleft Lip in the Newborn

ELIZABETH B. BRODMAN, M.D., The Bronx *(by invitation)*
Fellow in Anesthesiology, Montefiore Hospital and Medical Center

EDITH R. KEPES, M.D., The Bronx
Attending Anesthesiologist, Montefiore Hospital and Medical Center; Associate Professor of Clinical Anesthesiology, Albert Einstein College of Medicine of Yeshiva University

Surgical correction of congenital cleft lip presents a problem to the anesthesiologist. The optimal age range for repair of this defect is between the neonatal period and twelve weeks. The tiny patient creates a problem in competition between surgeon and anesthesiologist for access to the operative site. Endotracheal intubation has been recommended by most anesthesiologists. This technic is not without complications, since laryngeal edema of even minor degree causes severe respiratory obstruction in small infants.

The authors' present technic consists of: (1) two hours preoperatively: up to 3 ounces of formula; (2) water (dextrose) may be given at any time, and the bottle accompanies the infant to the operating room; (3) secobarbital 3 mg. per pound is given intramuscularly on arrival in the operating room; (4) ten minutes prior to incision, the infant receives 0.5 mg. per pound of meperidine hydrochloride intramuscularly; (5) the surgeon infiltrates the operative site with lidocaine 0.5 per cent with adrenaline hydrochloride 1:200,000; (6) if the infant is restless during surgery, 1 or 2 mg. of meperidine is given intramuscularly; and (7) narcotic-induced respiratory depression may be corrected with levallorphan tartrate 0.005 mg. per pound intramuscularly.

No complications have been noted to date. Details of the authors' experience with this technic will be presented.

Discussion: HERBERT RACKOW, M.D., New York City
Associate Attending in Anesthesiology, Columbia-Presbyterian Medical Center; Associate Professor of Anesthesiology, College of Physicians and Surgeons of Columbia University

6. Transaminase Values Following Anesthesia and Surgery

John I. Lauria, M.D., Buffalo
Clinical Instructor in Anesthesiology, State University of New York at Buffalo School of Medicine

Ross Markello, M.D., Buffalo
Assistant Professor of Anesthesiology, State University of New York at Buffalo School of Medicine

Benton D. King, M.D., Buffalo
Professor of Anesthesiology, State University of New York at Buffalo School of Medicine

In an attempt to evaluate the possible hepatotoxic effects of various anesthetic agents and technics, the serum glutamic oxalopyruvic transaminase levels of 700 patients were studied prior to and for three days following surgery and anesthesia. No clear-cut difference in the transaminase levels was found that could be correlated with any individual agent or technic. There appears to be a definite relationship between the extent of the surgery and the postoperative serum glutamic oxalopyruvic transaminase level.

Discussion: Charles M. Landmesser, M.D., Albany
Professor of Anesthesiology, Albany Medical College of Union University

7. Circulatory Lability and Myocardial Stress in Cardiovascular Surgical Patients

Philip H. Sechzer, M.D., Brooklyn
Professor of Anesthesiology, State University of New York Downstate Medical Center

Jacob Wachtel, M.D., Brooklyn
Instructor in Anesthesiology, State University of New York Downstate Medical Center

Arthur S. Keats, M.D., Houston, Texas (*by invitation*)
Professor of Anesthesiology, Baylor University College of Medicine

Prevailing opinion is that there may be an etiologic relationship between sudden, prolonged, profound hypotension and the development of myocardial infarction. But documentation is needed to ascertain whether hypotension is a primary factor or is a secondary result of an untoward cardiac event. As part of a continuing study of the effects of anesthesia and surgery in patients with generalized vascular disease, an evaluation was made of the significance of changes in arterial pressure during and after the procedure. Observations were made before, during, and after carotid or abdominal aortic operations. Each patient had continuous electrocardiographic and intra-arterial pressure monitoring during the anesthesia and operation. Evidence of myocardial stress was sought in the postoperative electrocardiogram, blood enzyme tests, and clinical course. Electrocardiogram and laboratory studies were made on the first, third, and seventh postoperative days. Emphasizing the role of anesthetic management, the significance of the following factors in the clinical course are being assayed: (1) homeostasis and lability of the cardiovascular system, (2) marked hypotension or hypertension (induced by the anesthetic, vasopressor, or vasodilators) as well as rapid change in arterial pressure often associated with overtreatment, and (3) changes in heart rate and rhythm.

Discussion: V. D. B. Mazzia, M.D., New York
Professor of Anesthesiology, New York University School of Medicine

SECTION ON
Chest Diseases

Chairman.....Irving G. Kroop, M.D., Kings
Vice-Chairman....Eli H. Rubin, M.D., Bronx
Secretary.....Harry Golembe, M.D., Sullivan
Delegate.....................................
.....Arthur Q. Penta, M.D., Schenectady

Tuesday, February 13/9:00 A.M./Versailles Terrace, Second Floor

1. *Chairman's Address*—Successful Pulmonary Embolectomy in a Seventy-Three-Year-Old Woman

Irving G. Kroop, M.D., Brooklyn
Director, Cardiopulmonary Laboratory and Attending in Cardiology, Jewish Hospital and Medical Center and Jewish Chronic Disease Hospital

Alvin A. Bakst, M.D., Brooklyn
Chief, Thoracic and Cardiovascular Surgery, Jewish Hospital and Medical Center

2. Radiographic and Isotopic Technics for Evaluation of Pulmonary Vasculature

John Vance, M.D., Buffalo
Director, Pulmonary Study Unit, Millard Fillmore Hospital; Assistant Clinical Professor of Medicine, State University of New York at Buffalo School of Medicine

3. Evaluation of Pulmonary Embolectomy with Cardiopulmonary Bypass

Karl E. Karlson, M.D., Brooklyn
Director of Thoracic Surgery, Kings County Hospital; Professor of Surgery, State University of New York Downstate Medical Center

Bernard M. Wechsler, M.D., Brooklyn
Assistant Professor of Medicine and Director of Cardiology, State University of New York Downstate Medical Center

4. Ventilatory Care Unit

Irwin Friedman, M.D., Buffalo
Director, Pulmonary Function Laboratory, Buffalo General Hospital; Clinical Instruc-

tor in Medicine, State University of New York at Buffalo School of Medicine

THEODORE NOEHREN, M.D., Buffalo
Associate Professor of Medicine, State University of New York at Buffalo School of Medicine

5. Observations on Refractory Asthma and Adrenergic Aerosols

JOHN F. KEIGHLEY, M.D., Syracuse (*by invitation*)
Chief, Pulmonary Disease Section, Veterans Administration Hospital; Assistant Professor of Medicine, State University of New York Upstate Medical Center at Syracuse

6. Roentgen Findings in the Postmyocardial Infarction Syndrome

DAVID BRYK, M.D., Brooklyn
Director of Radiology, Jewish Hospital and Medical Center

7. Endocrine Disorders Associated with Tumors of the Lung

BERNARD A. SACHS, M.D., The Bronx
Head of Endocrine Service, Montefiore Hospital and Medical Center; Associate Clinical Professor of Medicine, Albert Einstein College of Medicine of Yeshiva University

SECTION ON
Dermatology and Syphilology

Chairman . . . . WILLIAM W. WELLS, M.D., Schenectady
Vice-Chairman . . . . . . DOUGLAS P. TORRE, M.D., New York
Secretary . . . . HANS F. KIPPING, M.D., Erie
Delegate . . . . . . JOSEPH J. RUSSO, M.D., Albany

Monday, February 12/9:00 A.M./Versailles Terrace, Second Floor

JOINT MEETING WITH
Section on Obstetrics and Gynecology

Symposium and Panel Discussion—**Dermatologic Conditions of the Vulva**

HAROLD M. M. TOVELL, M.D., New York City, *Moderator*
Clinical Professor of Obstetrics and Gynecology, College of Physicians and Surgeons of Columbia University; Director of Obstetrics and Gynecology, St. Luke's Hospital Center

WILLIAM W. WELLS, M.D., Schenectady, *Moderator*
Dermatologist, St. Clare's Hospital

1. The Aims of a Joint Gynecology, Dermatology, and Pathology Vulvar Clinic

ESTHER WEISFOGEL, M.D., Roslyn
Assistant Obstetrician - Gynecologist, Mount Sinai School of Medicine; Clinical Assistant Obstetrician and Gynecologist, Elmhurst City Hospital

The vulvar skin disorders merit great consideration. Obsolete terms such as leukoplakia and kraurosis have prevented unified understanding and communication. There is great need for a new nomenclature based on microscopic criteria which would bring order to the field and allow for definitive diagnosis, rational management, and meaningful prognostication through knowledgeable prospective study. Vulvar clinics should ideally be staffed by the interested gynecologist and consulting dermatologist in close, active liaison with a dermatopathologist. Optimal patient care demands initial complete systemic and local appraisal as well as prolonged observation. Resident attendance would stimulate interest and orient the gynecologist in vulvar skin disorders.

2. Dermatologic Vulvar Conditions Seen in the Child

ALBERT ALTCHEK, M.D., New York City
Assistant Attending Obstetrician-Gynecologist, The Mount Sinai Hospital; Chief, Pediatric-Gynecology Clinic, St. Luke's Hospital Center

The most common problem is nonspecific vulvitis secondary to poor hygiene in an exposed area, physical or chemical trauma, allergy, moniliasis, or vaginitis (pinworms, foreign body, trichomonads, gonorrhea). Any general dermatologic disease may also affect the skin of the vulva, such as carbuncles, boils, impetigo, hemangioma, verruca, herpes simplex, seborrhea, psoriasis, lichen sclerosus, and exanthemata. Agglutination of the labia minora is unique to the child. Vulvar problems in the child are often complicated by maceration from moisture, secondary infection from scratching, secondary vaginitis, and made confusing by adherent medication and lack of an adequate history.

3. Dermatologic Vulvar Conditions Seen in the Adult

LESLIE P. BARKER, M.D., New York City
Consulting Dermatologist, St. Luke's Hospital Center; Special Lecturer in Dermatology, College of Physicians and Surgeons of Columbia University

Many common dermatoses are frequent causes of pruritus, including burning or pain of the female genitalia. Their manifestations in this region differ greatly from those of other diseases when they occur on their usual areas of predilection. Certain physiologic factors predispose the anogenital area to unique reactions which make diagnoses difficult. Precancerous leukoplakia of the vulva, while not a common dermatosis, may be the result of long-standing irritation from previous dermatologic conditions.

4. The Pathology of Vulvar Dermatoses

PERRY M. SACHS, M.D., New York City
Assistant Attending Dermatologist, The

Mount Sinai Hospital, Consulting Dermatologist, St. Luke's Hospital Center

The histopathology of 50,000 routine diagnostic specimens was reviewed. These specimens were practically limited to a dermatologic practice; 125 had been removed from the vulva. Statistical data obtained from this series are presented, and pertinent microscopic findings and facts derived from the microscopic pictures will be demonstrated.

5. Viral Infections of the Vulva

WILLIAM E. JOSEY M.D., Atlanta, Georgia (*by invitation*)
Associate Professor of Obstetrics and Gynecology, Emory University School of Medicine

Most infections of the vulva, including viral infections, are not confined to this region but rather occur as part of a more general inflammatory process involving the lower genital tract (vulva, vagina, and cervix). Of the viral diseases affecting the female genital tract the most frequently encountered is herpes simplex. Utilizing exfoliative cytology detection and virologic methods for confirmation, we have found that genital herpetic infection is much more common than previously recognized. In the great majority of cases genital herpes is a specific venereal disease, caused by a "genital" strain of the virus and transmitted sexually. The relative frequency of herpes simplex as compared with other venereal diseases in a venereal disease clinic is currently under investigation.

SECTION ON
Gastroenterology and Proctology

Chairman...............................
...A. W. MARTIN MARINO, JR., M.D., Kings
Vice-Chairman...J. EDWIN ALFORD, M.D., Erie
Secretary...............................
......MICHAEL J. LEPORE, M.D., New York
Delegate. RALPH E. L. HERTZ, M.D., New York

Tuesday, February 13/9:00 A.M./Royal Ballroom A, Second Floor

1. ALBERT F. R. ANDRESEN MEMORIAL LECTURE
Management of Gastroduodenal Hemorrhage

CLARENCE DENNIS, M.D., Brooklyn
Professor and Chairman, Department of Surgery, State University of New York Downstate Medical Center

A triple-blind controlled study on management of massive gastroduodenal hemorrhage (loss of 40 per cent or more of circulating red cell mass) excluding esophageal varices as the source, comprised over 400 cases. The Andresen ultraconservative management carried a mortality rate of 19.8 per cent. A pattern of conservatism with emergency gastrectomy reserved for those needing excessive transfusion carried a mortality rate similar to transfusion and gastrectomy within twelve hours (14.1 per cent and 16.5 per cent respectively). The differences are not statistically significant.

Andresen's theories on the role of transfusion in inciting fresh bleeding after spontaneous cessation of bleeding have been solidly confirmed in the experimental laboratory.

2. The Spectrum of Liver Disease Following Viral Hepatitis

ROBERT A. LEVINE, M.D., Brooklyn (*by invitation*)
Assistant Professor of Medicine, State University of New York Downstate Medical Center; Chief, Division of Gastroenterology, The Brooklyn-Cumberland Medical Center

Ninety-five per cent of patients recover fully within four months following acute viral hepatitis, while 5 per cent continue with relapsing or persistent liver disease. The chronic sequelae include posthepatitic hyperbilirubinemia, chronic active hepatitis, postnecrotic cirrhosis, and subacute hepatic necrosis. Particular attention should be given to the latter syndrome. Its clinical picture is nonspecific, its diagnosis best established by percutaneous liver biopsy, and its recognition important, since it is a well-documented precursor of postnecrotic cirrhosis. Preliminary studies suggest that prolonged steroid therapy administered early in this disorder may prevent cirrhosis.

3. Experience with Jejunocolic Bypass for Obesity

RUPERT B. TURNBULL, JR., M.D., Cleveland, Ohio (*by invitation*)
Head of Department of Colon and Rectal Surgery, Cleveland Clinic Foundation

Eight years experience with jejunocolic bypass for obesity at Cleveland Clinic has enabled the observers to draw conclusions relative to the danger of the surgical procedure and the therapeutic results obtainable. Complications encountered have been electrolyte imbalance and fatty infiltration of the liver. A method of eliminating the fluid and electrolyte problems has been devised.

4. *Panel Discussion*—Problems in the Medical and Surgical Management of Diverticular Disease of the Colon

JOHN H. REMINGTON, M.D., Rochester (*Moderator*)
Clinical Associate Professor of Surgery, University of Rochester School of Medicine and Dentistry; Senior Attending Surgeon, St. Mary's Hospital

Diverticular disease of the colon is seen more frequently as the median age of an ever-increasing population advances. The medical and surgical problems associated with this progressive disease will be presented.

Panelists

Hans J. Bruns, M.D., Syracuse
Assistant Professor of Medicine, State University of New York Upstate Medical Center

John L. Madden, M.D., New York City
Director of Surgery, St. Clare's Hospital

James F. Phillips, M.D., Buffalo
Associate Physician, Buffalo General Hospital

Charles B. Ripstein, M.D., Brooklyn
Director of Surgery, Brookdale Hospital Center

SECTION ON
General Practice

Chairman.........Louis Bush, M.D., Nassau
Vice-Chairman ...Max Cheplove, M.D., Erie
Secretary.....George Liberman, M.D., Kings
Delegate....................................
....Rudolf H. Steinharter, M.D., Nassau

Wednesday, February 14/9:00 A.M./Versailles Terrace, Second Floor

This program is acceptable for three hours, Category II credit by American Academy of General Practice

1. Edema Mechanisms and Diuretic Therapy

John H. Laragh, M.D., New York City
Professor of Clinical Medicine, College of Physicians and Surgeons of Columbia University

2. Physiologic Basis of Edema and Diuretic Management

Marvin F. Levitt, M.D., New York City
Chief, Division of Kidney Diseases, The Mount Sinai Hospital; Associate Professor of Medicine, Mount Sinai School of Medicine

3. Experimental Studies on the Action of Diuretic Agents

Richard M. Hays, M.D., The Bronx
Assistant Professor of Medicine, Albert Einstein College of Medicine of Yeshiva University

Panel Discussion

The above speakers

SECTION ON
Industrial Medicine and Surgery

Chairman.Thomas J. Doyle, M.D., New York
Vice-Chairman............................
.......George L. Calvy, M.D., New York
Secretary....Robert P. Jessup, M.D., Nassau
Delegate....................................
...Robert E. Sandroni, M.D., Schenectady

Wednesday, February 14/2:00 P.M./Royal Ballroom A, Second Floor

JOINT MEETING WITH
Section on Medical-Legal and Workmen's Compensation Matters

Panel Discussion—**The Problem Patient-Employe**

Thomas J. Doyle, M.D., New York City, *Moderator*
Assistant Medical Director, Consolidated Edison of New York

The panelists will present this subject from their different viewpoints. The psychology of inadequate or unsatisfactory employes, those with personality disorders, neurotic and psychotic employes, and those with sociopathic problems will be discussed, with suggestions for management. Problems of alcoholic persons and problems with the chronic compensation case will be included. This program will be comprehensive, covering viewpoints of a psychiatrist, sociologist, as well as the legal aspects, and all related to the work world.

Panelists

Robert L. Meineker, M.D., New York City
Consulting Psychiatrist, Continental Insurance Companies; Attending Psychiatrist, St. Vincent's Hospital

Abraham Markhoff, Esq., New York City *(by invitation)*
President, New York State Trial Lawyers Association

SECTION ON
Internal Medicine

Chairman.....Maxwell Spring, M.D., Bronx
Vice-Chairman ....
...........Virgil H. F. Boeck, M.D., Erie
Secretary...................................
...Edward H. Robitzek, M.D.. Richmond
Delegate ....Marvin L. Bloom, M.D., Erie

Wednesday, February 14/9:00 A.M./Versailles Ballroom, Second Floor

JOINT MEETING WITH
New York State Society of Internal Medicine

This program was made possible with the cooperation of the Clinical Society, New York Diabetes Association; and with grants-in-aid from Postgraduate Program, Merck, Sharp & Dohme; Eli Lilly and Company; USV Pharmaceutical Corporation; The Upjohn Company; E. R. Squibb & Sons; and the Hoechst Pharmaceutical Company.

Symposium—**Atherosclerosis and Its Relationship to Carbohydrate Metabolism**

1. Relationship of Carbohydrate to Fat Metabolism

RACHMIEL LEVINE, M.D., New York City (*by invitation*)
Professor and Chairman, Department of Medicine, New York Medical College, Flower and Fifth Avenue Hospitals

2. Carbohydrate Intolerance and Lipemia

EDWIN L. BIERMAN, M.D., Seattle, Washington (*by invitation*)
Associate Professor of Medicine, University of Washington School of Medicine; Chief, Metabolic Disease Service, Veterans Administration Hospital

3. Incidence of Metabolic Abnormalities in Angiographically Demonstrated Coronary Heart Disease

RICHARD GORLIN, M.D., Boston, Massachusetts (*by invitation*)
Associate Proressor of Medicine, Harvard Medical School; Director, Cardiovascular Unit and Physician, Peter Bent Brigham Hospital

4. Hyperglycemia and Hyperuricemia in Acute Myorcardial Infarction

MAXWELL SPRING, M.D., The Bronx
Assistant Clinical Professor of Medicine, New York Medical College; Associate Visiting Physician, Bronx-Lebanon Hospital Center, Misericordia Hospital, Metropolitan Hospital Center

5. Relationship Between Hyperglyceridemia and Carbohydrate Metabolism

MARGARET ALBRINK, M.D., Morgantown, West Virginia (*by invitation*)
Professor of Medicine, West Virginia University School of Medicine

6. Carbohydrate-Induced and Fat-Induced Hyperglyceridemia

PETER KUO, M.D., Philadelphia, Pennsylvania (*by invitation*)
Associate Professor of Medicine, University of Pennsylvania School of Medicine

SECTION ON

Medical-Legal and Workmen's Compensation Matters

Chairman.................................
......ADELAIDE ROMAINE, M.D., New York
Vice-Chairman.............................
..........JOHN F. DEVLIN, M.D., New York
Secretary...CARL F. FREESE, M.D., Hempstead
Delegate........IRVIN KLEIN, M.D., New York

Wednesday, February 142/:00 P.M./Royal Ballroom A, Second Floor

JOINT MEETING WITH

Section on Industrial Medicine and Surgery

(*see page 32*)

SECTION ON

Neurology and Psychiatry

Chairman.....MATTHEW BRODY, M.D., Kings
Vice-Chairman..CHARLES F. NICOL, M.D., Erie
Secretary......MILTON TARLAU, M.D., Queens
Delegate

Wednesday, February 14/9:00 A.M./Royal Ballroom B, Second Floor

JOINT MEETING WITH

New York State District Branches of American Psychiatric Association

Symposium and Panel Discussion—**Depression and Somatic Illness**

MATTHEW BRODY, M.D., Brooklyn, *Moderator*
Attending Psychiatrist, Jewish Hospital of Brooklyn; Consulting Psychiatrist, Brooklyn State Hospital

1. Somatic Illnesses Precipitating Depression

MATTHEW BRODY, M.D., Brooklyn

2. Depressions Following Neurologic Disorders

CHARLES F. NICOL, M.D., Buffalo
Assistant Professor of Neurology, State University of New York at Buffalo School of Medicine

3. Hypochondriasis as a Defense Against Depression

WILFRED DORFMAN, M.D., Brooklyn
Assistant Attending Psychiatrist, Maimonides Hospital

4. Drug and Shock Therapy

MAXIMILIAN FINK, M.D., New York City (*by invitation*)
Professor of Psychiatry, New York Medical College

5. Psychodynamics of the Use of Somatic Therapy in the Depressions

MORTIMER OSTOW, M.D., The Bronx
Associate Psychiatrist, Montefiore Hospital; Professor of Pastoral Psychiatry, Jewish Theological Seminary

6. Cultural Variables Affecting Somatic Complaints and Depression

S. Mouchly Small, M.D., Buffalo
Professor and Chairman, Department of Psychiatry, State University of New York at Buffalo School of Medicine

Marvin K. Opler, M.D., Buffalo (*by invitation*)
Professor of Social Psychiatry, State University of New York at Buffalo School of Medicine

Panel Discussion
The above speakers

SECTION ON Obstetrics and Gynecology

Chairman. . . . .
. . . . Harold M. M. Tovell, M.D., New York
Vice-Chairman. . . . .

. . . . . . Arthur D. Hengerer, M.D., Albany
Secretary. . . . . . . Donald W. Hall, M.D., Erie
Delegate. . . . Robert C. Hays, M.D., Onondaga

Monday, February 129/:00 A.M./Versailles Terrace, Second Floor

JOINT MEETING WITH Section on Dermatology and Syphilology

(*see page 30*)

SECTION ON Ophthalmology

Chairman. . . . .
. . . . . . Dale P. Pritchard, M.D., Tompkins
Vice-Chairman. . . . .
. . . . Frank M. Green, M.D., Queens
Secretary. . Robert E. Kennedy, M.D., Monroe
Delegate. . . . Philip H. Landers, M.D., Broome

Wednesday, February 14/9:00 A.M./Royal Ballroom A, Second Floor

1. *Panel Discussion*—**Evaluation of New Technics in Cataract Surgery**

Bernard Kronenberg, M.D., New York City, *Moderator*
Associate Clinical Professor of Ophthalmology, New York Medical College; Director of Ophthalmology, Sydenham Hospital

Panelists
Miles A. Galin, M.D., New York City
Associate Surgeon (Ophthalmology), New York Hospital

John A. Cetner, M.D., Albany
Attending Ophthalmologist, Albany Medical Center Hospital

James L. McGraw, M.D., Syracuse
Chairman and Professor, Department of Ophthalmology, State University of New York Upstate Medical Center

2. *Panel Discussion*—**Stroke and the Ophthalmologist**

Albert C. Snell, M.D., Rochester, *Moderator*

Professor of Ophthalmology, University of Rochester School of Medicine and Dentistry; Chief of Ophthalmology, Strong Memorial Hospital

Panelists
Donald N. Zehl, M.D., Rochester
Assistant Surgeon (Ophthalmology), Strong Memorial Hospital

Bennett M. Stein, M.D., New York City (*by invitation*)
Assistant Attending Neurologic Surgeon, Presbyterian Hospital

Robert S. Jampel, M.D., New York City
Assistant Attending Ophthalmologist, Presbyterian Hospital

SECTION ON Orthopedic Surgery

Chairman. . . . .
. . . . . . Robert S. Siffert, M.D., New York
Secretary. . . . .
. . . . Donald B. Kettelkamp, M.D., Albany
Delegate . . . .
. . Frederick Lee Liebolt, M.D., New York

Tuesday, February 13/9:00 A.M./Versailles Ballroom, Second Floor

1. Surgical Treatment of the Clubfoot

Philip A. Barenfeld, M.D., Brooklyn
Assistant Attending Orthopedic Surgeon, Maimonides Medical Center

Martin S. Weseley, M.D., Brooklyn
Assistant Attending Orthopedic Surgeon, Maimonides Medical Center

A clinical study and a review of the authors' experience in the treatment of approximately 200 clubfeet are presented. Surgical procedures were performed in about 40 per cent of the cases. The indications for operative intervention and an evaluation of the results will be discussed

Discussion: Alexander Hersh, M.D., New York City
Associate Attending Orthopedic Surgeon, Hospital for Special Surgery and New York Hospital; Assistant Clinical Professor of Orthopedic Surgery, Cornell University Medical College

2. Medial Displacement Fixation of Unstable Intertrochanteric Fractures of the Hip

Joseph J. Conrad, M.D., Kingston
Attending in Orthopedics, Benedictine and Kingston Hospitals

Albert H. Tannin, M.D., Kingston

A clinical review is presented of the complications of unstable intertrochanteric fractures of the hip. The indications for medial displacement of fixation are discussed, and the technic and manner of postoperative care are described. The end results of this technic in 20 cases are evaluated.

Discussion: J. William Fielding, M.D., New York City
Orthopedic Surgeon, St. Luke's Hospital

3. Changing Concepts in the Treatment of Clubfeet

G. Dean MacEwen, M.D., Wilmington, Delaware (*by invitation*)
Surgeon-in-Chief, Alfred I. duPont Institute; Chief of Orthopedic Service, Veterans Administration Hospital

The technic for correction of clubfeet at the Alfred I. duPont Institute has changed over the years, resulting in the application of less and less direct force to the foot. The method of treatment will be correlated with the results, and the present technic of correction with adhesive tape will be described.

4. Patterns of Localization of Sr^{85} in Osteosarcoma: A Correlative Study Using Gross Autoradiography

Henry J. Mankin, M.D., New York City
Chief of Orthopedic Surgery, Hospital for Joint Diseases; Professor of Orthopedic Surgery, Mount Sinai School of Medicine

Barry D. Gerson, M.D., New York City
Instructor in Orthopedic Surgery, Mount Sinai School of Medicine

Howard D. Dorfman, M.D., New York City
Director of Laboratories, Hospital for Joint Diseases; Associate Professor of Pathology, Mount Sinai School of Medicine

Alex Norman, M.D., New York City
Director of Diagnostic Radiology, Hospital for Joint Diseases; Professor of Radiology, Mount Sinai School of Medicine

Three cases of osteosarcoma were studied utilizing Sr^{85} (radioactive strontium) macroautoradiography as a technic to correlate clinical and specimen x-ray examinations with the gross and microscopic pathologic conditions. The technic of obtaining macroautoradiographs is described. The relationship of histologic pattern to Sr^{85} localization and, therefore, bone formation is discussed. It is concluded that the highest rates of bone formation occur in areas of greatest cellularity rather than in areas of greatest density of tumor bone.

Discussion: Kenneth C. Francis, M.D., New York City
Attending Orthopedic Surgeon, University Hospital; Associate Professor of Clinical Orthopedic Surgery, New York University School of Medicine

5. Fractures Leading to Neurotrophic Joints

Eugene R. Mindell, M.D., Buffalo
Professor and Chairman, Department of Orthopedic Surgery, State University of New York at Buffalo School of Medicine

Fractures may trigger the development of neuropathic joints in susceptible patients with diabetes or lues. If a fracture does occur in a susceptible individual, the fracture must be handled very carefully, fixed securely, and be immobilized for a sufficient period of time. This type of treatment may prevent the development of neuropathic joints.

Discussion: Sidney Eichenholtz, M.D., Yonkers
Attending Orthopedic Surgeon, Bronx Veterans Administration Hospital

SECTION ON
Otolaryngology

Chairman . . . . . John P. Frazer, M.D., Monroe
Vice-Chairman . . . . Francis X. Ipolyi, M.D., Franklin
Secretary . . . . William F. Rabbett, M.D., New York
Delegate . . . . . John F. Daly, M.D., New York

Wednesday, February 14/2:00 P.M./Versailles Ballroom, Second Floor

1. Respiratory Distress in the Newborn

James M. Toomey, M.D., Rochester
Assistant Professor of Otolaryngology, University of Rochester School of Medicine and Dentistry

The incidence and presenting signs and symptoms of lesions causing respiratory distress in the newborn are reviewed. The individual lesions are then considered, proceeding in an orderly fashion from the anterior nares inferiorly to the lungs. Differential diagnostic points of the various abnormalities are emphasized.

2. Nasal Injuries in Children

Richard B. Hadley, M.D., Rye
Director of Otorhinolaryngology, United Hospital, Port Chester

Early nasal injuries and the late sequelae will be presented and discussed. Traumatic lesions which are either missed or improperly evaluated with respect to serious sequelae will be illustrated. Treatment of early injuries will be discussed as will corrective measures for the disturbing sequelae. The correlation of dysfunction and poor appearance will be illustrated.

3. Surgical Technic for Preservation of the Spinal Accessory Nerve in Neck Dissections for Laryngeal Carcinoma

Robert E. Alessi, M.D., Syracuse
Assistant Professor of Otolaryngology

State University of New York Upstate Medical Center at Syracuse

Recent studies with cervical lymphangiography and the distribution of metastases in the neck nodes from laryngeal carcinoma challenge the old concept of sacrificing the spinal accessory nerve in all radical dissection. Since the incidence of positive posterior triangle nodes is minimal in elective neck dissection, it should be safe to preserve the spinal accessory nerve in these instances. However, this is not recommended when jugular metastases are present, since the lymphatic drainage patterns then become unpredictable and the spinal accessory chain may be involved.

Anatomically, the spinal accessory nerve may adapt to its surgical dissection and preservation, thereby maintaining normal function and appearance of the shoulder.

Discussion: James M. Toomey, M.D., Rochester
Assistant Professor of Otolaryngology, University of Rochester School of Medicine and Dentistry

4. Modern Ear Surgery: Which Patient May Benefit?

Harold H. Wanamaker, M.D., Syracuse
Instructor, Department of Otolaryngology, State University of New York Upstate Medical Center at Syracuse

Clinical, radiologic, and audiologic findings of various otologic problems will be presented. Indications, contraindications, and anticipated results will be presented and discussed. Cases illustrating lesions in which surgery is contraindicated will be illustrated, as well as the types of middle-ear disease which are properly considered for rehabilitative and reconstructive surgery.

5. Cine-Clinic of Laryngeal Problems

David W. Brewer, M.D., Syracuse
Clinical Professor of Otolaryngology, State University of New York Upstate Medical Center at Syracuse

Illustrated histories of a variety of laryngeal lesions and dysfunctions will be presented. Discussion, diagnosis, and questions from the audience will be encouraged to elaborate and differentiate the findings. Thereafter, the proved diagnosis will be presented and rebuttal and review by the audience encouraged.

6. An Otolaryngologic Clinical Pathologic Conference

David L. Poushter, M.D., Syracuse, *Moderator*
Clinical Associate Professor of Otolaryngology, State University of New York Upstate Medical Center at Syracuse

Slides and protocols of certain unusual but interesting clinical cases will be presented that should whet the diagnostic appetite of those in attendance. Certain members of the audience will receive abstracts in advance and will discuss the presented cases. However, the audience is encouraged to participate and no one will be embarrassed or discredited.

7. *Panel Discussion*—Clinical Problems of Salivary Gland Disease

John M. Loré, Jr., M.D., Buffalo, *Moderator*
Professor of Surgery and Head of Division of Otolaryngology, State University of New York at Buffalo School of Medicine

The panelists, representing otolaryngology, surgery, and oral surgery, will discuss clinical problems of salivary gland disease. Illustrations of both inflammatory and neoplastic disease will be presented, diagnostic procedures and findings offered, and treatments and results mentioned.

Panelists

Glenn H. Leak, M.D., Buffalo
Associate Clinical Professor of Surgery, State University of New York at Buffalo School of Medicine

Jean G. Haar, M.D., D.D.S., Buffalo
Clinical Instructor, Division of Otolaryngology; Clinical Professor of Oral Diagnosis and Oral Surgery, State University of New York at Buffalo School of Medicine

Questions and Answers

SECTION ON
Pathology, Clinical Pathology, and Blood Banking

Chairman. . . . Herbert Derman, M.D., Ulster
Vice-Chairman. . . . .
William C. Schraft, Jr., M.D., Westchester
Secretary. . . . .
. . . . . George K. Higgins, M.D., New York
Delegate. . . . . John J. Clemmer, M.D., Albany

Thursday, February 15/9:00 A.M./Royal Ballroom A, Second Floor

1. Laboratory Investigation of the Patient with a Hemorrhagic Disorder

Clarence Merskey, M.D., The Bronx
Associate Professor of Medicine and Director of Hematology Laboratory, Albert Einstein College of Medicine of Yeshiva University

Nothing replaces a good history in the investigation of bleeding diathesis. From the laboratory point of view the best screening tests are the one-stage prothrombin time, the activated partial thromboplastin time, the platelet count (or estimation of platelets on a well-stained blood smear), and clot observation. Thromboplastin generation and prothrombin consumption tests are less helpful. In most cases bleeding time, clot retraction, and the tourniquet tests reflect the level of platelet count, although they do occasionally vary independently. Specific assays for individual coagulation factors provide the most precise information.

2. In Situ Lobular Carcinoma of the Breast

Frank W. Foote, Jr., M.D., New York City
Director of Pathology, Memorial Hospital for Cancer and Allied Diseases

The concept of in situ lobular carcinoma was published in 1941. Data at that time were insufficient to assess the danger of the later development of invasive cancer when the preinvasive form was treated only by local excision. Results of a long-term prospective study will be presented which will measure the rate of later development of invasive cancer in both the ipsilateral and contralateral breast. Histologic traits of the lesion will be demonstrated.

3. Effects of Chemotherapeutic Agents on Neoplastic Disease

David A. Karnofsky, M.D., New York City
Chief, Oncology Service, Department of Medicine, Memorial Hospital for Cancer and Allied Diseases

General Discussion

SECTION ON
Pediatrics

Chairman.....**Abraham Gilner**, M.D., Kings
Vice-Chairman..**John W. Wood**, M.D., Oneida
Secretary..................................
....**Joseph A. Silverman**, M.D., New York
Delegate.....**Frank A. Disney**, M.D., Monroe

Monday, February 12/9:00 A.M./Royal Ballroom A, Second Floor

1. Malabsorption from the Small Bowel

Murray Davidson, M.D., The Bronx
Director of Pediatrics, Bronx–Lebanon Hospital Center; Clinical Professor of Pediatrics, Albert Einstein College of Medicine of Yeshiva University

A brief review of the physiology of the gastrointestinal tract is presented to stress differences in function of small and large intestines which result in unique contributions of each to the content of stools. Knowledge of these variable effects on bowel content may be utilized to appreciate how malfunction of small or large intestine will result in different clinical symptoms. The remainder of the talk centers on the differential diagnoses of small-bowel malabsorption and distinguishes between the diseases that are primarily maldigestive, that is, enzymatic defects, those that are malabsorptive, and those in which there may be a combination of these effects due to inflammatory conditions, neoplasms, or anatomic variations.

2. The Mechanism of Absorption from the Small and Large Intestine

Jules Deren, M.D., Brooklyn (*by invitation*)
Director of Gastroenterology Research, Maimonides Medical Center; Assistant Professor of Medicine, State University of New York Downstate Medical Center

An overall view of the physiology of absorption of water, electrolytes, carbohydrates, amino acids, fats, and vitamins from the small and large bowel will be presented. An attempt will be made to integrate our present concept of absorption so that it can serve as a skeleton framework to classify clinical disorders of the malabsorption syndromes. Examples of both discrete (disaccharidase deficiency, juvenile pernicious anemia, Hartnup's disease) and diffuse (infectious diarrhea, celiac disease) abnormalities in these pathways will be used to illustrate the pathophysiology of the malabsorptive state.

3. Ulcerative Colitis: An Example of Protein-Losing Enteropathy

John A. Balint, M.D., Albany (*by invitation*)
Assistant Professor of Medicine, Albany Medical College of Union University; Chief of Gastroenterology, Albany Medical Center Hospital

Under normal circumstances substantial amounts of protein enter the intestinal tract each day as food and in intestinal secretions, yet only 4 to 6 Gm. are lost in the feces. The causes of excess protein loss will be reviewed and the methods for measuring endogenous protein loss discussed. The pathology of ulcerative colitis will be discussed from the point of view of a protein-losing lesion and the therapeutic implications reviewed. Attention will be drawn to some colonic and small intestinal functional disturbances seen in this disease.

4. The Cause of Microcolon: Factors Influencing the Caliber of the Colon at Birth

David H. Baker, M.D., New York City
Director of Radiology, Babies Hospital; Associate Professor of Radiology, College of Physicians and Surgeons of Columbia University

Factors involved in the production of "microcolon" have been evaluated, relating it to the level of the intestinal obstruction. Microcolon describes a pencil-thin, normal-length colon, usually found in newborns with low small-bowel obstruction, that is, meconium ileus. Since it is not seen in high obstructions such as esophageal or duodenal atresia, the relative role of swallowed amnion, gastric and small-bowel contents, and bile flow in distending these fetal colons has been defined. Microcolon has not been in any form of Hirschsprung's disease but is found in newborns with "colon inertia and normal ganglion cells."

Finally, microcolon has been found in markedly depressed newborns (as in erythroblastosis fetalis) with intact gastrointestinal tracts.

SECTION ON
Physical Medicine and Rehabilitation

Chairman.......**Boris J. Paul, M.D.**, Albany
Vice-Chairman..........................
.........**Jane R. Winer, M.D.**, New York
Secretary......**Nicholas Panin, M.D.**, Albany
Delegate ....**Henry Fleck, M.D.**, Bronx

Monday, February 12/2:00 P.M./Versailles Ballroom, Second Floor

1. *Chairman's Address* — Rehabilitation Medicine as an Educational Process

Boris J. Paul, M.D., Albany
Associate Professor of Physical Medicine and Rehabilitation, Albany Medical College of Union University

2. *Symposium and Panel Discussion*—Evaluation and Management of the Handicapped Child

The Child with Cerebral Palsy

Harriet Gillette, M.D., Burlington Vermont (*by invitation*)
Professor of Physical Medicine and Rehabilitation, University of Vermont College of Medicine

The Child with Minimal Brain Damage

Robert J. Cassidy, M.D., Schenectady
Clinical Assistant Professor of Neurology, Albany Medical College of Union University; Pediatric Neurologist, Ellis Hospital, Schenectady

Morris Eson, Ph.D., Albany (*by invitation*)
Professor of Psychology, State University of New York at Albany; Consultant in Psychology, Albany Medical College of Union University

The Child with Neuromuscular Disease

Lawrence T. Taft, M.D., The Bronx
Associate Professor of Pediatrics, Albert Einstein College of Medicine of Yeshiva University

Panel Discussion
The above speakers

SECTION ON
Plastic and Reconstructive Surgery

Chairman..................................
.....**Joseph A. Tamerin, M.D.**, New York
Vice-Chairman ....
......**Michael L. Lewin, M.D.**, New York
Secretary...**Mark K. H. Wang, M.D.**, Albany
Delegate......**E. Hoyt De Kleine, M.D.**, Erie

Tuesday, February 13/2:00 P.M./Royal Ballroom A, Second Floor

1. Total Pharyngoesophageal Reconstruction with a Medially Based Deltopectoral Flap

Vahram Y. Bakamjian, M.D., Buffalo (*by invitation*)
Associate Chief, Head and Neck Reconstructive Surgery, Roswell Park Memorial Institute

All of the existing methods for reconstruction of the pharynx and cervical esophagus following total laryngopharyngectomy for advanced cancer are short of ideal, some of them considerably so. A new pedicle flap technic that accomplishes the major part of the reconstruction at the same time as the resection has been developed, which reduces some of the disadvantages to an acceptable minimum. After resection has been performed, the missing part of the alimentary tube is replaced by rotating an oblong rectangular flap from the pectoral region into the neck and inserting it to form a hollow epidermal tube which is anastomosed end-to-end to the pharyngeal opening above and side-to-end to the esophageal stump below. A second stage three to five weeks later completes the procedure.

2. Plastic Surgery for Prisoners at the Clinton Prison, Dannemora, New York

Mark K. H. Wang, M.D., Albany
Associate Clinical Professor of Plastic Surgery, Albany Medical College of Union University

Stanley Labow, M.D., Albany (*by invitation*)
Fellow in Plastic Surgery, Albany Medical College of Union University

A. M. Marchionne, Ph.D., Albany (*by invitation*)
Associate Professor of Psychiatry, Albany Medical College of Union University

In October, 1962, the Department of Plastic and Reconstructive Surgery at the Albany Medical Center Hospital in conjunction with the Department of Correction of the State of New York instituted a program of plastic and reconstructive surgery at the Clinton Prison at Dannemora, New York. Shortly after its inception, an effort to broaden the scope of this program culminated in a psychological study of the social and personal dimensions of the prisoners receiving plastic surgery. The organization of this program, analysis of the cases performed, and the further requirements are discussed.

3. Interdigitating Flaps: Variations on a Theme

Harmon T. Rhoads, Jr., M.D., New York City
Associate Professor of Plastic Surgery, New York Medical College

4. A Method for the Treatment of Digital Involvement of the Extremities in Scleroderma

Frederick MacDowell, Jr., M.D., Poughkeepsie
Associate Attending Surgeon (Plastic Surgery), St. Francis and Vassar Brothers Hospitals

The purpose of this report is to describe a technic which helps to relieve the symptoms caused by calcific deposits in the digits. In contrast to cold-knife dissection a dental burr is utilized. This preserves the septa and results in minimal postoperative discomfort, prompt wound healing, and considerable improvement in function.

5. Experiences in the Management of Soft-Tissue Injuries of the Hand and Forearm at Harlem Hospital

Arthur L. Garnes, M.D., New York City
Attending Plastic Surgeon, Harlem Hospital

Injuries involving the skin and subcutaneous tissues, tendons and muscles, nerves, and blood vessels are considered. Injuries of the skin and subcutaneous tissues can usually be repaired primarily. Where there is loss of tissue, free graft or pedicle flaps will be required.

Extensor tendons tend to heal very kindly. However, exact anatomic restoration is necessary for good functional results. In managing several flexor tendons in the wrist and hand, the sublimis are best excised because their repair is unvariably followed by the formation of restricting adhesions.

Following primary repair of major nerves in the forearm, we have found it advantageous to do early tendon transfer so as to hasten rehabilitation of adult patients.

The determination of injury of blood vessels in puncture wounds requires careful observation to decide whether or not the wound should be explored. Illustrative cases are given.

6. Unusual Industrial Injuries of the Hand

William P. Whalen, M.D., New York City
Chief of Plastic Surgery, St. Vincent's Hospital; Professor of Surgery, New York University Medical College

The hand is exposed to many varied and complex injuries from machines with rapidly moving parts, cutting, and compression devices. These injuries present unusual problems of immediate surgery and later reconstructive surgery. This report is best presented by analyzing 2 specific cases.

Case 1. Rollar compression of the forearm involving not the typical rollar injury to the skin and subcutaneous tissue but extensive crush injury to the deeper forearm musculature with subfacial hemorrhage.

Case 2. Amputation of all four fingers leaving an intact but functionless thumb until a post was constructed against which the thumb could pinch.

Discussants

George F. Crikelair, M.D., New York City
Professor of Clinical Surgery, College of Physicians and Surgeons of Columbia University; Director of Plastic Surgery Service, Columbia-Presbyterian Medical Center

F. Stanley Hoffmeister, M.D., Albany
Associate Clinical Professor of Surgery, Albany Medical College of Union University

Joseph D. Kepes, M.D., Rochester
Attending Plastic Surgeon, Rochester General Hospital

James W. Smith, M.D., New York City
Attending Plastic Surgeon, Bronx Veterans Administration Hospital; Assistant Professor of Clinical Surgery (Plastic), Cornell University Medical College

SECTION ON
Preventive Medicine and Public Health

Chairman. . **Jack Goldman, M.D.**, Westchester
Vice-Chairman. . . . .
. . . **Mary C. McLaughlin, M.D.**, New York
Secretary. . **James J. Quinlivan, M.D.**, Albany
Delegate . . . .
. . . **Robert E. Rothermel, M.D.**, New York

Tuesday, February 13/2:00 P.M./Royal Ballroom B, Second Floor

Symposium and Panel Discussion—**The Role of the Practicing Physician in Planning for Comprehensive Health Services**

Introductory Remarks

Jack J. Goldman, M.D., White Plains
First Deputy Commissioner, Department of Health, County of Westchester

Herman E. Hilleboe, M.D., Albany, *Moderator*
Professor of Public Health Practice, College of Physicians and Surgeons of Columbia University; Executive Secretary, New York State Planning Advisory Council

Broad Aspects

Mr. Edward H. VanNess, New York City (*by invitation*)
Executive Director, New York State Planning Commission

The State Level

Granville W. Larimore, M.D., Albany
First Deputy Commissioner, Department of Health, State of New York

The Federal Level

James R. Kimmey, M.D., New York City (*by invitation*)
Regional Health Director, U.S. Public Health Service

Private Practice

Waring Willis, M.D., Bronxville
Past President, Medical Society of the State of New York

Panel Discussion
The above speakers

SECTION ON Radiology

Chairman....E. Robert Heitzman, M.D., Onondaga
Vice-Chairman..Kent Ellis, M.D., New York
Secretary...Edward A. Dunlop, Jr., M.D., Niagara
Delegate........John F. Roach, M.D., Albany

Tuesday, February 13/9:00 A.M./Royal Ballroom B, Second Floor

Panel Discussion—**Radiology of the Liver**

E. Robert Heitzman, M.D., Syracuse, *Moderator*
Associate Professor of Radiology, State University of New York Upstate Medical Center

Panelists

Joseph P. Whalen, M.D., Syracuse
Associate Professor of Radiology, State University of New York Upstate Medical Center at Syracuse

Robert O'Mara, M.D., Syracuse (*by invitation*)
Instructor in Radiology, State University of New York Upstate Medical Center at Syracuse

Robert A. Bornhurst, M.D., Syracuse
Assistant Professor of Radiology, State University of New York Upstate Medical Center at Syracuse

Francis P. Ruzicka, Jr., M.D., New York City
Director of Radiology, St. Vincent's Hospital and Medical Center

SECTION ON Space Medicine

Chairman..Constantine D. J. Generales, Jr., M.D., New York
Vice-Chairman........Nathaniel E. Reich, M.D., Kings
Secretary....Levon Bedrosian, M.D., Albany
Delegate...H. Easton McMahon, M.D., New York

Monday, February 12/2:00 P.M./Royal Ballroom A, Second Floor

Ninth Annual Symposium on Space Medicine—**Anno XI of Space Exploration**

Opening Remarks: Charles Stark Draper, Ph.D., Cambridge, Massachusetts (*by invitation*)
Department of Aeronautics and Astronautics, Massachusetts Institute of Technology

1. **Life Detection Beyond the Earth**
Bessel Kok, Ph.D., Baltimore, Maryland (*by invitation*)
Head of Bioscience Department and Assistant Director, Research Institute for Advanced Studies, Martin Marietta

2. **Radio-Controlled Behavior**
José M. R. Delgado, M.D., New Haven, Connecticut (*by invitation*)
Professor of Physiology (Psychiatry), Yale University School of Medicine

3. **New Scientific Observations on the Solar System**
Fred L. Whipple, Ph.D., Cambridge, Massachusetts (*by invitation*)
Director, Smithsonian Astrophysical Observatory

4. **The Rise and Fall of Jean Francois Pilatre de Rozier, M.D., The First Aeronaut**
Constantine D. J. Generales, Jr., M.D., New York City
Physician and Research Associate, The Mount Sinai Hospital; Consultant in Space Medicine Affairs, David Sarnoff Research Center, Radio Corporation of America, Princeton, New Jersey

5. **Possible Relationship Between Reversal of the Earth's Magnetic Field and Biologic Change**
James D. Hays, Ph.D., New York City (*by invitation*)
Assistant Professor of Geology, Lamont Geological Observatory, Columbia University

6. **A Biologic Dynamic Source for Implanted Electronic Equipment**
R. Adam Cowley, M.D., Baltimore, Maryland (*by invitation*)
Professor of Thoracic and Cardiovascular Surgery, University of Maryland School of Medicine
Mostafa E. Talaat, Ph.D., Baltimore, Maryland (*by invitation*)
Professor of Mechanical Engineering, University of Maryland

SECTION ON Surgery

Chairman..Alfred M. Markowitz, M.D., New York
Vice-Chairman............Sidney M. Schaer, M.D., Erie

Secretary. . . . .
. . . Wheelock A. Southgate, M.D., Monroe
Delegate. . . . . John H. Morton, M.D., Monroe

Monday, February 12/2:00 P.M./Royal Ballroom B, Second Floor

Symposium—**Abandoned Operations**

1. Operation for Acute Completed Strokes

Charles G. Rob, M.D., Rochester
Chairman, Department of Surgery, University of Rochester School of Medicine and Dentistry

2. Vagectomy for Idiopathic Ulcerative Colitis

Clarence Dennis, M.D., Brooklyn
Professor and Chairman, Department of Surgery, State University of New York Downstate Medical Center

3. Subtotal Gastrectomy for Duodenal Ulcer

Charles L. Eckert, M.D., Albany
Chairman, Department of Surgery, Albany Medical College of Union University

4. Segmental Gastric Resection for Gastric and Duodenal Ulcer

David State, M.D., The Bronx (*by invitation*)
Professor and Chairman, Department of Surgery, Albert Einstein College of Medicine of Yeshiva University

5. Abdominal Cancer Operations

George E. Moore, M.D., Buffalo
Director of Surgery, Roswell Park Memorial Institute

SECTION ON
Urology

Chairman. . . . .
. . . . . John H. McGovern, M.D., New York
Vice-Chairman . . . Imre V. Magoss, M.D., Erie
Secretary . . . . Harry C. Miller, M.D., Monroe
Delegate . . . . . William J. Staubitz, M.D., Erie

Thursday, February 15/9:00 A.M./Royal Ballroom B, Second Floor

Symposium and Panel Discussion—**Postprostatectomy Incontinence**

Keith Waterhouse, M.D., Brooklyn, *Moderator*

Panelists

Francis Beneventi, M.D., New York City
John L. Berry, M. D., Albany (*by invitation*)
William A. Milner, M.D., Albany
Ralph J. Veenema, M.D., New York City

MEDICAL SOCIETY
OF THE STATE
OF NEW YORK

WEDNESDAY
FEBRUARY 14, 1968

IMPERIAL BALLROOM
AMERICANA
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Annual Dinner Dance

in honor of

FREDERICK A. WURZBACH, JR., M.D.

President

Cocktail Hour—7:00 p.m.

Superlative Dinner

Music by Ben Cutler

Dress Optional

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Please send ——— tickets for the Annual Dinner Dance on February 14, 1968.

Enclosed please find my check for ———.

NAME

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Please attach guest list.

Scientific Exhibits

ALBERT HALL, LOWER LEVEL

ALBERT H. DOUGLAS, M.D., Jamaica, Chairman
FRANCIS P. BILELLO, M.D., Glen Cove
FRED W. BUSH, M.D., Rochester
FREDERICK LEE LIEBOLT, M.D., New York City
ARTHUR Q. PENTA, M.D., Schenectady
BEVERLY C. SMITH, M.D., New York City
FRANK RAYMOND SMITH, M.D., New York City

Scientific Exhibits

Certificates of Award will be given by the Medical Society of the State of New York in two groups:

Group I: Awards are made for exhibits of individual investigation which are judged on the basis of originality and excellence of presentation.

Group II: Awards are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of presentation and correlation of data.

The Aesculapius Award for the most outstanding scientific exhibit carries a cash prize donated by Mead Johnson Laboratories of Evansville, Indiana.

Alterations in Bronchial Artery in Emphysema, Primary and Metastatic Carcinoma, and Other Chronic Lung Disease

Bok Y. Lee, M.D.
Reuben Z. Schulz, M.D.
Veterans Administration Hospital, Castle Point
John L. Madden, M.D.
St. Clare's Hospital, New York City

The injection technic employed and the results obtained in a study of bronchial and pulmonary artery alterations which occur in the various pulmonary disease processes are depicted. Utilizing this technic, the pulmonary vascular system in both the experimental animal and the fresh postmortem specimens were studied **(Booth 201)**.

Sarcoidosis or Not!

D. C. Kent, M.D.
V. N. Houk, M.D.
H. A. Arnold, M.D.
U.S. Naval Hospital, St. Albans

A series of cases diagnosed by clinical picture and peripheral biopsy as sarcoidosis proved to be other clinical entities when further definitive studies were accomplished. The final diagnoses include berylliosis, tuberculosis, lymphoma, histoplasmosis, carcinoma, and mycobacteriosis. Problems in diagnosis are stressed **(Booth 202)**.

Comparison of Chronic Ulcerative Colitis and Regional Enteritis of the Colon

Richard G. Farmer, M.D.
William A. Hawk, M.D.
Rupert B. Turnbull, Jr., M.D.
Cleveland Clinic Foundation, Cleveland, Ohio

Of the primary ulcerative-inflammatory diseases of the colon, two distinct pathologic entities have emerged: one a mucosal disease, ulcerative colitis, and one a transmural disease, regional enteritis. The exhibit compares and contrasts the pathologic features and clinical manifestations. It is based on 151 operated cases from the Cleveland Clinic **(Booth 203)**.

Hyperlipidemia

Donald Berkowitz, M.D.
Albert Einstein Medical Center, Philadelphia, Pennsylvania

The exhibit summarizes the mechanisms of production, the clinical findings, the complications, and treatment of hyperlipidemia based on an experience with over 300 patients with this condition. The various hyperlipidemic syndromes are classified according to their specific abnormalities, and illustrative lipid profiles of each are shown together with photographs of typical skin or other manifestions of the disorder. Chlorophenoxyisobutyrate is shown to be an effective lipid-lowering agent resulting in normalization of the blood triglycerides and cholesterol in over 75 per cent of patients treated **(Booth 204)**.

Are Diabetes and Atherosclerosis Related?

Maxwell L. Gelfand, M.D.
Maximilian Fabrykant, M.D.
New York University School of Medicine, New York City

Ischemic heart disease is more common in patients with diabetes than in those without diabetes. We have studied the carbohydrate metabolism in patients with atherosclerosis who had no symptoms of diabetes, a normal fasting blood sugar, and no glycosuria. We found a high incidence of impaired carbohydrate metabolism in these patients when compared with a control group matched for age and sex. The similarity of the biochemical findings of both diseases and the characteristic angiopathy findings of diabetes will be presented. The purpose of this exhibit is to present our findings and raise the question, "Are diabetes and atherosclerosis related?" **(Booth 205)**.

Arteriography in Adrenal Tumors

Plinio Rossi, M.D.
Iven S. Young, M.D.
William Panke, M.D.
St. Vincent's Hospital, New York City

The exhibit illustrates various adrenal tumors and their demonstration by arteriography. In addition to aortic injection, some tumors are also shown by selective catheterization of the adrenal arteries. Pheochromocytoma, adrenal adenoma, and adrenal carcinoma will be presented **(Booth 206).**

Cinegastroscopy and Still Photography of Gastric Lesions

Henry Colcher, M.D.
College of Physicians and Surgeons of Columbia University, New York City

The exhibit will consist of the continuous projection of a color motion picture with sound (telephones) depicting the findings of a normal stomach, various types of gastritis, and two gastric ulcers. In addition, 30 slides will be projected on two screens with accompanying verbal description **(Booth 207).**

Adverse Reactions to Drugs

American Medical Association
Chicago, Illinois

The exhibit familiarizes physicians with the operation of the Drug Utilization Section of the AMA. Special brochures discussing possible adverse reactions to drugs used by specialty groups (nephrologists, dermatologists, hematologists, and so forth) as well as general practitioners are available **(Booth 208).**

Component Blood Therapy Means Better Patient Care

American Association of Blood Banks
Chicago, Illinois
Cancer Control Program of the U.S. Public Health Service
Arlington, Virginia

The exhibit's objective is to promote greater use of blood component therapy which, by its specificity, provides better patient care and conserves our human blood resources. The problem relating to the supply of and the demand for these labile elements is presented. The methodology developed and employed by the modern blood bank to make these blood components available is illustrated. Practical guidelines for clinical usage are provided by the alignment of the specific components, with their indications **(Booth 209).**

Drug Abuse Problems and New York State's Approach

Narcotic Addiction Control Commission
Albany

The drug abuse problem in New York State is presented with the Commission's plan for dealing with it **(Booth 210).**

Gout: Diagnosis, Pathogenesis, Treatment

J. E. Seegmiller, M.D.
National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda, Maryland

A comprehensive review of current diagnostic, therapeutic, and prophylactic technics in acute and chronic gouty arthritis is presented. Also presented is a working hypothesis, based on extensive original data collected at the National Institutes of Health, of the metabolic mechanisms responsible for the onset and sustentation of the acute attacks of gout and the method of allopurinol's action **(Booth 211).**

Physical Signs in Coronary Disease

Smil Zoneraich, M.D.
Olga Zoneraich, M.D.
Albert H. Douglas, M.D.
Long Island Jewish Hospital–Queens Hospital Center, Jamaica

The exhibit shows that physical signs, if detected and recorded, may provide important clues to the presence of coronary disease from inception to the most advanced stages and lead to confirmatory diagnosis. Seven cases with illustrative cardiographic tracings are presented: phonocardiograms, apexcardiograms, carotid pulses, kinetocardiograms, or ballistocardiograms. They were confirmed clinically, electrically, and/or roentgenologically. Three cases had anatomopathologic confirmation. A model shows normal tracings for reference. Emphasis is put on recording low-frequency vibrations of the precordium for diagnostic purposes **(Booth 212).**

How to Approach an Eye

Dan M. Gordon, M.D.
New York Hospital, New York City

The exhibit covers the fundamentals of an eye examination, stressing the conditions which the nonophthalmologist can and cannot handle and illustrating important diagnostic hints. The differentiation between conjunctival and ciliary injections will be illustrated, as well as indications for the use of anti-inflammatory agents with or without antimicrobials. Conjunctivitis versus intraocularly induced inflammations, technic of fluorescein staining, tonometry, eversion of the upper lid, control of lids in a possibly perforated eye, immediate first aid of burns, perforated eye traumatic hyphema, lid lacerations, foreign bodies, rust rings, when to use dilating drops and when not, when to patch, and so forth will be discussed **(Booth 214).**

Physician-Nurse Communications

American Medical Association
Chicago, Illinois

The exhibit represents a visual summary of the objectives and program of the AMA Committee on Nursing. It emphasizes the importance of high standards of patient care through a close physician-nurse relationship. The areas of liaison, consultation, research, and education through which such a relationship can be strengthened are highlighted **(Booth 215).**

Arm-Ankle Systolic Blood Pressure Gradient: Objective Test for Occlusive Arterial Disease in Leg

JERROLD S. LIEBERMAN, M.D.
New York Hospital–Cornell Medical Center, New York City

Arterial insufficiency in the leg can be diagnosed with 95 per cent accuracy by comparing the ankle systolic blood pressure to the brachial. The exhibit describes a bedside test for determining the ankle blood pressure without special equipment and gives diagnostic criteria **(Booth 216).**

Chemoprophylaxis of Tuberculosis

NEW YORK TRUDEAU SOCIETY
New York City

Information is presented on the relative risk of developing active tuberculosis among various groups of exposed and infected individuals. Priorities for the application of chemoprophylaxis to these different groups and chemoprophylaxis regimens will be outlined. This information is based on a recent study done both in the United States and elsewhere **(Booth 218).**

Endocrine and Metabolic Manifestations in Bronchogenic Carcinoma

HARRY L. KATZ, M.D.
JOHN T. KAEMMERLEN, M.D.
JAMES H. CULLEN, M.D.
Veterans Administration Hospital, Albany

The exhibit consists of case histories, x-ray demonstrations, and photomicrographs illustrating various endocrine and metabolic disturbances secondary to bronchogenic carcinoma with emphasis on hyponatremic states, hypercalcemia, Cushing's disease, gynecomastia, and myasthenia-like syndromes. A correlation is presented between these and the pathologic condition of the pulmonary lesion. Emphasis is placed on the recognition of these metabolic and endocrine disturbances which may clinically obscure the underlying pulmonary neoplasm **(Booth 219).**

Physiologic Basis of Diuretic Drug Therapy

ALBERT N. BREST, M.D.
Hahnemann Medical College and Hospital, Philadelphia, Pennsylvania

The exhibit features the natriuretic and diuretic mechanisms of action shown by thiazides, mercurials, ethacrynic acid and furosemide, and the potassium-sparing drugs. Diuretic drug effects encountered under separate conditions of hydration and dehydration are compared, and relative potencies of diuretic drugs, as determined by bioassay acute weight loss studies, are described **(Booth 220).**

Method for Managing Tenosynovitis and Other Hand Infections: Irrigation with Antibiotic-Enzyme Solution Through Polyethylene Catheter

SYLVESTER J. CARTER, M.D.
WALTER L. MERSHEIMER, M.D.
SHELDON O. BERMAN, M.D.
New York Medical College, Flower and Fifth Avenue Hospitals, New York City

The method for managing tenosynovitis and other hand infections avoids residual damage to peripheral structures necessary to proper functioning of the hand. The technic consists of irrigation with an antibiotic-enzyme solution through a polyethylene tube inserted in the infected area. The surgical procedure may be followed by continuous-drip therapy. Illustrative cases from various New York hospitals are presented. Extent of infection is pictured along with subsequent healing and degree of flexion and extension preserved **(Booth 221).**

Implantodontics at Brookdale Hospital Center

A. NORMAN CRANIN, D.D.S.
SAMUEL P. WEBER, D.D.S.
Brookdale Hospital Center, Brooklyn

Oral rehabilitation of the patients unable to function with conventional dentures through the use of surgically implanted prosthetic devices is depicted. A cross section of the various allopathic implant technics with their clinical applications in dentistry is presented **(Booth 222).**

Surgery in the Mentally Retarded

WILLIAM C. FREDERICK, M.D.
ISIDRO C. ALMEDA, M.D.
St. Vincent's Medical Center of Richmond, Staten Island
JACK HAMMOND, M.D.
Willowbrook State School, Staten Island

The exhibit will detail surgical problems encountered in over 200 retarded patients at Willowbrook State School who were managed by the attending resident staff of St. Vincent's Medical Center of Richmond. Preoperative and postoperative management will be stressed. Bizarre surgical conditions will be described **(Booth 223).**

New Technic in Management of Pretibial Skin Loss Using Muscle Transplantation

RALPH GER, M.D.
DONALD M. PEARLMAN, M.D.
GERSHON EFRON, M.D.
Albert Einstein College of Medicine of Yeshiva University–Lincoln Hospital Affiliation, New York City

The problems involved and the advantages in a suggested new approach are indicated. Color photographs of clinical cases illustrate the indications for the procedure, the principles involved, and the technic of the operation. The fate of the transplanted muscle is demonstrated by electromyography **(Booth 224).**

Brain Tumor and Other Intracranial Masses: Role of Increased Intracranial Pressure

S. A. Jacobson, M.D.
Alan B. Rothballer, M.D.
New York Medical College Flower and Fifth Avenue Hospitals

Brain tumors and other intracranial masses produce their pathologic changes by local and generalized elevation of intracranial pressure. A demonstration is presented of the pathophysiology of these changes, their manifestations, and modes of control. Electronic equipment developed by the authors for monitoring intracranial pressure is presented **(Booth 225)**.

Transantral Sphenoidal Hypophysectomy

Theodore R. Miller, M.D.
H. Randall Tollefsen, M.D.
Ernest J. Greenberg, M.D.
Memorial Hospital for Cancer and Allied Diseases, New York City

The indications and surgical technic of transantral sphenoidal hypophysectomy, based on our experience of over 100 cases done in the past two years, are presented. Gross operative specimens of intact pituitary glands provide the best evidence of total removal **(Booth 226)**.

Cryosurgery in Treatment of Primary Bone Tumors and Metastatic Carcinoma to Bone

Ralph C. Marcove, M.D.
Theodore R. Miller, M.D.
William G. Cahan, M.D.
Memorial Hospital for Cancer and Allied Diseases, New York City

For the past three years cryosurgery has been used as an adjunct in the treatment of metastatic carcinoma to bone as well as to primary bone tumors. Examples of the cases and follow-up x-ray films will be demonstrated. Different technics of bone freezing will be illustrated **(Booth 227)**.

Management of Thermal Injuries

Bertram E. Bromberg, M.D.
In Chul Song, M.D.
William P. Blackmore, M.D.
State University of New York Downstate Medical Center, Brooklyn

Pertinent statistical data, pathogenesis, diagnosis, management, and complications of thermal injuries are analyzed and illustrated. The manner of the use of sulfamylon acetate cream and biologic dressings in controlling the bacterial population of burn wounds are also illustrated and their advantages outlined **(Booth 228)**.

Arterial Reconstruction Below the Knee

Callisto A. Danese, M.D.
Adolf Singer, M.D.
The Mount Sinai Hospital, New York City

A new surgical exposure of the lower popliteal artery and its branches for distal anastomosis of a bypass and/or local endarterectomy will be demonstrated. The technic will be described and the patient selection for this approach will be discussed. Transparencies of pre- and postoperative arteriograms illustrate the indications and demonstrate the results **(Booth 229)**.

Management of Stab Wounds of Abdomen in Civilian Practice

William F. Mitty, Jr., M.D.
David Befeler, M.D.
Carlo Grossi, M.D.
St. Vincent's Hospital, New York City

In patients with abdominal stab wounds, it was not possible to differentiate reliably between penetrating and nonpenetrating injuries on the basis of physical findings, x-ray, or laboratory studies. Since there were no deaths among patients explored without viscus injury, and the morbidity and mortality rates with viscus injury are proportional to the delay, we continue to feel that mandatory exploration for all stab wounds is indicated. Cases reported numbered 297 **(Booth 230)**.

Lasers in Ophthalmology

E. R. Squibb & Sons
New York City

One of the first applications of laser energy was the development of ruby laser photocoagulators to channel the laser beam through the pupil of the eye. The treatment of many ocular lesions with laser is being studied, and some of the results of this research are explained **(Booth 231)**.

Malignant Melanoma Therapy by Endolymphatic Infusion of Radioactive Isotopes

Irving M. Ariel, M.D.
Ruben Oropeza, M.D.
Donna Galey, R.N.
Pack Medical Foundation, New York City

The rationale of using isotopes endolymphatically to treat malignant melanoma: the indications, over-all considerations, and limitations are shown. The reasons for altered lymphatics dynamics and various alteration patterns are demonstrated, as well as the results of intralymphatic therapy to invaded nodes and satellitosis, which occur with metastasis of this disease **(Booth 232)**.

Arteriography of the Breast

Frieda Feldman, M.D.
David V. Habif, M.D.
Columbia-Presbyterian Medical Center, New York City

Angiography of the breast was done in 12 cases in whom a diagnosis of malignant tumor was made from clinical evidence and in one normal control. The apparent correlation between arteriographic findings and surgical results have been encouraging. Angiographic abnormalities were found in all [illegible] malignant cases **(Booth 233)**.

Preanesthetic Medication: Changing Concepts

STEPHEN N. STEEN, M.D.
DOROTHY HAHL, C.R.N.A.
STEPHEN PRESTON, M.D.
State University of New York Downstate Medical Center, Brooklyn

The qualities of an "ideal" preanesthetic agent are listed and used as a point of reference in evaluating other agents. Included are the findings of a double-blind study of approximately 800 patients using parenteral diazepam or a placebo as premedication prior to various short surgical procedures **(Booth 234).**

Newer Anesthetics: A Ten-Year Survey

ALLEN B. DOBKIN, M.D., AND ASSOCIATES
Department of Anesthesiology, State University of New York Upstate Medical Center, Syracuse

Data currently available on anesthetic drugs that have been subjected to clinical trial during the past ten years are reviewed. Inhalational, parenteral, and regional anesthetics are discussed. A three-way clinical comparison is made of methotrimeprazine with morphine and meperidine **(Booth 235).**

Treatment of Advanced Bladder Carcinoma

PAUL GONICK, M.D.
EMILE J. BERLET, M.D.
BERNARD ROSWIT, M.D.
Veterans Administration Hospital, The Bronx

Histories of 168 patients with bladder cancer invading into or beyond the muscle layer were reviewed. Less than 5 per cent of patients with lesions that extended beyond the muscle survived five years. In 64 patients with muscle invasion, cystectomy and ileal conduit gave better results than cystectomy and ureterosigmoidostomy, suprapubic cystotomy with resection, and partial cystectomy **(Booth 236).**

Renal Homotransplantation

DONALD G. VIGT, M.D.
BRUCE H. STEWART, M.D.
SATURO NAKAMOTO, M.D.
Cleveland Clinic Foundation, Cleveland, Ohio

This exhibit reviews the Cleveland Clinic experience with 152 renal transplants. Particular emphasis is placed on transplantation of organs from nonliving donors. Approximately 75 per cent of our experience has been with cadaver transplantation. Post-transplant management as well as complications of transplantation are discussed, and results are reviewed **(Booth 237).**

Chemotherapy of Metastatic Testis Cancer

A. RANALD MACKENZIE, M.D.
ROBERT B. GOLBEY, M.D.
WILLET F. WHITMORE, JR., M.D.
Memorial Hospital for Cancer and Allied Diseases, New York City

Of 180 patients who received chemotherapy for metastatic cancer of the testis, 28 were rendered clinically free of disease, and 16 remain so. Actinomycin D used alone appears to be the most effective means of treating metastatic embryonal-cell carcinoma, teratocarcinoma, and choriocarcinoma. Chlorambucil, in our experience, is the best drug for seminoma **(Booth 238).**

Evaluation of Analgesics and New Episiotomy Procedure in Relief of Postpartum Pain and Trauma

R. C. BENSON, M.D.
R. B. DURFEE, M.D.
J. M. SCHNEIDER, M.D.
University of Oregon Medical School, Portland, Oregon

The authors report on 295 patients, including 213 primagravidas, who required a vaginoperineotomy in the second stage of labor. This procedure was repeated on 11 of these patients when they returned as secundigravidas.

A new median episiotomy technic, vaginoperineotomy, developed with the primary aim of decreasing the unnecessarily high incidence of symptomatic rectocele, is described. Advantages include the very low incidence of third-degree laceration and possible disadvantages associated with the described vaginoperineotomy technic.

A double-blind study of relief of pain and cramps in 215 postepisiotomy patients is also presented, in which randomized administration of a muscle relaxant combined with acetophenetidin, caffeine, and codeine is compared with an analgesic as well as a placebo **(Booth 239).**

Metroplasty Improves Fetal Salvage

V. J. CAPRARO, M.D.
C. L. RANDALL, M.D.
E. J. CAPRARO, B.S.
State University of New York at Buffalo School of Medicine, Buffalo

The last 85 cases of uterine anomalies seen at the State University of New York at Buffalo–University Affiliated Hospitals are reviewed. These include uteri of the septate, bicornuate, and didelphus types. Obstetric histories and fetal loss are analyzed. The methods of diagnosis and methods of correcting such anomalies are shown. The incidence of other associated anomalies is reviewed. Some of the more recent cases have had chromosomal studies. These findings are presented **(Booth 240).**

Radiologic Aspects of Normal and Abnormal Vagina

RICHARD M. FRIEDENBERG, M.D.
MAX C. KING, M.D.
CHARLES NEY, M.D.
The Bronx-Lebanon Hospital Center, The Bronx

A comprehensive survey of various conditions affecting the vagina which can be visualized by contrast radiographic examination will be presented. Included will be the normal vagina in children and adults, congenital lesions of the vagina including intersex, fistulas, inflammatory lesions, and benign tumors. The technic will be shown together with brief discussions of the diagnostic criteria of each entity **(Booth 241).**

Trivalent Poliovirus Vaccine: Latest Reports on Initial Doses and Duration of Immunity

CHARLES J. MASUR, M.D.
Ramsey, New Jersey

The exhibit presents the results of two investigations on initial doses and duration of immunity for trivalent poliomyelitis virus vaccine. In one investigation infants from six to eight weeks old were fed trivalent vaccine. A graphic presentation demonstrates that this age group can be immunized and that satisfactory immunity is generally maintained for a year, when a third dose is advised.

The other investigation involved immunization of older children triply susceptible to all strains of poliomyelitis virus. A significant percentage of these children were followed for four years. It appears that a booster is necessary every three years **(Booth 242).**

Prognosis in Childhood Nephrosis

HARRY SONNENSCHEIN, M.D., AND ASSOCIATES
Department of Pediatrics, Maimonides Hospital, Brooklyn Department of Pathology, The Mount Sinai Hospital, New York City

The prognosis of nephrosis depends on the type. The uncomplicated type responds well to steroid therapy and carries a good prognosis. The exhibit deals with a method of differentiating this type from all other forms of nephrosis by means of four parameters or criteria. Evidence to support this method of classification is supplied by renal biopsy. The exhibit is based on a study of 39 cases **(Booth 243).**

Venereal Disease: Not a Problem Anymore?

JOSEPH B. ROBINSON, M.D.
Venereal Disease Control Program, State of New York Department of Health, Albany

Pictures of babies diagnosed with congenital syphilis point out that syphilis is still a problem in New York State. The loss of man work-hours and the tax cost of caring for the syphilitic blind and insane are depicted. A colorful reproduction of the Treponema pallidum is shown **(Booth 244).**

Health Guides

HOLLIS S. INGRAHAM, M.D., Commissioner
State of New York Department of Health, Albany

The exhibit relates to the health problems of the poor living in the ghetto areas of large cities. The disparity between their sickness and death rates compared with those living in more affluent neighborhoods is due partly to limited or nonuse of health services. Also portrayed is a novel health education approach to getting better use of available health services through the intervention of neighbors serving as "health guides" **(Booth 245).**

Operation Compassion: Rehabilitation of Vietnamese Paraplegics

EMILIO M. EJERCITO, M.D.
BOK Y. LEE, M.D.
THOMAS J. LARKIN, M.D.
Veterans Administration Hospital, Castle Point

On November 9, 1965, by executive order, 57 wounded Vietnamese veterans were flown from Saigon, South Vietnam, to the Veterans Administration Hospital, Castle Point, New York, for medical and physical rehabilitation. Thus began what has been termed "Operation Compassion." The exhibit depicts the complications commonly seen in spinal cord injuries, the treatment of these conditions, and the final application of rehabilitation procedures employed in the restoration of the patients to utmost functional capacity **(Booth 246).**

The Child with Spina Bifida: Comprehensive Care

CHESTER A. SWINYARD, M.D.
JOSEPH RANSOHOFF, M.D.
LEON GREENSPAN, M.D.
New York University Medical Center, New York City

Material based on data collected during the last decade at New York University Medical Center on a clinical population in excess of 300 patients with spina bifida is presented. The latest technics for acute and long-term care will be shown as well as the primary problems of five areas of medical specialty required. A newly developed implantable pump (biofluid transfer system) for the treatment of hydrocephalus on a volume-control basis will be demonstrated. A three-dimensional table model of the pump will be displayed **(Booth 247).**

Meniscus Injuries of Temporomandibular Joint

CAROLL M. SILVER, M.D.
STANLEY D. SIMON, M.D.
HENRY M. LITCHMAN, M.D.
Miriam Hospital, Providence Rhode Island

Meniscus injuries of the temporomandibular joint are common. Conservative management is the treatment of choice, consisting of: rest of the jaw, soft foods, use of intra-articular hydrocortisone injections, and dental supervision for bite adjustment. If conservative therapy fails, then surgical excision of the injured meniscus can produce a gratifying result **(Booth 248).**

Birth Defects and Adaptations

ARTHUR A. MICHELE, M.D.
JOEL H. EISENBERG, M.D.
New York Medical College, New York City

A scheme of birth defects is displayed. Genetic aspects are mentioned, but the further development of the phenotype is more fully analyzed. The defects are mainly orthopedic. However, simultaneous aberrations existing or concomitant throughout the various systems of the individual are correlated. Early diagnosis is emphasized and principles of treatment to prevent the formation of pathologic sequelae to the basic defects outlined. Illustrative cases are presented **(Booth 249).**

Surgical Rehabilitation of the Rheumatoid Hand

Peter A. Casagrande, M.D.
Bernard M. Norcross, M.D.
L. Maxwell Lockie, M.D.
Buffalo General Hospital, Buffalo

A new approach to the rheumatoid hand has been evolved. Proliferative rheumatoid synovium is the distinctive element in the disease and accounts for joint and tendon swelling. A new surgical approach is shown which removes the destructive tissue and modifies or prevents many hand deformities from occurring **(Booth 250).**

New York State Journal of Medicine

Medical Society of the State of New York
New York City

The New York State Journal of Medicine welcomes visiting doctors to its booth where members of the staff will discuss Journal editorial matter and solicit physicians on their preferences in contents for the publication **(Albert Hall).**

Medical Directory of New York State

Medical Society of the State of New York
New York City

The 1968 *Medical Directory of New York State* is now in production and will soon be available for circulation. This essential reference is the complete authoritative compilation of professional data on the over 33,000 practicing physicians in this State. Staff personnel will be on hand to answer inquiries concerning the new edition and to provide advance-order forms for those interested in obtaining the book immediately on publication **(Albert Hall).**

Voluntary Prepaid Blue Shield Medical Care Plans: Medicare—New York State Division

Bureau of Medical Care Insurance, Medical Society of the State of New York
New York City

Material describing the benefits provided by the seven Blue Shield Plans approved by the State Medical Society is available. Also available is information regarding medical benefits provided by physicians to eligible dependents of active duty military personnel under the Dependents Medical Care Act—Public Law 569 which became effective December 7, 1956 **(Albert Hall).**

"What Goes On"

Division of Scientific Activities, Medical Society of the State of New York
New York City

What Goes On will welcome you to its booth and give you a free brochure of meetings going on in New York City, New York State, and the State of New Jersey **(Albert Hall).**

Malpractice Insurance Program

Medical Society of the State of New York
New York City

(Booth 103, Albert Hall)

New York State Medical Assistants Association

Medical Society of the State of New York
New York City

(Albert Hall)

UNIVERSITY OF VIRGINIA MEDICAL ALUMNI ASSOCIATION

A cocktail reception will be held Monday night, February 12, 1968, at 6:00 P.M. at the Dorset Hotel, 30 West 54th Street, New York, for all medical alumni, interns, and residents of the University of Virginia. Mr. William Booth of the University Medical Center will be on hand in the registration area of Albert Hall in The Americana and will furnish additional information.

JEFFERSON MEDICAL COLLEGE ALUMNI ASSOCIATION

Reception-Cocktail Party, Tuesday, February 13, 1967, 5:30 P.M., Dorset Hotel, 30 West 54th Street, New York. Open to all alumni.

Woman's Auxiliary

32nd Annual Convention The Americana, New York City

Sunday, February 11, through Wednesday, February 14, 1968

Mrs. James A. Moore, our president, the officers, and the Convention Committee extend a warm invitation to all doctors' wives to register and attend the regular meetings and social functions of this thirty-second convention.

TENTATIVE SCHEDULE

Sunday, February 11

1:30 P.M.–5:00 P.M.	Registration and Information, *Imperial Ballroom Foyer*
2:00 P.M.	Board of Directors Meeting, *Provence Room*
6:00 P.M.–8:00 P.M.	Reception, honoring State Auxiliary past presidents. Doctors and their wives are cordially invited, *Royal Box*
8:30 P.M.	Gavel Club Dinner Meeting (for past State Auxiliary presidents), *Buckingham Room A*

Monday, February 12

8:30 A.M.–4:00 P.M.	Registration and Information, *Imperial Ballroom Foyer*
9:00 A.M.–12:00 NOON	House of Delegates, *Imperial Ballroom B*
1:30 P.M.–3:30 P.M.	House of Delegates—*Guest Speaker:* Hollis S. Ingraham, M.D., Commissioner, State of New York Department of Health
4:00 P.M.–6:00 P.M.	Voting for Nominating Committee and Delegates to National Convention, *Buckingham Room A*

Tuesday, February 13

8:30 A.M.–12:00 NOON	Registration and Information, *Imperial Ballroom Foyer*
9:00 A.M.–12:00 NOON	House of Delegates, *Imperial Ballroom B*
12:30 P.M.	Luncheon honoring Mrs. James A. Moore, President, Woman's Auxiliary, Medical Society of the State of New York, *Imperial Ballroom A* *Special Guest Entertainer:* Kitty Carlisle Hart, Special Consultant to the Governor's Women's Unit

Wednesday, February 14

8:30 A.M.–10:30 A.M.	Registration and Information, *Imperial Ballroom Foyer*
9:00 A.M.–12:00 NOON	House of Delegates, *Imperial Ballroom B*—Installation of Officers Postconvention Meeting (State Officers, State Chairmen, County Presidents, County Presidents-Elect)
2:00 P.M.	Board of Directors, *Provence Room*
7:00 P.M.	Cocktail Hour and Dinner Dance, honoring Frederick A. Wurzbach, Jr., M.D., President, Medical Society of the State of New York, *Imperial Ballroom*

Officers

President	MRS. JAMES A. MOORE, Albany
President-Elect	MRS. ALBERT M. BIGLAN, Suffolk
First Vice-President	MRS. RALPH E. ISABELLA, Schenectady
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Upstate Coordinator	MRS. EDWARD RYAN, Warren-Washington

1968 ANNUAL CONVENTION

Scientific Motion Pictures

Sunday, February 11, through
Thursday, February 15
Motion Picture Theatre, Albert Hall

Chairman
KENNETH B. OLSON, M.D., Albany

Cochairmen
JAMES J. QUINLIVAN, M.D., Albany
LESTER COLEMAN, M.D., New York City

Sunday, February 11, 1968

Afternoon

12:00 **Anatomy of the Cell**
MARCEL BESSIS, M.D., Paris, France

12:25 **Anemia**
WILLIAM DAMESHEK, M.D., New York City

12:55 **Anomalies of the Aortic Arch**
GEORGE H. HUMPHREYS, II, M.D., New York City

1:30 **Cinefluorography of Upper Gastrointestinal Tract Lesions**
GEORGE C. BARRETT, M.D., Charlotte, North Carolina

2:19 **Coarctation of the Aorta**
JOHN C. JONES, M.D., Los Angeles, California

2:49 **Congenital Anomalies of the Heart**
GEORGE H. HUMPHREYS, II, M.D., New York City

3:42 **Development of the Aortic Arch**
GEORGE H. HUMPHREYS, II, M.D., New York City

4:00 **Development of the Heart**
GEORGE H. HUMPHREYS, II, M.D., New York City

4:40 **Juvenile Polyps of the Colon**
HAROLD A. ZINTEL, M.D., CHARLES F. BEGG, M.D., and W. GRAHAM KNOX, M.D., New York City

Monday, February 12, 1968

Morning

9:00 **The Management of Obesity**
NORMAN JOLLIFFE, M.D., New York City

9:30 **The Mitral Valve**
ROBERT P. GLOVER, M.D., JULIO C. DAVILA, M.D., and ROBERT G. TROUT, M.D., Philadelphia, Pennsylvania

9:54 **The Radioisotopic Renogram in Renovascular Hypertension**
JAMES L. QUINN, III, M.D., and JOSEPH E. WHITLEY, M.D., Winston Salem, North Carolina

10:19 **Resuscitation for Cardiac Arrest**
CLAUDE S. BECK, M.D., Cleveland, Ohio

10:44 **Amputation and Anoplastic Hemorrhoidectomy**
ISIO F. WASSERMAN, M.D., Utica

11:05 **Infant to School Age Child: The Unilateral Below-Elbow Amputee**
General Film Laboratories, Hollywood, California

11:22 **The Early Development of Ambulation: The Unilateral Below-Knee Amputee**
General Film Laboratories, Hollywood, California

11:42 **Chronic Bronchitis and Pulmonary Emphysema—Part I**
DuArt Film Laboratories, New York City

Afternoon

12:16 **Chronic Bronchitis and Pulmonary Emphysema—Part II**
DuArt Film Laboratories, New York City

12:46 **The Otoneurological Examination For Vestibulo-Cerebellar Function**
Abbott Laboratories, North Chicago, Illinois

1:17 **Treatment and Diagnosis of Tongue Thrust as a Result of Deviant Swallowing**
American Dental Association, Chicago, Illinois

1:36 **Treatment of Dysphonia Due to Unilateral Recurrent Nerve Paralysis by the Intracordal Injection of Synthetics**
HENRY J. RUBIN, M.D., Beverly Hills, California

1:56 **Spinal Cord Injury: The Functional Expectations As Related to Level of Injury**
Attending Staff Association, Rancho Los Amigos Hospital, Downey, California

2:26 **Techniques of Non-Verbal Psychological Testing**
International Film Bureau, Chicago, Illinois

2:51 **Basic Mechanisms in Neurophysiology**
Netherlands Information Service, New York City

3:31 **LSD: Insight Or Insanity**
Bailey Films, Inc., Hollywood, California

3:54 **The Face**
Wayne State University, Detroit, Michigan

4:20 **Cystic Fibrosis**
National Cystic Fibrosis Research Foundation, New York City

Tuesday, February 13, 1968

Morning

9:00 **Physiology of the Larynx Under Daily Stress**
Institute of Laryngology and Voice Disorders, Los Angeles, California

9:28 **Function of the Pathologic Larynx**
Institute of Laryngology and Voice Disorders, Los Angeles, California

9:57 **Function of the Normal Larynx**
Institute of Laryngology and Voice Disorders, Los Angeles, California

10:23 **Contact Ulcer of the Larynx**
Institute of Laryngology and Voice Disorders, Los Angeles, California

10:39 **An Approved Technique for Pure Tone Air Conduction Audiometry**
Price Vowell Associates, Hollywood, California

10:58 **Auditory Responses of Newborn Infants**
Thorne Films, Inc., Boulder, Colorado

11:06 **Hands**
Nebraska Psychiatric Institute, Communications Division, Omaha, Nebraska

11:40 **Population Ecology**
Encyclopaedia Britannica Films, Inc., Wilmette, Illinois

Afternoon

12:04 **Oral Exfoliative Cytology**
Veterans Administration Hospital, Brooklyn

12:24 **Early Clinical Signs of Intra-Oral Malignancies**
Veterans Administration Hospital, Chicago, Illinois

12:59 **Emergency Childbirth**
United States Public Health Service, Division of Health Mobilization, Washington, D.C.

1:25 **Verbal Impairment Associated with Brain Damage**
DuArt Film Laboratories, Inc., New York City

1:46 **Cancer of the Colon and Rectum**
American Cancer Society, Syracuse

2:09 **Abdominoperineal Resection and the Management of Colostomy**
New York University Medical Center, New York City

2:56 **A Paranoid Schizophrenic**
Robert Anderson Associates, Ltd., Canada

3:29 **The Obsessive-Compulsive Neurosis**
Robert Anderson Associates, Ltd., Canada

4:02 **Psychosomatic Conditions—Obesity**
Robert Anderson Associates, Ltd., Canada

4:35 **Moles and Melanomas**
American Cancer Society, Syracuse

Wednesday, February 14, 1968

Morning

9:00 **The Dentist and Cancer**
American Cancer Society, Syracuse

9:26 **Oral Cancer**
American Cancer Society, Syracuse

9:53 **Cancer in Children**
American Cancer Society, Syracuse

10:25 **Cinegastroscopy with the Fiberscope**
Sturgis Grant Productions, New York City

10:48 **Lymphography in Female Genital Cancer**
Eaton Laboratories, Norwich

11:09 **Treatment of Melanoma of the Head and Neck**
RUBEN OROPEZA, M.D., and GEORGE T. PACK, M.D., New York City

11:29 **Proctosigmoidoscopy: A Part of the Physical Examination**
American Cancer Society, Syracuse

11:54 **Smoking and Lung Cancer**
Sterling Educational Films, New York City

Afternoon

12:28 **Physical Diagnosis of the Ear, Nose and Throat**
Ohio State University, Columbus, Ohio

1:01 **Introducing the Mentally Retarded**
Division of Health of Missouri, Jefferson City, Missouri

1:30 **Airway Obstruction**
Health Research Inc., Roswell Park Memorial Institute, Buffalo

1:47 **Heart Sounds and Murmurs**
University of Washington, Seattle, Washington

2:12 **Resuscitation of the Newborn**
Sturgis Grant Productions, New York City

2:47 **Physical Examination of the Joints Part II—Hip, Shoulder, and Back**
Audio Visual Education Service, University of Minnesota, Minneapolis, Minnesota

3:22 **Kinetics and Orthotics for Function**
Institute of Physical Medicine and Rehabilitation, New York University Medical Center, New York City

3:52 **PKU: Mental Deficiency Can Be Prevented**
Harry A. Waisman, M.D., University of Wisconsin Medical School, Madison, Wisconsin

4:12 **Some Techniques of Tissue Section Preparation in the Pathology Laboratory**
National Committee for Careers In Medical Technology, Washington, D.C.

Thursday, February 15, 1968

Morning

9:00 **Cricothyroidotomy**
Norwood Studios, Inc., Washington, D.C.

9:16 **Multiple Sclerosis Documentary**
National Multiple Sclerosis Society, New York City

9:50 **The Universal Implant**
Samuel P. Weber, D.D.S., New York City

10:25 **Birth Defects and Adaptations**
Arthur A. Michele, M.D., and Joel H. Eisenberg, M.D., New York Medical College, New York City

11:00 **The Management of Pretibial Skin Loss Using Muscle Transplantation**
R. Ger, M.D., Lincoln Hospital, The Bronx

11:10 **Prescription For Life** (2 Parts)
American Heart Association, New York City

A Symposium on

Medical Aspects Of Sports

Sponsored by the

Medical Society of the State of New York,
Committee on Medical Aspects of Sports

Saturday, February 10, 1968
9:00 a.m. to 5:00 p.m.

Imperial Ballroom
Americana Hotel
New York City

* * *

Medical and associated health professions, coaches, trainers, and athletic directors are invited.

(no registration fee)

* *

Co-sponsors

New York State Public High School Athletic Association
Health, Physical Education and Recreation Association

1968 ANNUAL CONVENTION

Technical Exhibits

TECHNICAL EXHIBITS *located in Albert Hall of the Americana Hotel will open on Sunday, 12:00* NOON *to 5:00* P.M., *Monday through Wednesday, 9:00* A.M. *to 5:00* P.M., *and Thursday, 9:00* A.M. *to 12:00* NOON.

Our exhibitors look forward to the pleasure of meeting and serving members and guests of the Medical Society of the State of New York.

Abbott Laboratories **Booth 75**
North Chicago, Illinois

The Alkalol Company **Booth B**
Taunton, Massachusetts
Alkalol, Irrigol

Aqua Tec A Teledyne Company **Booth 34**
Denver, Colorado
Water Pik Oral Hygiene Appliances

Astra Pharmaceutical Products, Inc. **Booth 37**
Worcester, Massachusetts
Xylocaine, Citanest, Astrafer, and Jectofer

Ayerst Laboratories **Booth 29**
New York City
Premarin, Atromid-S

Barrington Research Associates **Booth 125**
Physician Interviewing

Beecham Research Laboratories **Booth 90**
New York City
Penbritin

Berkeley Medical Instruments **Booth 42**
Berkeley, California

Beutlich, Inc. **Booth 16**
Chicago, Illinois
Mycosert, Ceo-Two, Peridin-C

Borcherdt Company **Booth 77**
Chicago, Illinois
Maltsupex Liquid, Powder, Tablets; Feromalt Tablets; Syllamalt

Breon Laboratories, Inc. **Booth 28**
New York City
Alevaire, Bronkometer, Bronkotabs, Bronkolixir, Bronkephrine, Bronkosol

Bristol Laboratories **Booth 60**
Syracuse, New York
Polycillin

Brookes Research Associates **Booth 40**
Hanover, New Jersey
Physician Interviewing

Burroughs Wellcome & Co. (U.S.A.) Inc. **Booth 31**
Tuckahole, New York
Zyloprim, Actifed

Burton, Parsons & Company, Inc. **Booth 52**
Washington, D.C.
Konsyl, L. A. Formula, EKG Sol, One Step, Hematological Stain

Cameron-Miller Surgical Instruments Company **Booth 93**
Chicago, Illinois

S. H. Camp & Company **Booth 44**
Jackson, Michigan
Orthopedic Supports and Braces

Ciba Pharmaceutical Products, Inc. **Booth 38**
Summit, New Jersey
Ser-Ap-Es

The Coca-Cola Company **Booth 83**
Atlanta, Georgia
Ice cold Coca-Cola

Creative Systems, Inc. **Booth 56**
Waterloo, Iowa
Control-o-fax Pegboard Accounting Systems, Micro-Statement System, Electrocopy "400" Copy Machines

Dannon Milk Products, Inc. **Booth 3**
Long Island City, New York
Dannon Yogurt, Dannon Bokoo Dessert

E. I. du Pont de Nemours & Company, Inc. **Booths 21 and 22**
Wilmington, Delaware

Symmetrel

Thomas A. Edison Industries Voicewriter Division **Booth 67**
West Orange, New Jersey

Edison Voicewriter, Televoice, and EMR Business Recording System

The Emko Company **Booth 39**
St. Louis, Missouri

Emko Vaginal Foam

Endo Laboratories, Inc. **Booth 123**
Garden City, New York

Coumadin, Numorphan HCL, Percodan, Percodan-Demi, Hycomine, Hycomine-Compound, Hycodan, Valpin, Valpin-PB

Encyclopaedia Britannica, Inc. **Booth 41**
Chicago, Illinois

Esta Medical Laboratories **Booth 100**
New Brunswick, New Jersey

Estaneedle Device; Gastrotest Kit

C. B. Fleet Company, Inc. **Booth 57**
Lynchburg, Virginia

Phospho-Soda, Fleet Enema, Fleet Oil Retention Enema, Fleet Theophylline Rectal Unit, and Provimalt

Flint Laboratories **Booths 73 and 74**
Morton Grove, Illinois

Choloxin, Hu-Tet, Synthroid

Geigy Pharmaceuticals **Booth 99**
Ardsley, New York

Dulcolax, Hygroton, Preludin, Persantine, Tofranil, Butazolidin

Group Health Insurance, Inc. **Booth 35**
New York City

Health Insurance

Hoechst Pharmaceutical Company **Booth 51**
Cincinnati, Ohio

Lasix, Surfak, and Doxidan

Holland-Rantos Company, Inc. **Booth 122**
New York City

Hyva Gentian Violet Vaginal Tablets, Nylmerate Jelly and Nylmerate Antiseptic Solution Concentrate, Hollandex Skin Ointment, Koromex Vaginal Jelly, Koro-Flex Contouring Diaphragms and Sets, Koromex Diaphragms and Sets, Koromex Douche Powder, H-R Diaper Rash Baby Cream, Rantex Personal Cloth Wipes, Perifoam, Steri-Wipe Alcohol Prep Pads

Key Pharmaceuticals, Inc. **Booth 64**
Miami, Florida

Proternol, Nitroglyn, Theo-Nar, Hyasorb, Carbamine

Knoll Pharmaceutical Company **Booth 27**
Orange, New Jersey

Akineton, Dilaudid, Dilaudid Cough Syrup, Metrazol, Nico-Metrazol, Vita-Metrazol, Quandrinal, Theokin, and Verequad

Lakeside Laboratories **Booth 96**
Milwaukee, Wisconsin

Lederle Laboratories **Booth 45**
Pearl River, New York

Declomycin, Achromycin V, Levoprome, Aristocort, Varidase

Lever Brothers Company **Booths 4, 5, 6**
New York City

Dove, Phase III

Eli Lilly & Company **Booth 62**
Indianapolis, Indiana

V-Cillin K, Darvon, Ilosone

Loma Linda Foods **Booth 49**
Riverside, California

Soyalac, Hi-so-pro, and Multigen

Janrus Recorders Corporation **Booth 72**
New York City

Marion Laboratories, Inc. **Booth 50**
Kansas City, Missouri

Pavabid

Mead Johnson Laboratories **Booth 95**
Evansville, Indiana

K-Lyte, Mucomyst, Therapeutic Nutrients

Medco Products Company, Inc. **Booth C**
Tulsa, Oklahoma

Medical Film Guild, Ltd. **Booth 92**
New York City

Merck Sharp & Dohme **Booth 85**
West Point, Pennsylvania
Triavil

Merrill Lynch, Pierce, Fenner & Smith, Inc. **Booth 66**
New York City
Stock Brokers

Miles Laboratories, Inc. **Booth 43**
Elkhart, Indiana
Alka-Seltzer

Milex Products, Inc. **Booth 47**
Chicago, Illinois
Plastic Disposable Spatula; Book Program Series; Early Cancer Detection Instruments

National Dairy Council **Booth 55**
New York City
Health Education Materials, booklets, and pamphlets

New York Seven-Up Bottling Company, Inc. **Booth 36**
New York City
Seven-Up and Like

New York Telephone **Booths 86, 87, 88**
New York City
Doctors and Hospital Telephone Communications and Telephone; Services for the Handicapped

No-Cal Corporation **Booth 124**
Brooklyn, New York
No-Cal Carbonated Beverages, No-Cal Flavor Syrups, No-Cal Granulated and Liquid Sweeteners

Organon, Inc. **Booth 94**
West Orange, New Jersey
Monosticon, Pregnosticon, Pregnosticon Slide Test, Rheumanosticon, Hexadrol

Ortho Pharmaceutical Corporation **Booth 68**
Raritan, New Jersey
Ortho-Novum

Parke, Davis & Company **Booth 59**
Detroit, Michigan
Norlestrin, Ponstel

Pfizer Laboratories **Booth 18**
New York City
Vibramycin

Pharmacia Laboratories, Inc. **Booth 115**
Piscataway, New Jersey
Rheomacrodex, Macrodex, Azulfidine, Azulfidine EN-tabs

Photo Eaze Mfg., Inc. **Booth A**
New York City

Procter & Gamble Company **Booths 23 and 24**
Cincinnati, Ohio

Puritan Compressed Gas Corporation **Booth 65**
Kansas City, Missouri
Inhalation Therapy Equipment and Emergency Breathing Units

Quaker City Pharmacal Company **Booth 117**
Philadelphia, Pennsylvania
Lipo-K W/Heparin, Normotensin, Ossonate-Plus, Plac-C-Dom, Quakerdex, Viro-Zyme

A. H. Robins Company **Booth 120**
Richmond, Virginia

Roche Laboratories **Booth 46**
Nutley, New Jersey
Librium, Valium, Noludar, Gantanol

J. B. Roerig & Company **Booth 63**
New York City

William H. Rorer, Inc. **Booth 11**
Fort Washington, Pennsylvania

Sandoz Pharmaceuticals **Booth 33**
Hanover, New Jersey
Mellaril, Sansert, Cafergot P-B, Fiorinal, and Fiorinal with codeine

Sardeau, Inc. **Booth 26**
Kenilworth, New Jersey
Sardo Bath Oil, Sardoettes, Sardo Soap

W. B. Saunders Company **Booth 30**
Philadelphia, Pennsylvania
Medical Books

Schering Corporation **Booth 48**
Union, New Jersey

Valisone, Drixoral, Etrafon, Garamycin, Afrin

Julius Schmid, Inc. **Booth 58**
New York City

Saf-T-Coil Intra-Uterine Contraceptive Device; Immolin Vaginal Cream-Jel; Ramses Flexible Cushioned and Bendex Diaphragms; Ramses Vaginal Jelly; Vagisec Liquid, Jelly, and Suppositories; Candeptin Vaginal Ointment and Tablets; Fourex Skin Condoms, Ramses and Sheik Rubber Condoms; Vaginostic Kit

G. D. Searle & Company **Booth 84**
Chicago, Illinois

Ovulen-21, Enovid, Aldactazide, Flagyl, Lomotil, Pro-Banthine

Sherman Laboratories **Booth 89**
Detroit, Michigan

Persistin

Sherman Specialty Company **Booth 54**
Merrick, New York

Toys and Novelties

The Silver Hill Foundation **Booth 79**
New Canaan, Connecticut

Services and Facilities at Residential Psychiatric Hospital

Smith Kline & French Laboratories **Booth 19**
Philadelphia, Pennsylvania

Dyazide

E. R. Squibb & Sons **Booth 61**
New York City

Swift & Company **Booth 53**
Chicago, Illinois

Swift's Strained and Junior Meats for Babies, Swift's Strained and Junior High Meat Dinners, Swift's Treats for Tots (Junior Franks and Chicken Sticks)

Syntex Laboratories, Inc. **Booths 1 and 119**
Palo Alto, California

Norinyl 1 and Synalar

Systemedics, Inc. **Booth 71**
Princeton, New Jersey

Medical Office Systems

United Medical Service, Inc. **Booth 8**
New York City

A graphic display of Greater New York's Blue Shield Community Service Programs.

USV Pharmaceutical Corp. **Booth 7**
New York City

Cerespan

Wallace Pharmaceuticals **Booth 17**
Cranbury, New Jersey

Milpath

H. F. Wanvig, Inc. **Booth 103**
New York City

Malpractice Insurance Program

Warren-Teed Pharmaceuticals Incorporated **Booth 104**
Columbus, Ohio

Modane, Kaon

Westwood Pharmaceuticals **Booth 121**
Buffalo, New York

Alpha-Keri, Keri Lotion, Sebulex, Fostex Cake, Fostex Cream, Fostril

Winthrop Laboratories **Booth 82**
New York City

Talwin

Wyeth Laboratories **Booth 76**
Philadelphia, Pennsylvania

162nd ANNUAL CONVENTION

Medical Society of the State of New York

FEBRUARY 11 through 15, 1968

The Americana, New York City

SCIENTIFIC PROGRAM

SCIENTIFIC EXHIBITS

SCIENTIFIC MOTION PICTURES

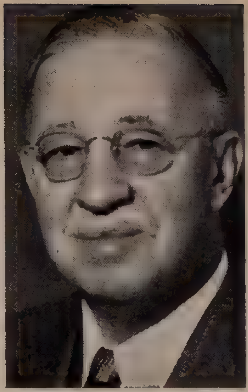
TECHNICAL EXHIBITS

HOUSE OF DELEGATES

PRESIDENT'S DINNER

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Officers 1967–1968



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Bronx

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Edward C. Hughes

Onondaga

President-Elect

A. W. Martin Marino, Sr.

Kings

Vice-President

Walter T. Heldmann

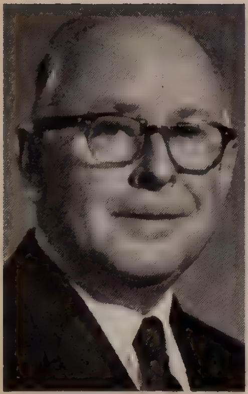
Richmond

Secretary

Carl Goldmark, Jr.

New York

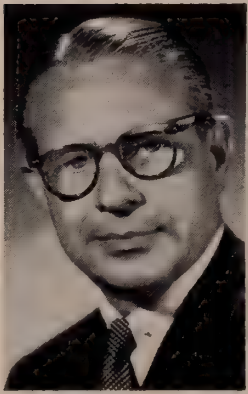
Assistant-Secretary



Thomas F. McCarthy

Bronx

Treasurer



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New York

Assistant Treasurer

George Himler

New York

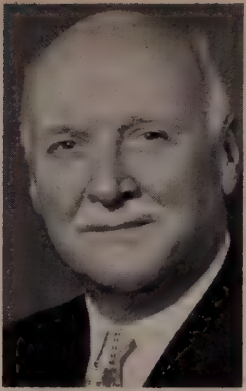
Speaker

John H. Carter

Albany

Vice-Speaker

Board of Trustees 1967–1968



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Herkimer

John M. Galbraith
Nassau

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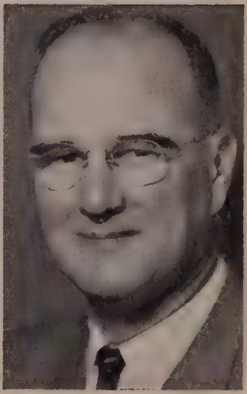
Westchester

John F. Kelley
Oneida

William L. Wheeler, Jr.
New York

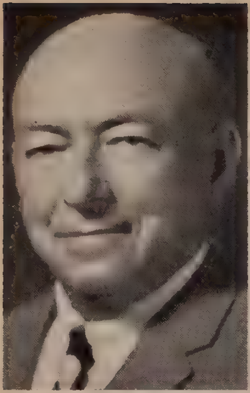


James M. Blake
Schenectady

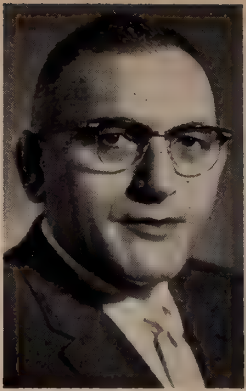
Councillors 1967–1968

Charles M. Brane
Westchester

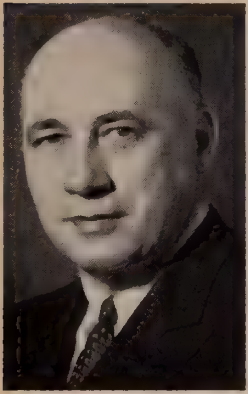
John E. Lowry
Queens


Edward Siegel
Clinton

C. Stewart Wallace
Tompkins


Irving L. Ershler
Onondaga

Joseph J. Kaufman
Wayne

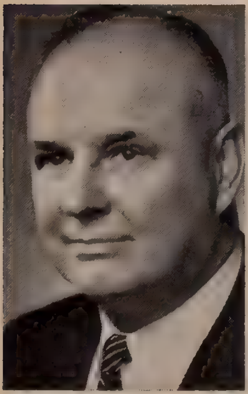

Bernard J. Pisani
New York

Solomon Schussheim
Kings

G. Rehmi Denton
Albany

Ralph S. Emerson
Nassau

Ex Officio Members of Council


Walter S. Walls
Erie

Swen L. Larson
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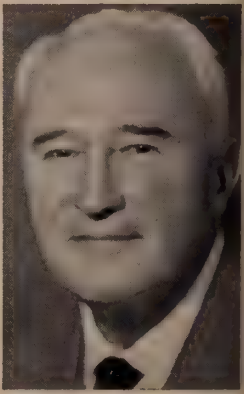
Henry I. Fineberg
Queens
Executive Vice-President


William Hammond
Westchester
Editor, New York State Journal of Medicine

MEDICAL SOCIETY OF THE
STATE OF NEW YORK

House of Delegates

February 11 through 15, 1968

The Americana, New York City

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Additional Annual Reports............. see January 15 issue

Schedule of Sessions

Sunday, February 11

Opening Session................2:00 p.m.

Monday, February 12

Reference Committee Hearings..9:00 a.m.
Reference Committee Hearings..2:00 p.m.

Tuesday, February 13

Reference Committee Hearings..9:00 a.m.
Second Session................2:00 p.m.

Wednesday, February 14

Third Session..................9:00 a.m.
Fourth Session................2:00 p.m.

Thursday, February 15

Closing Session................9:00 a.m.

According to the Bylaws, Chapter II, Section 7, the following shall be the order of business at the Sessions of the House of Delegates

Order of Business

1. Calling the meeting to order.
2. Invocation.
3. National Anthem.
4. Report of Reference Committee on Credentials.
5. Report by the secretary as to the presence or absence of a quorum.
6. Remarks by the speaker.
7. Reading the minutes of the previous meeting by title.
8. Report of the president.
9. Address of the president-elect.
10. Report of the Judicial Council.
11. Report of the Council.
12. Report of the secretary.
13. Report of the treasurer.
14. Report of the Board of Trustees.
15. Reports of district branches by district delegates.
16. Reports of special committees.
17. Reports of reference committees.
18. Unfinished business.
19. New business.
20. Adjournment.

Members

The following pages contain a complete list of the members of the 1968 House of Delegates of the Medical Society of the State of New York.

Officers 1967–1968

President—Frederick A. Wurzbach, Jr., Bronx
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Assistant Treasurer—Albert M. Schwartz, New York
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Vice-Speaker—John H. Carter, Albany

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John Edward Lowry, Queens
Edward Siegel, Clinton
C. Stewart Wallace, Tompkins
Term Expires 1969
Irving L. Ershler, Onondaga
Joseph J. Kaufman, Wayne
Bernard J. Pisani, New York
Solomon Schussheim, Kings
Term Expires 1970
G. Rehmi Denton, Albany
Ralph S. Emerson, Nassau
Swen L. Larson, Chemung
Walter Scott Walls, Erie

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John M. Galbraith, Nassau
Waring Willis, Westchester
John F. Kelley, Oneida
William L. Wheeler, Jr., New York
James M. Blake, Schenectady

Past Presidents

1932–1933—Chas. Gordon Heyd, New York
1934–1935—Arthur J. Bedell, Albany
1944–1945—Herbert H. Bauckus, Erie
1950–1951—Carlton E. Wertz, Erie
1952–1953—Edward T. Wentworth, Monroe
1953–1954—Andrew A. Eggston, Westchester
1955–1956—Renato J. Azzari, Bronx
1957–1958—Thurman B. Givan, Kings
1959–1960—Henry I. Fineberg, Queens
1960–1961—Norman S. Moore, Tompkins
1961–1962—John M. Galbraith, Nassau
1963–1964—William L. Wheeler, Jr., New York
1964–1965—George A. Burgin, Herkimer
1965–1966—Waring Willis, Westchester
1966–1967—James M. Blake, Schenectady

Commissioner, New York State Department of Health

Hollis S. Ingraham, Albany

District Delegates

(*Elected Delegates of District Branches*)

First—Leonard L. Heimoff, Bronx
Second—Otho C. Hudson, Nassau
Third—Orville L. Henderson, Rensselaer
Fourth—none elected
Fifth—Marvin Brown, Oswego
Sixth—Norman C. Lyster, Chenango
Seventh—Charles M. Smith, Seneca
Eighth—John D. Naples, Erie
Ninth—James M. Jones, Westchester

Section Delegates

(*Delegates from Scientific Sections*)

Allergy—Robert B. Beede, Oneida
Anesthesiology—Victor J. Tofany, Monroe
Chest Diseases—Arthur Q. Penta, Schenectady
Dermatology and Syphilology—Joseph J. Russo, Albany
Gastroenterology and Proctology—Ralph E. L. Hertz, New York
General Practice—Rudolf H. Steinharter, Nassau
Industrial Medicine and Surgery—Robert E. Sandroni, Schenectady
Internal Medicine—Marvin L. Bloom, Erie
Medical-Legal and Workmen's Compensation Matters—Irvin Klein, New York
Neurology and Psychiatry—none elected
Obstetrics and Gynecology—Robert C. Hays, Onondaga
Ophthalmology—Philip H. Landers, Broome
Orthopedic Surgery—Frederick Lee Liebolt, New York
Otolaryngology—John F. Daly, New York
Pathology, Clinical Pathology, and Blood Banking—John J. Clemmer, Albany
Pediatrics—Frank A. Disney, Monroe
Physical Medicine and Rehabilitation—Henry Fleck, Bronx
Plastic and Reconstructive Surgery—E. Hoyt De Kleine, Erie
Preventive Medicine and Public Health—Robert E. Rothermel, New York
Radiology—John F. Roach, Albany

Space Medicine—H. Easton McMahon, New York
Surgery—John H. Morton, Monroe
Urology—William J. Staubitz, Erie

Delegates from Component County Medical Societies

Albany (4)
Gerald B. Austin, Delmar
James A. Moore, Albany
John J. Phelan, Jr., Albany
Francis A. Stephens, Albany

Allegany (1)
Irwin Felsen, Wellsville

Bronx (12)
Carl R. Ackerman, Bronx
Marcelle Bernard, Bronx
Charles M. Kapp, Bronx
Frank LaGattuta, Bronx
Samuel Leo, Bronx
Samuel Lieberman, Bronx
Francis J. Loperfido, Bronx
Joseph C. Polifrone, Bronx
Isidore Sternlieb, Bronx
Samuel Wagreich, Bronx
Alvin D. Yasuna, Bronx
Saul Zucker, Bronx

Broome (3)
Sterling W. Boyd, Binghamton
Paul M. DeLuca, Binghamton
John A. Kalb, Endicott

Cattaraugus (1)
James Durkin, Olean

Cayuga (1)
Bernard J. Hartnett, Auburn

Chautauqua (2)
Herbert A. Laughlin, Westfield
Garra L. Lester, Chautauqua

Chemung (2)
R. Scott Howland, Elmira
Henry B. Marshall, Elmira

Chenango (1)
Thomas M. Flanagan, Norwich

Clinton (1)
Leonard J. Schiff, Plattsburgh

Columbia (1)
Edward P. Ginouves, Hudson

Cortland (1)
William J. McAuliffe, Cortland

Delaware (1)
Philip J. Hust, Sidney

Dutchess (3)
H. Sherman Hirst, Hyde Park
Martin Koloski, Poughkeepsie
George T. C. Way, Poughkeepsie

Erie (9)
John C. Brady, Buffalo
Thomas S. Bumbalo, Buffalo
Max Cheplove, Buffalo
George L. Collins, Jr., Buffalo
James H. Cosgriff, Buffalo
Kenneth H. Eckhert, Buffalo
Eugene J. Hanavan, Jr., Buffalo
Herbert E. Joyce, Buffalo
Clarence A. Straubinger, Buffalo

Essex (1)
Earl A. Munyan, Jr., Lake Placid

Franklin (1)
Alfred A. Hartmann, Malone

Fulton (1)
Armand J. D'Errico, Gloversville

Genesee (1)
Alfred L. George, Batavia

Greene (1)
Edwin G. Mulbury, Windham

Herkimer (1)
Harold T. Golden, Herkimer

Jefferson (1)
Thomas P. Hamilton, Watertown

Kings (23)
Lawrence Ames, Brooklyn
Norman S. Blackman, Brooklyn
Matthew Brody, Brooklyn
Ernest Buffone, Brooklyn
Philip J. Cantor, Brooklyn
Philip Cohen, Brooklyn
Leo S. Drexler, Brooklyn
John J. Flynn, Brooklyn
Alfred P. Ingegno, Brooklyn
David Kershner, Brooklyn
Adrian Lamos, Brooklyn
Warren A. Lapp, Brooklyn
George Liberman, Brooklyn
Harry S. Lichtman, Brooklyn
Martin Markowitz, Brooklyn
Bentley D. Merrim, Brooklyn
Max B. Milberg, Brooklyn
Robert A. Moore, Brooklyn
Ralph M. Schwartz, Brooklyn
Stanley Stark, Brooklyn
Leo J. Swirsky, Brooklyn
M. Theodore Tanenhaus, Brooklyn
Vincent J. Tesoriero, Brooklyn

Lewis (1)
Louis A. Avallone, Lowville

Livingston (1)
James M. Judd, Mt. Morris

Madison (1)
Felix Ottaviano, Oneida

Monroe (6)
William B. Forsyth, Rochester
Gerald L. Glaser, Rochester
Eli A. Leven, Rochester
Charles R. Mathews, Rochester
Charles D. Sherman, Jr., Rochester
John D. States, Rochester

Montgomery (1)
Hilbert Ziskin, Amsterdam

Nassau (12)
John A. Billows, Hempstead
Clement J. Boccalini, Floral Park
Jeff J. Coletti, Old Westbury

Abraham W. Freireich, Malvern
John P. Glaubitz, Bethpage
Frank M. Green, Rockville Centre
Marjorie H. Greene, Hicksville
Raymond F. Smith, Garden City
Reginald R. Steen, Valley Stream
Paul H. Sullivan, Great Neck
H. Lawrence Sutton, Hempstead
Joseph G. Zimring, Long Beach

New York (25)
Edgar P. Berry, New York
Edward A. Burkhardt, New York
May E. Chinn, New York
C. Joseph Delaney, New York
Lawrence Essenson, New York
John A. Finkbeiner, New York
William H. Foege, New York
Samuel Z. Freedman, New York
Stanley H. Greenwald, New York
Keith O. Guthrie, Jr., New York
John E. Hammett, New York
Milton Helpern, New York
Clarence W. Hogans, New York
W. Graham Knox, New York
Thomas K. Lammert, New York
John A. Lawler, New York
Julia V. Lichtenstein, New York
Barbara Lipton, New York
Donald B. Louria, New York
Vaughan C. Mason, New York
William B. Rawls, New York
Guy F. Robbins, New York
George M. Saypol, Jamaica
Mary Spalding, New York
Roger W. Steinhardt, New York

Niagara (2)
John T. Donovan, Jr., Lockport
Glenn E. Jones, Lewiston

Oneida (3)
Clarke T. Case, Utica
Irving Cramer, Utica
Robert B. Wallace, Utica

Onondaga (5)
Robert J. Collins, Syracuse
Richard D. Eberle, Syracuse
Louis G. Fournier, Syracuse
Charles A. Gwynn, Syracuse
William J. Ryan, Syracuse

Ontario (2)
Robert M. Price, Clifton Springs
Philip M. Standish, Canandaigua

Orange (3)
Allen H. Keniston, Port Jervis
William S. Montgomery, Newburgh
Irving Weiner, Newburgh

Orleans (1)
Kenneth J. Clark, Medina

Oswego (1)
Kent Wood Jarvis, Oswego

Otsego (1)
John W. Latcher, Oneonta

Putnam (1)
Garrett Vink, Carmel

Queens (16)
Alfred A. Angrist, Beechhurst
Sol Axelrad, Woodhaven
Angelo R. Bologna, Flushing
Lester J. Candela, Elmhurst
Thomas M. d'Angelo, Flushing
Albert H. Douglas, Jamaica
Harry H. Epstein, Jamaica
John L. Finnegan, Flushing
Irving G. Frohman, Rockaway Beach
Peter V. Gugliuzza, Hollis
George J. Lawrence, Jr., Flushing
Louis J. Morse, Kew Gardens
Kurt Rosenberg, Long Island City
Ralph E. Schlossman, South Ozone Park
Lester R. Tuchman, Elmhurst
Ezra A. Wolff, Forest Hills

Rensselaer (2)
Allen Gifford, Troy
John Noonan, Troy

Richmond (3)
Albert B. Accettola, Staten Island
William A. Schwarz, Stapleton
Joseph F. Shanaphy, Staten Island

Rockland (3)
Sheldon B. Adler, Spring Valley
Mark S. Masch, West Nyack
Louis J. Wagner, New City

St. Lawrence (1)
William R. Carson, Potsdam

Saratoga (1)
Russell Peacock, Ballston Spa

Schenectady (3)
John L. Clowe, Schenectady
Robert P. Coolidge, Schenectady
Herbert J. Wright, Jr., Schenectady

Schoharie (1)
John H. Wadsworth Cobleskill

Schuyler (1)
Fritz Landsberg, Watkins Glen

Seneca (1)
David L. Koch, Seneca Falls

Steuben (2)
Thomas S. Cotton, Hornell
Wayne C. Templer, Corning

Suffolk (6)
Daniel Friedman, Bay Shore
Milton Gordon, Huntington
Bruce Alexander Harris, Jr., Huntington
Andrew W. Lawrence, Huntington
George E. Leone, Riverhead
John L. Sengstack, Huntington

Sullivan (1)
Sirkka Elisabeth Vuornos, Liberty

Tioga (1)
George F. Pritchard, Owego

Tompkins (2)
Stephen Blatchly, Groton
George G. McCauley, Ithaca

ULSTER (2)
Eugene F. Galvin, Rosendale
Edward F. Shea, Kingston

WARREN (1)
Walter F. Harrison, Jr., Glens Falls

WASHINGTON (1)
Milton J. Greenberg, Hudson Falls

WAYNE (1)
James M. Flanagan, Newark

WESTCHESTER (8)
William A. Brumfield, Jr., White Plains
Arthur H. Diedrick, Port Chester
John N. Dill, Yonkers
James Q. Haralambie, Larchmont
Robert E. Healy, Mt. Kisco
Reid R. Heffner, New Rochelle
Wallace M. Sheridan, White Plains
Maurice L. Woodhull, Scarsdale

WYOMING (1)
Paul A. Burgeson, Warsaw

YATES (1)
Vincas Sirmenis, Penn Yan

1968 HOUSE OF DELEGATES

Reference Committees

Credentials

C. Joseph Delaney, New York, *Chairman*
Kent W. Jarvis, Oswego
Russell Peacock, Saratoga
Julia V. Lichtenstein, New York
Joseph F. Shanaphy, Richmond

Reports of Officers

PRESIDENT
PRESIDENT-ELECT
SECRETARY
TREASURER
EXECUTIVE VICE-PRESIDENT
BOARD OF TRUSTEES
  WAR MEMORIAL
  INVESTMENT
BUDGET AND FINANCE
BUILDING

Herbert A. Laughlin, Chautauqua, *Chairman*
W. Graham Knox, New York
Herbert E. Joyce, Erie
Harold T. Golden, Herkimer
Philip M. Standish, Ontario

Medical Services

COMMISSION ON MEDICAL SERVICES
ECONOMICS
LIAISON WITH VETERANS ADMINISTRATION
MEDICAL CARE INSURANCE
WORKMEN'S COMPENSATION
INDUSTRIAL HEALTH
LABOR HEALTH FACILITIES
AD HOC, OEO CLINICS
PROPOSED HEALTH INSURANCE LAW

Lawrence Essenson, New York, *Chairman*
Herbert J. Wright, Jr., Schenectady
Clement J. Boccalini, Nassau
William B. Forsyth, Monroe
Vincent J. Tesoriero, Kings

Standards of Medical Care

COMMISSION ON STANDARDS ON MEDICAL CARE
ETHICS
HOSPITAL AND PROFESSIONAL RELATIONS
HOSPITAL-BASED PHYSICIANS
MEDIATION AND INSURANCE CLAIMS REVIEW
MEDICAL REVIEW
NURSING
PUBLIC MEDICAL CARE
UTILIZATION REVIEW

George McCauley, Tompkins, *Chairman*
Gerald B. Austin, Albany
Ralph M. Schwartz, Kings
Reid Heffner, Westchester
Bernard J. Hartnett, Cayuga

Medicare (Title 18) and Medicaid (Title 19)

TECHNICAL ADVISORY COMMITTEE ON MEDICAL CARE

John L. Clowe, Schenectady, *Chairman*
Felix Ottaviano, Madison
Charles D. Sherman, Jr., Monroe
Milton Gordon, Suffolk
Albert B. Accettola, Richmond

Public Health and Education

COMMISSION ON PUBLIC HEALTH AND EDUCATION
ACCIDENT AND INJURY PREVENTION
AGING AND NURSING HOMES
ALCOHOLISM AND DRUG ABUSE
AUDIO-VISUAL AIDS
CANCER
CARDIOVASCULAR DISEASE
CHRONIC PULMONARY DISEASES
CONTINUING (POSTGRADUATE) EDUCATION
DATA PROCESSING IN MEDICINE
DISEASES OF THE EYE
ENVIRONMENTAL HEALTH
FORENSIC MEDICINE
GENERAL PRACTICE AND SCHOOL HEALTH
HARD OF HEARING AND THE DEAF
HEALTH ASPECTS OF IONIZING RADIATION
HEALTH MANPOWER
MATERNAL AND CHILD WELFARE
MENTAL HYGIENE
METABOLIC DISEASES
PHYSICAL MEDICINE AND REHABILITATION
PREVENTIVE MEDICINE
RURAL MEDICAL SERVICE
QUACKERY
AD HOC JOINT COMMITTEE WITH BAR ASSOCIATION ON ALCOHOLISM AND DRUG ABUSE
MEDICAL ASPECTS OF SPORTS

Paul M. De Luca, Broome, *Chairman*
George E. Leone, Suffolk
Saul Zucker, Bronx
Louis J. Wagner, Rockland
George M. Saypol, New York

Scientific Activities and Publications

WHAT GOES ON
PUBLICATION
ARCHIVES AND HISTORY
CONVENTION
PHYSICIAN'S PLACEMENT
TO EXPLORE ALL ASPECTS OF DISTRICT BRANCHES
DISTRICT BRANCHES
DISASTER MEDICAL CARE
NASA, LIAISON WITH

Edgar P. Berry, New York, *Chairman*
John L. Finnegan, Queens
Richard D. Eberle, Onondaga
Kenneth H. Eckhert, Erie
Robert E. Healy, Westchester

Public and Professional Affairs

COMMISSION ON PUBLIC AND PROFESSIONAL AFFAIRS
FEDERAL LEGISLATION
STATE LEGISLATION
PUBLIC RELATIONS
TO STUDY REVISION OF EDUCATION LAW
MEDICINE AND RELIGION
ADVISORY TO NEW YORK STATE MEDICAL ASSISTANTS ASSOCIATION

George T. C. Way, Dutchess, *Chairman*
Francis J. Loperfido, Bronx
John A. Lawler, New York
John T. Donovan, Jr., Niagara
Charles M. Smith, Seneca, Seventh District Branch

Organization, Policies, and Legal Matters

MALPRACTICE INSURANCE AND DEFENSE
LEGAL COUNSEL
JUDICIAL COUNCIL
ON OSTEOPATHY
CONSTITUTION AND BYLAWS
NEW YORK DELEGATION TO AMA
RESEARCH AND PLANNING

John H. Wadsworth, Schoharie, *Chairman*
Stanley Stark, Kings
Abraham W. Freireich, Nassau
Eugene J. Hanavan, Jr., Erie
Lester R. Tuchman, Queens

Sergeants-at-Arms

Armand J. D'Errico, Fulton, *Chairman*
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Leo J. Swirsky, Kings
Lester J. Candela, Queens
Alfred A. Hartmann, Franklin

Tellers

John N. Dill, Westchester, *Chairman*
William J. McAuliffe, Cortland
Thomas S. Bumbalo, Erie
James A. Moore, Albany
Mary Spalding, New York

Instructions from 1967 House

Résumé of instructions of the 1967 House of Delegates and actions thereon by the Council, Board of Trustees, and Officers.*

Constitution and Bylaws Revision (page 1492). The House of Delegates adopted President Blake's recommendation that there be a detailed study and revision of the entire Constitution.

The Council referred this to the House Committee on Constitution and Bylaws.

Data Processing (pages 1495 and 1496). The House adopted reference committee reports which noted the suggestion of the president-elect that a Committee on Medical Computers be established in the Commission on Public Health and Education.

With the approval of the Council, President Wurzbach appointed this committee in February.

At its September meeting the Council adopted the recommendation of the chairman of the committee that its name be changed to "Committee on Data Processing in Medicine." The first annual report of this committee will be found on page 119 of this issue.

Remuneration of President and President-Elect (page 1495). The House voted to increase the per diem paid to the president and the president elect and referred to the Council for further study the suggestion that they be paid a salary rather than a per diem.

At their March meetings the Council recommended and the Board of Trustees voted increases which would bring the per diem of the president to $150 and that of the president-elect to $100. The Council referred the question of a salary for these officers to the House Committee on Constitution and Bylaws.

Woman's Auxiliary (page 1495). The House adopted a reference committee report acknowledging the need for keeping the Woman's Auxiliary well informed of the happenings of the Society in order that they may be of even greater assistance.

At the March Council meeting Dr. Fineberg stated he would take care of this. Dr. Fineberg reported to the Council in September that on June 28 he conferred with the president and the president-elect of the Woman's Auxiliary about future programs.

What Goes On (page 1520). The House commended Lederle Laboratories for continuing to subsidize *What Goes On*. The Council referred this to the executive vice-president for action.

Malpractice Insurance and Defense Communication (page 1520). The House recommended that all members of the Society read the communication from the Malpractice Insurance and Defense Board contained in the report of the executive vice-president. This appears on pages 1505, 1506, and 1507 of the June 1, 1967 issue of the JOURNAL. No further action was taken.

Future Meeting Dates (pages 1509 and 1520). The House adopted the following dates for its meetings for the next five years: 1968—February 11 to 16; 1969—February 9 to 14; 1970—February 8 to 13; 1971—February 14 to 19; and 1972—February 13 to 18. Arrangements have been made to hold the 1968 annual meeting in accordance with this schedule, as announced on page 2228 of the August 15, 1967, issue of the JOURNAL.

War Memorial (page 1528). The House adopted a reference committee report referring to assurances received by the reference committee that "there would be enough money in the Fund to include in the program children of physicians who may lose their lives serving in the Vietnam War." The Council voted in March to refer this to the Board of Trustees.

The Board of Trustees had discussed the question on February 16. At that time only one doctor had died as a result of the Vietnam War, and he had no children. It was stated that, although there would be a slight surplus in the War Memorial Fund at the termination of its present responsibilities, new money would be needed to expand the program as suggested. At the September meeting of the Board the matter was discussed again, and it was voted to defer action until a case is brought to the attention of the Trustees.

Dues Increase (page 1529). The House unanimously adopted resolution 67-31, "Increase in Annual Membership Dues," providing that, effective January 1, 1968, dues for active members shall be $70 a year instead of $45 as at present.

The Council referred this to the Membership

Pages referred to are from the Minutes of the House of Delegates of the 1967 Annual Meeting, as published in the NEW YORK STATE JOURNAL OF MEDICINE, June 1, 1967, pages 1461 through 1682.

* As of November 1, 1967.

Department, and on June 2, 1967, notice of the increase was sent to presidents, secretaries, treasurers, and executive secretaries of the county medical societies.

Relative Value Scale Study (page 1530). The House referred to the Council a recommendation of the Reference Committee on Medical Services that a bureau staffed and financed by the State Medical Society be established by the Council "for the maintenance of a continuing study of the Relative Value Scale."

The Council referred this in March to the Economics Committee with a request that it present an estimated budget and details of the proposed study. The chairman reported to the Council in May that a survey should be made by an outside agency and that the cost of such a survey would be reported to the Council at its fall meeting.

At the September Council meeting the committee submitted "for funding" a proposal for a statistical survey of physicians' fees in New York State by an independent research organization. With this proposal, the committee submitted a proposed agreement with the Syracuse University Research Corporation to make the survey at a cost not to exceed $30,154 (exclusive of any finished publication costs). The Council voted (1) to approve the contract, (2) to have the project established through the Empire State Foundation, and (3) to request that the Board of Trustees underwrite the necessary funds up to the amount of $35,000. The Board of Trustees voted to underwrite the full amount, through the Empire State Foundation, in the hope that the State Health Department and other interested parties would come in and share expenses.

Prior Authorization by Welfare Agencies (page 1531). The House adopted the statement of the Public Medical Care Committee: "All county societies should encourage local welfare agencies to dispense with prior authorization card and initiate the program now in practice in six counties under the pilot program."

The Council referred this to the Communications Division. It was stated at the March Council meeting that this statement should be sent to the county welfare commissioners with a copy to Commissioner Wyman. The Public Relations Committee reported to the Council in May its decision to prepare a statement on the evolvement of the ruling on prior authorization in the treatment of patients and to distribute it to physicians, local welfare commissioners, and local medical societies.

Qualifications for Treatment of Medicaid Patients (pages 1534, 1553, and 1581). The House adopted the supplementary report of the Committee on Public Medical Care, which stated "all licensed doctors of medicine must be allowed to treat Medicaid patients without any new 'qualifications' just for Medicaid patients."

The Council referred this to the Commission on Standards of Medical Care.

The House also adopted a substitute for resolutions 67-40, 67-44, and 67-72, opposing special qualifications for general practitioners under Medicaid and providing that this Society request the Commissioner of Health of the State of New York to allow all licensed general practitioners in the State to treat all Medicaid patients not requiring specialist care. The Council referred this to the Technical Advisory Committee on Medical Care.

The committee's report at the May Council meeting regarding its meeting with State Health Department representatives on April 20, stated, "A report was made on the preparation of a roster of physicians eligible to participate in the Medicaid program. This will be done as painlessly as possible by certification in Albany. In most cases, there will be no need for physicians to make application. It was again stated that requirements have been promulgated in spite of Medical Society opposition, and the assistance of Norman S. Moore, M.D., as director of the Commission on Public Health and Education, was sought in helping to develop reasonable and effective educational requirements." The House also adopted resolution 67-71, "Qualifications for Physicians to Participate in Medicaid Program," providing that this Society take appropriate action (including legal process if necessary) to insure that licensed physicians within the scope of their practice be deemed "qualified" under the provisions of Sections 363 and 363a of the New York State Social Welfare Law. The Council referred this to legal counsel.

Chautauqua Regional Medical Service, Inc. (page 1535). The House voted to continue its approval of the Chautauqua Regional Medical Service, Inc., and to recommend (*a*) that the withdrawal of the Chautauqua County Medical Society as a sponsoring and approving medical society for the Plan be considered, as provided for in paragraphs 2 and 3 of the Standards for Approval by the Medical Society of the State of New York of New York State Medical Care Plans, and (*b*) that the special committee provided for under these standards report within a period of six months.

The Council referred this to the Committee on Medical Care Insurance. The committee reported to the Council in September that an ad hoc committee for this purpose, formed in accordance with the directions contained in the standards, had met in Buffalo on June 29. It found that some objections to the Plan had been removed, that four grievances remained to be settled, and that 83 per cent of the physicians in the Plan are still participating after three or more years of dispute. It recommended provisional approval for one more year subject to review at that time. It also urged greater use of existing machinery for settling problems.

The Council approved this report.

Government-Assisted Health Insurance (pages 1540 and 1565). The House adopted resolution 67-36, "Government-Assisted Health

Insurance," which provides that the Society form a study committee to explore the feasibility of a program of government-assisted health insurance and present its findings and recommendations to the proper legislative representatives in the State and Federal governments.

The Council referred this to the Ad Hoc Committee on OEO Clinics, with a statement that notice should also go to the Committee on State Legislation after consideration by the ad hoc committee.

Health Insurance Legislation (page 1565). The House adopted a substitute for resolution 67-1, "Proposed Changes in Title 19 Income Eligibility," providing that this Society (*a*) support the reduction of income eligibility under Title 19 to conform to the standards stated in the October 11, 1966, report of the House of Representatives Committee on Ways and Means and (*b*) offer the services of its appropriate committees to the Governor, the members of the New York State Legislature, Secretary Gardner, Congressman Mills, and the New York State representatives in Congress in formulating constructive and appropriate health insurance legislation to serve the best interests of the people of the State of New York.

The Council referred this to the Technical Advisory Committee on Medical Care, the Committee on Federal Legislation, the Committee on State Legislation, and the Ad Hoc Committee on OEO Clinics.

In June the Committee on Federal Legislation and the Committee on State Legislation requested the Council to supply "clarification" and "further instructions" with regard to this resolution. The Council took no action on their request.

In September the Technical Advisory Committee reported as follows: "The House Ways and Means Committee is recommending limits on eligibility for Federal participation in medical assistance that . . . would ultimately allow Federal matching funds for medical assistance only to families of four with incomes of $3,900 per year or less. . . . The Society's position that reasonable eligibility requirements are essential if the program is to survive should be reaffirmed. At the same time it should be indicated that the eligibility levels suggested by the Ways and Means Committee are excessively severe."

Associated Hospital Service Board of Directors (page 1535). The House voted to approve the present physician representation on Associated Hospital Service of New York. The Council referred this to the Division of Medical Care Insurance.

Chiropractors under the Workmen's Compensation Law (page 1541). The House adopted resolution 67-67, "Opposition to Inclusion of Chiropractors Under the Workmen's Compensation Law," which provides that the Society make known to the Legislature and to the Chairman of the Workmen's Compensation Board its position opposing the inclusion of chiropractors under the Workmen's Compensation Law.

At the March Council meeting President Wurzbach stated that this had been done and that the bills referred to were dead. No referral was made by the Council.

Workmen's Compensation Information to Physicians (page 1542). The House approved resolution 67-79, "Informing the Attending Physician of the Patient's Status in Workmen's Compensation Cases," which provides that the Society request of the Workmen's Compensation Board "that it become standard and routine practice that, in all Workmen's Compensation cases, the last physician of record be notified in writing of any action by the Workmen's Compensation Board or the compensation carrier that may affect the physician's care of his patient."

The Council referred this to the Division of Industrial Health and Workmen's Compensation. This request was conveyed to the Workmen's Compensation Board on May 18. Following discussion by the Advisory Committee to the Board on October 4, the presenter of the resolution was asked to cite specific adjudicated cases where lack of notification had created hardship for the physician or the patient.

Nursing Education (page 1551). The House adopted a reference committee report stating that this Society "should do everything in its power to expand the facilities for all nursing education, including practical nurses, diploma schools of nursing, associate degree nursing, and baccalaureate degree nursing."

The Council referred this to the Committee on Nursing.

Fees of Hospital-Employed Physicians (pages 1551 and 1552). The House adopted a reference committee report quoting the recommendations of the Committee on Ethics regarding assignment of fees to hospitals. These are (*a*) that full-time or part-time physician employes do not sign over their insurance assignments; (*b*) that these physicians develop agreements with their employers which stipulate that their salaries be reduced by the amounts collected by them from any medical assistance programs, programs of insurance, or programs of direct billing; and (*c*) that any fees received above the limits of his salary are to be kept by the physician. The Council referred this to the Communications Division and to the Committee on Hospital-Based Physicians.

The Public Relations Committee reported to the Council in May that it had submitted to the Ethics Committee for consideration a proposed program of disseminating to county medical societies the opinion that assignment of fees is unethical.

The Committee on Hospital-Based Physicians presented to the Council in May a classification of attending hospital staff physicians with recommendations that those who are primarily responsible for the patient's professional care and those who render a direct personal service in the treatment of the patient should be paid directly by the patient or his medical insurer, while those who are not directly and personally involved in the care and treatment of the patient should be paid by the hospital. The Council tabled the committee's recommendations.

In September, on recommendation of the Committee on Hospital-Based Physicians, the Council voted to endorse and provide for the formulation of guidelines for hospital-based physicians by legal counsel in collaboration with an appropriate group of physicians, which could be used by hospital-based physicians in their contractual arrangements of employment with their hospitals.

Assignment of Physicians' Fees to Hospitals (page 1554). The House adopted a substitute for resolutions 67–3 and 67–48, regarding assignment or rebating of fees, which provides that this Society "urge the New York State Health Department to disapprove any hospital regulation or procedure which would make hospital privileges contingent on the assigning or rebating to the hospital of Medicare or Medicaid fees by physicians."

The Council referred this to the Technical Advisory Committee on Medical Care. At the September Council meeting, the Technical Advisory Committee presented reports regarding several meetings with representatives of the State and City governments and of the hospital associations. The report relating to the July 26 meeting, after describing methods of reimbursement presented by the State and by the City, states: "With either method, hospitals will be billing for services of physicians, and your chairman again presented the principles adopted by the Medical Society of the State of New York and agreed to by the Greater New York Hospital Association and the New York State Hospital Association."

Blue Shield Payments for Services of "Hospital-Based" Physicians (page 1552). The House adopted an amended version of resolution 67–32, "Transfer of Coverage for Services of 'Hospital-Based' Specialists from Blue Cross to Blue Shield," providing that this Society endeavor to have coverage for services of full-time physicians in hospitals shifted from Blue Cross to Blue Shield "so that all fees for physicians' services can be covered in a consistent manner" and that our delegation introduce a similar resolution in the AMA House of Delegates.

The Council referred this to the Committee on Hospital-Based Physicians and to the delegation to the American Medical Association.

The delegation introduced a resolution as directed (resolution 25). The first "resolved" was amended by Reference Committee D to read, "Resolved, That the American Medical Association reaffirm the principle that payment, however rendered, for the services of 'hospital-based' physicians, regardless of their contractual arrangement with the hospital or institution, be separated from the charges made by hospitals and that payments to hospitals and physicians not be intermingled." The resolution, thus amended, was adopted by the AMA House of Delegates.

At the May Council meeting the Committee on Hospital-Based Physicians moved that the Society "register concern" over official regulations under Title 18 contravening the stipulation that physicians' services should be paid under Part B. The Council referred this to the AMA Legislation Committee. At the same meeting the Council received as information a proposal for exploratory discussions between representatives of Blue Cross, Blue Shield, and the New York State Commissioner of Insurance in order to transfer those aspects of professional medical services now included in Blue Cross contracts to Blue Shield.

Criteria for Specialty Practice (page 1554). The House amended and adopted resolution 67–80, "Criteria for Specialty Practice," providing that this Society "recommend that criteria such as those currently in use by voluntary, municipal, and proprietary 'accredited' hospitals be the yardstick for establishing eligibility for specialty practice."

The Council referred this to the Technical Advisory Committee on Medical Care.

Utilization Committees: Reimbursement (page 1555). The House adopted an amended version of resolution 67–20, "Reimbursement for Physicians Serving on Utilization Committees," which provides that this Society "recommend that hospitals and nursing homes be required to use the criteria established by the Department of Health, Education, and Welfare for reimbursement for physicians serving as active members or chairmen of hospital and nursing home utilization and review committees."

The Council referred this to the Committee on Utilization Review and to the Committee on Medical Review.

At its June meeting, the Council approved recommendations of the Committee on Utilization Review, as follows:

"(*a*) Reimbursement. Fees are to be collected from the individual extended care facility by the project group. Provision is also to be made for payment of secretarial and other 'overhead' expenses. The physicians rendering the utilization review services are to be paid by the project group. Reimbursement is to be for professional services beyond that which can normally be expected as part of Medical Society committee membership. Under no circumstances is a physician to arrange to service a facility as an individual."

"(*b*) Each county medical society or district branch is to establish a committee to conduct and administer extended care facility utilization review under the direction of that county medical society and/or district branch, to collect the fees, and to distribute them to the physicians furnishing the service."

Utilization Committees: Legal Immunity (page 1555). The House amended and adopted resolution 67–37, "Legal Immunity for Members of Hospital and Nursing Home Utilization Committees," which provides that this Society "initiate and support legislation to provide legal immunity for members of hospital and nursing home utilization and review committees."

The Council referred this to the Committee on State Legislation with a suggestion that it might ask the cooperation of the Commission on Standards of Medical Care.

The Committee on State Legislation reported in June that a bill would be considered for introduction in 1968.

Diploma Schools of Nursing (page 1557). The House amended and adopted a substitute for resolutions 67–34, 67–58, and 67–68, regarding diploma schools of nursing, which provides that this Society (*a*) endorse and support the program of the hospital schools of nursing (diploma program), (*b*) recommend that this program be appropriately strengthened and expanded in order to meet the immediate and acute shortage of bedside nurses, (*c*) petition State Senator Norman Lent and other interested members of the State Legislature to provide funds for staffing and such other assistance as may be necessary to diploma schools of nursing, (*d*) urge the State Legislature to support all the 14 recommendations made in Senator Lent's report on "Methods to Correct the Nursing Shortage," and (*e*) send copies of the substitute resolution to each county medical society, the president of the AMA, the Governor of New York State, the New York State commissioner of education, the chairman of the Joint Legislative Committee on the Problems of Public Health and Medicare, the National League for Nursing, Department of Diploma Programs, the American Hospital Association, the Hospital Association of New York State, the New York State Nurses Association, and the American Nurses Association.

The Council referred this to the Committee on Nursing. At the June Council meeting the committee presented three suggestions for insuring that graduates of nursing schools have had adequate clinical training and experience. They were (1) that a joint commission on accreditation of schools of nursing be established, with representatives from the American Nursing Association, the National League for Nursing, the American Medical Association, and the American Hospital Association; (2) that a letter be sent to the Joint Commission on Accreditation of Hospitals asking them to expand their Committee on Nursing Service to include education; and (3) that a letter be sent to the Regents of the State of New York offering for their consideration the desirability of establishing a commission for this purpose in New York State. The Council approved these three suggestions, and the committee conveyed this information to the agencies involved by letter on June 13.

Hospital Staff Tenure (page 1558). The House amended and referred to the Council for wording and implementation resolution 67–63, "Hospital Staff Tenure," which was regarded as embodying the intent of resolution 67–4, "Annual Staff Appointments of Hospital Physicians." The amended and referred resolution outlines a procedure to be recommended to hospitals for use as a model "when a physician who has completed a probationary period is not recommended for reappointment to his hospital staff position or it is recommended that his staff privileges be curtailed." The resolution also provides that this Society (*a*) urge the Joint Commission on Accreditation of Hospitals to incorporate the procedure as guidelines in their model staff bylaws for hospital accreditation and (*b*) instruct its delegates to the American Medical Association House of Delegates to introduce this resolution at the annual meeting of the AMA House in June, 1967.

The Council referred this to the Committee on Hospital and Professional Relations and to the delegation to the American Medical Association.

This resolution was introduced, as resolution 24, in the American Medical Association House of Delegates, was amended by Reference Committee D, and was adopted by the AMA House.

Closed Hospitals or Clinics (page 1559). The House adopted resolution 67–17, "Disapproval of Establishment of Closed Hospitals," providing that this Society express its disapproval of the establishment of closed hospitals or clinics staffed entirely by salaried physicians and inform the American Medical Association, all recognized specialty groups and boards, and all members of the New York State Legislature of this action.

The Council referred this to the Division of Communications for implementation.

Corporate Practice of Medicine (page 1559). The House referred to the Council for legal clarification resolution 67–18, "Disapproval of Corporate Practice of Medicine," by which the Society would go on record as reaffirming its disapproval of the corporate practice of medicine and the participation of physicians in arrangements which lead to such practice.

The Council referred this to legal counsel and to the Committee on Hospital-Based Physicians. At the May Council meeting the Committee on Hospital-Based Physicians recommended investigation as to whether or not the State Medical Society should participate in any way in the suit instituted by Dr. Feeley against the Brooklyn-Cumberland Medical Center. The Council referred this to legal counsel.

At the Council meeting in September the Committee on Hospital-Based Physicians reported that, following a conference on June 26 with Samuel A. Hirshowitz, first assistant attorney general, a letter was drafted to inform

Mr. Hirshowitz regarding individual instances of corporate practice and to assist him in determining whether or not he wished, through his own office, to obtain more comprehensive statistical information on the subject. The draft had been held, however, and no letter has been sent in view of the suggestion of legal counsel that no further action be taken at this time. The Committee's September report was adopted by the Council.

Utilization and Claims Review: County Medical Society Committees (page 1559). The House approved resolution 67-13, "Use of County Medical Society Claims Review and Utilization Committees," providing that the Society urge fiscal intermediaries for Part B of Title 18, PL 89-97, to use the services of county medical society committees to resolve problems of utilization and claims review whenever and wherever possible.

The Council referred this to the Utilization Review Committee. At its June meeting the Council approved the following recommendation of the Committee on Utilization Review: "Resolved, that the Medical Society of the State of New York recommend that utilization review in extended care facilities be made available through the local county societies and/or district branches."

Medical Review by Government Agencies (page 1560). The House approved resolution 67-45, "Evaluation of the Quality of Medical Care by Government Agencies," stating that this Society is opposed to the evaluation of the quality of medical care by any government agency and reaffirming the need for the continuation of the evaluation of medical care by agencies of the medical profession under existing criteria.

The Council referred this to the Committee on Medical Review. At the May meeting of the Council, the committee described preliminary phases of its program for establishing criteria and methodology for medical review. At the September meeting, the committee requested and received the Council's approval for presentation to the Department of Health, Education, and Welfare of plans for a field test of the methodology, to be conducted through this Society and financed by HEW.

Laboratory Services: Costs (page 1560). The House amended and adopted resolution 67-76, "Costs of Laboratory Services," urging physicians and hospitals to use the most efficient methods of providing laboratory services and recommending that, when such services are obtained at "a lower cost," this fact be reflected in charges to patients. The Council referred this to the Division of Communications.

Medicaid Fees: Direct Billing (pages 1566, 1567, and 1570). The House approved resolution 67-6, "Right of Practitioner to Contract with Patient," to go on record as supporting the right of the private practitioner to contract directly with his patient "and that any third party involved not be permitted to interfere with such a contract." The Council referred this to the Committee on Federal Legislation.

The House also adopted resolution 67-33, "Direct Billing Under Title 19," petitioning the representatives of New York State in Congress to introduce an amendment to the Social Security Act of 1936 and to Title 19 of PL 89-97 to permit state legislatures to allow direct billing of usual and customary fees under Title 19 of PL 89-97. The Council referred this to the Committee on Federal Legislation.

The committee reported to the Council in June that it had taken no action on resolutions 67-6 and 67-33 because these resolutions "already had been communicated to designated legislators and government officials" by President Wurzbach.

Medicaid Fees: Direct Reimbursement to Patients (page 1570). The House approved resolution 67-50, "Direct Reimbursement to Patients Under Title 19, "providing that this Society strongly support amendment of Title 19 of PL 89-97 to permit direct reimbursement to patients who have made payments to physicians for medical services for those cases in which physicians have not accepted assignments.

The Council referred this to the Committee on Federal Legislation. The committee reported to the Council in June that it had taken no action on resolution 67-50 because the resolution "already had been communicated to designated legislators and government officials" by President Wurzbach.

Medicaid: Income Levels (page 1566). The House adopted resolution 67-10, "Legislation to Establish Income Levels for Medicaid," to initiate and support legislation amending the Medical Assistance for Needy Persons Law to provide that no person or family shall be eligible for health care benefits if such person or family has a net income in excess of 50 per cent above the level of welfare maintenance of a comparable person or family.

The Council referred this to the Committee on State Legislation. In June the committee requested that the Council supply "clarification, particularly in regard to the criteria for income ceilings, and further instructions" regarding this resolution. The Council took no action.

Medicaid: Prior Authorization for Hospitalization (page 1566). The House adopted resolution 67-14, "Legislation to Eliminate Prior Authorization for Hospitalization Under Medicaid," to initiate and support legislation amending the Medicaid law to eliminate the requirement of prior authorization for hospitalization which is deemed to be necessary by the treating physician.

The Council referred this to the Committee on State Legislation. The committee reported in June that "although it is no longer necessary for doctors to obtain prior authorization, with a few exceptions such as crippled children, action on this resolution will be considered at the 1968 session."

Medicaid Fees: Usual, Customary, Prevailing, and Reasonable (page 1567). The House changed the title of resolution 67–21 to "Usual, Customary, Prevailing, and Reasonable Fees," amended the resolution, and adopted it. As amended and adopted the resolution "strongly recommends that only usual and customary fees be used as a basis of payments for medical services to patients entitled to Medicaid benefits."

The Council referred this to the Technical Advisory Committee on Medical Care.

The House also adopted resolution 67–49, "Usual, Customary, and Prevailing Fees Under Medicaid," that this Society make every effort to bring about payment for physicians' services in the Medicaid program on the basis of "usual, customary, and prevailing" fees to insure the participation of a sufficient number of physicians in the program to meet the requirements of the Department of Health, Education, and Welfare.

The Council referred this to the Technical Advisory Committee. At the September Council meeting, the committee submitted a report of a meeting held on June 22 with representatives of the Governor, the Department of Social Welfare, the Department of Health, the Department of the Budget, the Greater New York Hospital Association, Long Island College Hospital, the New York State Hospital Association, the Coordinating Council of the First District Branch, and the State Medical Society. The report includes the statement, "The question of fees for clinic services was then taken up. Your chairman stated, as he now does automatically, that the Medical Society would approve payments only at the usual, customary, and prevailing rates. State representatives pointed out that this method of fee determination would not be adopted until the Director of the Budget had completed his 'studies.'" It was also reported to the Council in September that, at a meeting of the committee on July 27, a suggestion had been made that the Department of Health participate with the Medical Society of the State of New York in a study of regional customary and prevailing fees and that Dr. Ingraham had stated he would give the suggestion serious consideration.

Consultation: Written Certification of Request (page 1567). The House adopted resolution 67–22, "Rescinding Requirement for Written Certification for Consultation," which provides that an appropriate committee of this Society meet with officials of the New York State Department of Health with the object of rescinding, in all State-supported programs, the requirement that the attending physician certify in writing that he requested a consultation before payment is made to the consultant.

The Council referred this to the Technical Advisory Committee on Medical Care.

Medicare and Medicaid: Patients' Rights (page 1568). The House amended and adopted resolution 67–42, "Rights of Patients Under Medicare and Medicaid," providing that this Society (*a*) record itself as supporting the principle that subscribers to Part B of Title 18 and beneficiaries under Title 19 of PL 89-97, by virtue of payment of premium or eligibility have the same rights to personal medical care as those enjoyed by any other private patient, (*b*) record itself as supporting the principle that the professional responsibility of a physician for service rendered by an intern or resident requires the certifying physician's personal attendence, supervision, and direction in order for the service to be considered identifiable and compensable, and (*c*) forward copies of the resolution to the Secretary of Heath, Education, and Welfare, to the Health Insurance Benefits Advisory Council, and to the New York State Departments of Health and Social Welfare for their action.

The Council referred this to the executive vice-president. Copies of this resolution were sent with Dr. Wurzbach's letter to key persons in the State Legislature and in the administration at State and Federal levels.

Medicaid: Free Choice (pages 1568 and 1639). The House amended and adopted resolution 67–43, "Free Choice of Physician and Medical Facility," opposing approval by the State Health Commissioner of any local plan for the implementation of Title 19 which controls in any way the guarantee of free choice of physician and medical facility and also opposing the "locking in" of any recipient to any voluntary choice he makes for any period of time. The Council referred this to the Technical Advisory Committee on Medical Care.

The House also adopted resolution 67–27, "Support for McCloskey Bill to Guarantee Free Choice of Physician and Facility," that this Society work actively to secure the passage of A.1140.

The Council referred this to the Committee on State Legislation. The committee reported in June that "this bill was supported by the Medical Society of the State of New York but failed to pass."

Medical Care: Quality in Government-Supported Programs (page 1569). The House approved resolution 67–46, "Principles for Maintaining High Quality of Medical Care Under Government-Supported Medical Programs," reaffirming the following seven principles: (*a*) the primary purpose of the physician is to provide appropriate medical care based on scientific knowledge to any and all citizens who desire it, within limits imposed by law; (*b*) physicians' services must be available under conditions which permit full and intelligent exercise of professional judgment; (*c*) physicians must be free to accept for treatment those patients they feel they can benefit; (*d*) physicians must be free to select such therapy as in their judgment will be most beneficial to the patient; (*e*) the confidentiality of physicians' medical records must be maintained; (*f*) physicians should have a key role in the maintenance of the highest quality of medical care; and (*g*) when government assumes the responsibility of providing medical care for a large group of citizens, it must be prepared to reimburse the providers of such care adequately.

The Council referred this to the Technical Advisory Committee on Medical Care. At the request of the committee, President Wurzbach asked Governor Rockefeller for appointment of a top-level negotiating committee with power to act on policy for all State-supported programs. The Governor, however, felt that the proposed committee would serve no real purpose.

Medicaid: Fiscal Intermediaries (page 1569). The House amended and adopted resolution 67–47, "Use of Fiscal Intermediaries in Medicaid Programs," urging the Governor and State agencies to endorse and encourage the use of fiscal intermediaries by local health and welfare districts in the operation of their local Medicaid programs, consistent with the recommendations of the State Medical Society's Advisory Committee to the New York State Interdepartmental Committee on Health Economics.

The Council referred this to the Technical Advisory Committee on Medical Care.

Medicaid: Need for Outpatient Diagnostic Tests (page 1570). The House adopted a substitute for resolution 67–52, "Rescinding Requirement for Certification for Diagnostic Procedures," affirming "that a physician's request or requisition for outpatient diagnostic services constitute certification for such services as required under Public Law 89–97 and no additional certification of medical necessity be required."

The Council referred this to the Committee on Federal Legislation. The committee reported to the Council in June that no action had been taken on HR–5710, "Social Security Amendments of 1967," since the status of the bill required no follow-up at that time and since the committee had decided to await data from the AMA regarding it.

Medicare and Medicaid Programs: Improvement (page 1571). The House approved resolution 67–57, "Recommendations for Improved Financial and Administrative Policies in Medicare and Medicaid Programs," providing that this Society (*a*) make every effort to bring about the adoption of the "usual and customary" concept as the basis for the payment of physicians' fees for services rendered under the Medicaid program as is the current practice under the Federal Medicare program and (*b*) urge the New York State Departments of Health and Social Welfare to develop a less cumbersome and time-consuming method of billing than the one now required for those receiving assistance under both the Federal Medicare and the State Medicaid programs.

The Council referred this to the Technical Advisory Committee on Medical Care. The committee reported to the Council in May, "It was also decided that the Society seek to establish a top level negotiating committee with representatives of the Governor's office and the Departments of Health, Social Welfare, and Budget, with power to act on policy for all State-supported programs. . . . Your chairman was empowered to request that Frederick A. Wurzbach, M.D., president, write to Governor Rockefeller calling for the immediate appointment of a negotiating committee."

In September the committee reported, "Your chairman then asked Mr. Marshall informally whether or not the Governor intended to create the negotiating committee that has been called for by Dr. Wurzbach. He was told that the Governor does not wish to do so officially, since that might bring pressure from other vendor groups for a similar arrangement."

Medicaid: Position of State Medical Society (page 1581). The House adopted the following resolution presented by the Reference Committee on Medicare and Medicaid after studying the supplementary report of the Advisory Committee to the New York State Interdepartmental Committee on Health Economics:

> *Resolved*, That the Medical Society of the State of New York inform all concerned of its untiring efforts on behalf of the people of the State of New York to make Medicaid a constructive, workable plan consistent with the intent of Federal Public Law 89–97; and be it further
>
> *Resolved*, That until substantial evidence is forthcoming from State government representatives that they intend to honor their commitments to the people of the State of New York, the Medical Society of the State of New York has no other choice than to disapprove the Medicaid program as administered at the present time; and be it further
>
> *Resolved*, That the contents of this resolution be given the widest publicity utilizing all communications media in order to inform the Governor, the State legislators, Federal legislators, State Health Department, State Social Welfare Department, State Division of the Budget, Department of Health, Education, and Welfare, all New York State physicians, and the general public; and be it further
>
> *Resolved*, That the Medical Society of the State of New York adopt the recommendations embodied in the supplementary report and that suitable abstracts of the supplementary report be prepared by the Advisory Committee and sent to the Governor, the Secretary of Health, Education, and Welfare and to other appropriate agencies; and be it further
>
> *Resolved*, That the Advisory Committee continue its efforts to assist the responsible State government officials and agencies in making a currently inadequate and inoperable program workable.

Dr. Himler stated to the House of Delegates that, before abstracts of the report were circulated, the paragraph regarding the Relative Value Scale would be deleted. At the March Council meeting it was noted that the abstracts were being published in the *News of New York*.

The full text of the report appears in the NEW YORK STATE JOURNAL OF MEDICINE, June 1, 1967, pages 1575 to 1580. The Council also referred this resolution to the Technical Advisory Committee.

Committee Names (pages 1583, 1590, 1598, and 1602). The House adopted portions of the report of the Reference Committee on Public Health and Education noting and approving changes in the names of two committees, that is, change of the Diabetes Committee to Committee on Metabolic Diseases and change of the Committee on Accident Prevention to Committee on Accident and Injury Prevention. The Council received this as information.

The House also recommended that the name of the Ad Hoc Advisory Committee to the New York State Public High School Athletic Association be changed to Committee on Medical Aspects of Sports and that its activity cover public and private elementary and high schools. This has been done.

The House recommended that the scope of the Film Review Committee be enlarged and that its name be changed to the Audio-Visual Aids Committee. At the March Council meeting it was reported that this had been done.

Chronic Pulmonary Disease Centers (page 1587). The House expressed approval of the development of centers for the treatment of chronic pulmonary diseases. The Council referred this to the Committee on Chronic Pulmonary Diseases.

The committee reported to the Commission on Public Health and Education in August that it had worked with the Department of Health in trying to increase treatment facilities for chronic pulmonary diseases but had encountered difficulties related to Federal reimbursement policies for the cost of treating Medicaid patients.

Sigmoidoscope Demonstrations (page 1589). The House adopted a portion of the reference committee report accepting the report of the Committee on Continuing Education with special reference to the Sigmoidoscope Demonstration Teaching Project.

The Council referred this to the Committee on Continuing Education.

Postgraduate Education for General Practitioners (page 1589). The House recommended that the Society encourage the expansion of postgraduate education for general practitioners and specialists through the Empire State Medical, Scientific and Educational Foundation and that the Society, through the Foundation, actively seek financial support from private and public agencies.

The Council referred this to the Committee on Continuing Education. At the September Council meeting the committee presented a proposal that a scientifically designed questionnaire, prepared for automatic data processing, be funded and implemented cooperatively by the committee, the NEW YORK STATE JOURNAL OF MEDICINE, and the Empire State Medical, Scientific and Educational Foundation to find out what physicians want in comprehensive continuing education programs. The Council voted to authorize the committee to consult with the editor of the JOURNAL and requested that an estimated budget be presented at the November meeting.

Medical Examiner Systems (page 1591). The House voted to support Dr. Helpern's proposal for the establishment of medical examiner systems on a regional basis. The Council referred this to the Committee on Forensic Medicine.

Infectious Diseases Committee (page 1593). The House approved the following proposals regarding the organization and personnel of the Infectious Diseases Committee: "That the Liaison and Public Health Education Subcommittees be eliminated; that the Hospital Epidemiology, Preventive Medicine, Tropical Diseases, and Venereal Disease Subcommittees be retained; that the latter be headed by a specialist in each field; and that the Infectious Diseases Committee be composed of its chairman and the heads of the four subcommittees."

These proposals were put into effect by the president and approved by the Council at its February meeting.

Postprandial Blood Chemistries (page 1598). The House recommended the use of postprandial blood chemistries as a means of diabetes detection. The Council referred this to the Committee on Metabolic Diseases.

Quackery Programs (page 1600). The House suggested that programs on quackery similar to that presented at the Cortland State Teachers College be presented at the other State teachers colleges.

The Council referred this to the Committee on Quackery. The committee's report at the annual meeting of the Commission stated that, as a result of the symposium at Cortland, a number of follow-up programs had been presented, specifically mentioning speeches to the New York State Association for Health, Physical Education, and Recreation and to the Eastern Zone, New York State Teachers Association.

Reimbursements to Traffic Accident Patients (page 1603). The House referred to the Council resolution 67-2, "Basic Protection for the Traffic Accident Patient," which would provide that the Society propose and support legislation to permit accident victims to receive awards for medical payments, out-of-pocket payments, and a portion of lost wages without going to court.

The Council referred this to legal counsel and to the Committee on Accident and Injury Prevention. A letter of October 12 from the chairman states that the Committee on Accident and Injury Prevention approves of this legislation and recommends that it be supported.

Motorcycle Safety (page 1603). The House adopted resolution 67–11, "Legislation to Establish Motorcycle Safety Regulations," providing that this Society sponsor and support legislation to establish motorcycle safety regulations requiring crash bars, handholds, foot rests, saddles, and suspension systems.

The Council referred this to the Committee on Accident and Injury Prevention and to the Committee on State Legislation. The Council also requested the Committee on Accident and Injury Prevention to contact the AMA Automotive Accident Committee.

The Committee on State Legislation reported in June that it would endorse a bill for this purpose in the 1968 Legislature.

The report of the Accident and Injury Prevention Committee to the Commission on Public Health and Education states, "We contacted the American Medical Association's Automobile Accident Prevention Committee and found that a similar recommendation was being made by the AMA."

Accident Investigation Teams (page 1604). The House accepted a change in resolution 67–12, "Establishment of Accident Investigation Teams (AIT) at Medical Centers," and voted to refer it to the Council for further study. The resolution provides that the State Society ask the State Legislature to support the establishment of such centers and to assist these centers in obtaining assistance from the State and Federal governments and that the Society also ask the Legislature to provide legislation granting immunity to AIT.

The Council referred this to the Committee on Accident and Injury Prevention and to the Committee on State Legislation. The Committee on State Legislation reported in June that it would endorse a bill for this purpose in the 1968 session of the Legislature. The Committee on Accident and Injury Prevention reported to the Commission on Public Health and Education that it supported this resolution.

Seat Belts (page 1604). The House adopted resolution 67–25, "Legislation to Require Seat Belts in Taxicabs, Rental Cars, and Limousines," providing that this Society initiate and support legislation to make provision of seat belts in public conveyances mandatory.

This was referred by the Council to the Committee on State Legislation. The committee reported in June that this would be introduced in 1968 as a State Medical Society-sponsored bill.

Medical Advisory Board to Bureau of Motor Vehicles (page 1604). The House adopted resolution 67–29, "Recommendations for Medical Advisory Board to Bureau of Motor Vehicles," and referred it to the Council for implementation and direction. The resolution calls on this Society to recommend to the State Legislature that a medical advisory board be created to advise the Bureau of Motor Vehicles on the physical examinations and the supervision and control of drivers with mental or physical defects which interfere with safe driving.

The Council referred this to the Committee on Accident and Injury Prevention. The committee reported to the Commission at its annual meeting in August that there were rules and regulations already in effect regarding these conditions and recommended that these regulations be implemented throughout the State.

First Aid and Transportation of the Injured (page 1605). The House adopted a reference committee comment that the program described in resolution 67–35, "Education Program in First Aid and Transportation of Injured," is now in effect and that the committee approved the resolution to indicate its endorsement of the program.

The Council referred this to the Committee on Accident and Injury Prevention with a request that it contact Robert H. Kennedy, M.D., New York City, and David Noel Kluge, M.D., Rochester. The Accident and Injury Prevention Committee reported to the Public Health and Education Commission in August its approval of the resolution and its suggestion that our members be informed of the State Health Department's training courses for ambulance personnel and additional courses throughout the State.

Drug Prescription (page 1606). The House amended and adopted a substitute for resolutions 67–5 and 67–51, "Generic Names and Drug Substitution," providing that this Society condemn the practice of the substitution of any drug for that which has been prescribed by a physician and oppose any effort by a government agency to require the compulsory use of generic names in prescribing drugs.

The Council referred this to the Commission on Public Health and Education. In June President Wurzbach transmitted a copy of this resolution to the chairman of the Subcommittee on Monopoly of the Senate Small Business Committee.

Narcotic Addiction Control (page 1606). The House adopted resolution 67–64, "Narcotic Addiction Control Program," to recommend to the Governor and the State Legislature that all Federal funds accruing to the State for the antinarcotic addiction battle be channeled through the Narcotic Addiction Control Commission and that, if such funds are given directly for specific research projects, the Narcotic Addiction Control Commission should be so informed by the project directors.

The Council referred this to the Committee on Alcoholism and Drug Abuse.

Hypodermic Syringes and Needles (page 1606). The House amended and adopted resolution 67–65, "Disapproval of Legislation Outlawing Nondisposable Hypodermic Syringes and Needles," calling on the Society to oppose Senate Int. 2344.

The Council referred this to the Committee on State Legislation. The committee reported to the Council in June that this bill, introduced at the 1967 session of the State Legislature, had died in committee.

Physical Examination of Food Handlers (page 1607). The House referred to the Council, because of legal implications, resolution 67-66, "Disapproval of Mandatory Semiannual Physical Examinations for Food Handlers," opposing enactment of Assembly bill Int. 1412.

The Council referred this to the Committee on State Legislation and to legal counsel. The committee reported to the Council in June that "this proposal is to be followed-up with the Health Department."

Abortion Law Reform (pages 1607 and 1634). With respect to resolution 67-26, "Support for Revision of New York State Abortion Laws," and resolution 67-55, "Recommendations for Reform in Abortion Law," the House adopted the following reference committee statement:

"Last year's report by the Reference Committee on Public and Professional Affairs (page 1565 of the June 1, 1966, issue of the NEW YORK STATE JOURNAL OF MEDICINE) was reviewed, and it was the impression of the reference committee that no new evidence had been introduced to justify changing the action taken at this time."

The 1966 action recommended revision of the abortion law and listed conditions under which abortion should be permitted. At the Council meeting in March, 1967, President Wurzbach stated that the bills in question died in committee.

The House also voted to reaffirm the guidelines regarding therapeutic abortion adopted by the 1966 House of Delegates. The Council referred this to the Committee on State Legislation. The committee's report to the Council in June stated, "Attention is called to the fact that items marked for action at the 1967 session of the State Legislature were not acted on this year because of the short session of the State Legislature."

District Branch Realignment (page 1617). The House adopted a reference committee report recommending realignment of the district branches to correspond with the hospital service regions of the State. The Council referred this to the Ad Hoc Committee to Study All Aspects of the District Branches.

Comprehensive Health Planning and Public Health Services Amendments of 1966 (page 1628). The House endorsed the amendments to Federal PL 89-749 proposed by the AMA at the public hearings held by the Committee on Interstate and Foreign Commerce, House of Representatives, October 11, 1966, as quoted, with some modifications, in the supplementary report of the Federal Legislation Committee, page 1627 of the June 1, 1967, issue of the NEW YORK STATE JOURNAL OF MEDICINE.

The Council referred this to the Committee on Federal Legislation. At the June Council meeting, the committee requested approval for submission to the AMA House of Delegates of a resolution entitled "HR 6418, 'Partnership for Health Amendments for 1967.'" Approval was granted by the Council, and the resolution was introduced by the New York delegation. This resolution (AMA 105) was referred by the AMA House of Delegates to the Board of Trustees.

Ambulance Law (page 1634). The House voted to urge correction by the State Health Department of inequities in the Ambulance Service Licensing Law which cause hardships in many communities.

The Council referred this to the Committee on State Legislation. The chairman of the Public Health and Education Commission reported to the Council in June that the Committee on Accident and Injury Prevention was actively engaged in a discussion of the ambulance law before the Constitutional Convention in Albany.

Compulsory Health Insurance (page 1634). The House voted that the State Society do all in its power to keep its membership fully apprised of all important developments regarding compulsory health insurance.

The Council referred this to the Communications Division. The Public Relations Committee reported in May that this was "previously completed by the committee."

Public Relations Program (pages 1637 and 1638). The House endorsed the continuance of the public relations program, particularly the regional conferences. The Council referred this to the Communications Division. Regional conferences, now called "area conferences," were held as follows: September 7—Kingston; September 21—Plattsburgh; October 12—Utica; October 19—Olean; and November 2—Saratoga.

Official Spokesmen (pages 1637 and 1638). The House requested the president and the executive vice-president to designate official spokesmen from the State Society to function in their absence so that an official spokesman will be available at all times. At the March Council meeting Dr. Wurzbach and Dr. Fineberg stated that this was always done in accordance with rules of the Council.

Research and Planning (page 1638). The House voted to emphasize the urgent need for a research and planning department.

The Council referred this to the president and the executive vice-president. A Committee on Research and Planning was appointed at the Council meeting in May. At this time the Council received a report that the Budget Committee had approved a budget of $50,000 for this division for 1967.

Blue Cross Coverage for Medical Services (page 1639). The House adopted resolution 67-9, "Repeal of Provisions of Chapter 795 of Laws of 1965," that this Society seek to obtain repeal of the provisions of Chapter 795 of the

Laws of 1965 which allow Blue Cross plans in New York State to cover medical services.

The Council referred this to the Committee on State Legislation. The committee reported in June that no action was being taken on this resolution "since this problem is being studied by another committee." See "Blue Shield Payments for Services of Hospital-Based Physicians" in this issue.

Health Legislation: Opportunity to Study (page 1639). The House adopted resolution 67–38, "Opportunity to Study Pending Health Legislation," providing that this Society (*a*) urge the New York State Legislature to afford the Society, district branches, and component county societies adequate and ample opportunity to study and prepare comments on all pending legislation relating to health and medical care and (*b*) urge each county medical society and all physicians to assume an active leadership role providing guidance to legislators, local, State, and Federal, on proposed health and medical legislation.

The Council referred this to the Committee on State Legislation. The committee reported in June, "The problem had been brought to the attention of State government officials who indicated they will cooperate with us."

Education Department Questionnaire (page 1640). The House referred to the Council "for further study, clarification, and appropriate action" resolution 67–41, "Recommended Revisions of Questionnaire Distributed by State Education Department." The resolution calls on this Society (*a*) to inform the State Department of Education of the restricted nature of the information they request on the questionnaire distributed with the current registration application, (*b*) to recommend that the State Education Department revise the questionnaire to reflect an accurate representation of a physician's qualifications and to discard the questionnaires already completed and returned, and (*c*) to present a resolution in the AMA House of Delegates in June, 1967, apprising them of another possible "back door" political effort to hamper and restrict physicians.

The Council referred this to the Committee on Continuing Education. A resolution entitled, "Surveys of Physicians' Qualifications by State Licensing or Regulatory Bodies," (AMA #27) was introduced by the New York State delegation in the AMA House of Delegates in June. On recommendation of Reference Committee G, the House voted not to adopt the resolution.

Autopsy Law Revision (page 1641). The House adopted resolution 67–62, "Revision of Laws Concerning Autopsy and the Dead Human Body," calling on the State Society to request a survey of existing law as it pertains to the dead human body, clarification and revision of the law, modernization of the autopsy law, and permission for trained dieners to assist at an autopsy under the supervision of a pathologist.

The Council referred this to the Committee on State Legislation. The committee reported in June, "This proposal has been annually considered and will be taken up again in 1968."

Empire Medical Political Action Committee (page 1641). The House amended and adopted resolution 67–73, "Reaffirmation of Support of Empire Medical Political Action Committee," by which the Society expresses support of the aims and objectives of EMPAC. At the Council meeting on March 23, it was stated that no action was needed.

Education Law Revision: Scope of Podiatry (page 1641). The House adopted resolution 67–75, "Opposition to Major Surgery and Prescription and Use of Narcotics in Podiatry," providing that the Society go on record as being strongly opposed to the portions of the proposed revision of the Education Law which permit major surgery and the prescription and use of narcotics by podiatrists.

The Council referred this to the Ad Hoc Committee to Study Revision of the Education Law. At the September Council meeting the Committee reported that its third statement to the Joint Legislative Committee to Revise and Simplify the Education Law expressed pleasure that the present wording of Section 7001, Subdivision 2C of the law had been retained and urged that this position be maintained.

Education Law Revision: Separate Medical Licensing and Disciplinary Board; Provisions re Insanity (page 1645). The House adopted the following reference committee statement regarding the annual report of the Ad Hoc Committee to Study Revision of the Education Law:

"In the first six and one-half pages of this report of the Ad Hoc Committee to Study Revision of the Education Law, there is a series of proposed changes for revision of the Education Law in which we concur. We particularly endorse the recommendations for a separate medical board for the licensure and discipline of doctors of medicine outside of the Education Department. The reference committee agrees with the ad hoc committee's recommendations for disapproval of suggestions 1, 2, and 3, page 1644 of the June 1, 1967 issue of the NEW YORK STATE JOURNAL OF MEDICINE.

"The reference committee recommends addition of the words 'or incurable insanity' to Section C 6510, 2 e.

"The reference committee notes that the current proposed draft provides that the adjudication of insanity or voluntary commitment or admission to a State hospital shall operate to automatically suspend a physician's right to practice medicine.

"This is wholly and totally unsatisfactory. We object to it primarily because such a law would serve as a deterrent to members of all the professions from seeking psychiatric assistance for fear that it might cause the revocation of one's license to practice his profession.

"Your committee recognizes that a physician, in order to practice his profession, must be fully competent at all times and that the public must have a suitable remedy when a physician becomes mentally ill.

"Accordingly, we propose (1) the deletion of the entire present complicated formula with respect to insanity; (2) the formation by the State Society of its own committee made up of three psychiatrists who shall serve in an advisory capacity to control any possible problems within the profession, thereby providing a safeguard to the public and at the same time an appellate body for a physician under charges of insanity; (3) to modify present language stating as a broad ground that incurable insanity shall be the grounds for the revocation of licenses, not only for medicine, but for all other professions."

The Council referred this to the Committee to Study the Revision of the Education Law. At the September Council meeting the Committee reported that its third statement to the Joint Legislative Committee to Revise and Simplify the Education Law reiterated requests made in two previous statements that the draft of the new law be amended in accordance with the views expressed by the House of Delegates. The statement also included a suggestion that, in the event provisions for routine reporting of mental illness are retained in the final proposal, paragraph 3b, Section 6510, be deleted entirely and the following new paragraph be substituted:

"Upon the voluntary admission of a licensee to a State mental hospital or other mental institution, and, if such licensee shall remain as a patient therein for more than thirty days, and if no formal adjudication of incompetency or insanity is rendered by a court of record of this State, it shall be the duty of the attending physician to certify, and the institution to report, to the department, only when in the attending physician's opinion, the condition of such licensee is such as to render him incompetent to practice his profession. Such report and certification shall be referred to the committee on professional practice of the profession in which such person is licensed. If the attending physician certifies that the condition of such licensee is such as to render him incompetent to practice his profession, then it shall inquire into the facts and circumstances and thereupon if such committee shall consider it to be in the public interest that such person be temporarily suspended from the practice of his profession, the committee shall recommend to the Regents that such license shall be suspended and the Regents after review may suspend the same, if it deems such suspension in the public interest."

Malpractice: Precautions Against Incidence and Cost (page 1646). The House voted (1) to re-emphasize the utility of consultation in the prevention of malpractice actions, the necessity for maintaining good patient-doctor relationships, and the exercise of extreme care in the use of our newer, powerful drugs and of diagnostic tests with a potential for untoward reactions; (2) to recommend that the members of the Society consider for themselves the usefulness of the added protection which the so-called umbrella policies give against the contingency of an unusually high award in a malpractice action; and (3) to recommend, in view of increasing costs of malpractice defense and malpractice insurance, that all necessary self-policing aimed at protecting the Society's members be undertaken at both the State and county levels.

The Council referred these actions to the Communications Division. The Public Relations Committee reported to the Council in May that it had instructed the staff to compose a letter to advise the membership of this situation.

Methods of Reimbursing Specialists (page 1667). The House adopted a substitute for resolution 67-24, "Speciality Group Representation on State Society Committees Negotiating Methods of Reimbursement." The substitute resolution provides that all committees of the Society which deal with the development or negotiation of methods of reimbursement for physicians' services consult a representative from each specialty group, designated by said group, and give proper consideration to the information provided by such representatives.

This was transmitted to the chairman of the Technical Advisory Committee on Medical Care.

Attendance at House of Delegates' Sessions (page 1668). The House voted to approve "in its full intent" resolution 67-78, "Time of Presentation of Reference Committee Reports." The Council referred this to the Speaker of the House of Delegates.

Seal of the Medical Society of the State of New York (page 1668). The House referred to the Council for study and action, resolution 67-81, "A New Seal for the Medical Society of the State of New York," providing that a new seal be designed and that a committee to undertake this study be appointed.

The Council recommended that the president take this under advisement.

Reports of Officers

President

To the House of Delegates, Gentlemen:

This has been an active year. Many problems have been met, some have been solved, and several new and valuable activities will be presented in this report.

During the months of April, May, and June your president was incapacitated and unable to attend meetings and conferences. This does not mean that he lost track of Society activities, for all correspondence was photostated and sent to him, and he was in daily contact with the headquarters office, more especially Henry I. Fineberg, M.D., our executive vice-president. I wish to thank the officers of the Society and commission and committee chairmen who represented me at many places. Edward C. Hughes, M.D., our president-elect, and Dr. Fineberg gave much more of their time than duty required. Again my sincere thanks for this showing of friendship and good will.

This past year the Society has gained in stature and now has the respect it deserves. We have honestly stated our purposes and have held to the belief that we cannot compromise on essentials.

My statement to the House of Delegates as president-elect was, "Probably the greatest task we must tackle is that of making Medicare and Medicaid work." This is still true. The Medicare program is workable and is accepted by the physicians of this State.

The Medicaid program is still an unacceptable and unworkable mess. Despite the offers of the Society to help and personal letters to Governor Nelson Rockefeller asking that a negotiating committee be appointed with power to act, our efforts have been unavailing.

We now have the added confusion of a project for total, universal, or compulsory health insurance. An ad hoc committee under the chairmanship of Ralph S. Emerson, M.D., Nassau, has been working since March getting the facts of the thinking of the Society membership. A report will soon be ready for Council action. This report will go to the State Legislation Committee as the policy of the Society. We ask for no promises. We want an honest and satisfactory bill. The actual bill will probably not be available until after the Legislature convenes in January, 1968.

Public Health and Education. The Commission on Public Health and Education under the chairmanship of Irving L. Ershler, M.D., with Norman S. Moore, M.D., director of the Division of Scientific Activities, has done a magnificent job. The 48-page report of the annual conference with the State Health Department is a document that every doctor should read. The advances of medicine and the programs presented cannot but make all of us proud of the physicians of this State. This report is proof that advances in the health of the people of the State of New York come through the efforts of the doctors of the State of New York. My thanks go to all chairmen and members of these committees for their excellent and creative work. It seems somewhat unfair to pick individual committees in this great effort, but the reports of the following committees stand out: Accident Prevention, Aging and Nursing Homes, Continuing Education, Alcohol and Drug Abuse, Forensic Medicine, Health Manpower, and Rural Medicine.

CHAMPUS. The military dependent medicare program has been upset by the ruling of the Defense Department that a state medical society has a vested interest and therefore may not implement. There are changes going on in the department and we hope that this ruling will be reversed.

Publications. The NEW YORK STATE JOURNAL OF MEDICINE is numbered in the top few state journals as regards format and scientific content. Under the control of William Hammond, M.D., and Miss Alvina Rich Lewis it can only become better in all ways. It is worthy of notice that in the first nine months of this year the advertising sales have gone up $58,153.84 over the comparable period of 1966. This is a tribute to the JOURNAL.

The *Directory* has had a sales income of over $70,000, much greater than in past editions.

Commission on Standards of Medical Care. The many committees that compose this commission have been vey active. None of the reports are spectacular or make the front pages of the papers, but I hold that the work in this department is the most important for the individual physician. The findings of the Committees on Medical Review and on Hospital-Based Physicians will long have an influence on the practice of medicine.

Public Relations. Under the chairmanship of C. Stewart Wallace, M.D., and Guy D. Beaumont, director, Division of Communications, this department has not rested one day. There are so many activities that it is difficult even to enumerate all of them.

The publication, *News of New York*, continues its high standards and is proving invaluable in staying in contact with the membership. The new "hot line" letters in their distinctive envelope are really reaching out and making direct contact with the rank and file members. A questionnaire sent to members not in any official capacity in State or county showed 84 to 6 in asking that the "hot line" be continued. Another new venture is the putting up in hospitals of Ad Rem bulletin boards where frequent short bulletins from headquarters are posted. There are now 26 boards in operation and 50 additional will be activated by the end of 1967. The ultimate aim is to have 425 boards.

In place of the regional conferences previously held, the Public Relations Committee has had nine area conferences scattered throughout the State; all but one has been a real success. Attendance has been from 60 to over 100. We believe that these conferences have done such a good job of "communication" that plans are now being formulated for 14 area conferences in 1968. This is a hard-working department that does not work by the clock. The director, Guy D. Beaumont, is assisted by Martin Tracey, coordinator of legislative activities, and the three field representatives, Harry Dexter, Gerald Sullivan, and Coleman Fineberg.

Ad Hoc Committee on Revision of Education Law. Walter T. Heldmann, M.D., and his committee have done an arduous and time-consuming study of this problem. There have been three proposed bills and on each occasion the committee has studied them and Dr. Heldmann has appeared at open hearings and presented the policy of the MSSNY, especially on objections to parts of the bills. The most controversial area is that of "mental sickness" where, if adopted as presently written, any physician committed either by court order or voluntarily would lose his license to practice. Practically, this means that very few M.D.'s would try to get adequate psychiatric treatment for a curable condition. The Society will continue to fight for its expressed policy.

District Branches. There is an Ad Hoc Committee with a representative from each of the nine district branches studying the entire format of district branches. There seems to be a greater interest, especially Upstate. I was an invited guest at the Fifth and Sixth District Branches meeting at Shawnee-on-the-Delaware and again at the Seventh and Eighth District Branches meeting at White Face Inn, Lake Placid. Both of these affairs were attended by over 250 members and their wives. The caucuses were of great positive value in shaping policy and the scientific sessions were excellent. Some of the other district branches are not so active. Financially, the ad hoc committee is studying what would be reasonable assistance on the part of the State Society.

Malpractice Insurance and Defense. Here is an area of medical practice life that is nearing, if not already in, a danger stage. Again there must be a large premium increase to be able to continue the coverage. It is a well-known fact that no insurance carrier is happy with this type of coverage even with increased fees, and yet we certainly cannot practice without this protection. It is time that insurance companies, medical societies, the legal fraternity, and the public get together for an in-depth study and present recommendations for unified action. The time is short.

New Advances.

1. *Medical Aspects of Sports.* On February 10, 1968, the Saturday before the MSSNY annual convention opens, a committee under the chairmanship of Dr. Emerson will present a full-day program at The Americana. This is a comprehensive presentation and deserves national recognition.

2. *Cancer Program.* The Society for the Promotion of Hospital Cancer Programs and the Cancer Committee of the Medical Society of the State of New York have united and adopted a constitution and bylaws (accepted by the Council) to further this worthy objective.

3. *Electron Microscopy Center.* The Medical Society of the State of New York and the Medical Center Hospital in Albany have cooperated in setting up an electron microscopy center that will service a large portion of the State.

4. *Relative Value Scale.* The Economics Committee of the Commission on Medical Services under Robert E. Westlake, M.D., and the Technical Advisory Committee on Medical Care under George Himler, M.D., joined forces and requested that, under the supervision of the Empire State Medical, Scientific and Educational Foundation, a contract be signed with the Syracuse University Research Corporation for a study of the Relative Value Scale. The cost was to be $30,154 exclusive of publication costs of the findings. The Council and the Board of Trustees have approved.

5. *New Building.* The Ad Hoc Committee on Our Own Building presented, after five years' study, a request that the Society purchase a plot of land of 3.9 acres in Lake Success, Nassau County, at a cost of $4.44 per square foot. The Board of Trustees approved, and the Medical Society of the State of New York now owns this property. The committee is now studying the problems of building—architects, specifications, contractors, and many others. It is hoped that ground breaking and cornerstone laying will be in 1968 and the building dedicated in July, 1969, when the AMA convention will be in New York City This is the beginning of the end of a dream.

6. *Department of Information.* This department in public relations is staffed by Mrs. Helen Hickey and will be very valuable as time and "knowhow" accumulate.

7. *Committee on Research and Planning.* This committee is composed of John M. Galbraith, M.D., chairman, and Drs. Joseph J.

Kaufman, Robert E. Westlake, William L. Wheeler, Jr., Waring Willis, Renato J. Azzari, and James M. Blake. The committee had its first meeting on September 14, 1967, at which time the founder and present director of research of the California Medical Association, Murray Klutch, was present and explained the activities of the California committee.

Conclusion. The president is deeply appreciative of the honor bestowed on him when you elected him president and hopes that he has been a worthy successor to the long line of presidents of the Medical Society of the State of New York.

I thank the entire headquarters staff from the executive vice-president, Dr. Fineberg, to the last clerk hired, for their help, encouragement, and stimulation. Without their help I could not have functioned properly.

In conclusion may I say—the Medical Society of the State of New York is not static. It is dynamic, creative, and doing an excellent job of advancing the health potential of New York State.

Respectfully submitted,

FREDERICK A. WURZBACH, JR., M.D., *President*

Secretary

To the House of Delegates, Gentlemen:

The Secretary has the following to report for the year 1967–1968.

House of Delegates. At the March, 1967, Council meeting the Secretary presented a list of actions taken by the 1967 House of Delegates and requested that the Council act on them. Instructions of the Council regarding the House of Delegates' actions were transmitted to the officers or committee chairmen involved. These dispositions are reported in detail in the "Résumé of Instructions of the 1967 House of Delegates and Actions Thereon by the Council, Board of Trustees, and Officers." (See pages 70 to 82 of this issue.) Actions taken by officers and committees in compliance with these instructions of the Council and reported before November 1, 1967, are included in the résumé.

As required by the Bylaws, the Secretary has kept minutes of the House of Delegates proceedings. An edited version of the minutes, prepared from the stenotype record, appeared in the June 1, 1967, issue of the NEW YORK STATE JOURNAL OF MEDICINE.

The procurement of names, certificates of election, and credentials of the delegates to the 1968 meeting has been undertaken by the Speaker of the House of Delegates

Council, Executive Committee, Judicial Council, and Board of Trustees. The Secretary has kept minutes of meetings of the Council, the Executive Committee, the Board of Trustees, and the Judicial Council and has secured their approval. He has sent notices of these meetings. As required by the Bylaws, he has reported to the Council actions taken by the Executive Committee.

Membership. Dues remission requests from county medical societies have been presented to the Council and to the Executive Committee. Changes in the Bylaws relating to membership and dues which were adopted by the House in 1967 have been implemented.

Life Members—To date, the following life members have been elected by the Council, through September 28, in accordance with Chapter I, Section 6, of the Bylaws as amended by the House of Delegates in February, 1967.

Adolph A. Adams, New York City
Siegfried Alexander, The Bronx
Alexander Altschul, New York City

Kerson Wyckliffe Barney, Brooklyn
Georges Bean, Garden City
William Jacob Bearman, The Bronx
Arthur Bier, Waquoit, Massachusetts
Morris Gerschon Blutstein, The Bronx
Raymond Joseph Bowen, Binghamton
John Foster Burden, Oswego

Nicholas Carabba, Brooklyn
Domenick Caravetta, Elmira
Jeanne Carbonnier, New York City
Roland Benedict Carr, Clarence
Angel Bienvenido Carrasco, New York City
Julius John Carucci, The Bronx
Michael Edward Cavallo, New York City
Simeon O. Chlenoff, New York City
Seymour Garland Clark, Brooklyn
Leslie Frederick Clary, Kings Park
John Isaac Cotter, Poughkeepsie
Jose E. Crespo, New York City

Guiseppe Amos William D'Andrea, Whitesboro
Gerard Charles deGrandpre, Plattsburgh
Harold Comonfort Denman, Brooklyn
Dora Diamand, The Bronx
Dimitry Simon Dibich, New York City
Barnett Dobrow, New York City
Walter Michael Dresel, Marathon

David Farber, Brooklyn
Patrick Joseph Fitzgibbons, Amsterdam
James Gwynne Fowler, Buffalo
Samuel Barnett Frischberg, Brooklyn

James Francis Gallo, Herkimer
Vincent Anthony Gallo, Hampton Bays
Marthe Loyson Gassmann, New York City
Meyer Ginsburg, Brooklyn

Isaac F. Gittleman, Brooklyn
Morris Goldberg, Brooklyn
Louis Goldfarb, Brooklyn
Joseph Golomb, The Bronx
Milton J. Goodfriend, The Bronx
Herman Goodman, New York City
Arthur William Grace, New York City
Edward Stanley Graff, Delmar
Anthony Joseph Graffeo, Rochester
David Granger, New York City
Dorothy Grey, Evanston, Illinois
Walter Farkas Gruber, Haifa, Israel
Maynard William Gurnsey, Corning
Robert Gutierrez, New York City

Robert Bernard Hagen, Liverpool
Debora Halberstam, The Bronx
Margaret Carolyn Halley, Olean
David Abraham Harrison, Utica
William Hayn, Jackson Heights
Darwin Hecht, Brooklyn
Aaron Hechtman, Brooklyn
Joseph Herzstein, New York City
August Gerhard Hinrichs, Queens Village
Samuel Hochman, Katonah
Leo House, Ridgewood

Joseph Imich, New York City

Kent Wood Jarvis, Oswego
Herbert Bolster Johnson, Boca Raton, Florida

Anatole Kaminsky, New York City
Else Kaufmann, The Bronx
John Charles Kilroe, New York City
Nicholas M. Kiraly, Woodside
Carl Cornelius Koester, Batavia

James Bernard Lawler, Vernon
William Levine, Brooklyn
Joseph Bernard Loder, Rochester
Leo Loewe, New York City
Henry Walter Louria, Sr., Santa Ana, California
Mark Lynton, New York City

Charles Mandel, The Bronx
Alexander Reid Martin, New York City
Schuyler McCulloch Martin, North Troy
John Baptist Mauro, Forest Hills
James Bernard McGrath, The Bronx
Elmer Thomas McGroder, Buffalo
Alexander Minor, New York City
Donald Emerson Moore, Syracuse
Milnor Bowden Morrison, Pawling
Lester Solano Mullin, Brooklyn

Emanuel Alfred Neuren, Jericho
Joseph Irwin Nevins, Brooklyn
Charles Francis Nicol, Brooklyn

Girard Franklin Oberrender, New York City
William Joseph Orr, Buffalo

Arnold Palm, The Bronx
Joseph Peter Paolillo, Massapequa
E. Clifford Place, Brooklyn
Richard Pollak, Forest Hills
Nathan Portnoy, New York City

Ferdinand Theodore Reid, New York City
Emanuel Revici, New York City
Max Erwin Rifken, Syracuse
Bartholomew Hernad Ring, Lake Placid
Sarah E. Worob Rossien, Huntington Station
Charles Sollie Rubenstein, Brooklyn

Sidney Scheinman, New York City
Oscar Julius Schwoerer, Katonah
Samuel F. Scuderi, Brooklyn
Morton Seldowitz, Brooklyn
Morris E. L. Shapiro, Brooklyn
Edmund Lester Shlevin, Brooklyn
Albert Charles Joseph Simard, New York City
Emil Smith, Brooklyn
Philip Winfield Smith, Syracuse
Aaron Sobel, Poughkeepsie
Salvatore Francis Sorgi, Woodhaven
Clarence Armstrong Spence, Amsterdam
Jacob L. Stein, Brooklyn
Nobe Ely Stein, New York City
Einar Andrew Sunde, Brooklyn
Victor Royce Syracuse, New York City

Ida Tannenwald, New York City
Edward Tolstoi, New York City
Clifford Sharp Trimmer, Montclair, New Jersey
Isidore Morris Turner, Flushing

Earle Winfred Voorhees, Poughkeepsie

Harry Weaver, The Bronx
Samuel Weiskopf, The Bronx
Faith Shelford Wohnus, Hollis

The names of life members who may be elected at the November and January meetings of the Council will be included in a supplementary report.

Membership totals are omitted here. These, too, will be the subject of a supplementary report of the Secretary so that the House may be provided with information for all of 1967.

Physicians' Placement Bureau. Following the resignation of Mrs. Beatrice Moosa, in December, 1966, the work of the Physicians' Placement Bureau was transferred to Mrs. Evelyn Clark of the Division of Scientific Activities. Information regarding the year's work of the Bureau will be found in its report on page 127 of this issue.

Meetings. As required by the Bylaws the Secretary has attended meetings of the Council, the Board of Trustees, the Executive Committee, the Judicial Council, the Malpractice Insurance and Defense Board, and the American Medical Association's House of Delegates. As directed by the House of Delegates, he plans to attend the meeting of the Nominating Committee, and he has attended a number of other committee meetings. His activities as chairman of the Ad Hoc Committee to Study the Revision of the Education Law and of the Ad Hoc Committee on OEO Clinics are reported elsewhere. (See page 145 of this issue.)

Routine Matters. The Secretary has had the seal of the Society affixed to all documents requiring it, including applications signed by him for transfer of membership or for licensure outside New York State. Records other than those relating to the offices of the treasurer and of legal counsel are kept by him.

Acknowledgments. Your Secretary wishes to express his appreciation for the friendship and cooperation of his fellow officers, members of the Council, and trustees. He wishes to express his thanks to all the committee chairmen whose meetings he was privileged to attend for their courtesies and consideration.

Particular acknowledgment is made of the untiring efforts of our executive vice-president, Henry I. Fineberg, M.D. In addition to assuming many of the routine tasks of this office, such as carrying out the instructions of the House of Delegates, the Council, and the Board of Trustees, he has never been too busy, when called on, to give advice and assistance.

So many members of our efficient headquarters staff have been helpful and cooperative in the past year that the Secretary finds it impossible to name them all in this report. He wishes to express his sincere thanks and appreciation to all of them for their help.

A very special tribute is given to a most beloved and faithful servant of the Medical Society of the State of New York. Miss Doris K. Dougherty has retired during the past year. Her devotion and efficient service over a period of thirty years will not be forgotten by the members, officers, and fellow workers who were privileged to know and to work with her.

The Secretary is most fortunate to have Miss Gretchen Wunsch appointed to serve as executive assistant. She has been an efficient and loyal member of the staff for many years, having recently served with Norman S. Moore, M.D., as assistant director, Division of Scientific Activities. A cordial welcome is extended to her. Dr. Moore's loss is our gain.

Respectfully submitted,

WALTER T. HELDMANN, M.D., *Secretary*

Board of Trustees

To the House of Delegates, Gentlemen:

The Board of Trustees consists of the following members:

Gerald D. Dorman, M.D., *Chairman*	New York
George A. Burgin, M.D.	Herkimer
John M. Galbraith, M.D.	Nassau
John F. Kelley, M.D.	Oneida
William L. Wheeler, Jr., M.D.	New York
Waring Willis, M.D.	Westchester
James M. Blake, M.D.	Albany

On February 16, 1967, the organizational meeting of the Board of Trustees was held at The Americana following adjournment of the House of Delegates. The senior trustee, Gerald D. Dorman, M.D., of New York, was elected chairman.

Appointments were made to the Investment Committee and the War Memorial Committee. The maximum expense allowance for room and board for officers, councillors, trustees, members of the Judicial Council, and members of commissions and committees of the Society was increased from $30 to $35 per day because of price increases. This increase was recommended by the Council.

At the March 23 meeting the Trustees approved an increase of $50 in the per diem rate for the president and president-elect. This increase was recommended by the Council.

Since she was not adequately covered under our retirement plan, arrangements were made for a supplementary retirement benefit for Miss Doris Dougherty, who has served this Society long and well.

Further regular meetings of the Trustees were held in May, September, and November, and they will meet in January, 1968. A special meeting was held on July 17 to authorize the buying of a site for a permanent home for the Medical Society of the State of New York at Lake Success in Nassau County. As authorized by the Trustees pursuant to the actions of the House of Delegates, the closing of title to the property was effected on August 28. Building plans are in the hands of the Ad Hoc Committee For Our Own Building, appointed by the president.

Your chairman also attended the meetings of the Council, including the one held in Plattsburgh in June, as well as the quarterly meetings of the Council's Committee on Budget and Finance. The other Trustees have continued their practice of attending Council meetings, when possible, and have expressed their feeling that this policy is of great value in carrying out their responsibilities.

By careful limitation of expenditures and by the conservation of assets, pending official audit, it appears that we shall be able to stay "in the black" this year. However, without the increase in dues voted at the last meeting of the House of Delegates, we would face a serious deficit in 1968.

The Internal Revenue Service has not yet given us a decision on our alleged "unrelated business income," although our tax counsel, Wilkie, Farr, Gallagher, Walton, and Fitzgibbon presented our case to them on August 17, 1966.

Our Investment Committee under Waring Willis, M.D., has invested a larger percentage of our funds in common stocks. Our land purchase necessitated the sale of somewhat less than half of the holdings in our building fund this year, and construction of our new offices will more than consume the balance of this fund.

The War Memorial Fund continues to fulfill its objectives under the chairmanship of John M. Galbraith, M.D., and requires no new funds. If it is decided to extend benefits to children of New York physicians killed in Vietnam, more funds might become necessary. So far only one New York physician, that we know of, has lost his life in that conflict, and he left no children.

The Board of Trustees are grateful for the work and devotion of our executive vice-president, Henry I. Fineberg, M.D., and his staff, in their continued dedication to the interests of the Society.

Respectfully submitted,

Gerald D. Dorman, M.D., *Chairman*

Executive Vice-President

To the House of Delegates, Gentlemen:

Contrary to our usual procedure, we will attempt to streamline this annual report, which covers the nine-month period since the last meeting of the House of Delegates. We will confine ourselves to essentials and avoid duplication of the material contained in the presentations of the various committees. Of course, there will be instances where repetition is indicated in order to highlight certain important situations.

The past year has been a very busy one. Some time ago we pointed out that today the summer is hectic and no different from the other seasons. There are no longer true vacation periods. We find that, no matter how we prepare for what we believe to be the inevitable, emergencies arise continuously, and, too often, we are compelled to solve our enigmas by "crises." This is not always a very desirable state of affairs, but in our type of endeavor it is unavoidable.

The problems that face our profession today are serious ones and demand clear thinking without emotion. Naturally, in this type of atmosphere, misapprehensions appear on the horizon, and these result in hasty judgments without reasonable data to support them. However, we must say that, as our people learn the facts, they become more understanding and realize that there are no easy solutions.

I must repeat what I have stressed in the past—that your executive vice-president does not determine policy. This is left to the House of Delegates and/or the Council. On the other hand, we are ever ready to implement what is determined by the governing bodies. Also, your executive vice-president reserves the right—granted to him when he assumed his position—to "talk up" when the proper occasion arises.

Progress. In our report to the House of Delegates last February, we discussed our plans for a better medical society. We pointed out the need for additional funds if we were to realize some of our goals. Fortunately, the House saw fit to go along with an increase in dues in an unanimous decision. Of course, the increment will become effective on January 1. Most of the 1967 deficit—and it appears that there will be one, although not so great as we thought we would have—will be covered by the 1966 surplus.

You will remember that we declared that the "new money" would be used primarily to establish or "build up" the following: (*a*) the Commission on Standards of Medical Care; (*b*) a Division of Research and Planning, which we first brought to your attention a few years ago; (*c*) better communications; (*d*) a Department of Information; (*e*) an improved filing system; (*f*) a more efficient Special Services Department (a "pool" of the staff and a stenotypist); (*g*) salary increases; (*h*) a finer employes' benefits program. Also, we stated that more money would be needed because of higher costs of operation—publishing the *Directory*, printing the Journal, the annual convention, travel, the the regional conferences, the legislative newsletter, meetings of the Council and Board of Trustees, the AMA delegation, legal affairs, and so on. This rise in expenditures is a continuing process and due to factors beyond our control.

Now we are happy to report that during the year the "new look" was started.

In order to effectuate some of our plans it was necessary to alter our physical facilities. May we give you one example of what happened. Because of new provisions adopted by Congress and approved by the President, the workload of the program of Medical Care for Dependents of Military Service Men went up astronomically. (The name of this agency has been changed to the Civilian Health and Medical Program of the Uniformed Services—CHAMPUS.) We were compelled to take on additional personnel and create new space. Of course, the Government is reimbursing us for this greater activity. (CHAMPUS will be discussed later in this report.)

The Division of Standards of Medical Care is well on its way. The various committees of this commission are meeting, and they show the dedication which we expected, in areas of utmost importance. Truly, here there is no self-aggrandizement of the physician.

Research and Planning. There have been advances in the development of a Division of Research and Planning. We have been in touch with the "experts," and we have talked to knowledgeable persons about the directorship of this very important enterprise.

On September 14, the Committee on Research and Planning, appointed by the president, met at our headquarters. We were fortunate to have with us Murray Klutch, director of research of the California Medical Association. Mr. Klutch described in detail what has been going on in his state—truly a fascinating story of the origin and growth of a great department. The physicians in California started with a modest budget, and in the space of six to seven years they have come up with a staff of 12 or 13 and an annual allotment of $140,000. Also, they have been able to convince the Federal government that they should have financial assistance to carry on their work.

The committee was impressed greatly with Mr. Klutch's story. We are determined more than ever that our enterprise will be a success. We are beginning with a modest budget. We are in the process of searching for a well-qualified director. We cannot afford to make any mistakes in this direction, because the success of the Division of Research and Planning will be determined by the man who "makes it tick." Finding such an individual is not an easy task; the director must have a broad background, not only in the field of medicine but perhaps more importantly in the social and behavioral sciences; he must have an understanding and interest in current social problems, be interested in psychology, economics, and sociology—a statistician—and also a flexible person with good organizational ability. Finding one who has all these qualities may be well nigh impossible, but we will do the best we can.

In the meantime, even without a director, we have started the Division of Research and Planning by establishing the position of research assistant, under the supervision of your executive vice-president. Alvina Rich Lewis, who has been managing editor of our JOURNAL for many years, will leave this position on March 31, and, on the first of April, she will become a research assistant. She will develop and work on certain projects which we have had in mind for some time. Among many tasks, she will have the following work assigned to her: the preparation of a history of actions of the MSSNY from 1906 to the present time, by subject (too often, we lose track of the many actions taken in the House of Delegates and Council); the preparation of a handbook for delegates; a procedures manual for the House of Delegates; a handbook concerned with the functions of the various committees of our Society, their responsibilities and relationships to commissions, how to write reports for the Council and House of Delegates, and so on; the history of the MSSNY, which we should have in our archives (the MSSNY will be one hundred seventy-five years old in 1982); and editing of the minutes of the House of Delegates.

Communications. Communications to physicians throughout the State have improved, as shown by letters and telephone calls of approbation which we have received. However, we are not completely satisfied. We will continue to strive for better reporting to all the people who should know what is going on.

The "hot line" letters will go out whenever necessary. The Budget Committee has seen fit to appropriate the funds needed to take care of this project. As a matter of fact, the whole Division of Communications will be "stepped up" considerably.

A Department of Information was established during the year. In charge is a dedicated lady, who has become acquainted with voluntary health agencies, medical schools, hospitals, and other similar groups in our State. In this way important pertinent data are transmitted to those who come to us for help and ask questions.

Evidently our Department of Information has gone far and is beginning to show results. Following is a clipping from a Westchester County newspaper. Indeed, we are getting some recognition.

> Q. I would appreciate it if you could advise me as to where to seek information on electroencephalography. In particular, I am interested in where courses of instruction and textbooks are available.—J.Q.
>
> A. Write to Mrs. Helen Hickey, Medical Society of the State of New York, 750 3rd Ave., New York 10017 and ask for the pamphlet, "Horizons Unlimited." We believe you will find the information you want in this booklet.

The area conferences, which will be described more fully in the report of the Committee on Public Relations, with one or two exceptions have been great successes. The Division of Communications is to be congratulated for arranging these splendid meetings. We know that there will be many more during the years that lie ahead.

We have consulted a number of well-informed people in the field of letter and records filing. It appears that the establishment of a central filing system requires much more money than we would like to spend at this time, and additional space, which is not available. Therefore we have postponed action in this area until we have our own building.

The Special Services Department has been improved. A competent stenotypist has been employed, and he has been of inestimable value to us and to many of our committees.

We will discuss our job reanalysis and salary increases later.

Our employes' benefit program has been in effect since January 1, 1966. It requires continual study and refinement as we go along.

We often have said that we are not satisfied with the *Directory*, and this opinion of ours persists. In the not-too-distant future, we will concentrate on drastic changes and modernization of the "blue book." Only in this way can it be an effective up-to-date compilation of the men in medicine. Production costs have risen, but so has our revenue from the sales of this reference book to other than medical agencies.

The Building. On October 23 we transmitted to the members of our Society a "hot line" letter concerned with our own headquarters building. This communication described in detail the events leading up to the present time. We do not believe that it requires repetition.

May we just say again that the MSSNY is the landowner of 3.9 acres of land in Lake Success in Nassau County, which is just outside the City of New York, with all the advantages of a rural area.

At a meeting of the Ad Hoc Committee for Our Own Building on October 5, it was decided that the next step is to obtain the services of an architect. This search is now in progress.

A new building committee was appointed, because it was felt that trustees should not be members. The Board of Trustees is in charge of our finances and should be in a position to adjudicate problems with an "unjaundiced eye."

CHAMPUS (Civilian Health and Medical Program of the Uniformed Services).* On August 17, we transmitted to the officers, councillors, and Board of Trustees a memorandum concerning new developments in the CHAMPUS program. This communication contained a report from the Deputy Assistant Secretary of the Department of Defense in Washington to the effect that there would be a termination of contracts with state medical associations serving as fiscal agents for the CHAMPUS program. We believe that the following letter, written to our president by Brigadier General Norman E. Peatfield, executive director of CHAMPUS, should be made known to you:

> We have recently received a communication from the Assistant Secretary of Defense (Manpower), Washington, D.C., that it is his desire, and I quote, that:
>
> "1. In those states where no contracts exist with state medical societies the 'usual, customary, and reasonable' fee concept developed by the Social Security Administration in implementing the Social Security Amendments of 1965 should be followed.
>
> "2. In each state where a contract exists with a state medical society prescribing local schedules of allowances, the policy specified in Item 1 should be implemented effective upon termination of the present contract."
>
> As you may know, in implementing the Social Security concept, the carriers in their contracts with the Society Security Administration are required to determine reasonable charges with respect to services to any eligible beneficiary. Also, in determining the reasonable charge for such services, the carrier is required to take into consideration the customary charges for similar services generally made by the physician furnishing such services, as well as the prevailing charges in the locality for similar services. In addition, the carrier must take such actions as may be necessary to assure that such charges are not higher than the charges applicable for comparable services furnished policyholders and subscribers of the carrier under similar circumstances. Further, in carrying out these duties, the carrier is required to the extent that it is practical: (1) consult with, and take into consideration, the advice of state and local organizations of physicians and as appropriate, other organizations in the health field, and (2) utilize such societies and/or associations or other groups to provide advice and assistance in cases where eligible individuals, physicians, or other persons furnishing services disagree with the carrier's determinations.
>
> As the medical societies and/or associations are not involved in selling health insurance or making payments to policyholders or subscribers and in order to avoid any possible question of conflict of interest, since such organizations do have a significant part in the prescribing of local schedules of fees, we have been further advised that all arrangements involving the use of state medical societies and/or associations as fiscal agents for the payment of physicians bills be discontinued upon the termination of the present contracts with such organizations.
>
> As you are aware it is in keeping with the desires of most state medical societies and/or associations and the American Medical Association that all physicians be paid customary and reasonable fees. It is anticipated this will be the result when the Social Security concept is fully implemented, rather than being restricted to a Schedule of Maximum Allowances such as that which was negotiated between our respective office and which has been in effect for a number of years. I trust that you will appreciate that to implement this concept and confirming recent discussions of this matter between my contracting officer, Colonel William H. Hayes, and representatives of your organization, it will be necessary to make arrangement with another fiscal agent upon the termination of our present contract. We would certainly welcome your comments and suggestions in this regard.
>
> In the absence of subsequent mutually agreed upon arrangements this letter may be considered as formal notice to terminate the contract as contemplated in Article 13 of the schedule to the contract.
>
> Please know this decision in no way reflects upon the efficient, effective, and very capable manner in which your medical society has and is carrying out its responsibilities.
>
> Further, please be assured that it is our hope to continue the same close and cordial relations with your society that we have enjoyed in the past. We believe that informal noncontractual arrangements are of distinct benefit to your society and the government. Certainly the stability, understanding, and comparatively smooth operation of our program has been a result, in large part, of the interest and cooperation of your medical society and the physicians of New York.

This announcement caused a furor in those states which are involved in the CHAMPUS program. Meetings were held and the entire situation was discussed. It was decided definitely that we would protest the action of CHAMPUS, and we did. A letter was addressed to General Peatfield. Among other things, we stressed the fact that there has been the greatest cooperation between our office and the CHAMPUS administration, and we questioned very seriously that this fine cooperation could be maintained in any other way. We asked that the proposal of CHAMPUS be reviewed and that the Medical Society of the State of New York continue to act as the administrative agency for our over 26,000 members to insure that the present successful program be continued to the mutual advantage of the patients, the physicians, and the Federal government.

We contacted the four New York members of the House of Representatives who are on the Armed Services Committee—Congressmen Pike,

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* Formerly known as Medical Care for Dependents of Military Service Men.

Stratton, Pirnie, and King. We are happy to report that the latter three did get in touch with the Department of Defense and did in some way intercede in our behalf.

A brief containing the following statement was also submitted:

> We believe the following reasons are valid for continuing the present plan and arrangement in New York State with the Department of Defense and the Medical Society of the State of New York:
>
> 1. The present contract in effect with the Office for Dependents' Medical Care, Office of the Surgeon General, does provide for payment of physicians' services on the "usual and customary" fee concept. This was mutually agreed upon by Brigadier General Norman E. Peatfield, executive director of the Program, and Carl R. Ackerman, M.D., chairman of the Economics Committee of the Medical Society of the State of New York.
>
> 2. It was understood that no Schedule of Allowances would be published to the membership and that the guidelines for maximum payments would be determined by the 1965 Relative Value Scale adopted by the House of Delegates of the Medical Society of the State of New York on February 17, 1965, by applying a $5.00 conversion factor.
>
> 3. The present carriers in the State of New York, under Title 18, Part B, using the "usual, customary, and reasonable" fee concept, use similar guidelines for maximum payments.
>
> 4. There is no conflict of interest between the Medical Society of the State of New York and the carriers under Title 18, Part B, because the Relative Value Scale adopted in 1965 specifically states, "The Relative Value Scale in no way sets anyone's fees or anyone's schedule of fees until a conversion factor is applied."
>
> 5. The Medical Society of the State of New York was asked to act as Fiscal Agent in 1956 in lieu of seven Blue Shield Plans in the State of New York.
>
> 6. Of the 26,000 members of the Medical Society of the State of New York, there have been 12,500 doctors who have participated in the Program and have voiced no complaint. Over a period of eleven years claims which require review, either for overcharges or special procedures, are reviewed by a "Physicians' Review Committee." These represent hundreds of claims and savings of many thousands of dollars to the Office for Dependents' Medical Care.
>
> Since the Medical Society of the State of New York has operated the Program for a period of eleven years and received full cooperation from its members and the Office for Dependents' Medical Care, it should be permitted to continue the Plan because we believe our present agreement complies with the May 10, 1967, directive of Thomas D. Morris, and therefore request your serious consideration.

Fortunately, the pressure that was brought to bear on the Department of Defense has had some effect. The Department of Defense has postponed any definite action. There is still hope. The Department's decision will be announced soon.

We might add that Shirley Fisk, M.D., has resigned from the position of Deputy Assistant Secretary of Defense (Health and Medical) to become associate dean of Columbia University's College of Physicians and Surgeons. Perhaps when the new appointment is made official, there will be a "change of heart."

Job Analysis. Diedrich K. Willers, and his staff, of Cornell University, at our request and with the approval of the Council, has conducted a job analysis (the last one was done some time ago). With Mr. Willers' report as a guide, we have reviewed the entire staff, made certain adjustments in job nomenclature, and reviewed our salary scale.

In order to compete in the labor market in the area in which we are located, we find it necessary to rearrange salary classifications. The older employes, in terms of service, remain with us, but it is extremely difficult to attract and hold on to the "newcomers." The turnover has been greater than we would like to see it. It is our hope that in the future, with better fringe benefits and with a more realistic look at salary levels, we will be able to do better.

We have instituted the practice of paying employment agency fees, after the staff member has been in service for over six months. This is in keeping with the routines throughout industry.

Medicare and Chiropractic. During July we were informed by the American Medical Association of the "probability" of the inclusion of chiropractic under Medicare being approved by the Ways and Means Committee of the House of Representatives. We immediately contacted the county medical societies by telegram, requesting that they get in touch with the members of Congress in their areas—and the chairman of the Ways and Means Committee—and protest strongly against this provision. A number of county societies responded nobly.

The president of our Society also sent protests to Representative Wilbur D. Mills, chairman of the House Ways and Means Committee, and to the two Congressmen from New York State on that committee—Hon. Barber B. Conable, Jr., of Rochester, and Hon. Jacob J. Gilbert, of The Bronx.

Your executive vice-president personally contacted Representative Gilbert and was given the usual "brush off." Ever since this gentleman was a member of the Senate of New York, he openly has been "anti-doctor of medicine." Being in the House of Representatives has not changed his views. He informed us that he will definitely vote to include chiropractic under Medicare.

The response from Congressman Conable was satisfactory. He pointed out that, on occasion, when he was in the New York Legislature, he voted against the licensure of chiropractors.

As of this time, the inclusion of chiropractors under Medicare has not been approved. The AMA is very active in this field.

Osteopathy and the "Unearned" M.D. Degree. The New York State Supreme Court has vindicated and upheld the position of the State Medical Society that it is against public policy to permit osteopaths, who received an unearned M.D. degree from the California College of Medicine upon application and payment of a fee therefor, to hold themselves out as M.D.'s in New York.

You will recall that this whole controversy grew out of the action of the New York Board of

Regents and State Education Department's listing in the New York State register for medical doctors certain individuals, who originally held New York physician's and surgeon's licenses with a D.O. inscription. They had obtained an M.D. degree from the California College of Medicine (formerly the College of Osteopathic Physicians and Surgeons), following a 1961 contract and 1962 legislation regarding the merger of the osteopathic and nonosteopathic branches of the medical profession in California. Each of the individuals involved received his preliminary and professional education and training only in osteopathic medicine.

The Court, by Mr. Justice Cooke, sitting at special term in Albany in an Article 78 proceeding brought by the New York State Osteopathic Society, in which the Medical Society of the State of New York intervened as *amicus curiae*, pointed out that throughout the Education Law the distinction between osteopaths and medical doctors, who subscribe to different principles and employ different systems of therapy, is recognized and implemented and the differing licenses serve to apprise the public of the differing training of the licensee.

You may recall that in our letter to the Board of Regents on January 8, 1964, protesting their action, we said essentially the same thing: "It is clear from both the statutory requirements of the Education Law and the Commissioner's Regulations that the degree of M.D. and the degree of D.O. are separate and distinct recognitions of separate and distinct educational and professional disciplines requiring attendance at separate and distinct professional schools."

Also, we said: "We are sure that you are aware that a lay person places great reliance on the educational background of those entrusted with their physical well-being. They are entitled to rely on the official licensing document issued by their State as representing a true and accurate indication of their physician's training and education."

The Court placed great reliance on our previous victory in the case of *Matter of Kurk v. Medical Society of the County of Queens*, wherein the county society's refusal to admit to membership a D.O. who obtained an unearned M.D. degree from the California College of Medicine upon application and payment of a fee was upheld upon appeal all the way to our highest State court. It made the following observation concerning the Kurk case: "The Appellate Division bluntly stated: 'The petitioner is an osteopath, who is a graduate of a school of osteopathy. He has received therefore, a D.O. license *which is all that he is entitled to.*' " (Emphasis supplied by the Court.)

The Court went on to dismiss the Board of Regents and Education Department's contention that it was compelled to give full faith and credit to the action of the California authorities in granting the M.D. degree by virtue of the requirements of the Constitution of the United States. The Court ruled that "the full faith and credit clause does not require one state to substitute for its own statute, applicable to persons and events within it, the conflicting statute of another state, even though that statute is of controlling force in the courts of the state of its enactment with respect to the same persons and events" in the absence of Congressional prescription of the extrastate effect of such a statute.

The decision has directed the Board of Regents and State Education Department to "cancel, revoke, and rescind" the M.D. inscription granted to the D.O.'s involved and to remove such references from the official register of New York licensed physicians and surgeons; it ordered the D.O.'s to remit their New York licenses and registration certificates so that the M.D. inscription can be deleted and new licenses and registration certificates issued without the M.D. inscription.

Undoubtedly, this landmark decision will be appealed by the Board of Regents and State Education Department, but we feel strongly that justice and probity is on the side of the Medical Society of the State of New York. Ultimately, our statement of principle that "the primary concern of the Medical Society of the State of New York is not that these osteopathic physicians are improperly licensed to practice 'medicine and surgery' in New York, but that the public will be misled and deceived by the addition of the unearned degree of M.D. on their licenses when these men have never studied or attended a medical school," will be upheld.

Miscellaneous.

AMA-ERF. On May 25, our president presented checks, representing AMA-ERF allocations, to the following medical schools in our State: Columbia University College of Physicians and Surgeons, Cornell University Medical College, New York University School of Medicine, State University of New York Downstate Medical Center, Albert Einstein College of Medicine, New York Medical College, Albany Medical College, State University of New York at Buffalo School of Medicine, State University of New York Upstate Medical Center in Syracuse, Mount Sinai School of Medicine, and University of Rochester School of Medicine and Dentistry.

Contributions making this allocation possible came, in 1966, from physicians throughout the United States and its possessions. The amount distributed to all medical schools was $1,051,933.11.

Advertising Sales. The results reported by our advertising staff are encouraging. We are sure that the following statistics will be of interest to you.

Year	*October*	*10 months*
1967	$35,074.22	$294,320.15
1966	$33,363.21	$234,455.50
Increase	$ 1,711.01	$ 59,864.65

As yet, the explanation for this upward trend has not been determined. We must await further developments.

Also, as of November 1, the revenue received from the sale of the 1966 *Directory* amounted to

$73,929. This is beyond our expectations and represents the results of a campaign inaugurated some time ago.

Convention. The attendance at the 1967 convention was lower than that of a year ago. As far as the doctors of medicine were concerned, the decrease was around 7 per cent. The revenue from technical exhibits dropped from $58,135 to $54,131. In 1968, the exhibits will open on Sunday. This should enable many local physicians to visit the exhibits and sessions without giving up a day's practice. The technical and scientific exhibits will be located in the same area.

Change in Table of Organization. There is one change in the Table of Organization. In the future, the Special Services Department will be under the jurisdiction of the Personnel Department of the Division of Administration (formerly it was in the Business Division).

We maintain that one of the important functions of this department is to make available a "pool" from which we can designate replacements for members of the staff who are unable to appear for duty—for unforeseen reasons. We have notified the division heads that we should be able to fill emergency vacancies as they arise. It is not intended that the Special Services Department provide persons to take on "regular or permanent" assignments.

There will be further changes in the T.O., which will be reported to you in our supplementary report.

Staff Handbook. The Staff Handbook has been in existence for a number of years. It has been of value. Two issues have been published. However, as times change and new practices come into vogue, we must review our procedures and practices. With this in mind, a committee is now working on the third edition.

New Appointment. We are happy to announce that on June 1 Gretchen Wunsch became the new executive assistant. She replaced Doris Dougherty, our very dear friend who served our Society faithfully and well for many years. A formal dinner in her honor was held on June 28. It is nice to report that she is enjoying her retirement. She keeps in touch with us.

Obituary. It is with great sadness that we announce the death of our esteemed friend Walter P. Anderton, M.D., who labored in our behalf for many years. He was a fine physician and a credit to our profession.

Woman's Auxiliary. In accordance with the wishes of the House of Delegates, we have continued to serve as adviser to the Woman's Auxiliary to the Medical Society of the State of New York. On many occasions we have been in contact with Mrs. James A. Moore, the president, and we have attempted to assist them in every way possible. We will continue to work with them in the future.

Meetings. Since our last report to the House of Delegates, in addition to routine conferences your executive vice-president attended or participated in the following events:

1. A meeting with Governor Rockefeller in Albany on February 6. The State Society's legislative program, Medicaid, and revision of the Education Law were discussed. Of course, all our problems were not resolved, but there was some hope that better days lie ahead.
2. A meeting of the Queens County Bankers Association in Flushing on February 9. Your executive vice-president discussed Medicaid, Medicare, and the municipal hospitals situation in the City of New York.
3. The 1967 National Medicolegal Symposium, sponsored by the American Bar Association and the American Medical Association in Miami Beach, March 9 to 11.
4. A meeting of the New York State Hospital Review and Planning Council in New York City on March 16.
5. A meeting on legislation in Albany on March 17.
6. The 67th annual dinner of the Legislative Correspondents Association in Albany on March 18. The government officials were lampooned, without mercy.
7. The annual legislative reception and buffet of the New York State Association of Professions in Albany on March 20.
8. A meeting with Joseph Jaspan, special counsel to the State Joint Legislative Committee on Medicare and Public Health, in Garden City on March 27. Members of Nassau and Suffolk County Medical Societies also attended. In an informal way, we discussed at length the issues of the day—"compulsory" health insurance, and others.
9. A regional meeting (northeast region) of the American Association of Medical Society Executives in New York City on March 31. Your executive vice-president was master of ceremonies at the luncheon.
10. The annual banquet of the New York State Academy of General Practice in New York City on April 5.
11. Careers Day in Medicine, conducted by the Medical Society of the County of New York, at New York University New York City, April 8. The presentations were received enthusiastically by a group of high school and college students.
12. A meeting with the secretary and a past president of the Dental Society of the State of New York in New York City on April 10. Dr. Himler also was present. We talked about matters of mutual interest.
13. On April 14 we travelled to Ithaca to attend a very fine luncheon in honor of Norman S. Moore, M.D., for his twenty-seven years of service to Cornell University. This was a grand party, conducted with dignity and in a manner befitting men of culture. The president of Cornell University, other officials, and a host of professors and alumni were present. Dr. Moore received the Cornell medal, which has been awarded to very few people—an honor well deserved.
14. A meeting of the Technical Advisory

Committee on Medical Care in New York City on April 20.

15. A conference with Edward O'Rourke, M.D., Commissioner of Health of the City of New York, in New York City on April 24. Officers of the five county medical societies involved and others were present. Of course, the subject for discussion was the implementation of Medicaid in the City of New York and the qualifications of physicians.

16. The annual meeting of the Connecticut State Medical Society in Hartford, April 25 to 27. We addressed the House of Delegates, and later attended scientific and business sessions and the annual banquet. As has been the case for many years, we were treated superbly by our next-door neighbors.

17. Representing the American Medical Association, we presented checks to representatives of the National Broadcasting Company and the *Wall Street Journal*, who had been declared winners of the 1966 American Medical Association Medical Journalism Awards. This ceremony took place at our headquarters on April 28.

18. The 87th annual meeting of the Louisiana State Medical Society in New Orleans April 30 to May 3. This was our second visit to Louisiana, and we cannot praise too highly the hospitality of the folks down south. It was grand!

Your executive vice-president was a guest of honor at the past presidents dinner, where he was granted the privilege of the floor. He addressed the House of Delegates on two occasions. He delivered the "Annual Oration." This talk was concerned mainly with the "town and gown syndrome" and full-time staffs in hospitals. Also, he spoke at the annual dinner, appeared on television and radio and at press conferences.

The Mayor of the City of New Orleans presented us with the key to the city, and we were made an honorary citizen. We mention these items merely to point out the type of hearty welcome which awaits guests of Louisiana.

19. A meeting of the AMA Committee on Quackery in Chicago on May 5.

20. The stated meeting of the Medical Society of the County of Kings in Brooklyn on the evening of May 16. We presented citations to members in practice for fifty years.

21. The funeral services for Walter P. Anderton, M.D., at the St. James Episcopal Church in New York City on May 19. (Walter passed away on the 16th of the month.)

22. The twentieth anniversary dinner of the Queens Pediatric Society at the JFK airport on May 20.

23. A dinner tendered by Dr. and Mrs. Hollis S. Ingraham, as part of the ceremonies of the 63rd Annual Health Conference, in Buffalo on May 22.

24. The first general session of the Annual Health Conference in Buffalo on the morning of May 23. The speakers were Commissioner Ingraham and the Hon. Alton H. Marshall, secretary to the Governor.

25. The annual luncheon of the New York State Public Health Council in Buffalo on May 23.

26. A dinner of the officers of the Medical Society of the County of Erie in Buffalo on the evening of May 23.

27. The annual meeting of the Medical Society of the County of Erie on May 23. Dr. Himler and your executive vice-president discussed Medicaid.

28. The annual meeting of the board of directors of the National Tuberculosis Association in Pittsburgh on May 27.

29. A luncheon-meeting with Charles Gillet, executive vice-president of the New York Convention and Visitors Bureau, and Eugene C. Hosmer, Jr., the Bureau's director of sales, in New York City on May 29. We talked about the AMA meeting in Atlantic City and discussed the program of the AMA in New York City in 1969.

30. An MSSNY area conference in East Meadow, Long Island, on May 31. The program included talks on Medicaid by George Himler, M.D., and I. Jay Brightman, M.D., deputy commissioner of health. The attendance was poor.

31. The Medallion Ball of the Nassau County Medical Society in Garden City on June 3. Actually this is the annual dinner-dance which honors the president, who this year was Frank M. Green, M.D.

32. This item has nothing whatsoever to do with the Medical Society, but I attended the fortieth reunion of my Yale medical school class, in New Haven during the weekend of June 10.

33. The formal dedication of the Central New York Academy of Medicine's new building on June 11. We flew up and back the same day. This building has been beautifully designed and without a doubt will serve the doctors in the community well.

34. Your executive vice-president was the guest speaker at the fortieth annual dinner meeting of the Queensboro Tuberculosis and Health Association at the Holiday Inn at LaGuardia on June 12. The subject of his talk was "The Menace of Quackery."

35. We addressed the Rotary Club in Rockaway Beach at a luncheon on June 14. Again the subject was medical quackery.

36. A meeting of the New York State Hospital Review and Planning Council in New York City on June 15. As all of you know, the chairman of this group is Norman Moore.

37. The AMA annual convention in Atlantic City, June 16 to 21. What took place here has been described in our report of the delegation.

38. A seminar conducted by the New York Telephone Company in New York City on June 23. Recent advances in the areas of communication were described thoroughly. This was a very fine program.

39. A conference in the office of the State Attorney General in New York City on June 26. We met with the Hon. Samuel Hirshowitz, first assistant attorney general, and other members of the Attorney General's staff. Waring Willis, M.D., Norman S. Blackman, M.D., William F.

Martin, Esq., Samuel A. Freedman, M.D., and J. Richard Burns, Esq., also were present. We discussed the practice of medicine by hospitals. No definite conclusions were reached.

40. A meeting with the president and president-elect of the Woman's Auxiliary, at our headquarters on June 28. We talked about future programs.

41. A testimonial dinner for Doris Dougherty, who retired after thirty years of service with the MSSNY. This very fine tribute to a grand lady was held at the Yale Club in New York City on the evening of June 28. We hear from her every once in a while, and she is doing well.

42. A meeting of the New York State Joint Council on Regional Medical Programs in New York City on June 29. The program coordinators from Buffalo, New York City, Syracuse, Rochester, and Albany reported on the developments in the regional medical programs. There has been great progress in these areas.

43. Mr. Burns and I met with James Heimbaugh, Jr., of the Loew's Hotel organization, in order to review the commitments of the Summit Hotel to members of the Council, in New York City on July 11. Definite rules were re-established, and we hope that our people will be taken care of adequately in the future.

44. The four-county (Oneida, Herkimer, Madison, and Chenango) outing meeting at the Twin Ponds Country Club in New York Mills on July 13. This is an annual affair which we have attended for many years. The president of our Society and your executive vice-president were the guest speakers.

45. A conference with Brainard E. Prescott, counsel to the Joint Legislative Committee to Revise and Simplify the Education Law, in Albany on July 18. Walter Heldmann, M.D., and Mr. Burns also attended. We discussed the revisions of the Education Law.

46. A special meeting of the State Hospital Review and Planning Council, on the morning of July 27. This meeting was called to evaluate the recent ruling of the Department of Health, Education, and Welfare concerning the new Federal requirements for payment for hospital inpatient services.

47. A meeting of the Commission on Public Health and Education and representatives of the New York State Department of Health, in Albany on August 3. As we have stated previously, this is one of the finest and most important meetings of the year. It is here that the chairmen of the various committees concerned with health get together and discuss their programs and what they hope to accomplish in the future.

It is gratifying to learn what these dedicated people are doing in the field of health. Here we see constructive thinking and wise planning in action. It is our hope that more conferences of this type will prevail in the years that lie ahead.

48. A meeting with Hollis S. Ingraham, M.D., commissioner of health, and George W. Foy, legislative counsel, in Albany on August 24.

49. A meeting of all those concerned with the signing of the final papers for the acquisition of land in Lake Success, in Hempstead on August 28.

50. A visit to "our land" in Lake Success and a conference with certain important people in the Levitt organization, on September 5.

51. The marriage ceremony of Fred Wurzbach and his new bride, in The Bronx at noon on September 7. Your executive vice-president was afforded the high privilege and honor of being the best man. As we have stated on several occasions, this is probably the only time that a "Fineberg" has been the best man at a Baptist ceremony.

52. The sixth combined annual meeting of the Fifth and Sixth District Branches of the Medical Society of the State of New York, at Shawnee on the Delaware, Pennsylvania, September 8, 9, and 10. A "good time was had by all."

53. The formal dedication of the Suffolk Academy of Medicine, in Hauppauge, Long Island, on the afternoon of September 10. This very lovely installation will house not only the Academy but also the offices of the Suffolk County Medical Society.

Addresses were delivered by John P. Ruppe, Jr., M.D., president of the Suffolk County Medical Society; John S. Toll, Ph.D., president of the State University of New York at Stony Brook; Edmund Pellegrini, M.D., director of Health Sciences Center of the State University of New York at Stony Brook; James R. Kimmey, M.D., regional health officer of the United States Public Health Services; Hollis S. Ingraham, M.D., commissioner of health of the State of New York, and Milton Gordon, M.D., president of the Suffolk Academy of Medicine.

54. A regularly stated meeting of the Coordinating Council, the executive committee of the First District Branch of the Medical Society of the State of New York, in New York City on September 12.

55. A meeting with Diedrich Willers of Cornell concerning the job analysis program, in New York City on September 13.

56. A meeting of the Committee on Research and Planning at our headquarters on September 14.

57. A meeting of the AMA Committee on Quackery in Chicago on September 15.

58. A visit to the Michigan State Medical Society on September 18 and the Pennsylvania Medical Society on September 19, to review their facilities.

59. An area conference of county medical societies in Plattsburgh on September 21. We submitted a "report from headquarters."

60. The fall conference of the Woman's Auxiliary to the Medical Society of the State of New York, in Schenectady on September 24 and 25. We talked about the "state" of the MSSNY.

61. The presidents dinner of the Medical Society of the County of New York on September 28.

62. A meeting of the New York State Hospital Review and Planning Council in New York City on September 29.

63. A meeting with Charles Gillet and Eugene Hosmer, of the Convention Bureau, in New York City on October 6. The agenda included a discussion of AMA conventions.

64. A symposium of the Postgraduate Institute of Osteopathic Medicine and Surgery in New York City on October 7. The program was "Clinical and Physiologic Aspects of Osteopathic Medicine."

65. A luncheon, sponsored by the New York State Department of Health and the Water Pollution Control Federation, in New York City on October 11.

66. An area conference at the Central New York Academy of Medicine in Clinton on October 12. Again we discussed the activities of the MSSNY.

67. A dinner and the inaugural meeting of the Medical Society of the County of Kings, in Brooklyn on October 17. Robert Moore, M.D., delivered his inaugural address, "This I Believe."

68. A luncheon meeting of the New York Society of Association Executives in New York City on October 18.

69. Another area conference, in Olean on October 19. We represented our president at this meeting.

70. A conference with State Senator Jeremiah Bloom in New York City on October 23. We talked about a cardiovascular program.

71. A meeting of the Medical Society of the County of New York on October 23. C. Joseph Delaney, M.D., delivered his inaugural address.

72. A meeting with an Americana Hotel official in New York City on October 27 to discuss our 1968 convention.

73. The presidents' dinner-dance, Medical Society of the County of Kings, in Brooklyn on October 28.

74. The presidents' dinner-dance, Richmond County Medical Society, in Staten Island on November 4.

75. Dedication ceremony of the Medical Research Library of Brooklyn (Downstate Medical Center and the Academy of Medicine of Brooklyn) on November 7.

76. Meeting of the board of trustees of the Milton Helpern Library of Legal Medicine in New York City on November 8.

77. Dinner-dance of the Association of Private Hospitals in New York City November 10.

78. Dinner in Honor of Francis J. Loperfido, M.D., president of Bronx County Medical Society, in The Bronx on November 11.

Acknowledgments. Again we express our great gratitude to the many men and women who have rendered dedicated service to the MSSNY—the officers, councillors, trustees, chairmen and members of committees, physicians throughout the State, the staff, the members of the Woman's Auxiliary. Without their help in every field, very little would have been accomplished.

Our visits throughout various parts of the State have been rewarding. We wish we had the time to get around more frequently; the hospitality we have been exposed to has been superb everywhere.

We will submit a supplementary report to you in February.

Respectfully submitted,

HENRY I. FINEBERG, M.D.
Executive Vice-President

Medical Services

Commission on Medical Services

To the House of Delegates, Gentlemen:

The Commission on Medical Services consists of the following:

Walter Scott Walls, M.D., *Chairman*	Erie
George Rehmi Denton, M.D., *Vice-Chairman*	Albany
Herbert H. Bauckus, M.D.	Erie
Dallas E. Billman, M.D.	Steuben
Frederic W. Holcomb, Jr., M.D.	Ulster
Robert W. Hurd, M.D.	Oneida
Robert Elmer Westlake, M.D.	Onondaga

Reports of the individual committees follow, and it can readily be seen that the committees have been quite active.

The Economics Committee has been especially busy and is presently embarking on the task of setting up a new Relative Value Scale which is badly needed.

The Committee on Industrial Health is in the process of making a State-wide survey of occupational health services.

The Committee on Workmen's Compensation continues to be a busy committee with the endless adjustments of the compensation fee schedule and the relationships between doctors, carriers, and hospitals.

During the past year the activities of the various committees were reported to the Council, by the chairman or vice-chairman of the Commission, for either appropriate action or information purposes.

The chairmen and members of the various committees merit sincere thanks from the members of the State Medical Society for the time and effort they have spent on their assigned tasks.

It would be remiss not to mention the efficient services of staff members assigned to these committees, particularly, the conscientious work of George. P. Farrell and Robert Katz, M.D.

Respectfully submitted,

WALTER SCOTT WALLS, M.D., *Chairman*
GEORGE REHMI DENTON, M.D., *Vice-Chairman*

Industrial Health

To the House of Delegates, Gentlemen:

The following is the report of the Committee on Industrial Health. The Committee consists of the following members:

Dallas E. Billman, M.D., *Chairman*	Steuben
James J. Brandl, M.D.	Erie
Sam R. Burnett, M.D.	Schenectady
Peter J. DiNatale, M.D.	Genesee
*Nicholas I. Klimow, M.D.	Chemung
Herbert F. Wendelken, M.D.	Kings

During the twelve-month period since its last report to the House of Delegates, the committee met on three occasions.

The committee considered various problems facing the practice of occupational medicine in our State at this time. Preliminary steps have been taken for a State-wide survey of industrial medical resources to be preceded by a pilot study in a representative region of our State.

The committee endorsed the program of the American Medical Association's Council on Occupational Health to set up a Registry of Information on Adverse Reactions Resulting from Occupational Exposure. The program was publicized to our membership in the *News of New York*.

We are continuing our program of writing short pertinent reports on topics relating to occupational medicine which we feel are of interest to all physicians. An article on "Medical Certificate in Industry" was prepared for publication in the NEW YORK STATE JOURNAL OF MEDICINE by Robert Katz, M.D., director, Division of Industrial Health and Workmen's Compensation, and James J. Brandl, M.D., a member of the committee. To stimulate activity in the county medical societies' industrial health committees, detailed reports of scientific meetings attended by committee members and the director are now sent to all county society chairmen, in the hope that they will follow-up topics of special interest to them by obtaining further information from the Division of Industrial Health and Workmen's Compensation or directly from the authors or panelists.

A survey of source materials to study economic advantages of industrial medical programs did not yield conclusive results because of lack of available data or the unwillingness of those solicited for information to participate in such a survey. While the need for information was readily acknowledged by all parties, no one was willing to disclose results which may not come up to anticipation or reputation, even though such findings could lead to recommendations designed to improve procedures and to pave the way for a joint approach to the solutions of the problems.

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* Deceased.

The director of the division was invited to participate as a guest lecturer on three orientation symposia sponsored by the American Management Association for Medical Directors, Industrial Nurses, Personnel Directors, and Safety Managers. These symposia have shown that there is a marked increase in interest by industrial management in the health and welfare of their employes.

The director had several informal conferences with managers of employe benefit programs of national corporations who have sought guidance in setting up and maintaining adequate programs for their firms.

Detailed reports of the following meetings were prepared by the director and distributed as indicated in this report: tri-state meeting of the American Industrial Hygiene Association; Joint Meetings of the New York State Society of Industrial Medicine, Inc., and the Section on Occupational Medicine of the New York Academy of Medicine; annual meeting of the Industrial Medical Association; the 27th Congress on Occupational Health; and the third annual Joint Meeting of the American Industrial Hygiene Association, Health Physics Association, and the New York State Society of Industrial Medicine, Inc. The director also attended the Institute for Physicians in Industry held annually at Columbia University School of Public Health and Administrative Medicine, several meetings of the New York County Medical Society's Committee on Industrial Medicine, and spoke before the New York Association of Radiology Technicians.

In the course of a visit of a group of Swiss physicians to the State Medical Society headquarters office, it was interesting to learn that occupational health services, as known in the United States, are relatively rare in Switzerland where the emphasis is still on the treatment of industrial injuries, rather than on the prevention of industrial accidents and occupational diseases.

The participation of several county and State medical society committee chairmen in the meeting of the American Medical Association's Council on Occupational Health which preceded the 27th Congress on Occupational Health, may be ascribed directly to improved communications between the State Medical Society's committee and the county medical society committees. Many valuable recommendations made at that meeting will be put into action by our committee at a future date.

The director was encouraged to broaden the program of employes' health services for the headquarters staff, which has again participated to a great extent in a voluntary program of vaccination against influenza.

The committee is grateful for the tireless efforts of the director of the Division of Industrial Health and Workmen's Compensation, Robert Katz, M.D., and his administrative assistant, Miss Alice E. Wheeler, and commends them for their continued readiness to follow through in the fulfillment of the committee's program.

Respectfully submitted:
Dallas E. Billman, M.D., *Chairman*

Labor Health Facilities

To the House of Delegates, Gentlemen:

The following is the report of the Special Committee on Labor Health Facilities.

The committee members are as follows:

William H. Foege, M.D., *Chairman*	New York
Theodore Rosenthal, M.D.	New York
Louis Venet, M.D.	New York

The Special Committee on Labor Health Facilities has continued its efforts to establish a greater harmony between organized labor and organized medicine. A new edition of the questionnaire originally circulated in 1964 was sent to the various labor health centers. This included a group of questions proposed by one of the centers to assist in establishing a uniform vacation policy for the center.

In spite of our attempt to cooperate with the centers, the response to the questionnaire was very poor, in contrast to the excellent response in 1964.

Several meetings of the committee were held to consider the information which might be obtained from the forms which were returned, but the data were insufficient to warrant any conclusions. It seemed, however, that there had been some decrease in utilization of the labor health centers as compared to 1964.

In another attempt to establish communications with the labor health centers, the committee is arranging a luncheon meeting at which Walter Sheerin, executive director of the medical care subcommittee of the New York City Central Labor Council AFL-CIO will be invited to speak on a topic of interest to the medical directors and business administrators of the labor health facilities. It is hoped by this means to establish a pattern of frank discussion of mutual problems.

During the past year there has been no indication that the air of suspicion which pervades the relationship between labor and medicine has been dispelled. However, this committee, realizing the significance of the mutual problems of labor and medicine and the importance of a cooperative approach based on understanding and trust, will continue in its efforts to achieve these goals.

Respectfully submitted,
William H. Foege, M.D., *Chairman*

Standards of Medical Care

Commission on Standards of Medical Care

To the House of Delegates, Gentlemen:

The Commission on Standards of Medical Care consists of the following members:

Waring Willis, M.D., *Chairman* . . Westchester
Charles M. Brane, M.D. . . . . Westchester
Edward Siegel, M.D. . . . . Clinton

Last year's report, which was the first, outlined the history of the origin of the Commission and the method of its organization. It also looked forward to an active and productive year, and the reference committee predicted, "many new ideas will be forthcoming."

The reports of the various committees under the jurisdiction of the Commission note in detail the prolific activities which have resulted. Thus the Committee on Medical Review is well advanced in its organization and work producing a manual for internal hospital review of standards. It is hoped that a grant can be obtained from the Division of Medical Care Administration of the Department of Health, Education, and Welfare to do a study of methodology of establishing such a system. Both the chairman of the committee, Charles M. Brane, M.D., and the director of the Division of Standards of Medical Care, Samuel Z. Freedman, M.D., have performed well beyond the call of duty to arrive at this stage.

The Committee on Hospital-Based Physicians, under Norman S. Blackman, M.D., chairman, has been occupied almost continuously with problems arising out of the implementation of Medicare and Medicaid which affect the economic and "working relations" between the hospitals and employed physicians. This is an area strange to our profession, but the committee is quickly and successfully meeting the challenge.

In a related sense the Committee on Hospital and Professional Relations, under Bernard J. Pisani, M.D., chairman, is very active in protecting the professional position of physicians in hospitals both in the area of "tenure" and in the fair distribution to the attending staff of monies made available through the teaching programs for interns and residents.

Although the Committee on Mediation and Insurance Claims Review met only once, it was very active in furnishing advice and help to many members and lay people through the director of the Division of Standards of Medical Care and others at headquarters.

The detailed report of the Committee on Utilization Review emphasizes the complications met in establishing understanding and producing a working structure in the area of utilization review, particularly in extended care facilities.

Under Vincent J. Tesoriero, M.D., chairman, the Committee on Nursing has continued its provocative, scholarly, and productive work and has advanced ideas which should bear fruit and provide more and better nursing. Its record to date and over the years deserves the Medical Society's highest praise.

Joseph G. Zimring, M.D., and his Committee on Ethics are always, almost daily, active in interpreting the code of ethics. The manner in which this is done, with clearness, decisiveness, and learning, continues to be a record which is taken almost for granted.

Since the last meeting of the House of Delegates, the Committee on Public Medical Care has been added to the Commission. No activity is reported because, with the introduction of Medicaid, its functions are in abeyance since its previous work was with welfare. It will become a functioning group again when the Technical Advisory Committee on Medical Care, now meeting with the appropriate government departments involved in this "mess," has finished its work. Incidentally, Dr. Freedman has been designated by the executive vice-president to sit in on the deliberations so that the Division will be prepared to work with Robert Schwinger, M.D., and his committee when it becomes active again.

The Commission on Standards of Medical Care has made every effort to implement its promise of a year ago. We wish to express our sincere appreciation to Samuel Z. Freedman, M.D., the director of the Division; his secretary, Miss Irene Rose; and the entire headquarters staff, under Henry I. Fineberg, M.D., our executive vice-president.

Respectfully submitted,
WARING WILLIS, M.D., *Chairman*

Ethics

To the House of Delegates, Gentlemen:

The Committee on Ethics is composed of the following members:

Joseph G. Zimring, M.D., *Chairman* . . Nassau
Walter J. Clarkson, M.D. . . . . Suffolk
Oscar Greene, M.D. . . . . Essex
Warren A. Lapp, M.D. . . . . Kings

During the first four months of this year, as a result of my joining the exclusive "coronary club," the following thoughts were a result of my enforced illness.

Ethics in medicine is the object of investigation by many groups, such as the Hart Committee in Washington, D.C., certain state legislators, and other critics who can find nothing else to do. Our image is being smeared in the newspapers because of a few members of our profession who belong to either one of the two following groups:

1. The uninformed, especially those who have not even read the code of ethics—these can be educated; and
2. The pathologic group, who have a completely warped attitude concerning the code of ethics and should be completely exorcised from our profession.

After giving this a great deal of thought and after going through the literature on ethics, I can see only two methods of correcting the present situation. The first method is a stricter enforcement of our code of ethics after a complete review of the code and reinforcement of any weak points.

The second method was proposed by the American Medical Association's House of Delegates in 1961. It was proposed that each medical school develop and present a required course in ethics. To date only a few schools have started such a course, but this is not enough. I believe that our State Society should stimulate the interest of the medical schools in our State in this field of medicine and urge them to have formal lectures covering the codes of ethics of our State Society and of the AMA. These schools could utilize visiting lecturers from our State Society who have had first-hand experience and can illustrate their talks with case reports and thus more effectively present the material. I say visiting lecturers because, with so many faculty members serving as full-time teachers, they are unaware of the ethical problems which will confront the student after he has become a practicing physician. These lecturers should be practicing physicians who are members of the Medical Society of the State of New York and who are in the private practice of medicine. Another stimulant to the medical schools would be the inclusion of questions on ethics by the State Board of Medical Examiners in their examination.

To several inquiries on the use of credit cards, the committee advises that the Medical Society of the State of New York disapproves of the use of credit cards in the payment of medical fees.

A letter was received from Onondaga County Medical Society requesting advice on the ethics of assigning or selling medical accounts receivable for a discount to professional organizations. The committee answered this by presenting the following resolution to the Council on June 8:

> *Resolved*, That the Council of the Medical Society of the State of New York disapprove the assignment of medical accounts receivable or the selling of medical accounts receivable for a discount to any organization."

This resolution was based on the following facts:

1. Chapters 256 and 257 of the Laws of New York State, 1966, known as the Medical Assistance for Needy Persons Law, implementing Title 19, Federal Public Law 89–97, forbids the assignment of any bill. Section 367–a, paragraph 1 (page 18, line 10), states: "Any payments with respect to any medical assistance shall be made to the person, institution, State department or agency or municipality supplying such medical assistance, except as otherwise permitted or required by applicable Federal and State provisions, including the rules of the board and regulations of the department."

2. Handbook 9, Professional Education, University of the State of New York, contains the following applicable rules:

> (*a*) Section 6514, paragraph 2, page 38, "The license or registration of a practitioner of medicine, osteopathy, or physiotherapy may be revoked, suspended, or annulled . . . after due hearing in any of the following cases . . . (f) That a physician, osteopath, or physiotherapist has directly or indirectly requested, received, or participated in the division, transference, assignment, rebate, splitting, or refunding of a fee for, or has directly or indirectly requested, received, or profited by means of a credit or other valuable consideration as a commission, discount, or gratuity in connection with the furnishing of medical or dental care, diagnosis, or treatment of services including x-ray examinations and treatment . . . ."
>
> (*b*) Article II, Section 30, paragraph 4, page 78, states: "Unprofessional conduct in the practice of medicine shall include but not be limited to the following . . . (c) The revealing of facts, data, or information obtained in a professional capacity relating to a patient or his records wihout first obtaining consent of the patient or his duly authorized representative, except if duly required by a court of competent jurisdiction or statute."

Medicaid bills must contain the name of the patient, diagnosis, and treatment. If these bills are assigned or sold to an outside organization for a discount, the physician thus reveals important information about the patient without the patient's consent.

3. The *Principles of Professional Conduct* of the Medical Society of the State of New York also forbid the divulging of any confidential information acquired by the physician in treating a patient.

4. The Judicial Council of the American Medical Association in its *Opinions and Reports 1966*, Section 5, paragraph 32, states the following: "The Council looks with disfavor on the use of this service (billing service) and similar operations by physicians because of the implication of advertising and patient solicitation. Further, the Council does not believe that these kinds of plans uphold the dignity and honor of the profession."

The Council passed this resolution.

The committee received the following letter from Howard A. Weiner, M.D., vice-president, Association of New York City School Psychiatrists:

> "Since the advent of Medicaid in New York State, it has become possible for many emotionally disturbed children and their parents to receive needed psychiatric attention not previously available. One of the largest referral agencies for such children is the Bureau of Child Guidance of the Board of Education of the City of New York.
>
> I represent the Association of New York City School Psychiatrists, the professional organization of this Bureau. Our Bureau can provide little psychiatric care because of the paucity of time available. We are also constrained from prescribing medications by law.
>
> "A number of our members who have associated with the State Medicaid system would be willing to see such children in their private practices if it were deemed ethical by the proper professional bodies. These psychiatrists all are trained in child psychiatry.
>
> "Would you please offer an opinion as to the ethical issues involved in setting up a panel of doctors who are at once employes of the Bureau of Child Guidance and would receive referrals from the same Bureau privately?
>
> "The City of New York, in spite of its high concentration of psychiatrists, still, of course, is woefully short of qualified psychotherapists for children. Consequently, this issue takes on great importance.
>
> "I would be grateful for your prompt reply."

The committee replied to Dr. Weiner as follows, with the approval of the Council:

> "The Bureau of Child Guidance of the Board of Education of the City of New York may avoid conflict with the *Principles of Professional Conduct* of the Medical Society of the State of New York and also avoid conflict with the private practicing physician in the City of New York by observing the following guidelines as drawn up by the Committee on Ethics.
>
> "A. The family physician should be notified of the need for therapy by his patient and requested to make a recommendation of a psychiatrist to his patient; or
>
> "B. The patient should be referred to the local medical society for the name of a psychiatrist; or
>
> "C. Setting up of a referral list of psychiatrists to be used by the physicians of the Bureau of Child Guidance with the following provisions:
>
> > "1. The referral list should embody not only those psychiatrists employed by the Bureau of Child Guidance but those private practicing psychiatrists of New York City, who are willing to accept Medicaid patients.
> >
> > "2. Personal contact at the Bureau with a patient makes that physician ineligible for referral.
> >
> > "3. Patients should be given the names of three (3) psychiatrists in the vicinity of their homes.
> >
> > "4. The referral list should be in continuous rotation.
>
> "We hope that the above may be of assistance to you."

There were many letters received by the committee this past year. Several were answered directly, but many were referred to the local medical societies because local problems were involved.

Respectfully submitted,
JOSEPH G. ZIMRING, M.D., *Chairman*

Hospital and Professional Relations

To the House of Delegates, Gentlemen:

The committee consists of the following:

Bernard J. Pisani, M.D., *Chairman*.......... New York
Albert M. Betcher, M.D.......... New York
C. Joseph Delaney, M.D.......... New York
Kenneth H. Eckhert, M.D............ Erie
August H. Groeschel, M.D........ New York
Joseph J. Kaufman, M.D........... Wayne
Herbert J. Wright, Jr., M.D... Schenectady

A brochure being prepared at the direction of the executive vice-president, outlining, among other things, the functions of committees notes that this committee is responsible for:

1. Hospital-physician relationship—doctors responsible for work of physicians.
2. Doctors relationship—tenure, appointments to staff, and free-choice principle.
3. Hospital relationships—responsibility for intern and resident training, community responsibility, responsibility to attending staff, and the economic and ethical standards in staffing of emergency rooms.
4. Education—outpatient department availability for area physicians, and the encouraging of attendance at clinicopathologic conferences and other hospital meetings by area physicians.

Last year's report noted that the committee "will be concerned with problems that arise from the direct relationship between the physician and the hospital involved."

During the past year, two particular areas were thoroughly explored. They are (*a*) tenure and (*b*) responsibility for enforcing the means for providing support to the area of intern and resident training. The former was particularly sensitive since the introduction of Medicare and Medicaid has produced a situation which might embarrass individual physicians in relation with a hospital board if agreement was at variance with the implementation of these new and "restructured" economic legislative acts. The Medical Society of the State of New York speaking on behalf of its members can provide guidelines to help all concerned in arriving at a mature, fair, and professional understanding. At the 1967 meeting of the House of Delegates two resolutions (67-4, 67-63) relating to hospital staff tenure were introduced. The reference committee recommended and the House approved the principles involved. An example of the influence of such an understanding between organized medicine and the hospital associations can be seen in the following notice sent by letter to all members of a hospital in Brooklyn where the board of trustees is "providing a mechanism for review and appeal of nonreappointment (that) provides to each physician the 'due process' action recommended by the State Medical Society and the Hospital Association."

In the matter of intern and residency training, the following letter, which was sent to approximately 200 hospitals in the State, is self-explanatory.

> "According to Social Security Administration's instructions, arrangements have been made for hospitals which have teaching programs for residents and interns to collect the fees for the attending staff due the latter under the provisions of Title 18, part B (PL 89-97, 1965). Although no directive has been issued to segregate these funds for division among the physicians, some hospitals already have made such provisions.
>
> "The Medical Society of the State of New York, through its Committee on Hospital and Professional Relations,. . .is collecting data on the type of agreement being entered into between the hospitals and physicians. The Society wishes to be helpful in making the system work with fairness to patients, government, hospitals, and physicians.
>
> "Therefore, if you will kindly supply us with a copy of the 'contract' and/or other arrangement between your hospital and the physicians whose fees will provide the money to be allocated, the Committee on Hospital and Professional Relations will study the matter and make whatever pertinent comments may be indicated.
>
> "I know you will understand the request is made in a spirit of cooperation and that you will therefore be helpful.
>
> "May I look forward to an early reply."

Many replies have already been received. At this time one can look forward to a new spirit of cooperation between the voluntary "teaching" hospitals and the physicians.

When the replies are collated, physicians will be in a firm position to receive their due compensation in this vital field of teaching, since the Society will then have information to guide them in discussions with their hospital boards and administrators.

A subcommittee is being set up to study in greater depth hospital emergency room conditions in various parts of the State.

No other items needing immediate attention were referred to our committee, but members are encouraged to refer to Society "headquarters" all items in which we may be of help. We are confident that Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, will, as usual, supply your committee with the information and background material needed to guide it toward a satisfactory solution or arrangement.

Respectfully submitted,
Bernard J. Pisani, M.D., *Chairman*

Hospital-Based Physicians

To the House of Delegates, Gentlemen:

The committee consists of the following members:

Norman S. Blackman, M.D., *Chairman*	Kings
Alfred A. Angrist, M.D.	Bronx
Ralph S. Emerson, M.D.	Nassau
Eugene Moskowitz, M.D.	Westchester
John F. Roach, M.D.	Albany
Harold N. Schwinger, M.D.	Kings
Victor J. Tofany, M.D.	Monroe

Subjects which are the concern of the committee can be classified as follows:

1. Ethical and legal relations between hospital and hospital-employed physicians.
2. Study of the Medical Practice Act in relationship to possible violations by hospitals of the corporate practice of medicine; meet with the Attorney General to clarify the issue;
3. Cooperation with the Committee on Hospital and Professional Relations in the matter of disposition of fees collected by physicians for patient care.

In the area of item 1, it is accepted that patients are primarily treated in hospitals by physicians and not by the "hospitals." Until the introduction of Medicare and, particularly, Medicaid, there were "charity" patients, but now there are, according to Governor Rockefeller, no "second-class medical citizens." In urban areas, particularly in the City of New York, therefore, the new sources of monies made available for the payment of services rendered by physicians has accentuated the legal and ethical relations between hospitals and hospital-employed physicians.

Our committee, therefore, has been occupied with defining the areas of conflict and suggesting methods to arrive at satisfactory conclusions. Ethical concepts are clearly defined by the AMA code of ethics which, in essence, give the physician the choice of how he shall dispose of his "earnings" from services rendered to patients in hospitals.

Our House of Delegates in 1967 accepted the report of the Committee on Ethics which in essence cautions physicians (1) against signing over their third-party payments without a clear written understanding that the monies involved are theirs and disposition of these funds must be mutually agreed to; (2) in the case of full-time physicians it must be stipulated that their salaries can be reduced by the amount collected from such sources but that any fees above the limits of the salary be retained by the physicians. Such an arrangement will probably be worked out with the hospitals through the negotiations now in process between representatives of the Medical Society of the State of New York and the hospital organizations. This is also being urged on the State Health Department so that it will "disapprove any hospital regulation or procedure which would make hospital privileges contingent on assigning or rebating to the hospital of Medicare or Medicaid fees by physicians."

The legal aspects are not, as of now, universally clearly understood or accepted. Therefore your committee has pursued its study in this area through a meeting and discussions with the Attorney General's office. On June 26 a delegation met with Samuel A. Hirshowitz, first assistant attorney general of the State of New York in New York City. The Medical Society of the State of New York was represented by Waring Willis, M.D., Henry I. Fineberg, M.D., Samuel Z. Freedman, M.D., J. Richard Burns, Esq., and your chairman. Also present was John Calanese, Esq., of the Attorney General's office. There was a meeting of the minds and the atmosphere was congenial. In order for the Attorney General to proceed, evidence was necessary, and this is now being sought. Pursuit of this matter in the hope that final adjudication of the corporate practice of medicine will result remains one of the committee's chief considerations.

To help physicians in their contractual arrangements with hospitals, the committee recommended and the Council approved that our legal counsel draw up guidelines for a contract between the individual physician and the hospital involved. This is in the process of development.

Since all physicians employed by hospitals do not render direct professional services to patients, the committee recommended, and the Council tabled for further study, the following classifications for purposes of remuneration:

1. Personal physicians
2. Hospital appointed consultants
3. Physician educators
4. Physician administrators
5. Physicians functioning in one or more categories.

Robert Katz, M.D., director of the Division of Industrial Health and Workmen's Compensation, brought to the attention of the committee that in some instances services rendered to patients in emergency rooms were billed for twice. This has since been corrected.

The committee expresses its sincere appreciation to Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, and to Waring Willis, M.D., chairman of the Commission on Standards of Medical Care, for their mature advice and guidance in the work of the committee.

Respectfully submitted,
NORMAN S. BLACKMAN, M.D., *Chairman*

Mediation and Insurance Claims Review

To the House of Delegates, Gentlemen:

The Committee on Mediation and Insurance Claims Review consists of the following members:

Carl Goldmark, Jr., M.D., *Chairman*	New York
Milton Gordon, M.D.	Suffolk
Elvin H. Gottdiener, M.D.	Dutchess
Peter V. Gugliuzza, M.D.	Queens
Walter F. Harrison, Jr., M.D.	Warren
Irving M. Pallin, M.D.	Kings

It was necessary to have but one formal meeting of the committee, on May 3, 1967. At headquarters, however, activity was almost hectic through telephone and mail communication with very many members of the Society. Understandably, confusion was rife because of the difficulty in comprehension of decisions of the carriers in paying claims on the basis of usual, customary, and prevailing fees.

At the May 3 meeting, it was decided "to keep statistics as to the number of complaints received and the resolution of these problems so that they may be included in the annual report." The director of the Division of Standards of Medical Care, Samuel Z. Freedman, M.D., reports that no formal complaints were received. Often all that was necessary was an explanation, and in several instances, where an immediate reply could not be made, satisfactory results were obtained by a letter or a telephone call to the carrier. As of now the questions are much fewer, and it appears that there is a clearer understanding of the workings of Medicare. As much cannot be said of Medicaid, particularly in New York City, where the situation is in a period of extreme confusion and very few physicians are participating. It is hoped that ultimately, through the meetings of the Technical Advisory Committee on Medical Care, under George Himler, M.D., with the New York State Health Department and the local New York City authorities, some solution will result.

In the 1966 report to the House of Delegates, the committee offered its services "to individual county societies and/or district branches, if they so desire, to help them set up review committees to consider complaints from doctors or patients against insurance carriers and/or fiscal intermediaries under PL 89–97, Part B . . . ." No such requests have been received. Your committee interprets this as a good sign. The offer, however, still stands.

Respectfully submitted,

Carl Goldmark, Jr., M.D., *Chairman*

Medical Review

To the House of Delegates, Gentlemen:

The Committee on Medical Review consists of the following:

Charles M. Brane, M.D., *Chairman*	Westchester
Joel J. Brenner, M.D.	Nassau
George Himler, M.D.	New York
Edward C. Hughes, M.D.	Onondaga
George G. McCauley, M.D.	Tompkins
Mortimer W. Rodgers, M.D.	New York
Harold J. Safian, M.D.	New York
Walter T. Zimdahl, M.D.	Erie

The year 1967 has been devoted to the accomplishment of the objectives delineated and approved by the committee at its meeting on November 30, 1966. The advice and approval of the committee and its advisers were received during the year through personal and mail communication. At a meeting of the committee on September 13, 1967, the mode of fulfillment of the objectives for the year to date and for the remainder of the year was reviewed and approved with some minor modifications.

The following objectives have been fulfilled:

1. Methodology for the review of quality of medical care has been developed. This methodology applies to the retrospective review of hospital records. A review pattern or form which may be applied to specific diagnoses and procedures has been designed. It is arranged in category-item form following the logical and temporal sequence of diagnosis and treatment. Purely informational questions may be answered by paramedical personnel, but the pattern requires that those questions involving analysis and evaluation be answered by reviewing physicians. It has been named the Category-Item Review Pattern.

2. The efforts of the committee in developing this methodology have been and are being planned in coordination with individuals representing other organizations who have an interest in, and responsibility for, medical review.

3. Six subcommittees of physicians with State-wide representation have been formed to decide on the standards of care for each of 6 diagnoses and procedures and to fit these standards to the framework of the Category-Item Review Pattern developed and approved by the Medical Review Committee.

4. A written guide has been prepared to aid each of these subcommittees in accomplishing these aims.

5. The writing of a Medical Review Manual, well under way, will be finished before January 1, 1968. This loose-leaf manual will include a discussion of medical review. The structuring of hospital review committees will be described with enough variants, fitted to a common approach, so that the structure best fitted to an individual hospital may be chosen by the hospital medical staff. The responsibilities and functioning of such committees will also be described. Review patterns, worksheets for the assessment of quality of medical care, for specific diagnoses and procedures will be added as these are developed.

Planning for testing the methodology of medical review as developed by the Medical Review Committee and as applied by the subcommittees to specific diagnoses and procedures is well under way. It is hoped that completion of this planning will allow testing of the methodology during 1968 and that the manual with its appended review patterns will be available before the end of 1968 for the use of those physicians, hospital staffs, and medical organizations wishing to use it.

The chairman wishes to thank all the members of his committee and the committee advisers for their ongoing aid and advice. He also wishes to thank all of the members of the subcommittees who have accepted the responsibilities entailed in such membership.

Respectfully submitted,
CHARLES M. BRANE, M.D., *Chairman*

Nursing Committee

To the House of Delegates, Gentlemen:

The membership of the Committee on Nursing is as follows:

Vincent J. Tesoriero, M.D., *Chairman*	Kings
Frank Albert Baumann, M.D.	Broome
Lester J. Candela, M.D.	Queens
Douglas S. Damrosch, M.D.	Otsego
Ralph F. Jacox, M.D.	Monroe
David L. Koch, M.D.	Seneca
John F. Prudden, M.D.	New York

During the past year the committee has held three meetings and also has met three times with representatives of the New York State Nurses Association and the Hospital Association of New York State.

All discussions on nursing education stressed the importance and need to continue diploma schools and to upgrade them in quality. The committee feels that all levels of education and nursing should be supported and none discontinued. Organized nurses associations do not concur in this opinion. The committee is supported on the continuation and improvement of diploma schools by various groups, such as the American College of Surgeons, association of psychiatrists, and leading medical educators.

There was considerable discussion on the recruitment of nurses and the many factors aggravating the present shortage which is reaching critical proportions. Among these factors, as expressed by a director of a school of nursing, is that "as a result of the increasing national emphasis on placing nursing in a college setting, student enrollment has steadily decreased the last two years and qualified faculty are most difficult to obtain." This three-year diploma school, one of the nation's best, was closed this year. Another condition considered by the committee was the matter of extending credit for various levels of nursing education toward a baccalaureate degree. The committee supports this concept and will so inform the appropriate private and public education agencies and organizations.

The committee notes with approval that a new commission is studying the needs in nursing education to formulate a more realistic policy for the future. It also advocates that in any such studies and policy making, the medical profession participate to give these groups the benefit of its experience and concern in good patient care. This goal, common to the nursing and medical professions, can be achieved better by such collaboration.

The following letter and resolution was sent to the American Medical Association's Committee on Nursing, the Joint Commission on Accreditation of Hospitals, and to a member of the New York State Board of Regents.

"The Medical Society of the State of New York through its Council has approved the following resolution submitted by its Committee on Nursing:

> 'WHEREAS, The education of nurses is a matter of great concern to all who have responsibility for the care of the sick; and
>
> 'WHEREAS, It is the conviction of this committee that, in many schools of nursing, clinical training and experience are woefully inadequate; and
>
> 'WHEREAS, It is further the conviction of this committee that the responsibility for evaluation of the effectiveness of nursing school curricula should be shared by the medical and nursing professions; now therefore be it hereby
>
> '*Resolved*, That a Joint Commission on Accreditation of Schools of Nursing be established with representatives from the American Nursing Association, the National League for Nursing, the American Medical Association, and the American Hospital Association; and be it further
>
> '*Resolved*, That said Commission be directed to establish standards for nursing education and to develop the organization necessary to conduct surveys to evaluate compliance with such standards and to assume such other responsibilities as shall be necessary to assure the highest possible degree of professional skill and competence among graduates of schools of nursing.' "

A letter from W. Benson Harer, M.D., chairman of the American Medical Association's Committee on Nursing, stated: "The supply of nurses, nursing education, and accreditation of schools of nursing are matters of great importance and are being studied extensively by government and many other organizations. It is impossible at this time to predict what action will be taken on these matters. I assure you that the Committee on Nursing is devoting much time and thought to all problems of nursing and will give serious consideration to the resolution adopted by the Medical Society of the State of New York."

Your chairman attended a conference sponsored by the AMA Committee on Nursing held in Chicago on October 5 and 6. Participating were 47 representatives of state medical society's liaison committees with nursing. The excellent attendance points up the nationwide interest in nursing by the medical profession.

On October 5 there was a reception with lively discussion and interchange of experiences and ideas. This was followed by dinner and an address by Milford O. Rouse, M.D., president of the American Medical Association. He stressed the great importance of the concern and interest of the medical profession in supporting the nursing profession in improving their economic and environmental conditions.

On October 6 the meeting was held at the AMA headquarters auditorium. The morning session, chaired by Edward Pellegrino, M.D., featured an excellent address by Eleanor Lambertsen, R.N., Ed.D., on "Current Nursing Education and Practice," which was followed by considerable discussion and expression of opinion. The trend toward "nursing education in a university setting" is apparently inevitable and is becoming more accepted in various states by the medical profession.

The afternoon session included a report on "The Development and Activities of Joint Physician-Nurse Liaison Committee," by Sister M. Raphael, R.N., and Joseph Marshall, M.D., both of Idaho. This is a formal committee which has been very successful in its activities, with alternate hosts and chairmen. It is similar to the informal joint meetings our committee has been holding during the past four years.

It was apparent that throughout the nation there is need for better physician-nurse professional relations. This is best achieved at the local level. The medical profession in general must be alerted to the importance of learning more about modern nursing education and practice and to regard the nurse as coworker or colleague in the care of a patient.

It is expected that nursing education will continue to be discussed at meetings of the committee and joint meetings with representatives of the Hospital Association and the Nurses Association during the coming year. We feel that discussion and collaboration rather than independent action should be fostered and that nursing education is the proper concern of physicians since it cannot be dissasociated from nursing practice.

Respectfully submitted,
VINCENT J. TESORIERO, M.D., *Chairman*

Public Medical Care

To the House of Delegates, Gentlemen:

The membership of the Committee on Public Medical Care is as follows:

Robert Schwinger, M.D., *Chairman*	Queens
Albert F. R. Andresen, Jr., M.D.	Westchester
Marcelle T. Bernard, M.D.	Bronx
I. Jay Brightman, M.D., *Adviser-Member*	Albany
Maura L. Flynn, M.D.	Westchester
Arthur H. Mulligan, M.D.	Herkimer
Milton B. Spiegel, M.D.	Kings

Since the introduction of Medicaid, the activities of the committee are at a standstill. Previously the problems arising under the welfare system occupied most of its attention. It is expected that when the activities of the Technical Advisory Committee on Medical Care presently involved in the clarification of the Medicaid problems are completed, our committee will be charged with the vital function of helping Medicaid work to the mutual satisfaction of patients and physicians. Until such time we are following the proceedings and studying the matter. We are confident that the chairman, George Himler, M.D., and the members of the Technical Advisory Committee will be successful in reaching a satisfactory solution in this new and provocative area of medical care.

Respectfully submitted,
ROBERT SCHWINGER, M.D., *Chairman*

Utilization Review

To the House of Delegates, Gentlemen:

The membership of the Committee on Utilization Review is as follows:

John A. Finkbeiner, M.D., *Chairman*	New York
Mark A. Freedman, M.D.	New York
Daniel Friedman, M.D.	Suffolk
James Q. Haralambie, M.D.	Westchester
Jason K. Moyer, M.D.	Broome
Charles D. Sherman, Jr., M.D.	Monroe
Herbert J. Wright, Jr., M.D.	Schenectady

This is the first report of this committee since it did not meet until after the annual meeting of the State Society in February, 1967.

The committee is charged with the following responsibilities:

1. To concern itself with the economic management of health care;

2. To maintain close relations between the medical profession and the fiscal intermediaries;

3. To assist in developing standards and methodology for utilization review in four specialized and different areas of health care: physicians offices, general hospitals, extended care facilities, and home health services; and

4. To assist the district and county medical societies to become knowledgeable in the demands of Public Laws 89–97 and 89–239 and Article 28 of the Public Health Laws of 1965.

Implied in these responsibilities, of course, is the necessary public relations to make the program effective.

The committee has met three times to date and concentrated its attention on standards and methodology in utilization review in extended care facilities. At the meeting of April 14, Samuel Z. Freedman, M.D., director of the Division of Standards of Medical Care, arranged for Benjamin Sandberg, assistant regional representative of the Social Security Administration, Bureau of Health Insurance, to meet with the committee. Although there was thorough discussion with this representative, there is still a lack of definitions and guidelines from the Federal and State departments involved.

The following minutes and resolution of the May 12 meeting were approved by the Council at its meeting in Plattsburgh on June 8:

Although the lack of adequate definitions and guidelines from the Federal and State programs handicapped the discussion and rendered decision uncertain, the committee recommends:

1. *Handbook: Extended Care Facility and Utilization Review* published by the Regional Utilization and Medical Review Project, Rochester, New York, serve as a model for such review. Particularly helpful was their definition of an extended-care patient as one "whose condition can be improved by convalescent or rehabilitative care within sixty days or less" (p. 17). It is further recognized that the differentiation between custodial and convalescent care may vary from patient to patient, depending on the medical condition, and may vary in different geographic areas depending on the health resources available.

2. It is the responsibility of county societies and/or district branches and/or other appropriate groups to form a utilization review project to conduct and administer utilization review in extended care facilities in their respective districts or counties. The membership of this committee should be selected so that physicians using or having other financial interest in a particular extended care facility shall not review that facility.

3. Case selection and the initial review is to be made in the extended care facility by the physician-surveyor who then shall report to the utilization project group as well as refer to them any cases for further discussion and final disposition.

4. Fees are to be collected from the individual extended care facility by the project group. Provision is also to be made for payment of secretarial and other overhead expenses. The physicians rendering the utilization review services are to be paid by the project group. Reimbursement is to be for professional services beyond that which can normally be expected as part of society-committee membership. Under no circumstances is a physician to arrange to service a facility as an individual.

5. The quality of patients' records in an extended care facility is to be improved.

6. It is essential that cooperation with the carrier and interested government agencies be maintained.

7. These recommendations with the following resolution are to be widely circulated to all health agencies, carriers, and other interested parties.

> WHEREAS, PL 89–67 provides for extended care facility accommodation, when medically necessary, for patients discharged from an "acute hospital" stay; and
>
> WHEREAS, The extended care facility must provide for utilization review; and
>
> WHEREAS, Payment for utilization review is made available through the carrier; and
>
> WHEREAS, The role of the physician in utilization review has been repeatedly reaffirmed; now therefore be it hereby
>
> *Resolved*, That the Medical Society of the State of New York recommend that utilization review in extended care facilities be made available through the local county medical societies and/or district branches; and be it further
>
> *Resolved*, That each county medical society or district branch establish a committee to conduct and administer extended care facility utilization review, under the direction of that county medical society and/or district branch, to collect the fees and distribute them to the physicians furnishing the service.

Despite distribution on July 24 of this information to all county medical societies and secretaries of district branches by Dr. Fineberg, there has been little response to date. Therefore, the development of methods and means of implementing the recommendations is an immediate task for the committee as well as consideration of the remainder of its charges and responsibilities.

On October 13, Dr. Freedman visited the offices of the Regional Utilization and Medical Review Project in Rochester. He observed the extended care facility utilization review committee in action and discussed all its activities in detail with Carmel Cristo, M.D., medical director. This information will be of great help to our committee.

The committee acknowledges with grateful thanks and appreciation the guidance and assistance of Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, Miss Irene Rose, his secretary, and the entire staff of the Medical Society of the State of New York.

Respectfully submitted,
JOHN A. FINKBEINER, M.D., *Chairman*

Medicare and Medicaid

Technical Advisory Committee on Medical Care

To the House of Delegates, Gentlemen:

The Technical Advisory Committee on Medical Care consists of the following members:

George Himler, M.D., *Chairman*	New York
William L. Wheeler, Jr., M.D., *Cochairman*	New York
John H. Carter, M.D.	Albany
George Rehmi Denton, M.D.	Albany
John T. Donovan, Jr., M.D.	Niagara
Carl F. Freese, M.D.	Nassau
David S. Gerbarg, M.D.	Ulster
George G. McCauley, M.D.	Tompkins
Stewart Clyde Wagoner, M.D.	Schenectady

The Technical Advisory Committee on Medical Care held several meetings with the New York State Health Department in 1967. This report will set forth the progress that was made toward meeting the directives of the 1967 House of Delegates and the current status of the Medicaid program.

Administration of Medicaid. One of the major reasons for disapproval by the House of the Medicaid program in 1967 was the disorganization that characterized its administration. The Delegates called on the State Commissioner of Social Services to create a uniform, State-wide program, with standard forms and procedures, to help minimize confusion, red tape, and delays in payment. Your committee has been unable to gain acceptance for this principle of uniformity in spite of its obvious advantages. Not only has the Department of Social Services made no effort in that direction, it has deliberately supported the home rule prerogatives of the Social Service districts. As a result, there are as many Medicaid programs as there are such districts, each with its own rules, regulations, and procedures. The efficiency of the local Social Service offices covers a wide range, as does the cordiality of their relations with the physicians of their respective areas. On the whole, the quality of administration has not improved noticeably over that of a year ago. The performance standards the Governor was asked to require his commissioners to establish have not even been developed, let alone enforced.

Intermediary Operation. In keeping with its exaggerated respect for home rule, the State Department of Social Services has refrained from encouraging district offices to turn to an intermediary type of operation similar to that of the Title 18 program, although legislation permitting them to resort to this expedient does exist. The local offices, on the other hand, have indicated that they will take no affirmative action without the specific approval of the Department at the State level. As a direct outcome of this policy or lack of it, there are 64 administrative agencies in the State duplicating the personnel and equipment of the Title 18 carriers which, in almost every instance, could do the job more efficiently. In addition to the fact that this is a financial burden to the program and, therefore, ultimately to the taxpayer, it is a nuisance to physicians who must put up with the red tape and inefficiency of their local bureaucracy. It would not be so bad if this type of operation were merely wasteful and inconvenient, but it carries a potential danger with it as well.

The longer the Social Service districts are permitted to delay in turning to intermediary administration, the less likelihood there is of its being adopted. These local administrative agencies, once entrenched in Medicaid, will be almost impossible to dislocate from the program, since all government officials tend to resist the diminution of their own empires. It may also be taken as axiomatic that parallel organizations (Title 18, private carriers, and Title 19, public agencies) to administer programs of health care financing will not long exist side-by-side. The trend will inevitably be for one to replace the other entirely. Direct administration of Medicaid by government constitutes a continuing threat to the viability of the prepaid voluntary health insurance system that the medical profession was instrumental in developing.

Direct Billing. The House of Delegates in 1967 called also for granting physicians the option of billing patients directly for services rendered under the Medicaid program. Patients cannot now seek reimbursement if they pay their physicians out of pocket because Medicaid is a so-called vendor payment program that permits payment only to providers of services. The attainment of the direct billing option requires modification of the Social Security law and is under consideration among the Medicare amendments presently before Congress.

Free Choice Legislation. The right of Medicaid patients to free choice of physician and facility is now being enforced under the provisions of a regulation adopted by the New York State Board of Social Welfare in 1966. As the delegates are aware, a bill to incorporate this guarantee into the Medical Assistance for Needy Persons law failed by one vote in the New York State Legislature. Your Committee on State Legislation will seek reintroduction and increased support for the bill during the current legislative session.

Eligibility. The New York State Board of

Social Welfare did not follow the recommendation of the Medical Society of the State of New York that income eligibility for medical assistance be set at 150 per cent of the income level required for money assistance. The Ways and Means Committee of the House of Representatives is now recommending that the eligibility level be reduced progressively over the next three years from 150 per cent of the money assistance ceiling, to 133 per cent, and, finally, to 125 per cent. This would ultimately bring the income eligibility for medical assistance payments to about $3,900 per year for a family of four with one wage earner. Your chairman believes that this would be a rather harsh cutback from present levels and that it would work much hardship in this State.

It is to be borne in mind, however, that if Congress does act favorably on the recommendations of the House Ways and Means Committee, the State of New York will not be compelled to adopt the income ceilings called for. The effect of the amendment would be merely to limit the amount of the Federal contribution to the State's Medicaid program. If, under these circumstances, current State income ceilings were continued in force, it would throw an intolerable burden on the taxpayers of New York.

Your chairman therefore recommends that the Medical Society of the State of New York reaffirm its action of 1967 in calling for a rollback of the eligibility income ceiling to 150 per cent of the money assistance level and oppose the more drastic reduction being contemplated in Congress.

Usual, Customary, and Prevailing Fees. In accordance with the mandate of the House of Delegates, your committee continued to press for the adoption of the Title 18 method of fee determination to replace the Maximum Fee Schedule promulgated in July, 1966. In late 1966 and early 1967, Hollis S. Ingraham, M.D., State commissioner of health, who has the authority to certify fees but not to promulgate them, certified to George K. Wyman, State commissioner of social services, that reimbursement to physicians should be on the basis of the "usual, customary, and prevailing" concept. Shortly thereafter, Commissioner Wyman, in a public statement, gave his support to the same principle. Since Governor Rockefeller had already announced his intention that physicians be paid their usual rates under the program, your committee enjoyed a brief period of euphoria. This was dispelled, never to return, on the discovery that there was one more hurdle to be cleared in the person of the Director of the Budget, who has so far turned a deaf ear to our urgings as well as those of the Commissioner of Health.

Your committee was informed that the Department of the Budget would conduct a study of prevailing fees to determine actual fee levels and their potential cost impact on the program. Those responsible for the study journeyed to Washington and to Baltimore and returned with hints that the Medicare program would shortly be in difficulties because of escalation of physicians' fees. There were apparently little or no concrete data gleaned from these visits, or at least none were given in the reports. In spite of the excruciatingly slow rate of progress of this study, its mere existance gave your committee hope that the principle we were fighting to establish was receiving serious consideration. That hope was interred in mid-1967, together with the survey, when the latter shuddered to a halt and those who had been conducting it were given other assignments.

Meanwhile, back at the State Department of Health, the Office of Health Economics, under the direction of David M. Schneider, Ph.D., was also attempting to secure information from the Social Security Administration and the Title 18 carriers on fee levels and costs under the Medicare reimbursement formula. Dr. Schneider reported that the intermediaries and the Social Security Administration were both reluctant to provide the study group with the data they sought. This survey was therefore also quietly abandoned.

From the beginning of the Medical Assistance to Needy Persons program, your committee has been convinced that accurate fee information is an essential tool in any negotiation and that, in this situation, it is imperative that we be able to document customary fees in the various regions of the State in a precise and unimpeachable manner. The committee had already recommended tentative regions for the appointment of study committees. It was felt, however, that the fee structures arrived at by these committees, if and when they were set in operation, would be suspect on the basis that physicians were reporting on their own fees. Accordingly, your committee suggested to the Council that the proposed fee survey should be conducted by a competent agency, independent of the State Medical Society, to free it from the taint of professional bias.

Simultaneously, the Society's Economics Committee was preparing to fulfill the mandate of the House of Delegates to revise the Relative Value Scale. It was immediately apparent that the type of information needed for this purpose was almost precisely the same as that required by your committee and that, with very little modification, the Economics Committee's study could be made to serve both purposes. A meeting was therefore held with the chairman of the Economics Committee and the following recommendations to the Council were agreed on:

1. That the study proposed by the Economics Committee to revise the Relative Value Scale be approved with whatever structural changes that are necessary to provide the fee information required by the Technical Advisory Committee.

2. That whatever agency is chosen to conduct the study do so under contract with the Empire State Medical, Scientific and Educational Foundation.

3. That the Economics Committee be charged with the conduct and/or supervision of the project.

4. That the chairman of the Technical Advisory Committee, in conjunction with the Chairman of the Economics Committee and the President of the Foundation, be empowered to agree with the New York State Department of Health on the conditions of their possible participation in the project. These agreements were to include but not be limited to (*a*) the authority of the participants, (*b*) cooperation in the preliminary planning of the study, (*c*) the amount of the Health Department's contribution, (*d*) the possible involvement of other interested agencies, and (*e*) disposition of the data and conclusions.

The necessary authorization was given by the Council and the survey is in the process of being prepared. Since the results will not be available for some time, the proposed regional fee study committees have not been appointed nor, indeed, has the composition of the regions themselves been finalized. Your committee recommends that these be appointed when the study group's report can be made available for their comment and recommendations and for distribution to the physicians of their areas. It is the hope of your committee that, in addition to providing the needed fee information, the survey will yield data to determine the validity of the concept of regional differences in medical fees. The protests of some county medical societies on their tentative assignments to regions makes it appear that area differences in fee levels are breaking down.

Pilot Project—In June, 1967, William B. Forsyth, M.D., deputy director of medical services in Monroe County, published the results of a pilot project he had conducted in that county on usual, customary, and prevailing fees for home and office visits. The report confirmed your committee's contention that payment on this basis would have little impact on the total cost of the Medicaid program. The State Health Department, on reviewing the report, decided to recommend that a similar pilot project be conducted in four counties—urban, suburban, and rural—and that those counties be guaranteed reimbursement by the State for any extra costs they might incur. The Health Department, at the time of this report, is seeking the approval of the Department of Social Services. Your committee feels that such a pilot study would have value in determining the specific cost impact of the payment of usual and customary fees and would also help to indicate the administrative difficulties that might arise. A final decision on whether or not the project will be undertaken has not yet been made.

In spite of the flurry of activity in studies of prevailing fees your chairman cannot help but report that, in his opinion, the very term is anathema to the minds of those officials and legislators whose approval would be necessary for the adoption of this method of payment. The cost of the Medicaid program has been so great that the protests have reached almost the proportions of a taxpayers' revolt. It is not generally appreciated that over 80 per cent of this cost is ascribable to nonmedical payments. Under these circumstances, it is extremely unlikely that any payment mechanism will be adopted that would permit an increase in physicians' fees even if it could be shown that total costs would not increase.

As time goes on, inflationary trends will make the currently inadequate Maximum Fee Schedule progressively more substandard. Since your committee is specifically prohibited from accepting any fixed fee schedule, your chairman foresees that the specialty societies will be compelled to seek to negotiate higher "interim" fees for their members, as they have done once before. This circumvention of the State Medical Society is destructive to its efforts to put Medicaid on a workable footing.

Your chairman recognizes the declared intent of the House of Delegates that the Society's adherence to the principle of "usual, customary, and prevailing" be held inviolate. On the other hand, it is becoming apparent that, as scheduled fees sink lower in comparison with customary charges, many more physicians will decline to participate in the Medicaid program. The medical profession is already receiving unjust criticism for the deficiencies of the program and the unwillingness of a large percentage of physicians to accept its terms. A significant further withdrawal of physicians from the program would be harmful to our public posture.

In order to forestall this possibility, your chairman recommends that your committee, or any other appropriate committee of the Society, be given some latitude in negotiating interim fees. When the Relative Value Scale has been revised, it could be used for that purpose with a suitable conversion factor and possibly another multiplier to take regional fee differences into account. Your chairman is aware that this proposal was rejected by the House of Delegates in 1967. He renews it at this time, with trepidation, only because he believes it to be necessary to prevent further deterioration of a bad situation. To complete the portion of this report dealing with physicians' fees, your chairman would like to refer the delegates to the report of the Coordinating Council of the First District Branch, a section of which describes the regulations that have been established by the New York State Department of Health for payment for services rendered to Medicaid beneficiaries in ambulatory care facilities and on hospital teaching services. Another section in that report deals with the disposition of fees paid to hospitals on behalf of staff physicians, which may also be of general interest.

Request to Governor for Negotiating Committee. Your committee has noticed a gradual degradation of the functions of the Technical Advisory Committee on Medical Care and the importance of the matters brought before it. It has been impossible to reach decisions on major policy with the State Health Department through this mechanism. Even when the Health Department does come to a major decision, it is often not binding because authority over the program overlaps and is divided among the Department of Health, the

Department of Social Services, and, apparently, the Department of the Budget.

Your committee, as originally appointed, was charged with the responsibility of negotiating with an Interdepartmental Task Force and was not intended to be either technical or advisory in nature. It is true that, on the recommendation of your committee, a representative of the Department of Social Services has been attending the meetings. This improves our communications but does not change the fact that the current arrangement does not provide for positive action on matters of considerable importance and urgency. Accordingly, your committee recommended to Frederick A. Wurzbach, Jr., M.D., president, that he write to Governor Rockefeller requesting him to set up a committee with top echelon representation from the office of the Governor, the Department of Health, the Department of Social Services, the Department of the Budget, and the Technical Advisory Committee, and that the group thus formed have the power to act. The letter was sent on April 25, 1967. This request, together with a similar later one, was denied.

The only recourse your chairman has been able to discover to secure prompt discussion and action on matters of importance and urgency has been to ask for a meeting with Alton Marshall, the Governor's secretary, and the State officials involved in the Medicaid program. He did this on two occasions, acting in another capacity, and although the results were not spectacular, the meetings were useful, and final decisions were made. This arrangement is not entirely satisfactory since it cannot be used regularly. Your committee therefore usually uses its meetings with the Health Department to introduce questions of major policy and carries these further only when action is not forthcoming.

Physician Qualifications. The New York State Department of Health has insisted on implementing its qualification and postgraduate study requirements for physicians participating in Medicaid. These are to go into effect early in 1968 despite the protests of the Medical Society of the State of New York. These protests have been based on the conviction that such requirements are not necessary or even conducive to the improvement of medical care and that they would establish the Health Department as a secondary agency for the licensing of physicians. Although the Empire State Medical, Scientific and Educational Foundation was authorized to work with the Health Department in developing opportunities for physicians to maintain and improve their skills through postgraduate study, this activity is not to be interpreted as acquiescence by the Medical Society of the State of New York to the proposed regulations.

Summary. Your chairman must therefore regretfully report that, in spite of strenuous efforts on the part of your committee, not a single one of the major requirements of the 1967 House of Delegates has been met by the State Administration. The only accomplishment of the year was a modest one in the form of the State Medical Manual which, ignoring the regulations on physician participation in Medicaid and the fee schedule it contains, will ultimately become a useful administrative tool.

This, then, is the condition of the New York State Medical Assistance to Needy Persons program in November, 1967, when this report is being submitted. It is unlikely that there will be any important changes in it between now and the 1968 annual meeting of the House of Delegates. State officials are obviously waiting for congressional action on the recommendations of the House Ways and Means Committee before they even consider modifying the present program. They may also anticipate alterations in the New York State law at the next session of the State Legislature. Whatever their reasons, meetings dates have been scheduled further and further apart and what we ruefully call negotiations are in a state of suspended animation awaiting the stimulus of expected legislation for their revival.

Your chairman would like to touch briefly on the question of "universal health insurance" or what he likes to call compulsory voluntary health insurance. A proposal of this nature was considered by the State Administration and by the Legislature in 1967 but was not adopted. Regardless of the effect of future legislation on the New York State Medicaid program, your chairman is convinced that there will be a strong drive to enact a universal health insurance program. This will be the subject of the report of another committee of which your chairman is a member, so it will not be elaborated on here. The important thing to remember is that Medicaid will still be operational whatever changes may be made in the Medical Assistance to Needy Persons Law. The correction of its many deficiencies will be no less important if part of the program is turned back to the private sector. Your State Society must continue to demand and fight for those corrections.

Your committee would emphasize the weaknesses inherent in the divided administration of the Medicaid program. It has resulted in operational chaos. In addition, it makes meaningful negotiation between the State Administration and the State Medical Society impossible. Your committee's desire to establish a high level negotiating group was based on its recognition of this fact. It would be even more beneficial to the proper development of the Medicaid program if it were turned over to a single agency vested with all necessary authority. The present arrangement is about as viable as a three-headed calf. There will be additional recommendations in a supplementary report to be submitted to the House.

Conclusion. In closing, your chairman would like to express his sincere gratitude to the members of the committee. They have been faithful in their attendence at meetings, mature and flexible in their thinking, and an inexhaustible source of advice and support.

Respectfully submitted,
GEORGE HIMLER, M.D., *Chairman*

Public Health and Education

Commission on Public Health and Education

To the House of Delegates, Gentlemen:

The Commission on Public Health and Education has the following membership:

Irving L. Ershler, M.D., *Chairman*	Onondaga
Franklyn B. Amos, M.D.	Albany
Norman J. Ashenburg, M.D.	Monroe
Peter S. Battaglia, M.D.	Niagara
William A. Bauman, M.D.	New York
Frederick Beck, M.D.	Tompkins
Charles A. Bertrand, M.D.	Westchester
Marvin A. Block, M.D.	Erie
Marvin L. Bloom, M.D.	Erie
Matthew Brody, M.D.	Kings
Irving Cramer, M.D.	Oneida
Leo Dobrin, M.D.	Queens
Arthur H. Dube, M.D.	Onondaga
James I. Farrell, M.D.	Oneida
Merton C. Hatch, M.D.	Onondaga
Milton Helpern, M.D.	New York
Edward C. Hughes, M.D.	Onondaga
Herbert A. Laughlin, M.D.	Chautauqua
Harry S. Lichtman, M.D.	Kings
James A. Moore, M.D.	New York
Jason K. Moyer, M.D.	Broome
Kenneth B. Olson, M.D.	Albany
Charles D. Sherman, Jr., M.D.	Monroe
Norman Simon, M.D.	New York

Each of the these members is a chairman of one of the Commission's committees.

Meeting with New York State Department of Health. The Commission met with representatives of the New York State Department of Health in Albany, on August 3. Eighteen of the Commission's 23 committee chairmen were present and gave reports. The other five chairmen submitted written reports.

Representing the Health Department were: Hollis S. Ingraham, M.D., commissioner; Granville W. Larimore, M.D., first deputy commissioner; Andrew C. Fleck, Jr., M.D., deputy commissioner; Robert P. Whalen, M.D., deputy commissioner; and the directors of bureaus of the State Health Department.

Also representing the Medical Society of the State of New York were: Henry I. Fineberg, M.D., executive vice-president; Norman S. Moore, M.D., director of scientific activities; and Edward C. Hughes, M.D., president-elect. Present by invitation were Mrs. James A. Moore, Albany, president, and Mrs. Granville W. Larimore, Albany, chairman, Public Health and Education, of the Woman's Auxiliary to the Medical Society of the State of New York.

This annual meeting serves to correlate the work of the Commission with that of the Health Department. It also coordinates the work of the committees and helps to eliminate duplication of effort. This year's meeting was particularly effective in achieving these aims. Dr. Ingraham stated that this annual meeting is eagerly anticipated by members of his Department because it is one of the most important contacts and means of communication between the State Medical Society and the Department of Health.

The work at the meeting was comprehensive and absorbing, occupying an entire day. It was suggested that in the future it might be well to plan a two-day session. A summary of the reports and plans discussed at the meeting has been prepared and may be obtained by interested persons on request.

Committees. The Commission's two new committees, Health Manpower and Data Processing in Medicine, have made progress. There will be an exhibit on data processing in medicine at the annual meeting in February. The Health Manpower Committee has been authorized by the Council to proceed with its proposed program concerning the serious and, in some instances, critical shortages in health manpower.

The Committee on Alcoholism and Drug Abuse has prepared "Criteria for Admission of Alcoholics to General Hospitals" and copies are being distributed by the Division on request. These have received favorable publicity in the press. At the suggestion of the Committee on Alcoholism and Drug Abuse, there has been appointed jointly with the New York State Bar Association an Ad Hoc Committee on Alcoholism and Drug Abuse. This joint committee is just beginning to work.

The Committee on Continuing Education has proposed a significant and progressive program. The details of this are outlined in the committee's report. The program has been approved in principle by the Council and will probably be implemented in early 1968.

The Committee on Aging and Nursing Homes met with representatives of the podiatry, optometry, and dental professions to discuss respective roles of each discipline in the care of patients in nursing homes of the State. Inasmuch as the quality of care of nursing home patients reflects conformity to the Nursing Home Code, under article 28 of the Public Health Law, the first meeting, while sponsored by the Committee on Aging and Nursing Homes, was held under the auspices of the State Department of Health.

The next meeting also will be sponsored by this committee and will include, in addition to representatives of these groups, spokesmen for the nursing home industry.

Forensic Medicine Symposium. More than 75 physician-coroners, medical examiners, forensic pathologists, and others attended the fifth annual Symposium on Forensic Medicine, Saturday and Sunday, October 28 and 29, at the Office of the Chief Medical Examiner of New York City. Principal consideration was given to "Official Investigation of Medically Unattended, Unexpected, Sudden, Suspicious, and Violent Death." The symposium was conducted by Milton Helpern, M.D., chairman of the committee.

The Medical Society of the State of New York is represented on the New York State Interagency Committee on Hazards of Smoking by Norman S. Moore, M.D., director of the Division of Scientific Activities, and your chairman.

Your attention is called to the individual committee reports which outline in detail their activities during the past year and their plans for the future.

Your chairman takes this opportunity to acknowledge with gratitude the efforts of all committee members and especially the dedication and plain hard work of the committee chairmen. Norman S. Moore, M.D., as director of the Division of Scientific Activities, has been a tower of strength and has given freely of his wisdom, time, and energies to make our program a success. Samuel Pakula, our stenotypist, recorded our proceedings faithfully. Without him an accurate record would have been impossible. Last, but far from least, goes my personal gratitude to Gretchen Wunsch. It is really she who pulled the whole program together and kept it there. We will miss her, but our best wishes go with her to her new and more responsible position.

Respectfully submitted,
IRVING L. ERSHLER, M.D., *Chairman*

Accident and Injury Prevention

To the House of Delegates, Gentlemen:

The members of the Committee on Accident and Injury Prevention are as follows:

Irving Cramer, M.D., *Chairman*	Oneida
James E. Holmblad, M.D.	Schenectady
Robert H. Kennedy, M.D.	New York
John D. States, M.D.	Monroe
Harold Brandaleone, M.D.	New York

The main business before the committee was action on the resolutions referred by the Council on March 23. The letter from Dr. Fineberg concerning the resolutions was read, and each resolution was acted on as follows:

1. *Resolution 67–2, "Basic Protection for the Traffic Accident Patient."* The committee approved this resolution and recommended that, with the approval of our Legal Counsel, the Medical Society of the State of New York propose and support legislation as indicated in the *Resolved* portion of this resolution.

2. *Resolution 67–11, "Legislation to Establish Motorcycle Safety Regulations."* The chairman reported that H. A. Fenner, M.D., New Mexico, chairman of the AMA Accident Prevention Committee, informed him that similar legislation was being recommended by the AMA. Dr. States pointed out that specifications have already been passed by the New York State Legislature requiring helmets and safety goggles, which were a little less than the standards set up by the American Standards Association. He also points out that rear view mirrors and tail lights are now required equipment for motorcycles. The committee supports resolution 67–11 in recommending legislation in New York State that will require motorcycle crash bars and will permit second riders only on motorcycles with adequate handholds, foot rests, saddles, and suspension systems.

3. *Resolution 67–12, "Establishment of Accident Investigation Teams (AIT) at Medical Centers."* The committee supports the portion of this resolution that the Medical Society of the State of New York ask the New York State Legislature to strongly support the establishment of Accident Investigation Teams at medical centers in New York State and to assist these centers in obtaining help from the State and Federal governments. There should also be provisions in the legislation granting immunity from legal action to members of accident investigation teams.

4. *Resolution 67–29, "Recommendation for Medical Advisory Board to Bureau of Motor Vehicles."* The committee recommends that the Medical Society of the State of New York recommend to the Legislature of the State of New York that a medical advisory board be created to advise the Bureau of Motor Vehicles on the physical examinations and the supervision and control of drivers with mental or physical defects which interfere with safe driving. Members of this board should also have immunity from legal action.

A letter was read from Henry I. Fineberg, M.D., to Irving L. Ershler, M.D., chairman of the Commission on Public Health and Education, which referred to a suggestion made by John H. Carter, M.D., regarding helicopter service which could pick up an accident victim on a highway or a patient in a rural area and transfer him to a hospital or perhaps to a large medical center. It was felt that the idea is a good one but is not practical at this time. However, continued studies should be made in this direction.

The committee reviewed procedures for licensing drivers with history of "seizures, spells, and blackouts." A copy of a speech on this subject, given by Norman S. Moore, M.D., while he was visiting Sweden, was read to the committee. The previously promulgated rules and regulations regarding these conditions were reviewed. The committee was unanimous in its reaffirmation of support for these principles and governing policies. The committee further recommended that copies of these rules and regulations be made available to all members of the State Medical Society and the method of distribution to be left to the discretion of the State Medical Society. Our committee feels that adequate safeguards for the patient and the public are built into these rules and regulations.

The next major topic to be discussed was ambulance service and the ambulance law. In this regard, the program described in resolution 67–35, "Education Program in First Aid and Transportation of Injured" was discussed. The reference committee approved the resolution to indicate endorsement of the program, and this agrees with the committee's action. In connection with this subject, the Council suggested that the committee discuss this with David N. Kluge, M.D., Rochester, and Dr. Kennedy, who is a member of our committee. Attention was called to the fact that the State Health Department now has courses to train ambulance personnel. The committee recommends the "Advanced American Red Cross First Aid Course," supplemented by additional courses in external cardiac compression, emergency childbirth, and handling of the mentally upset patient. It is recommended that the State Health Department be consulted in regard to coordinating their teaching programs with the Red Cross programs and that these training programs be made available to all voluntary ambulance personnel as well as to the funeral directors.

The committee noted that Chapter 620 of the Laws of 1967, together with the Governor's memorandum A–161, created a highway safety program for the State and empowered the Governor to do what was necessary to meet the specifications for Federal highway funds. The Governor's memorandum authorizes the Interdepartmental Commission, composed of the Commissioner of Health, Motor Vehicles, Transportation, Superintendent of Police, and the Commissioner of Education to head up this program. This commission has made the Department of Health responsible for emergency medical service plans in this State.

The committee strongly recommends that an informal advisory group be created with adequate medical representation to provide high quality emergency medical care on the highways. There is need for a better communication system for emergency vehicles, such as ambulances and helicopters, and for higher standards of medical service at reception points, such as hospital emergency rooms. Also, there is urgent need for advice on medical problems resulting from the projects involved in implementing the programs supported by the transportation bond issue which the voters approved at the last election.

The chairman of the committee attended a meeting of the Advisory Committee on Ambulance Services held at the State Health Department, under the chairmanship of Stephen C. Mahady, M.D., assistant commissioner for medical services. This meeting included representatives of the Ambulance Owners Association, the American College of Surgeons, New York State Police, and various other interested individuals. Considerable discussion was held and recommendations were made regarding implementation of the Ambulance Law and setting up standards.

Dr. States attended the meeting of the Committee on Medical Aspects of Automotive Safety of the American Medical Association as a representative from our committee. Dr. States has informed me that there is a uniformity in thinking on this subject at the AMA and State Medical Society levels.

It is anticipated that another meeting of this committee will be held prior to the February, 1968, meeting of the House of Delegates.

Respectfully submitted,
IRVING CRAMER, M.D., *Chairman*

Alcoholism and Drug Abuse

To the House of Delegates, Gentlemen:

The members of the Committee on Alcoholism and Drug Abuse are as follows:

Marvin A. Block, M.D., *Chairman*	Erie
William Antopol, M.D.	New York
Stanely E. Gitlow, M.D.	New York
Donald B. Louria, M.D.	New York

During the past year, the committee formalized the following suggestions to improve and facilitate its work. These were presented to the Council.

1. That a committee of physicians knowledgeable in the field of narcotic addiction be appointed to establish guidelines and policy regarding narcotic addiction; that the committee be authorized to utilize consultants from other disciplines; and that it be used in an

advisory capacity to any group seeking its help, such as law enforcement agencies, social agencies, and so on.

2. That the State Medical Society encourage local medical societies in those counties where narcotic addiction is a major problem to appoint similar committees at the county level to provide guidelines and give advice not only to agencies but also to individual physicians who request such information.

3. That the State Medical Society sponsor a State-wide conference on the misuse and abuse of narcotics similar to the national conference which was held by the American Medical Association last January for the purpose of discussing the narcotic problem, and to include in such a conference representatives not only of medicine, but of law enforcement personnel, pharmacists, nurses, and other ancillary groups.

4. That the State Medical Society publicize to all physicians a request that breaches of confidentiality in the reporting of addicts be reported to the Society so that the Society may, in turn, report such breaches to the New York State Health Department, and that the Society help re-establish a system of reporting habitual users of drugs which insures confidentiality.

5. That the suitability of using triplicate narcotic prescription blanks be studied for the purpose of better control of narcotic prescriptions.

6. That to help implement these suggestions and carry out further applicable measures, the Committee on Alcoholism and Drug Abuse be authorized to establish a Joint State Medical Society and State Bar Association Committee on Alcoholism and Narcotics and that the chairman of the present committee be authorized to communicate with the State Bar Association regarding names of members for such a joint committee.

In addition, it is my suggestion that membership of the Committee on Alcoholism and Drug Abuse be augmented to include a number of physicians representing the various disciplines which I feel are important to increase the efficiency and value of our committee. Specifically, I should like to see a qualified pharmacologist, a qualified psychiatrist, and a qualified educator, all physicians, added to our committee.

The problem of alcoholism and drug abuse is becoming more and more important as more younger people are beginning to use various kinds of drugs without proper information and background regarding these dangers involved. I feel that our committee and our State Medical Society have a responsibility to initiate and continue an ongoing educational program of sufficient intensity to keep before the public the growing importance of this increasingly dangerous problem. To this end, I also feel that our committee should have a full-time executive secretary who can devote himself or herself to the work which must be continually carried on in order to accomplish the ends which I have mentioned.

Respectfully submitted,

MARVIN A. BLOCK, M.D., *Chairman*

Cancer

To the House of Delegates, Gentlemen:

The members of the Cancer Committee are as follows:

Charles D. Sherman, Jr., M.D., *Chairman*	Monroe
Richard D. Brasfield, M.D.	New York
Walter T. Murphy, M.D.	Erie
Kenneth B. Olson, M.D.	Albany
Herbert Volk, M.D.	Westchester

The committee held four meetings during the year.

A general session was organized by the committee on "Chemotherapy from the Practitioner's Viewpoint" and was presented at the Annual Meeting of the Medical Society of the State of New York in February, 1967.

Radiotherapy. The problem of increasing the number of well-trained specialists in radiotherapy was reviewed by the committee. The following "white paper" and resolution on increasing the opportunities for training was presented to and adopted by the Council. These are to be published in *Cancer*, the American Cancer Society's journal for physicians.

Memorandum on radiotherapy. Many of us in the cancer field are concerned about the extremely slow progress occurring in the field of radiation therapy as a specialty. Some of us feel that the major stumbling block has been the reluctance of those in power to effect a divorce between the fields of diagnostic radiology and radiotherapy. Yet, in reality, the training of the radiotherapist must be clinical and in the field of oncology. The radiotherapist gives major therapy to patients and needs clinical training and understanding of the pathology of cancer, general medicine, general surgery, chemotherapy, as well as some knowledge of radiobiology. The radiotherapist does not need specialist training in diagnostic radiology; on the contrary, his needs are in the fields noted herein.

It would seem that because of this situation, the other disciplines in clinical oncology must make an effort to aid the separation of diagnostic radiology and radiotherapy so that improved training programs and better radiotherapy departments can be developed in a greater number of centers. Only then, we believe, will our patients uniformly get the topnotch radiotherapy they deserve.

In general, the following resolution is aimed at improving the number of well-qualified, full-time radiotherapists in this country. We feel that all specialty groups interested in cancer should take similar action and actively support measures designed to accomplish this aim.

> WHEREAS, There is an acute shortage of trained radiation therapists in the United States; and
>
> WHEREAS, There are too few men and women training to be radiation therapy specialists; and
>
> WHEREAS, There is an increasing number of cancer patients who need irradiation; and
>
> WHEREAS, Most of the irradiation of cancer patients in the United States is done by general radiologists who are required by the American Board of Radiology to have only ten months of training in radiation therapy (very infrequently under a full-time specialist in radiation therapy); and
>
> WHEREAS, Surgeons and internists specializing in cancer diagnosis and management recognize this rather distressing situation; now therefore be it hereby
>
> *Resolved*, That medical students be given a curriculum opportunity to spend at least some elective time in a department of radiation therapy to become acquainted with the existence and function of the radiation therapy specialist; and be it further
>
> *Resolved*, That medical students be offered summer fellowships in selected departments of radiation therapy for more intensive briefing concerning this specialty; and be it further
>
> *Resolved*, That interns be given an elective opportunity to spend at least a few days in a department of radiation therapy for the same purpose; and be it further
>
> *Resolved*, That residents in radiation therapy be given "favored" compensation especially if financially distressed; and be it further
>
> *Resolved*, That surgical and medical residents with two years service be given at least one year training credit in a program of radiation therapy training; and be it further
>
> *Resolved*, That board qualified surgeons and internists, preferably the former, who enter a training program in radiation therapy be compensated on a "staff" basis during their training period. Such trainees should receive at least one year credit toward their radiation therapy training period.

Committee Functions. The following outline of the committee's functions was prepared, including suggestions for the future:

1. *Coordinating function.* The committee should act as a coordinating committee to help coordinate the activities of all cancer groups in the State to make them more effective. It should be a forum for these diverse groups where they can present their programs and receive constructive suggestions, as well as support, from other interested groups which may at times have differing viewpoints.

These groups which have important programs in the cancer field include the American Cancer Society, the Bureau of Cancer Control of the State Health Department, the American College of Surgeons, the regional medical programs, the "cancer coordinators" of our medical schools, and the newly formed Association of Tumor Clinic Directors.

There is an overlapping membership of the key men in many of these groups, but the Cancer Committee seems to be the one group which can have an over-all coordinating function.

2. *Advisory function.* We feel it is the responsibility of the committee in representing the medical profession to periodically review all cancer programs in the State and to give constructive criticisms as well as help identify gaps in the field of cancer control. We should then stimulate action (largely by other groups) to fill the needs. We should be willing to review not only the programs of various groups in the cancer field, but to help any local segment of the profession, or community, or local hospital in identifying its needs in the cancer field and help fill these needs. Since our committee functions partly as an "interlocking directorate" of groups with money and staff, we should be able to interest them in supporting local activities. We should be able to identify problems and programs that cross local lines and require State-wide development, action, and cooperation. We should be a forum even for individuals who wish to present ideas or programs to us.

3. *Miscellaneous functions.* (*a*) The committee should stimulate needed legislation in the cancer field (that is, quackery laws, better control of cigaret advertising) and changes in the public health field (for example requiring Pap smear tests for certain hospital admissions).

(*b*) The committee should stimulate better programs of postgraduate education and do what it can to make them more effective in improving the care of the patient (that is, our sigmoidoscopy project). We should conduct programs and give exhibits at the annual meetings of the State Medical Society and should aid other groups, such as the regional medical programs, in developing methods of evaluating cancer control programs so that we have an effective means of comparing present care with future care.

(*c*) When any need in the cancer field is identified, we should institute a multifaceted program to fill that need (for example, our efforts to get more and better trained radiotherapists in New York State).

(*d*) We should identify physicians interested and willing to work at the local level and encourage and support them in their activities, bringing them together at suitable intervals for discussion and interchange of ideas (for example, our formation of an association of tumor clinic directors).

(*e*) Adequate means of communication of the committee's activities should be developed and continually improved. Perhaps a newsletter three or four times a year should be sent to all State Society members identified as having a special interest in cancer. (For example, such a newsletter could be sent to all members of the association of tumor clinic directors). In addition to reporting on the activities of the committee, it could include items from the various other agencies active in the cancer field. Selected articles from a newsletter of interest to the general membership of the State Society could be edited and published in the NEW YORK STATE JOURNAL OF MEDICINE.

Other activities. State Senator Edward J. Speno met with the committee in June for a joint discussion on the problem of smoking.

The committee went on record as being in favor of a change in the State Hospital Code which would require Pap smears to be taken on certain groups of women admitted to hospitals in New York State. This action was reported to the Council which approved a motion that this is desirable and that it be implemented, but that this procedure not be done if the patient disagrees or the physician feels it is not indicated.

The committee continued to urge coordination of the regional medical programs in New York State and participated in meetings designed to do this. It also set in motion plans to invite each program coordinator to discuss his cancer program with our committee; stimulated the formation of a group of physicians active at the local level in cancer, hoping to accomplish our goals through the activities of this group; and continued its liaison with the New York State Bureau of Cancer Control, the American Cancer Society, the American College of Surgeons, and other groups interested in cancer.

Respectfully submitted,

CHARLES D. SHERMAN, JR., M.D., *Chairman*

Cardiovascular Disease

To the House of Delegates, Gentlemen:

The members of the Committee on Cardiovascular Disease are as follows:

Charles A. Bertrand, M.D., *Chairman*	Westchester
Joseph T. Doyle, M.D.	Albany
Margery H. Greene, M.D.	Nassau
David Greene, M.D.	Buffalo
Abraham Jezer, M.D.	Bronx
Irwin K. Stone, M.D.	Jefferson

The Committee met on June 16 to discuss its program for the coming year. There was considerable discussion about the activities of the Coordinating Stroke Committee, which is integrating activities throughout the State and doing excellent work. Discussion was also held concerning the new publication, *Stroke*, which was well received.

The committee approved joint sponsorship of the Conference on Coronary Care to be held in Syracuse. Stewart W. Cooper, M.D., of the Bureau of Heart Disease, had interesting statistics relevant to the 553 hospitals in the State. As of the time of the meeting, 42 already had coronary care units and many others were in the planning stage. Dr. Moore said that he would look into the matter of coronary care training for nurses, and he did report that such courses are being held in the New York Hospital-Cornell Medical Center, under Thomas Killip, M.D. It is hoped that other such courses will be given within the State of New York.

The joint cardiopulmonary resuscitation program, which was originally set up by J. G. Fred Hiss, M.D., and James Greenough, M.D., has been reactivated, and retraining of groups has been started throughout the State. This seemed to be an excellent idea, and it was well received. It was thought that, in the main, such efforts should be concentrated within the limits of the hospital, since the chance of successful cardiopulmonary resuscitation is slight outside of a hospital.

In consideration of time involved and travel expenses, it was decided to give thought to the idea of having telephone conferences rather than meetings in person of the various members of the committee. It was thought that perhaps 2 or 3 telephone conferences could be held each year and one full committee meeting at the time of the annual meeting, when most of the members would be available.

Respectfully submitted,

CHARLES A. BERTRAND, M.D., *Chairman*

Chronic Pulmonary Diseases

To the House of Delegates, Gentlemen:

The members of the Committee on Chronic Pulmonary Diseases are:

Frederick Beck, M.D., *Chairman*	Tompkins
Harry Golembe, M.D.	Sullivan

Frank Clay Maxon, Jr., M.D. . . . . Albany
Carl Muschenheim, M.D. . . . . New York
Marshall Henry Williams, Jr., M.D. . . Bronx

The activities of this committee have been directed toward the extension of teaching and treatment facilities for chronic pulmonary disease throughout the State. Acting on instructions from the House of Delegates, the committee supported a bill in the Legislature to permit the State Department of Health to provide limited treatment facilities in its hospitals. The bill did pass in the Senate and had the endorsement of the Governor's office, but failed to pass in the Assembly.

This committee has been represented on the New York Tuberculosis and Health Association committees and has aided in the formulation and development of their programs in tuberculosis and chronic pulmonary disease.

We have also acted in a consultative capacity to the State Department of Health in its programs and at the present time are participating in an evaluation of its program and possible legislative proposals.

Our efforts have been directed to strengthening the teaching programs in the Upstate medical schools, not alone for physicians, but for nursing and technical personnel as well. Committee members are impressed that statistics indicate a rising incidence in deaths as well as in numbers of patients with chronic pulmonary disease. It is our belief that we should do all we can to promote excellent care for this type of patient in local general hospitals as well as to stimulate research programs in the larger medical centers.

Respectfully submitted,

FREDERICK BECK, M.D., *Chairman*

Continuing (Postgraduate) Education

To the House of Delegates, Gentlemen:

The members of the Committee on Continuing (Postgraduate) Education are as follows:

Marvin L. Bloom, M.D., *Chairman* . . . . . Erie
Richard D. Eberle, M.D. . . . . Onondaga
Robert Lee Patterson, Jr., M.D. . . New York
Theodore J. Prowda, M.D. . . . . Oneida
Leonard J. Schiff, M.D. . . . . Clinton
Franklyn B. Amos, M.D. . . . . Albany

As one component of the Commission on Public Health and Education, the committee's mission has been stated as follows: "to study the need for and to develop a State-wide plan for continuing medical education in New York State."

The committee's primary function is to advise the Commission. In the present presentation, it is trying to suggest practical approaches to activate continuing education leadership from the Medical Society of the State of New York.

The committee wants to underscore the complexity of the present scene. There is a tremendous need for coordination of multiple offerings from diverse sources: various professional specialties; programs from Federally-mandated regional medical programs, New York State Department of Health, State University of New York, various academies, and so on. The job of guidance and selection must be done for physicians. At present, no really comprehensive approach to individual educational needs can be identified, despite almost innumerable miscellaneous programs offered. As in any other sound educational program there must be clear goals, proper focus, and continuity. New stress is needed on interprofessional programs so as to provide proper emphasis to the health-team approach in medical care and the leadership obligations of physicians.

The committee emphasizes the reality of a rapid change from purely voluntary postgraduate participation to a situation where formal attendance is becoming mandatory. All across the nation, there are visible signs of this trend. In our own State, there is a significant new contract between the Empire State Medical, Scientific and Educational Foundation and the New York State Department of Health. Under this arrangement, many physicians who provide services under Medicaid will be required to provide evidence of one hundred fifty hours of postgraduate education every three years.

The committee is anxious to dispel any notion that a unit of credit for postgraduate education must be based on a classroom-lecture structure. A vast flexibility in acceptable continuing education forms must be understood and accepted. Extremely effective continuing education can be accomplished in many ways, most of them far superior to the too often deadly atmosphere of the classroom-lecture. In the context of daily clinical practice, there are untapped resources for meaningful and carefully structured postgraduate education. The use of the proctosigmoidoscope, for example, even offers a tutorial dimension which could be applied to innumerable subjects. University centers must be encouraged to spread academic influence centripetally, as opposed to the older but still present centrifugal trend. Medical teaching itself is one of the best modes of continuing education. Television films and radio tapes have pointed the way to simultaneous exercises which can reach any remote part of the State. Programmed instruction has its place. Data processing technics afford opportunity for new ways to retrieve information effectively and economically. A whole spectrum of educational forms is available, and the committee would like the Commission's support for its position that all imaginative educational possibilities be afforded proper place. There is a serious danger that, in the rush to force formal attendance, requisite "hours" or "credits" might be based on archaic and unsatisfactory center-based and classroom-lecture-structured "courses."

Last year the committee recommended that the work of the committee be expanded by means of the Empire State Medical, Scientific and Educational Foundation. The reference committee at the 1967 session of the House of Delegates recommended "that the State Society encourage the expansion of postgraduate education for general practitioners and specialists through the Empire State Medical, Scientific and Educational Foundation, and that the Society through the Foundation actively seek financial support from private and public agencies."

Another factor which coincided with this was the requirement that the State Health commissioner, by law, has to establish the quality of care under Medicaid. His recommendations, through the Board of Social Welfare, included certain qualifications for the physicians, such as, if the physician is not a specialist, is not affiliated with a hospital, is not a member of the American Academy of General Practice, and so on, he is required to take at least one hundred fifty hours of continuing education courses every three years.

As a result, a contract has been entered into for a review and evaluation of existing continuing medical education programs for physicians; to establish criteria for courses, preceptorships, and other continuing education; to cooperate with appropriate representatives of the State Medical Society and other professional organizations to determine the areas of need for additional continuing educational opportunities for physicians; to arrange courses for physicians which will provide them with information concerning the most recent developments in the medical field, so that they can provide optimal medical care for their patients; to investigate the method by which information which will be most useful to practicing physicians can be made available to the greatest number of physicians; and to record and report to the Department of Health the amount of continuing education of physicians who require such education to qualify for participation in the program of Medical Assistance to Needy Persons. This contract has gone through all the necessary stages and is expected to become effective in the immediate future.

During the year the committee presented the following proposals to the Commission for its consideration and referral to the Council:

1. That an inquiry, in the form of a questionnaire, be initiated to find out what physicians want in comprehensive continuing education programs.
2. That the inquiry be funded and implemented as a cooperative effort between the Committee on Continuing Education and the Empire State Medical, Scientific and Educational Foundation.
3. That the inquiry be considered officially by Norman S. Moore, M.D., of the Empire State Medical, Scientific and Educational Foundation and by the Medical Society of the State of New York.
4. That the inquiry be designed scientifically by competent experts and prepared for automated data processing.
5. That there be consideration of the following areas of cooperation with the New York State Journal of Medicine:

(*a*) Actual publicizing of the inquiry-questionnaire;

(*b*) Printing and circulation of the inquiry-questionnaire;

(*c*) Ultimate publication of the results from the inquiry-questionnaire;

(*d*) Creation of a continuing section in the Journal, to be devoted to medical continuing education, in coordination with the Committee on Continuing Education. In this connection, the committee could strengthen its own advisory capability by recruiting a roster of consultants and help devise effective material for this section, by commissioning brief authoritative statements on every aspect of medical practice. These could be devised as a new kind of personal expression, without tedious detail or even bibliography, and might be called "guides to professional practice."

Respectfully submitted,
Marvin L. Bloom, M.D., *Chairman*

Data Processing in Medicine

To the House of Delegates, Gentlemen:

The members of the Committee on Data Processing in Medicine are as follows:

William A. Bauman, M.D., *Chairman*	New York
William J. Burke, M.D.	Westchester
Ralph L. Engel, Jr., M.D.	New York
Arthur Shapiro, M.D.	Kings
Robert K. Ausman, M.D., *Adviser*	Erie

The committee held its organizational meeting in June, 1967. It was decided that the activities of the committee will be directed primarily toward informing the members of the State Medical Society concerning technics and applications of computers in medicine.

The members agreed to develop a seminar for the annual convention of the State Medical Society in February, 1968. There has been correspondence among the members concerning this program, but otherwise there has been little activity by the committee.

Respectfully submitted,
William A. Bauman, M.D., *Chairman*

Diseases of the Eye

To the House of Delegates, Gentlemen:

The membership of the Committee on Diseases of the Eye is as follows:

James I. Farrell, M.D., *Chairman*	Oneida
John A. Kennedy, M.D.	Jefferson
Philip H. Landers, M.D.	Broome

There has been no formal meeting of this committee during the past year. However, we have held two telephone meetings and one by correspondence in order to give our opinion to the Society's executive vice-president on matters he referred to us.

The chairman did attend two executive committee meetings of the New York State Ophthalmological Society and the August meeting of the Commission on Public Health and Education.

Respectfully submitted,
James I. Farrell, M.D., *Chairman*

Environmental Health

To the House of Delegates, Gentlemen:

The members of the Committee on Environmental Health are as follows:

Norman J. Ashenburg, M.D., *Chairman*	Monroe
Eric J. Cassell, M.D.	New York
Carl U. Dernehl, M.D.	New York
David W. Fassett, M.D.	Monroe
Thomas M. Gocke, M.D.	Kings

During the past year the chairman served as chairman of the New York State Action for Clean Air Committee representing the State Medical Society in this very active environmental health organization.

The chairman presented statements at the following hearings:

1. Interstate Abatement Action on Air Pollution in the New York–New Jersey Metropolitan Area—urging an effective cooperative interstate program with uniform air quality standards and comparable control legislation.
2. New York State Air Pollution Control Board—urging adoption of Parts 192 and 193 of its Rules dealing with automotive exhaust control and urging a redesign of our thinking about the larger questions of air pollution with regard to transportation.
3. New York State Air Pollution Control Board—urging adoption of rules for the prevention and control of air contamination and air pollution from general contaminant emissions and from incinerators.
4. New York State Air Pollution Control Board—endorsing proposed rules for fuel use in the New York metropolitan area in the interest of better health, but pointing out that a piecemeal approach to air pollution control is imprudent and that one must be fully aware of the impact of control measures on other sectors of society.

The chairman urged legislative support of S. 3424 permitting the Interstate Sanitation Commission to establish and enforce air-pollution standards in the New York metropolitan area.

The chairman represented the State Society at the American Medical Association's Congress on Environmental Health Management and presented a paper on the "Role of the Medical Society in Environmental Health."

Respectfully submitted,

Norman J. Ashenburg, M.D., *Chairman*

Forensic Medicine

To the House of Delegates, Gentlemen:

The members of the Committee on Forensic Medicine are as follows:

Milton Helpern, M.D., *Chairman*	New York
Richard Ament, M.D.	Erie
Alfred A. Angrist, M.D.	Bronx
John F. Devlin, M.D.	New York
Valentino D. B. Mazzia, M.D.	New York
Robert M. Greendyke, M.D.	Monroe

It is the consensus of the committee that a medical examiner system throughout New York State is desirable and that it should be organized on a regional basis with grouping of counties into districts rather than as a State agency.

The committee requests the House of Delegates' approval to explore ways and means of replacing the coroner system with a medical examiner system, in general, throughout the State and asks permission to start discussion for a pilot study in the Rochester area in particular.

Inasmuch as Monroe County has an excellent medical examiner system in operation, the committee supports the use of the Rochester area for a pilot study of a district plan for a medical examiner system.

The State Department of Health is in a position to help in organization, since it is set up by districts. It is believed that financially the Health Department is prepared to underwrite part of the cost.

Each county would be eligible for a part—even up to 50 per cent of the cost—if it entered the medical examiner system.

Respectfully submitted,
MILTON HELPERN, M.D., *Chairman*

Health Aspects of Ionizing Radiation

To the House of Delegates, Gentlemen:

The members of the Committee on the Health Aspects of Ionizing Radiation are:

Norman Simon, M.D., *Chairman* . . New York
Hendrik M. Rozendaal, M.D. . . . Schenectady

During 1967, the committee has maintained liaison with national and local organizations during a period of heightened interest in the hazards of medical radiation. Of particular importance has been a current investigation by a subcommittee of the Senate Commerce Committee originally designed to probe the problem of emission of excessive radiation from some color television sets. This investigation has branched out into a consideration of many electronic sources of radiation and extends itself into a restudy of exposure to population from medical x-ray equipment.

It is with pride that the Medical Society of the State of New York can point to the programs of the City and State of New York in implementing improvements in the use of radiation and in the inspection of radiation equipment, the state of which, in some regions of the country, has come under justified and unjustified critical attack. The Senate subcommittee continues its investigation, and your committee will continue its preoccupation with the status of the investigation and its advices.

The committee also continues its interest in the problem of hazards of radium, and its members have published in the *Journal of The American Medical Association* a new disclosure of the use for jewelry of spent gold radon seeds with resultant skin lesions.

Through the members of the committee, who belong to Federal, State, and City radiation organizations, the Medical Society of the State of New York is apprised of the aspects of ionizing radiation pertaining to the proper care of patients and protection of the public.

Respectfully submitted,
NORMAN SIMON, M.D., *Chairman*

Health Manpower

To the House of Delegates, Gentlemen:

The members of the Committee on Health Manpower are as follows:

Franklyn B. Amos, M.D., *Chairman* . . Albany
Benjamin Dinin, M.D. . . . . Westchester
Eugene J. Hanavan, Jr., M.D. . . . . Erie
Arthur Howard, M.D. . . . . Fulton

This committee was created by the Council this year and has held one meeting to date. At that meeting, the following decisions were made:

1. The functions of the committee should be as follows:

(*a*) To obtain data on health manpower needs, including numbers and distribution of physicians, nurses, health technicians, and other health workers, and to tabulate and analyze such data.

(*b*) To find out what official agencies, such as Federal, State, and local, as well as professional and private agencies are doing in the field of health manpower in order to integrate the activities of this committee with those of other agencies.

(*c*) To serve in an advisory capacity to the State Medical Society and represent the Society as requested.

2. The committee recommended that the State Medical Society become active in recruiting high school and college students into the health professions and submitted the following suggestions:

(*a*) Printed material regarding the opportunities in the health field should be prepared with a general brochure on the over-all subject and supporting brochures in each field of endeavor for distribution throughout all schools in the State.

(*b*) Guidance counselors should be contacted to obtain their interest and to be supplied with information so that they may be adequately informed about the health professions.

(*c*) Health brochures and student discussion should be coordinated through guidance counselors.

(*d*) A speakers bureau should be established to visit schools—this to be done on the local level—to talk about education requirements and costs, training, over-all rewards, and so forth of a career in the health field.

(*e*) Guided tours through hospitals and other health facilities should be arranged for small groups of students.

(*f*) Courses in health should be taught as part of the science curriculum in schools.

(*g*) Student volunteers and paid workers in hospitals and other health facilities should be encouraged.

These recommendations were reported to the Council at its September 28 meeting along with a motion made by Dr. Ershler that the committee be authorized to prepare a specific program with a proposed budget. The Council approved this motion, and the committee is in the process of preparing this material.

3. There is a need for highly skilled medical and/or emergency medical personnel in rural areas. There are many areas in the State without a physician. Little progress has been made in providing this coverage. After study of these problems, the committee will make recommendations.

4. There is a shortage of allied health manpower including nurses, laboratory technicians, operating room technicians, and other types of technicians. Recommendations were made in the Kinsinger Report for the training of technicians in the health field in the community colleges. It was noted that the main problem in developing such associate degree courses is a lack of qualified teachers. No recommendation for action was made.

5. Consideration was given to the means for additional scholarship support for the training of nurses. It was believed that lack of this support was, at least, a partial reason for an inadequate number of young women entering the nursing profession.

No definite action was taken by the committee, at this point, but it was felt that the question of additional nursing scholarship support should be further explored.

Respectfully submitted,

FRANKLYN B. AMOS, M.D., *Chairman*

Maternal and Child Welfare

To the House of Delegates, Gentlemen:

The membership of the Committee on Maternal and Child Welfare consists of the following:

Merton C. Hatch, M.D., *Chairman*	Onondaga
Alfred E. Fischer, M.D.	New York
Robert M. George, M.D.	Oneida
Edward C. Hughes, M.D.	Onondaga
George J. Lawrence, Jr., M.D.	Queens
Curtis J. Lund, M.D.	Monroe
E. Jurgen Plotz, M.D.	Albany
Olaf J. Severud, M.D.	Otsego
Clyde L. Randall, M.D., *Adviser*	Erie

The Committee on Maternal and Child Welfare held a meeting in Syracuse on May 18. The work and responsibilities of this committee were discussed.

The proposed changes in the report forms for births, fetal deaths, and death certificates were discussed. Dr. Hughes reported our recommendations to Selig H. Katz, M.D., of the New York State Department of Health.

The proposed changes in the so-called abortion law were also discussed. This information will be conveyed to the Committee on State Legislation

Dr. Hughes presented some ideas for a universal obstetric chart. This chart would be for use in the office of physicians. A carbon copy of this record would be sent to the hospital when the patient is admitted. This would then furnish a complete prenatal record which would become a part of the permanent hospital chart. We are continuing to work on this proposal.

The chief work of this committee is the supervision of the maternal and perinatal mortality studies which are conducted by the central New York Maternal and Perinatal Mortality Study.

At the May meeting in Syracuse, the committee formed rather definite concepts on procedure which consisted of the following:

1. Collection of data and statistics for an analysis of maternal and perinatal mortality rates.

2. Continuing education for physicians because studies have pointed out certain defects in patient care. We felt that if we could further stimulate physicians to use established procedures, we would reduce the perinatal mortality rate. For example, there is a lack throughout the State of screening of pregnant women for diabetes or potential diabetes in order to give them required specialized treatment. Another problem is the reporting of perinatal deaths. We have had difficulty in obtaining this information from certain areas of the State and are now working to rectify this situation. Still another problem is the timing of elective repeat cesarean sections. It results quite often in the premature loss of the baby, whereas better timing could have saved the baby. Investigation of these areas could be very helpful.

3. Public education on reproduction and the care of the pregnant woman. For a number of years, this committee has been responsible for the Central New York Maternal and Perinatal Mortality Study, which is sponsored by the Empire State Medical, Scientific and Educational Foundation. We are continuing in our

efforts to compile data for this study as the cases are reported to us. The committee has done a lot of work in increasing and expanding these studies to include all of the State excluding New York City.

I want to thank the personnel of the State Health Department for helping us to find the cases and for sending us a computer data card, each month, which lists the causes of death.

Respectfully submitted,
MERTON C. HATCH, M.D., *Chairman*

Metabolic Diseases

To the House of Delegates, Gentlemen:

The following are members of the Committee on Metabolic Diseases:

Arthur H. Dube, M.D., *Chairman*	Onondaga
Joseph B. Cortesi, M.D.	Schenectady
Charles Weller, M.D.	Westchester

The committee held a meeting in Syracuse on October 19.

A memorandum was sent to all county medical societies requesting information about the activities of their metabolic or diabetes committees and asking whether or not they participated in "Diabetes Detection Week." The role of the county medical society in the Diabetes Detection Week program is to be studied and reevaluated.

Plans were made for participating in a scientific session, either alone or with other groups, at the 1969 Annual Meeting of the Medical Society of the State of New York. The chairman of the Convention Committee will be contacted at a later date.

A major effort will be made to have articles published in *Health News* for distribution to both physicians and laymen, according to that journal's new publication policy.

Respectfully submitted,
ARTHUR H. DUBE, M.D., *Chairman*

Preventive Medicine

To the House of Delegates, Gentlemen:

The members of the Committee on Preventive Medicine, which includes the chairmen of following subcommittees, are as follows:

Harry S. Lichtman, M.D., *Chairman*	Kings
COMMUNITY HEALTH	
Leonard L. Heimoff, M.D.	Bronx
HOSPITAL EPIDEMIOLOGY	
Max B. Milberg, M.D.	Kings
INFECTIOUS DISEASES	
Thomas S. Bumbalo, M.D.	Erie
TROPICAL DISEASES	
Howard B. Shookhoff, M.D.	New York
VENEREAL DISEASE	
Bruce P. Webster, M.D.	New York

At the request of your chairman, the Council approved the change in name of the Committee on Infectious Diseases to the Committee on Preventive Medicine, and at the same time the Subcommittee on Preventive Medicine became the Subcommittee on Infectious Diseases.

The chairman attended the annual meeting of the Commission on Public Health and Education in Albany on August 3, and outlined the goals of the committee for the coming year.

The committee met twice in the past year, April 31 and October 12. The following is a summary of the activities of the committee and its future plans.

Your chairman is pleased to report that he has received enthusiastic cooperation from the director of the Bureau of Epidemiology of the New York State Department of Health, Julia L. Freitag, M.D., in implementing the measles immunization program. Letters were sent to county medical societies and district health officers over the signatures of the State Health commissioner and the president of the Medical Society of the State of New York, urging continuing efforts in reducing the incidence of measles through mass immunization. The education campaign directed at the public and utilizing all media has proved very effective, and the combined efforts of the State Health Department and the State Medical Society have resulted in increasing the distribution of the vaccine throughout the State. This has been accompanied by a precipitous drop in measles cases.

Vincent F. Guinee, M.D., director of the Immunization Activities Project for the New York City Health Department, has instituted a plan to send letters to mothers of all infants born in New York City who are one year of age, reminding them to seek measles immunization from their private physicians, health stations, or health centers of the Health Department.

After an intensive advertising campaign using the slogan "Measles Bites the Dust," the distribution of measles vaccine more than doubled in the metropolitan area.

Subcommittee on Infectious Diseases. The following proposals were considered and acted on favorably:

1. To offer physical examinations to physicians attending the 1969 annual convention of the State Medical Society.
2. To promote family life education (sex education) programs at the local level. County medical societies will be expected to guide, plan, and help implement such programs in their respective communities. Voluntary and paramedical groups are to be solicited for their cooperation and active participation.
3. To encourage routine serologic testing for syphilis in areas of high priority.
4. To encourage routine glaucoma testing among the higher age groups as part of a complete physical examination. This will require an education program for physicians not oriented in ophthalmology.
5. To conduct an education program to encourage and clarify the new State laws requiring routine chest x-rays and cervical "pap" smears.

Subcommittee on Community Health. The Federal government, through the Department of Health, Education, and Welfare and the Office of Economic Opportunity, has recognized the need for revising our present methods for the delivery of medical care to the poor and the medically indigent population.

The State Medical Society should be active in this field of community health. Local medical societies guided by the State Medical Society should inform the proper government agencies, both on a local and national level, of their desire to help plan comprehensive medical care centers in medically deprived areas. Medical societies likewise should become involved in existing government-supported centers through constructive criticism, advice, and support. It is our present duty to study all plans for comprehensive medical care to insure quality care for all patients using these facilities before such plans are foisted on the profession with built-in weaknesses and reckless use of funds.

Subcommittee on Hospital Epidemiology. The increase of hospital infections during the past decade has been well documented. Federal legislation in recent years has resulted in a trend toward increased hospital utilization and increased use of hospitals as the primary resource of medical care. Those directly responsible for medical care as well as those administratively responsible to the community are concerned that such services be offered in a milieu where hospital-acquired infections are reduced to a minimum.

The program, "Hospital Epidemiology on a Community Level," conceived and implemented in New York City during the past five years, was the result of this concern by both organized medicine and the public health profession. Specifically the program was developed by the joint efforts of the Medical Society of the County of Kings and the New York City Department of Health.

The control of intramural infections is essential to each and every hospital in the community. This is best achieved within each hospital by a hospital epidemiologist, integrated at the community level by a coordinator, preferably a member of the local health department. The health needs of the community on a broad horizon would thus be served.

The committee seeks approval from the State Medical Society and the New York State Department of Health to sponsor similar programs throughout the State in areas with a single hospital, in communities with several hospitals, or in cities with many hospitals.

Subcommittee on Tropical Diseases. The function of this subcommittee is to stimulate interest and educate. We should like to present the following at an annual meeting:

1. An exhibit of color photomicrographs of intestinal parasites.
2. A color film with soundtrack showing all the common intestinal protozoa and other parasites.
3. A color film with soundtrack showing the mobility of the intestinal amoebae of man.

Subcommittee on Venereal Diseases. To bridge the gap between the practicing physician and the Federal and State syphilis control program, attempts have been made to establish a pilot project in which a county medical society might work closely with the State Health Department and the Communicable Disease Center of the United States Public Health Service. Efforts to interest an Upstate county were not too fruitful. A fresh attempt will be made to gain the cooperation of a county medical society in the New York City area where the rate of venereal disease cases is high enough to warrant such a study.

Respectfully submitted,
Harry S. Lichtman, M.D., *Chairman*

Quackery

To the House of Delegates, Gentlemen:

The members of the Committee on Quackery are as follows:

Jason K. Moyer, M.D., *Chairman* . . . . Broome
William P. Clark, M.D. . . . . Westchester

Glenn E. Jones, M.D.	Niagara

The Quackery Committee has participated in a number of programs throughout the State this year, the most prominent being the Sixth Annual Governor's Conference on the Aging, in New York City, May 5, 1967. The chairman joined the Attorney General of the State of New York, the Honorable Louis J. Lefkowitz, and the president of Macy's, David Yunich, in a panel discussion entitled "The Older Person as a Consumer."

Unfortunately, last-minute weather conditions grounding the airlines left a meeting of Richmond County Medical Society's Woman's Auxiliary high and dry, with the chairman, who was scheduled to speak, stranded at an airport in upstate New York.

As a result of the very successful symposium on Health Quackery, sponsored by the State Medical Society and the State University College at Cortland, a number of follow-up programs have been presented. The chairman of the committee spoke at the Concord Hotel in January at a conference of the New York State Association for Health, Physical Education, and Recreation. He is also slated to speak on "Quackery Today, How to Deal with It" at the 122nd annual conference, Eastern Zone of the New York State Teachers Association, in Oneonta, on September 25. Numerous other local programs on the subject have been scheduled.

It has been noted that a definite interest in quackery has developed among the nurse-teachers group, and plans for a more sophisticated and extensive speakers bureau will, of necessity, have to be planned in the coming year.

Respectfully submitted,

JASON K. MOYER, M.D., *Chairman*

Medical Aspects of Sports

To the House of Delegates, Gentlemen:

The members of the Committee on Medical Aspects of Sports are as follows:

Ralph S. Emerson, M.D., *Chairman*	Nassau
Frederick H. Grabo, M.D.	Oneida
Eugene J. Hanavan, Jr., M.D.	Erie
Arthur Howard, M.D.	Fulton
Joseph J. Kaufman, M.D.	Wayne
William B. Kintzing, M.D.	Nassau
Alexius Rachun, M.D.	Tompkins
Murle Laurens Rowe, M.D.	Monroe

The committee enjoyed a very active and fruitful year.

Our programs have received wide publicity through athletic and educational associations such as the National Federation of State High School Athletic Associations; New York State Public High School Athletic Association; Health, Physical Education, and Recreation Association; New York State Public High School Athletic Plan; New York State School Boards of Education; and the Eastern States Trainers Association. The sports writers, professional football clubs, and members of the Touchdown Club have been most helpful in enhancing our athletic safety programs. We have also received requests from organizations such as the Public School Athletic League, and parochial and private schools for representation on our committee.

Our work was conducted primarily by telephone conferences. Reports and agenda were submitted prior to the conferences, and assignments were carried out by individual committee members. We received and approved the four-year study of "The Heel in the Cleatless Shoe," the continuation of the questionnaire on the helmet and face guard regarding fractures of the nose, and recommended that a set of "guidelines" be prepared for distribution to all football coaches. Plans were formulated at these telephone conferences for panel discussions, various symposia and the annual symposium to be held in conjunction with the annual meeting of the State Medical Society in February, 1968.

We are participating with the New York State Public High School Athletic Association in the following research projects involving about 125,000 high school athletes:

1. Junior high school modified football program.
2. Preseason experimental training study, the 5–10–5 program.
3. The cleatless shoe.

The committee members and other physicians participated in several Medical Aspects of Sports sectional programs as follows:

1. Health, Physical Education, and Recreation Association annual meeting, Concord Hotel, Kiamesha Lake, New York, January 21, 1967. Murle L. Rowe M.D., William Coleman, M.D., Philip M. Winslow, M.D., and Frank P. Smith M.D., Rochester, presented a panel discussion on heat exhaustion, knee injuries, the cleatless shoe, and head and spinal injuries. The proceedings of this meeting were published and distributed to coaches throughout the State through the courtesy of the Education Council for School Research and Development, Mineola, New York.
2. The New York State School Boards of Education held their annual meeting in Syracuse

on October 23, and Alexius Rachun M.D., was a panelist on a sports program, representing our committee.

3. Murle L. Rowe M.D., was moderator of a program in Rochester on September 11. This symposium consisted of four physicians, a lawyer, and "Dutch" Hafner of the New York State Public High School Athletic Association, with an attendance of about 250 guests.

Our first State-wide program is scheduled for February 10, 1968, the day before the opening of the annual meeting of the Medical Society of the State of New York at The Americana, New York City. It is being cosponsored by the New York State Public High School Athletic Association and the Health, Physical Education, and Recreation Association. It is an all-day program with outstanding specialists covering a wide variety of subjects, such as "The Long-Range Effects of Trauma in Athletes," "Heat Exhaustion" "The Wrestler's Ear," "The Cleatless Shoe," "Vital Insurance Injury Statistics," and an afternoon session on "The Knee Joint." This session includes panelists discussing: The anatomy with reference to the mechanics of injury, the significance of data and history of the injury, the proper physical examination with a demonstration movie, and the absolutes and relative indications of surgery. Among our distinguished panelists will be Anthony J. Pisani, M.D., orthopedic surgeon to the New York Giants, James A. Nicholas, M.D., orthopedic surgeon to the New York Jets, and Joseph D. Godfrey, M.D., of the Buffalo Bills. A luncheon is scheduled honoring our guest panelists with an attractive cast of outstanding sports personalities.

The program will have wide publicity through the State Medical Society communications media, the press, and our cosponsoring organizations. We hope physicians throughout the State will attend this important symposium.

Our committee wishes to thank the members of the State Medical Society staff with special thanks extended to Miss Alvina Rich Lewis, Guy Beaumont, Coleman Fineberg, Martin Tracey, Esq., and J. Richard Burns, Esq., for their invaluable assistance in arranging the symposium.

As chairman, I would like to extend my appreciation to the members of this committee and to Kenneth Hafner, New York State Public High School Athletic Association, for their dedication and wonderful spirit of cooperation during the past year.

Respectfully submitted,
Ralph S. Emerson, M.D. *Chairman*

Scientific Activities and Publications

What Goes On

To the House of Delegates, Gentlemen:

In this, its ninth year, *What Goes On* has undergone some changes. The number of issues was cut from twelve to ten, combining the summer months into one issue for May and June and one for July and August, since experience has shown that there is a drastic reduction in programs during these months.

The number of meetings and courses listed in 1967 amounted to approximately 1,750—including many more radio and television programs for physicians.

The circulation has risen to 51,985 which includes the following:

Physicians, staff, residents, and interns in New York and New Jersey	48,522
Osteopaths	1,463
Miscellaneous (hospitals, libraries, medical schools, radio, television and newspaper science writers, medical societies, free-lance writers, nurses, and others)	2,000

Lederle Laboratories, the sponsors of *What Goes On*, conducted a readership survey in May, 1967. Some of the findings may be of interest. In the New York—New Jersey area, doctors answered questions as follows:

1. Are you familiar with *What Goes On*? 85.3 per cent answered yes.

2. How useful is it to you? 54 per cent answered useful and very useful.

3. Do you know who advertises in *What Goes On*? 11 per cent named Lederle Laboratories.

This is only a sampling of the many questions asked. In order to acquaint more physicians with the fact that Lederle sponsors the booklet, we decided to put the Lederle name and emblem on the cover, starting with the November, 1967, issue.

If you read the lead editorial in your New York State Journal of Medicine, for November 1, 1967, and the November issue of *What Goes On*, page 4, you will have observed the new role of *What Goes On* in connection with the New York Medical Assistance Program (Medicaid).

Another feature introduced in the December, 1967, issue was the Physicians' Placement Opportunities appearing in the back of the booklet. There is such a need for doctors in our Upstate communities that we felt the contribution of space to this project was worthwhile. Each month as many of these free ads will be run as is feasible in the hope that some of our physician-readers will be made aware of the opportunities available in many attractive communities outside of the large cities.

Negotiations are underway for continued support by Lederle Laboratories for the costs of publishing *What Goes On*.

During the 1967 convention of the Medical Society of the State of New York, a booth was assigned to *What Goes On*. The February issues, handed out at the booth, carried a special pull-out insert of the convention, and many of the physicians remarked on how handy it was. Others found it a good source for locating other meetings during their stay in New York City. We hope that many more of our members will take time to visit our booth at the 1968 convention to give us ideas and suggestions—even complaints—concerning *What Goes On*.

Great credit for the success of this publication is attributable to Mrs. Evelyn Clark, the dedicated editor of *What Goes On* for the past five years.

Respectfully submitted,
Norman S. Moore, M.D., *Director*
Division of Scientific Activities

Physicians' Placement Bureau

To the House of Delegates, Gentlemen:

The Physicians' Placement Bureau received in 1967 about 150 requests from physicians seeking placement. Individual letters, enclosing our lists of opportunities and questionnaires, were mailed out and followed up. To date, we do not know how many physicians have actually started practicing in areas noted on our lists. Many requests come from other states and from men entering the Armed Services who want to establish contacts for the time when they will be getting out of service and entering private practice.

Beginning in December, 1967, 41 communities were listed in *What Goes On* and more will be listed as they come in. Letters and return post cards were sent to 90 contacts on our previous lists, and 47 answers have come in as of November 8, giving permission for the announcement to be published free of charge in *What Goes On*. Because this bulletin goes to approximately 50,000 physicians, residents, interns, and others, we felt this contribution was worthwhile and might help some of our Upstate communities get the doctors they need.

We will report on the outcome of this venture at a later time.

Respectfully submitted,
NORMAN S. MOORE, M.D., *Director*
Division of Scientific Activities

District Branches

First District Branch

To the House of Delegates, Gentlemen:

The annual meeting of the First District Branch was held at The Americana of New York, New York City, on February 11, 1967.

The minutes of the meeting held on February 13, 1966, were approved as distributed.

Leo Drexler, M.D., treasurer, presented his report covering the period May, 1966, to February, 1967. The report was accepted.

Respectfully submitted,
David Kershner, M.D., *President*

Following is the report of the Coordinating Council, executive committee of the First District Branch, submitted by the chairman of the Council, George Himler, M.D., New York.

Coordinating Council. The past year has been an extremely busy and portentous one for the Coordinating Council and a very full one for its chairman.

Medicaid. Among the many trends and conditions that have exerted an adverse effect on the quality and delivery of medical care to the public in New York City, the chief one has continued to be the unsatisfactory status of the Medicaid program. A summary of the implementation of the program on a State-wide basis will be found in the annual report of the Technical Advisory Committee on Medical Care. Only those facts and data will be presented in this report that relate specifically to the operation of the plan in New York City.

Approximately nine months ago, the responsibility for the medical aspects of Medicaid was taken from the Health Services Administration and transferred to the Department of Health. This was shortly after Edward O'Rourke, M.D., was appointed city health commissioner. Prior to this, the Health Services Administration had prepared a bulletin, HSA 10–1, and distributed it to all the physicians in New York City. This bulletin set forth the rules and regulations that were to apply to physicians who treated patients under the Medical Assistance to the Needy program. It had a number of objectionable features, chief among which was an attempt to limit the procedures that generalists could perform and for which they would be paid. Many other regulations were contrary to those of the State Health Department and therefore invalid.

This bulletin was totally unacceptable to physicians and the medical societies, and its revocation was discussed with Dr. O'Rourke shortly after his appointment. After several meetings, the issues raised by bulletin 10–1 were resolved. The details of the agreement are beyond the scope of this report, but they were distributed to the five county medical societies by the chairman.

Early this year the chairman indicated to the Departments of Health and Social Services that he was not satisfied with the advisory committee that had been appointed to the Health Services Administration since actions were frequently taken before they were consulted, and their recommendations and opinions were more often ignored than accepted. The Commissioners agreed that they would set up a top level negotiating or policy committee with the Coordinating Council. This committee has met twice, and the Commissioners were present on each occasion. This is the most satisfactory and direct approach we have found to exerting the influence of the medical profession in solving the seemingly endless problems arising from Medicaid.

The Department of Health also established a professional relations committee under the chairmanship of Beatrice Bolan, M.D. On the recommendation of the presidents of the five county medical societies, the chairman has appointed a physician from each county to the committee.

Dr. O'Rourke also asked that a technical advisory committee from the Coordinating Council be appointed to advise the Department of Health on matters that do not constitute major policy. Your chairman reappointed those physicians who had served briefly but well on the advisory committee to the Health Services Administration. These committees should be useful in providing for a free exchange of ideas, opinions, and criticisms between the officials responsible for the Medicaid program and the physicians whose services are necessary to make it work. It begins to appear that as far as the purely medical problems of the program are concerned, a means has been established for solving them with patience and negotiation. The Health Department has generally exhibited a more understanding and cooperative attitude than we experienced when the plan was under the direction of the Health Services Administration.

The administration of Medicaid by the Department of Social Services, however, has been, and continues to be, a far different matter. The chairman has been unable to obtain reliable data on the number of beneficiaries enrolled, the number of physicians who have accepted Medicaid patients for private care, and the lag time in paying doctors. What information has been given by the Department of Health and the Department of Social Services has seemed to be unduly optimistic and has not been borne out by the statistics of the State Department of Social Services or by the every-day experiences of physicians who provide care to Medicaid patients. The difficulties that the Department of Social Services has encountered in administering the welfare or money assistance portion of its responsibilities do not augur well for Medicaid. The chairman has repeatedly called for administration of the program by the Title 18 intermediary, for which permissive legislation exists, but the Department of Social Services has insisted on retaining this function in spite of its rather obvious incapacity to do it efficiently.

In summary, the deficiencies of the divided responsibility between the Departments of Health and Social Services that have been so apparent at the State level are mirrored in New York City. After weighing the scanty data made available by City officials, and responses by physicians to his own inquiries, the chairman concludes that the Medicaid program in New York City is merely an extension of the previously existing welfare program. Patients who are eligible generally continue to receive their care in municipal or voluntary hospital clinics or at Health Insurance Plan clinics, exactly as they did before enactment of the law. For the most part, in-hospital care is still provided on the teaching services of hospitals so that these patients are usually deprived of the privilege of having a personal physician. It seems fair to say that this program, although it involves more beneficiaries and pays for more services than the old welfare program, has failed to achieve the objective, so often claimed for it, of bringing its recipients "into the mainstream of medical care."

Your chairman, in speaking for the Coordinating Council, has been outspoken in his criticism. This was done with the intention of offering constructive advice rather than in the hope of destroying the program. Admittedly, the criticism has often been publicly made and has been forceful to the point of harshness in order to gain for it the attention it merited. This was made necessary by the lack of adequate communications between the City and the physicians which, hopefully, has now been corrected. The five county medical societies, through the Coordinating Council when appropriate, will continue to cooperate with the authorities to make Medicaid function if they are taken into a reasonable partnership. In those instances when the basis for cooperation does not exist, their only alternative will be to bring the deficiencies of the program to the attention of the administration and the public in the hope of engendering enough pressure to bring about their correction.

The Coordinating Council, together with the Greater New York Hospital Association, sponsored two meetings with the New York State Department of Health and the Department of Social Services and two meetings with both these departments and representatives of the Governor's office. These meetings were called in an attempt to secure payment to physicians for services rendered to Title 19 recipients in hospital clinics and on teaching services.

The State Department of Health has certified a fee schedule for in-hospital surgical services that corresponds to the Maximum Fee Schedule promulgated unilaterally in July, 1966. Although these fees were not accepted by the Coordinating Council, the principle was accepted that the total fee paid to the physician rendering the service and the hospital for preoperative and postoperative visits to the clinic was not to exceed the scheduled fee. This was necessary to secure their agreement that patients could be admitted from a clinic directly to a teaching service and still be under the care of one physician. This stipulation also makes it possible for a surgeon to discharge his patient to a clinic for follow-up care and still charge for his services.

For in-hospital medical care, the Health Department is suggesting that a flat per diem payment of $5.00 be made to the physician in charge. He need not see the patient each day but must make an identifiable contribution to his care. The chairman wishes to emphasize again that these decisions have been made unilaterally by the Health Department after innumerable and heated discussions.

To clear up any possible confusion, it should be understood that these decisions regarding payments to physicians for clinic and in-hospital services apply to those physicians who are salaried and whose salaries do not include provisions for patient care. Where the physician's salary includes reimbursement for some patient care, his salary appears in the per diem rate to the hospital, and he cannot claim direct reimbursement. The regulations also apply to nonsalaried attending physicians who treat Medicaid patients in hospital clinics or on teaching services where the residents share heavily in patient care. They do not apply to physicians who admit Medicaid patients to the hospital as private patients and treat them personally.

In spite of the four meetings held with the State officials at which it was made abundantly clear by representatives of the Hospital Associations and the Coordinating Council that physicians had the right to payment for these services under the program, payment for treatment on teaching services has still not been authorized. The State, county, and local governments have enjoyed a subsidy from their physicians for the past eighteen months to which they have no right. This matter, as may well be imagined, is being hotly pursued.

Apropos of reimbursement, the chairman felt that a clarification was urgently needed on the relationships of salaried physicians to their hospitals and the fate of the payments that were made for the services they rendered. During the past year, several principles were developed which have been accepted by the Greater New York Hospital Association and which were adopted at the annual meeting of the New York State Hospital Association. In brief, these principles are:

1. The money earned by a physician, salaried or otherwise, accrues to that physician.

2. When, by mutual agreement, a hospital collects payments for services rendered by its staff physicians, the money so collected is to be put into a segregated fund and is to be disbursed only on the direction of the physicians who rendered the services. It may not go into the hospital's general operating fund.

The above two principles were included as regulations in the New York State Health Department's *Medical Manual*. It was further recognized, however, that these financial questions might give rise to friction and misunderstanding among voluntary staff physicians, salaried physicians, and their hospitals. The State Department of Health, understandably, did not wish to enter into these intramural relationships, but the chairman, having knowledge of the policies of many hospitals and of a number of individual controversies between physicians and hospitals, secured the agreement of the Hospital Associations to two additional principles:

1. That when a physician is paid a salary and his salary is partly or fully for patient care, his salary be diminished by the amount he earns from the various sources of reimbursement for patient care. Those amounts he earns that are in excess of his salary belong to him.

The requirement that such monies be kept segregated from the hospital's operating fund will help to enforce this principle and make for ready accountability.

2. That there will be no coercion of physicians into assigning the funds they earn.

The chairman concedes that the last principle may be difficult to enforce and he is under no illusion that it is an adequate solution to the problems that may arise. Nevertheless, the Hospital Associations, the State Medical Society, and the Coordinating Council, by agreement, will bring heavy moral suasion to bear when instances of coercion are brought to their attention. The Hospital Associations and the medical societies have found enough common objectives, in this era of publicly financed medical and hospital services, to stimulate them into establishing and further developing effective cooperation and strong mutual ties.

City hospitals. Another question of importance during the past year has been the immediate and ultimate fate of the city hospital system. Almost every day, the newspapers carry statements from the Health Services Administration setting out its latest policy on city hospitals. These statements are inconsistent and often conflicting. We hear on the one hand that the City will continue to operate its hospitals, upgrade them to the level of good voluntary hospitals, and make them available to the physicians of their respective communities for private patient care. Another statement has been that the City will turn its hospitals over to voluntary agencies consisting of community-based boards of trustees and autonomous medical boards. No sooner has this had time to sink in, than we are informed that the affiliation program will be strengthened and expanded but, at the same time, individual City hospitals will be given greater authority. These statements are disturbing because they indicate a lack of intelligent, coherent planning for what amounts to almost half of our City's total hospital facilities. Even more disturbing was the recent leasing of the James Ewing Hospital to Memorial Hospital for fifty years. This may or may not have been a good move, but neither the public nor the physicians of the community were given an opportunity to be heard before a step of this magnitude was taken.

The fact is that the direction of the municipal hospital system is in a state of utter confusion. Apparently the Health Services Administration is making most of the important decisions. The Board of Hospitals, on the other hand, which presumably is responsible for setting policy for the City hospital system, has never consented to make known what its long-range plans are, if it has any. There has never been a public accounting for the disastrous affiliation program or any evidence adduced that it has improved patient care by one iota. Nevertheless, the Board of Hospitals is permitted to continue to adhere to this discredited program and cannot even be drawn into public discussion of decisions and policies that vitally affect millions of New Yorkers. The chairman has made repeated protests to the Mayor regarding this situation and has made specific recommendations on the constitution of the Board of Hospitals and the tenure of its members. These have not been received with enthusiasm, but the chairman will persist in advancing them because it is extremely important to correct the conditions that have brought so valuable an asset as our municipal hospital system to its present inadequate and chaotic state.

When the chairman was asked to appear before the Peil Commission, he stated that, in his opinion, the City of New York had never demonstrated ability to administer a hospital system. In addition, the restrictions and burdens imposed by Civil Service with its pay limitations, strict seniority requirements, and lack of recognition of incentive, make it unlikely that it can improve on its record. The affiliation program, to put it kindly, was merely an abrogation of responsibility by the City and not a solution to the many problems affecting its hospitals. The City no longer has the responsibility of maintaining general hospitals for the care of the indigent since Medicare and Medicaid have presumably eliminated medical indigency.

The chairman therefore recommended that a five- to seven-year program be developed to phase out municipal ownership of hospitals and that they be turned over to voluntary agencies. The latter would have to be developed, hospital by hospital, over a period of time to permit an orderly transition and prevent loss of hospital accommodations which are already in short supply.

Physicians parking. The parking problems of physicians in active practice have undergone an acute exacerbation during the past year, although there seems to be a slight lull in hostilities at the time of this writing. Restrictions on physicians parking at hospitals and before their offices were suddenly and arbitrarily reduced from three hours to one. After strenuous efforts, the three-hour limit at hospitals was restored, but we have been unsuccessful in obtaining a relaxation of the ridiculously inadequate one-hour limit for physicians who are having office hours. Double-parking is not permitted even in extreme emergencies which is a hardship on physicians who are on emergency call in Queens, Kings, and The Bronx, where curbside space literally does not exist. The City officials, although they privately admit the justice of the practicing physicians' claim to parking privileges, have been adamant in refusing to grant them. Activity in this sector will continue.

Areawide planning agency. The chairman testified at a Forum on Comprehensive Areawide Health Planning which was held by the State Health Planning Commission in September, 1967. In his testimony, he strongly urged rejection of the plan submitted by the City of New York which would have allowed City officials to dominate or control completely the health planning effort for this area. At the same time, he opposed vesting this function in the Health and Hospital Council of Southern New York Inc., which also presented a plan giving it total control of health planning. He stated that although the Health and Hospital Planning Council had an organization which could possibly be expanded and modified to meet Federal requirements and to serve the comprehensive health planning purpose, it already had extremely broad powers over the construction and modernization of hospitals and long-term care facilities. He pointed out that reposing additional authority in the hands of this agency would be imprudent.

The chairman therefore recommended that the planning body called for in PL 89–749 be a new group, entirely separate from existing organizations, with broad representation of consumers, labor, management, the City government, the Health and Hospital Planning Council, and last, but certainly not least, the Coordinating Council and the State Medical Society. In order to preserve existing skills and facilities, he further recommended that the Health and Hospital Planning Council's staff be the major research arm of the proposed new agency, although it could contract with other competent organizations for research and planning. The final decision rests with the State Health Planning Commission and has not yet been made, but the chairman intends that the Coordinating Council have adequate representation on the agency that is finally entrusted with comprehensive areawide planning in New York City.

The chairman also testified before a Senatorial subcommittee headed by Senator George A. Smathers (Democrat, Florida) on the Medical problems of the aged. Copies of this testimony have been distributed to the members of the Coordinating Council. In general, it described the impact that Medicare and Medicaid have had on the quality and availability of medical care for the aged. It contained a résumé of the Medicaid program to date. It stated that the problems of the entire population with regard to medical services and payment for them are essentially the same regardless of age or financial solvency. The fragmentation of the population into different groups for the purpose of financing medical services is destructive to the development of comprehensive prepaid health and hospital insurance for all. On this premise, the report deplored the establishment in New York State of the system of having the local welfare agencies administer the Medicaid program, which they do in a completely uncoordinated fashion. It was strongly urged that the State turn to intermediary administration or, even better, to the employment of the Title 18 intermediaries in a true carrier role for Title 19.

Future role of Coordinating Council. Before concluding, the chairman wishes to comment on the report of the Committee to Study the Structure and Function of the Coordinating Council which was chaired by Peter Gugliuzza, M.D. The committee did its work thoroughly, although its conclusions were far from heartening. The committee was of the opinion that at this time the five county medical societies do not wish to grant the Coordinating Council any power to act in their behalf but wish it to play a purely advisory role. As one with three years of rather rugged experience behind him, the chairman is convinced that, for the foreseeable future, the medical profession will have to deal with the municipal government on matters affecting medical practice. There is a distinct advantage to be gained from having a single organization, covering the same political subdivision, do all the negotiating with the weight of the five county medical societies behind it. Acting on this premise, the chairman asked the ad hoc committee to continue and to direct its attention to developing a formula by which the necessary authority could be vested in the Coordinating Council without infringing intolerably on the autonomy and prerogatives of the individual county medical societies. This may be difficult to achieve, but it is well worth the effort, because the stakes are high.

Conclusion. The chairman would like to thank those who have been the presidents and officers of the five county medical societies comprising the First District Branch during the past three years. They have given him their confidence and a wide degree of latitude in representing them during a most trying period. They have accepted his actions on their behalf without demur when the exigencies of the situation did not permit prior consultation with them. Sincere thanks are due for the unobtrusive but most competent support of the vice-chairman, Joseph F. Shanaphy, M.D., the secretary, William L. Wheeler, Jr., M.D., and the treasurer, Leo S. Drexler, M.D. The chairmen and members of the standing and special committees, too numerous to mention in this report, have all done yeoman service in their assignments.

Mrs. Alice Salter, after having served as recording secretary for almost two years, was forced to ask to be relieved of her duties, much to the regret of the chairman and the Council. Miss Phyllis Harris, New York County Medical Society, kindly consented to take over her duties on a temporary basis. She has been most efficient, and the chairman is grateful for her help.

Respectfully submitted,
George Himler, M.D., *Chairman*

Second District Branch

To the House of Delegates, Gentlemen:

The Second District Branch as of the date of this report, October 16, has not held any formal meetings. However, there have been many committee meetings held to discuss and make arrangements for the sixty-first annual meeting at the Dorado Beach Hotel, Puerto Rico, on November 9 through 16.

A total of 150 members, their wives, and guests are expected to attend. Edward C. Hughes, M.D., president-elect of the Medical Society of the State of New York, will be the honored guest and the principal speaker at the meeting. Two other honored guests will be Congressman John J. Wydler, Fourth Congressional District, Nassau County; and Jose E. Sifontes, M.D., University of Puerto Rico Medical School.

Among the scientific sessions which have been planned for the five-day meeting, three days will be devoted to discussions of scientific papers of general interest; the program for one session will be presented by the medical faculty of the University of Puerto Rico Medical School; and on another day, a special scientific program will be presented by the medical school faculty at the medical school in San Juan.

In addition to the comprehensive scientific sessions, an outstanding program for recreation, relaxation, and entertainment has been planned.

Respectfully submitted,
R. R. Steen, M.D., *President*

Third District Branch

To the House of Delegates, Gentlemen:

Under the guidance of the Ad Hoc Committee to Explore All Aspects of the District Branches, the Third District Branch of the Medical Society of the State of New York has joined with the Fourth District Branch in a pilot project to provide more effective action through the combined districts. A meeting was held on June 3 at the Holiday Inn, Saratoga, presided over by Arthur Howard, M.D., president of the Fourth District Branch, and certain recommendations were made for the betterment of the combined districts. This report will be presented to the House of Delegates at its meeting in February, 1968.

It is hoped that the reorganization envisioned by the administrators of the pilot project will work to the advantage of both districts.

It is with deep regret that I must report that the annual meeting which was to be held at Lake George, September 9 and 10, had to be postponed because of lack of response from the district membership.

Respectfully submitted,
Samuel Baer, M.D., *President*

Seventh District Branch

To the House of Delegates, Gentlemen:

The Seventh District Branch was extremely active during this past year with the president and officers participating in a number of committee and organizational meetings. The president of the Seventh District Branch felt that the organization needed to be improved to meet the challenges of the day, to improve communications, and to realistically meet its responsibilities and obligations. To begin this program, dues were raised to $10, and a committee was appointed to study the reorganization of the Seventh District Branch. The president's newsletters and minutes of key committees of the Monroe County Medical Society, such as Blue Shield, Legislation, Public Relations, Medical Economics, Utilization, and Public Health, are now regularly distributed throughout the Seventh District Branch, plus whatever other reports that may be of value to members on an area-wide basis. This project will continue to be studied and evaluated.

Progress on the Regional Utilization and Insurance Claims Review Project was reported by Carmen Cristo, M.D., revealing the participation of 22 hospitals and 49 nursing homes. The *Handbook on Extended Care Facility Utilization* and the activities of this project have been reported throughout the nation, and some features have been adopted by various state and other societies for implementation in their own areas.

The activities of the Seventh District Branch were marred by the death of First Vice-President M. Edgerton Deuel, M.D., on August 20, 1967. This was a great loss, both personally and to the District. Dr. Deuel had been nominated for the presidency of the Seventh District Branch at the time of his death.

The Seventh District Branch proposed and supported resolutions discussed at the annual meeting of the Medical Society of the State of New York which opposed the secondary licensure of physicians in the State of New York through the Medicaid program and opposed the inclusion of chiropractic under the Medicaid program. The Seventh District Branch also approved a resolution to support the aims and objectives of AMPAC (American Medical Political Action Committee).

The annual meetings of the Seventh and Eighth District Branches which have been held jointly for the last five years are now taking on a distinctive pattern. This year the meeting was held at White Face Inn, Lake Placid, on September 30 through October 3. Due to the illness of Vincent I. Bonafede, M.D., president, Seventh District Branch, Lynn R. Callin, M.D., second vice-president, was presiding officer.

The scientific program featured Andrew C. Fleck, Jr., M.D., deputy commissioner, New York State Department of Health, and James R. Kimmey, M.D., regional health director, U.S. Department of Health, Education, and Welfare, who spoke on "Comprehensive Health Planning." Members of the Seventh District Branch were invited to attend the scientific program of the Eighth District Branch dealing with "Aspects of Drug Addiction" featuring Henry Brill, M.D., vice-chairman, New York State Narcotics Addiction Control Commission; Robert J. Campbell, M.D., Department of Psychiatry, St. Vincent's Hospital and Medical Center, New York City; and Marvin A. Block, M.D., vice-president, National Council on Alcoholism.

At the business meeting on October 2, the following officers were elected for a two-year term:

President—Lynn R. Callin, M.D., Monroe
First Vice-President—Wayne Templer, M.D., Steuben
Second Vice-President—Erich Hirsch, M.D., Ontario
Treasurer—David Koch, M.D., Seneca
Secretary—James M. Flanagan, M.D., Wayne
Delegate—Charles M. Smith, M.D., Seneca
Past President—Vincent I. Bonafede, M.D., Livingston

A total of 247 physicians, wives, and guests attended the annual dinner on October 3 which featured Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, as the principle speaker.

The Seventh District Branch was invited to attend the excellent area program of county medical societies held in Batavia on June 15, sponsored by the Commission on Public and Professional Affairs and the Public Relations Committee of the Medical Society of the State of New York. The Medical Society of the State of New York is to be commended for arranging this forum which deserves the support and cooperation of all of its members.

A special meeting of the Seventh and Eighth District Branches was held on June 15 to discuss problems of common interest dealing with Medicaid, fee determinations, physician qualification for hospital services, compulsory health insurance, and planning.

The advisory councils of the Seventh and Eighth District Branches also met on June 15. The program for the annual meeting was finalized with emphasis on the necessity for planning and scheduling annual meetings four to five years in advance in order to assure accommodations. It was agreed to hold meetings in foreign countries on alternate years. Plans were made to hold next year's meeting at Dorado Beach, Puerto Rico, with the Eighth District Branch acting as host.

A recommendation was made to send a representative, as an observer, to the meetings of the Council of the Medical Society of the State of New York. It was also recommended that the Medical Society of the State of New York be advised that when any evaluation of economic conditions and future consideration of such problems are made, all component medical societies of the Seventh District Branch shall be included in the discussions.

Among the actions taken by the Seventh District Branch during the current year was the endorsement of a statement made by the Monroe County Medical Society on the subject of compulsory health insurance which urged the establishment of a universal system of health insurance administered by health insurance companies and providing comprehensive medical coverage. Support for proposed legislation was withheld since it did not meet the standards set forth in the statement.

At the annual meeting in White Face Inn, the subject of comprehensive health planning received a considerable amount of time and discussion. A resolution was adopted to the effect that approval of an organization for regional comprehensive health planning should be based on adequate representation of all agencies and organizations concerned and approval should not be granted until policies are established to protect the health of the public and preserve the health resources of the regions involved.

It has been a distinct honor to be of service to the Seventh District Branch during the past two years, and I am extremely grateful and appreciate the excellent dedication and cooperation of all who have helped. Specifically, I would like to cite and thank the officers of the Seventh

District Branch; Donald M. Irish, executive secretary, and his staff; Harry J. Dexter, regional representative of the Medical Society of the State of New York; and the Medical Society of the State of New York.

Respectfully submitted,
VINCENT I. BONAFEDE, M.D., *President*

Eighth District Branch

To the House of Delegates, Gentlemen:

The 1967 annual meeting of the Eighth District Branch was held at the Whiteface Inn, Whiteface, jointly with the Seventh District Branch.

The four-day session got under way October 1 with registration and a social period at the Whiteface Inn. On October 2, a symposium on "Comprehensive Health Planning" was presented. The moderator was Lynn R. Callin, M.D., program chairman and vice-president of the Seventh District Branch. The panelists were James R. Kimmey, M.D., regional health director, New York City, U.S. Department of Health, Education, and Welfare; and Andrew C. Fleck, Jr., M.D., deputy commissioner, New York State Department of Health.

On Tuesday, October 3, a symposium on "Aspects of Drug Addiction" was moderated by Herbert A. Laughlin, M.D., program chairman and secretary of the Eighth District Branch. The panelists were Henry Brill, M.D., vice-chairman, New York State Narcotics Addiction Control Commission; and Robert J. Campbell, M.D., Department of Psychiatry, St. Vincent's Hospital and Medical Center, New York City.

The business meeting of the Eighth District Branch was held on October 2, convening at noon. The report of the treasurer, Thomas S. Bumbalo, M.D., was approved.

Correspondence was read from Henry I. Fineberg, M.D., executive vice-president, Medical Society of the State of New York, dated June 12, 1967, in which Dr. Fineberg stated that the Council voted approval of our request of April 24 for permission to elect the district branch president for a one-year term at our next annual meeting. Proposed changes in the bylaws were approved which would change the term of officers from two years to one year with the exception of the district delegate who remains elected for a two-year term, and the office of president, which remains a two-year term but which can be a one-year term subject to the approval of the Council of the Medical Society of the State of New York.

The report of the nominating committee, consisting of Eugene J. Hanavan, M.D., chairman; James Durkin, M.D., and John D. Naples, M.D., was presented. The following officers were elected for 1968:

President—Paul A. Burgeson, M.D., Wyoming
Vice-President—Herbert A. Laughlin, M.D., Chautauqua
Secretary—Thomas S. Bumbalo, M.D., Erie
Treasurer—David R. Harrington, M.D., Genesee
Delegate—John T. Donovan, Jr., M.D., Niagara

The report of the president for 1966, published in the May, 1967, *Branch Bulletin;* the report on the joint meeting of the Seventh and Eighth District Branches, held June 15, 1967, at Batavia, previously distributed to members, and the report on the meeting of the Eighth District Branch delegates held March 9, 1967, at Williamsville, previously distributed to members, were accepted. The report of the 1966 annual meeting held September 28 through 30 at Bermuda, previously distributed to members, was approved. The Executive Committee report of a meeting held September 7, 1967, also was approved.

The following resolution, presented by Kenneth Eckhert, M.D., as proposed by the Seventh and Eighth District Branch Delegates at their meeting on October 3, 1967, was approved.

> WHEREAS, The medical societies of the Seventh and Eighth District Branches of the Medical Society of the State of New York are vitally interested in comprehensive health planning councils; and
>
> WHEREAS, No existing agency in our communities now meets the requirements for a comprehensive health planning group, and, therefore, none can be endorsed at this time; now therefore be it hereby
>
> *Resolved*, That approval of the final plan be based on adequate representation of all agencies and organizations and the establishment of policies to protect the health and preserve the resources in our area.

Herbert E. Joyce, M.D., Erie, and Eli A. Leven, M.D., Monroe, both members of the Ad Hoc Committee on Compulsory Health Insurance of the Medical Society of the State of New York, reported that the committee had polled the county medical societies, and the returns indicate an overwhelming vote against compulsory health insurance coverage as presently proposed. It was also reported that there will be new proposals for this type of legislation, and legislative hearings will be scheduled throughout New York State. Members of the Eighth District Branch voted to participate in any hearing held in its area.

The nineteenth Regional Conference of the Medical Society of the State of New York was held at Olean, on September 30 through October 3. The three-day meeting was climaxed with the annual dinner on October 3, at which Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, was the honored guest and the principle speaker.

The registration totalled 253.

I should like at this time to acknowledge with thanks the work of the program committee consisting of Herbert A. Laughlin, M.D., chairman, Paul A. Burgeson, M.D., Robert J. Collins, M.D., John Godfrey, M.D., and James R. Nunn, M.D., of the Eighth District Branch; and Lynn R. Callin, M.D., chairman, Ralph C.

Parker, Jr., M.D., David L. Koch, M.D., and Vincent I. Bonafede, M.D., of the Seventh District Branch, in arranging this excellent program.

I should also like to acknowledge with gratitude the assistance of two very capable executive secretaries, Richard F. Treccase of the Eighth District Branch, and Donald M. Irish of the Seventh District Branch. I wish to also acknowledge the excellent cooperation extended to us throughout the year by Harry J. Dexter, field representative of the Medical Society of the State of New York.

Respectfully submitted,
JOHN T. DONOVAN, JR., M.D., *President*

Disaster Medical Care

To the House of Delegates, Gentlemen:

The members of the Committee on Disaster Medical Care are as follows:

Irving G. Frohman, M.D., *Chairman*	Queens
James D. Bradley, M.D.	Clinton
Harold T. Golden, M.D.	Herkimer

Prior to the reactivation of this committee, an editorial was placed in the NEW YORK STATE JOURNAL OF MEDICINE summarizing the "Role of the Physician in Disaster Medicine." An urgent conference with representatives of the Division of Health Mobilization, Department of Health, Education, and Welfare, was held on March 3, relative to the new Packaged Disaster Hospital (PDH) program and the Hospital Reserve Disaster Inventory (HRDI) program. A summary report was sent to the State Medical Society for publication.

After reactivation, local representatives of the Division of Health Mobilization met with your chairman on August 2. This conference was designed to assess the degree of local governmental medical civil defense interest and cooperation. It was reported that, at least in downstate counties, the early discernible disaster emphasis was placed with hospitals, and not with the physicians, in or out of hospitals, who provide actual medical services.

A prime function of this committee is to furnish liaison between the American Medical Association's Committee on Disaster Medical Care and the physicians of New York State through their county society committees. Currently a determination is being made as to which of the counties already have such a committee. Thereafter, efforts will be made to insure that all counties do incorporate this medical responsibility. Apart from ever-present natural disasters, the advent of the orbital bomb with its ubiquitous potential should serve as a catalyst. Officers of county medical societies who have doubts on the matter are urged to read the special article, "I was in the Middle of the Atomic Blast in Hiroshima," by Lt. Col. T. Matsumoto, (MC) USA, in *Military Medicine*, September, 1967. It narrates the observations of a high school student in a classroom, less than one-half mile from ground zero.

The upgrading of emergency ambulance services and medical instruction of ambulance attendants is the subject of nationwide emphasis and is an appropriate target for the counties. A pilot program has been launched in Queens County with the New York State Volunteer Ambulance and First Aid Association. The course attendants have all completed advanced Red Cross first aid courses and are qualifying for a certificate to be issued by the New York State Department of Health. A major deterrent to this program, especially in nonmetropolitan areas, is a Health Department specification that some of these lectures to lay people are to be given by board-qualified physicians.

Distance, late committee reactivation, and the development of meaningful objectives have not made it practical to have committee meetings to date. A breakthrough from caretaker status to positive activity is envisaged in the field of disaster medicine, to combat the apathy that exists between catastrophic events. The October issue of *News of New York* carried an item on local preparation for riots.

Respectfully submitted,
IRVING G. FROHMAN, M.D., *Chairman*

Public and Professional Affairs

Public and Professional Affairs

To the House of Delegates, Gentlemen:

The Commission on Public and Professional Affairs is composed of the following members:

Solomon Schussheim, M.D., *Chairman*	Kings
John H. Carter, M.D.	Albany
Joseph J. Kaufman, M.D.	Wayne
C. Stewart Wallace, M.D.	Tompkins

The year 1967 marked the fourth year for this Commission. Your chairman believes that a great deal of progress was made not only by the committees as individual groups but in their teamwork activities sponsored by the Commission. The achievements of the three committees making up the Commission are spelled out in reports submitted to this House under Public Relations, Federal Legislation, and State Legislation.

Led by C. Stewart Wallace, M.D., chairman, the Public Relations Committee successfully inaugurated and carried out several projects, notable among which were the area conferences, the establishment of a Department of Information, the distribution of Ad Rem bulletin boards to hospitals, and the "hot line" system of communications.

Our State Legislation Committee, headed by John H. Carter, M.D., also had an action-packed year. The continuing problems of Medicaid, the resurgence of compulsory health insurance as a major issue at the State level, and other matters were capably handled by our committee.

Continuing its enthusiastic spirit of 1966, the Federal Legislation Committee, under the chairmanship of Joseph J. Kaufman, M.D., kept pace with the ever-changing scene in Washington. Principal attention was focused on the amendments to the Medicare Law and the extension of the Comprehensive Health Planning and Public Health Service Amendments of 1966.

As head of the Commission, your chairman has continuously urged, and worked for, cooperative endeavors by the three committees. As a step in this direction, a precedent-setting joint meeting of our Federal and State Legislation Committees was held for the purpose of providing a forum through which the members of both groups might understand and study mutual problems. At the time this report is being prepared, both the Federal and State Legislation Committees, for the second consecutive year, will participate in the Annual Conference of County Medical Society Legislation Chairmen, scheduled for December 7 in Syracuse. In these endeavors, our Public Relations Committee has played, and will continue to play, a vital role through the attendance of its chairman at these conferences.

The implementation of the activities of the three committees of our Commission was ably and successfully carried out by our Division of Communications, directed by Guy D. Beaumont. The legislative activities of our committees were coordinated by Martin J. Tracey, Esq. The work of the regional representatives and secretarial staff contributed largely to the success of our projects. To all, we are most grateful.

On behalf of the Commission we wish to thank all who assisted us, particularly Henry I. Fineberg, M.D., executive vice-president, and J. Richard Burns, Esq., assistant executive vice-president.

As chairman of the Commission, my personal expression of appreciation goes to our three hard-working committee chairmen: John H. Carter, M.D., State Legislation; Joseph J. Kaufman, M.D., Federal Legislation; and C. Stewart Wallace, M.D., Public Relations.

Respectfully submitted,
SOLOMON SCHUSSHEIM, M.D., *Chairman*

Federal Legislation

To the House of Delegates, Gentlemen:

The committee consists of the following members:

Joseph J. Kaufman, M.D., *Chairman*	Wayne
Burton Allyn, M.D.	Rockland
Robert H. Cross, M.D.	Oneida
John T. Donovan, Jr., M.D.	Niagara
George Liberman, M.D.	Kings
James A. Moore, M.D.	Albany
George M. Saypol, M.D.	New York
Lester R. Tuchman, M.D.	Queens

Throughout the year, your committee kept abreast of developments in Washington concerning pending Federal legislation and took action whenever necessary. Through memoranda from your chairman and materials supplied by the AMA and our coordinator, Legislation Activities, the members of your committee were kept informed through a practical workable system of communications. Your committee participated in a precedent-setting conference when it held a joint meeting with our State Medical Society's Committee on State Legislation at the request of Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs, for the purpose of providing a forum through which the members of both committees might understand and study mutual problems.

At the time this report is being written, in late October, your committee plans to participate in the annual conference of county medical society legislation chairmen slated for December 7, 1967, at the Country House, North Syracuse. Your committee, therefore, intends to submit to the House a supplementary report which includes developments between the date of this report and the time the House meets in February, 1968.

Joint Meeting. On May 19, your committee met at State Society headquarters. As previously mentioned, this meeting was held in conjunction with the Committee on State Legislation at the request of Dr. Schussheim. Since your chairman was out of the country at that time, John T. Donovan, M.D., committee member, presided at the meeting. Other members of the committee who took part in the meeting were Drs. Allyn, Cross, Moore, Tuchman, and Liberman. Dr. Saypol was excused.

The agenda for the meeting was based on a report which your chairman had sent to the committee prior to the meeting so that they might know his thoughts concerning (*a*) the actions of the 1967 House of Delegates, (*b*) the items submitted to the committee by this House, (*c*) pending Federal legislation, and (*d*) a committee meeting in Washington, D.C.

Among the principal items considered by the members was a review of major bills before Congress at that time. In the course of this review, there was a great deal of discussion on the then proposed law (H.R. 6418) "Partnership for Health Amendments for 1967" which would amend PL 89-749 "Comprehensive Health Planning and Public Health Services Amendments of 1966." Following this discussion, the committee voted to present a resolution on this subject to the AMA House of Delegates. This resolution, in substance, reiterated the previous objections advanced by the AMA to the original proposals and also included additional suggestions.

Your chairman is pleased to report that this resolution was submitted to the Council at its June meeting. After amending the resolution, the Council approved it for submission to the AMA House of Delegates at its June, 1967, meeting in Atlantic City. At the AMA meeting, the reference committee commended the New York delegation for its interest in this important bill and suggested that the Board of Trustees may wish to review materials contained in the resolution in preparation for future presentation before Congress. The AMA House of Delegates voted to refer the resolution to its Board of Trustees.

At our May 19 meeting, in addition to the "Partnership for Health Amendments of 1967" (H.R. 6418), the committee discussed five other Federal bills of primary importance. These included: (*a*) Social Security Amendments of 1967; (H.R. 5710); (*b*) Appalachian Regional Development Act (S.602); (*c*) Medical Restraint of Trade Act (S.602); (*d*) Generic Drugs, Part B, PL 89-97 (S.1303); and (*e*) Corporate Tax Treatment of Professional Associations (H.R. 5315). Since the status of some of the bills required no follow-up at the time the meeting was held and the committee decided to await data from the AMA, no action was taken on these bills by the committee.

Concerning the items from the 1967 session of the House of Delegates referred to our committee by the Council, the members joined the State Legislation Committee in voting to refer back to the Council, for clarification, resolution 67-1 "Proposed Changes in Title 19, Income Eligibility." The committee took no action on three other resolutions, since they had already been communicated to designated legislators and government officials by our president, Frederick A. Wurzbach, Jr., M.D. These three resolutions were: 67-6 "The Right of the Practitioner to Contract with Patients"; 67-33 "Direct Billing Under Title 19"; and 67-50 "Direct Reimbursement to Patients Under Title 19."

The committee also discussed a proposal by your chairman that a special business meeting of the committee be held in Washington, D.C. The purpose of the meeting would be to confer not only with Federal legislators but with representatives of the Federal government agencies. The meeting would differ from past trips in that it would be on a strictly preplanned business basis with no "social hour" and restricted to committee members only. After the members had discussed this proposal, the committee voted to approve the proposal in principle. The committee also recommended that such a meeting should be held only after Council approval, whenever the chairman and members believe that legislative or government proposals were important enough to warrant the trip and that such proposals could be handled in the best interests of the State Medical Society by personal contact in Washington.

At this meeting there was also a great deal of discussion about the proposed Internal Revenue Service regulations concerning unrelated business income tax. These regulations would consider the activities of soliciting, selling, and publishing of commercial advertising as a taxable business even though such advertising was published in a tax exempt organization's periodical, such as the NEW YORK STATE JOURNAL OF MEDICINE. Two bills (H.R. 8765 and H.R. 9691) which would provide, in general, that income from such activities would not be taxable also were brought to the attention of the committee. The committee voted that they would endorse whatever action was taken by our State Medical Society and the AMA concerning this matter.

At the June, 1967, Council meeting, your chairman presented a report of our May 19 meeting, which was accepted as amended. The amendment concerned the resolution on the "Partnership for Health Amendments of 1967" which has been acted on by the AMA.

Medicare. On July 20, your chairman sent a telegram to all county medical society legislation chairmen urging them to protest the inclusion of chiropractors under H.R. 5710 (Medicare), then pending before Congress. Included in the memo was a copy of the telegram sent by our executive vice-president, Henry I. Fineberg, M.D., to all county medical society presidents and executive secretaries. Our memo urged the legislation chairmen to implement Dr. Fineberg's request by sending personal letters and telegrams to their congressmen and by enlisting the support of their patients, local chambers of commerce, and other civic and service organizations. Copies of all communications were requested to be forwarded to Wilbur D. Mills, chairman, House Ways and Means Committee. At the time this report is being written, the bill had passed the House and did not include chiropractors.

Health Planning. On September 15, your chairman alerted members of our committee to the fact that a "sleeper" had been added to H.R. 6418 (Staggers), the "Partnership for Health Amendments of 1967," which would extend PL 89–749, the "Comprehensive Health Planning and Public Health Service Amendments of 1966," until 1972. This "sleeper," known as section 12, was tacked on to the bill by the House Commerce Committee. In brief, the new section would provide "emergency grants to hospitals" and would bypass the Hill-Burton program. Thirteen Republican members of the House committee had opposed the new section and had voiced their opposition in "minority views," published in the committee report. Because of the "minority views," the House Rules Committee granted a rule on H.R. 6418, which permitted the House to vote on a motion to delete section 12 before voting on the entire bill. Your chairman requested that the committee advise him of their views on this matter. Responses favored the deletion of section 12. As a result of this memorandum, messages were sent to Congress urging the deletion of section 12. By a vote of 155 to 81, the House deleted section 12 and sent the bill to the Senate, where it was at the time this report was prepared.

Legislation Information Center. Your committee is grateful for the assistance rendered by our State Medical Society's Legislation Information Center in supplying materials and answering questions concerning Federal legislation. Our State Society's Committee on State Legislation is submitting a detailed report on this valuable service.

Your Federal Legislation Committee, however, wants to underscore the point, that the center is providing a most important service not only to physicians but to the public and deserves the wholehearted and continuing support of all our members.

Your committee has continually maintained that we need the cooperation of more physicians in our legislation programs in order to obtain our goals. Physicians who are knowledgeable about Federal legislation are more inclined to exert their efforts on our behalf. We, therefore, strongly recommend that more physicians be encouraged to utilize the facilities of our Legislation Information Center so that they may be inspired to participate in our efforts.

Your committee also wishes to recognize the fact that our legislative bulletin, *Capitol News*, carried items on Federal legislation from time to time. Since we feel that this publication is influential with our members, we recommend that, whenever feasible, more items pertaining to Federal legislation be published in this worthwhile bulletin.

Acknowledgments. Your chairman once again wants to thank particularly the members of his committee who have worked so well with him in his endeavors to make the committee an effective group. Likewise, he also expresses gratitude to all who have aided him and the members of his committee. Among these are: Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs; John H. Carter, M.D., chairman, Committee on State Legislation; C. Stewart Wallace, M.D., chairman, Committee on Public Relations; Henry I. Fineberg, M.D., executive vice-president; and J. Richard Burns, Esq., assistant executive vice-president.

The committee deeply appreciates the work carried on by our State Medical Society staff, especially the Division of Communications. These include: Guy D. Beaumont, director; Martin J. Tracey, Esq., coordinator, Legislation Activities, who devoted considerable time and effort to our activities; and the regional representatives and secretaries of the division.

Respectfully submitted,
JOSEPH J. KAUFMAN, M.D., *Chairman*

State Legislation

To the House of Delegates, Gentlemen:

The Committee on State Legislation is composed of the following members:

John H. Carter, M.D., *Chairman*	Albany
John C. Brady, M.D.	Erie
Matthew Brody, M.D.	Kings
James P. Casey, M.D.	Bronx
E. Yale Clarke, M.D.	Warren
Andrew W. Lawrence, M.D.	Suffolk
George G. McCauley, M.D.	Tompkins

Pressed for time by the April opening of the Constitutional Convention, the 1967 session of the New York State Legislature adjourned after a short three-month work period. During this comparatively curtailed session, there was a great deal of activity both on the part of the Legislature and your committee, particulary concerning the issue of compulsory health insurance. Reports of your committee's activities have been presented regularly to our Council.

At the time this report is being prepared, in late October, your committee's plans for 1968 have not been completed since they are scheduled to be finalized in connection with the Annual Conference of County Medical Society Legislation Chairmen scheduled for December 7 in Syracuse. A supplementary report, therefore, covering activities between this date and February, 1968, will be submitted to the House at that time.

The following is a brief review of the highlights of your committee's activities listed under several categories.

Final Legislative Action, 1967 Session. Your committee was vigilant and watchful for all bills affecting the medical profession during the 1967 session. Hundreds of bills were reviewed by our legislative counsel, the coordinator, legislation activities, and the editor of *Capitol News*. Particular attention was paid to the major issues involving compulsory health insurance and revision of the State Education Law. A list of more than 100 bills and their final disposition was compiled and is on file in our Legislation Information Center.

As part of its 1967 State legislation program, our Society sponsored or supported seven key bills. We are pleased to report that the bill providing that the membership of the Medicaid Advisory Committee be increased with at least seven physicians, passed both Houses and was signed by the Governor. The other six bills, however, did not fare as well. The bill on free choice was passed by the Senate, but died in the Assembly. The bill on usual, customary, and prevailing fees was lost on a vote call in the Senate. The bill on body donations was passed by the Senate, but died in the Assembly. The other bills were killed in committee.

The following is a detailed report on the final status of these bills:

1. *Medicaid Advisory Committee (S.3052—Lent—Social Services; A. Int. 5518; Pr. 5804—Blumenthal—Health*). Provides that the medical advisory committee for medical assistance for needy persons shall consist of not more than 20 members, instead of exactly 15 members, and that at least 7 shall be licensed physicians, with the Governor to consider osteopathy and podiatry in appointing members, as well as considering other professions therefor. The Senate bill passed both Houses and was signed by the Governor, (Chapter 611, Laws of 1967).

2. *Free Choice of Physician and Facility (S.4183—Lent—Social Services; A. Int. 5676; Pr. 5962—McCloskey—Health—Rules*). Requires the Health Department, in administering and supervising medical care and health services for needy, to provide for free choice by applicant or recipient of licensed physicians, dentists, nurses, optometrists, podiatrists, and medical institutions or facilities consistent with quality and availability of medical care. The Senate bill was passed. The Assembly bill died in committee. Another bill (*A. Int. 1140; Pr. 4762—McCloskey—Social Welfare*) was amended, recommitted, and finally killed in committee.

3. *Body Donations* (*S. 1408—Lent—Health; A. Int. 2801; Pr. 2837—Turshen—Health*). Allowed surviving spouse and, if none, all children of legal age, to make a gift in writing for scientific, educational, or therapeutic use, of any tissue, organ, structure, or blood, from the body of a deceased person, unless there is reason to believe that decedent left instructions otherwise or expressed objection thereto. The Senate bill was passed. The Assembly bill was defeated in committee.

4. *Usual, Customary, and Prevailing Medicaid Fees* (*S.3055—Lent—Social Services; A. Int. 5471; Pr. 5757—Stephens—Health*). Requires that payments made to physicians and dentists for medical care to the needy, shall be at least equal in amount to that which would be determined to be a reasonable charge under Title 18 of the Federal Society Security Act in the locality where such care is rendered. The Senate bill lost on a vote call. The Assembly bill was killed in committee.

5. *Use of Title "Doctor"* (*S.2965—Gioffre—Education; A. Int. 3937; Pr. 6211—Rose—Education—Rules*). Would prohibit a person, in connection with practice of a profession or business having for its purpose, diagnosis, treatment, correction, or cure of any human ailment, condition, disease, injury, or infirmity, from holding himself out as doctor, or use title thereof, unless he was actually graduated and holds doctor degree from school, college, university, or institution authorized to confer such degree. Both bills died in committee.

6. *Hypnosis* (*S. 2071—Stafford—Education; A. Int. 4655; Pr. 4863—Cullen—Education*).

Restricts inducing of hypnosis, to physicians, doctors of osteopathy, and dentists, licensed to practice in State, and teaching thereof, to educational institutions chartered by New York, all hospitals approved by Social Welfare Department or maintained or operated by government agency or under jurisdiction of New York City Department of Hospitals. Senate bill was amended several times but died in committee. The Assembly bill was defeated in committee.

7. *Therapeutic Abortion* (*S. 349—Paterson—Health; A. Int. 1489; Pr. 1489—Browne—Codes*). Would permit physician or surgeon to lawfully perform therapeutic abortion under certain conditions, in hospital approved by State Health Department, subject to approval by committee composed of hospital medical staff members, and fixes qualifications for such members. Both bills died in committee.

In regard to the highly publicized bill on therapeutic abortions, which was the subject of much controversy, (*A. 2568, Pr. 2584—Blumenthal*), our State Medical Society pointed out where the bill varied considerably from the norms set forth in the position statement adopted by our House of Delegates. While we did not oppose the bill, we stated we could not endorse the proposed law since it was not in conformity with our State Medical Society's official position.

Compulsory Health Insurance. On the issue of compulsory health insurance, your committee took quick and decisive action. Because of the urgency of the situation, two telephone conferences of the committee were held and our recommendations were submitted to the executive committee. The following is a brief timetable of events.

On February 27, the Senate Committee on Rules introduced the bill, known as S. 4268. Shortly thereafter, the Joint Legislative Committee on the Problems of Public Health and Medicare held four public hearings on the measure in various parts of the State, commencing on March 6 and ending on March 15. Because of the speed and urgency with which the State Legislature was acting, our State Medical Society likewise took speedy action. Our first step was to alert all of our 61 county medical societies by sending them copies of the bill, with an urgent request for their comments and suggestions.

Prior to the first public hearing, our committee studied and evaluated the bill. To weigh our recommendations as well as the replies received from the county medical societies, our State Society's executive committee held two emergency sessions.

At the first public hearing, conducted by the State Legislature's Joint Legislative Committee in Albany, your chairman advised the committee that our State Society would have a statement before the final public hearing. At the final public hearing, our president-elect, Edward C. Hughes, M.D., presented the statement which our executive committee had approved two days previously. The statement was to the effect that our State Medical Society had consistently advocated voluntary health insurance and, therefore, was in agreement with the concept of utilizing private insurance carriers. The statement also pointed out that we could not approve the proposed law in its then present form, but that we would reconsider the bill if amended. The statement also urged additional study and that action be deferred.

On March 23 our Council enlarged on this statement by the executive committee when it expanded the recommendation of further study and urged the appointment of a commission with an adequate representation by the physicians of this State to study the matter in depth.

As you all know, the bill failed to emerge from the committee, and to all intents and purposes the action recommended by your State Society was followed.

Fully aware that the 1967 defeat simply meant that the issue was dormant but not dead, our Council, at its May meeting, approved the appointment of an Ad Hoc Committee on Compulsory Health Insurance, headed by Ralph S. Emerson, M.D., Nassau, appointed by our president, Frederick A. Wurzbach, Jr., M.D. As you know, this committee has been actively studying this matter, and a report is being submitted by the committee to this House.

Revised Education Law. While your committee has been keeping a watchful eye on the introduction and progress of the study bill, S. 4415, the detailed analysis of this bill which is necessary for recommendations concerning this complicated statutory revision, has been carried on by the special Ad Hoc Committee to Study the Revision of the Education Law, chaired by Walter T. Heldmann, M.D. A report by this committee will be submitted to the House of Delegates.

Joint Meeting. At the request of Solomon Schussheim, M.D., chairman, Council Commission on Public and Professional Affairs, your committee met jointly with the Council Committee on Federal Legislation at State Society headquarters on May 19 so that members of both committees might understand and study mutual problems.

Included on the agenda were two directives from the 1967 session of the House of Delegates which had been referred to both committees by the Council. These items were resolution 67-1, "Proposed Changes in Title 19, Income Eligibility" and resolution 67-10, "Legislation to Establish Income Levels for Medicaid." Your committee joined with the Federal Legislation Committee in voting to send both resolutions back to the Council for clarification, particularly in regard to criteria for income ceilings and for further instructions.

Also included on the agenda were several directives from the 1967 session of the House of Delegates which had been referred to our committee by the Council. The following is a summary of the disposition made of these items by the committee. Attention is called to the fact that the items marked for action at the 1968 session of the State Legislature were not acted on in 1967 because of the short session of the State Legislature.

(*a*) Resolution 67–9, "Repeal of Provisions of Charter 795 of Laws of 1965," which allows Blue Cross Plans in New York State to cover medical services. Since this problem is being studied by the Commission on Standards of Medical Care, no action was taken.

(*b*) Resolutions 67–11, "Legislation to Establish Motorcycle Safety Regulations," and 67–12, "Establishment of Accident Investigation Teams (AIT) at Medical Centers." Your chairman noted that similar bills were killed at the last session of the Legislature, but stated that we would endorse them at the next session.

(*c*) Resolution 67–14, "Legislation to Eliminate Prior Authorization for Hospitalization." Although it is no longer necessary for doctors to obtain prior authorization, with a few exceptions, such as crippled children, action on this resolution will be considered at the 1968 session.

(*d*) Resolution 67–16, "Right of Medicaid Patients to Select Own Physicians." This proposal will be actively supported again next year.

(*e*) Resolution 67–25, "Legislation to Require Seat Belts in Taxicabs, Rental Cars, and Limousines." This bill will be introduced next year as a State Society-sponsored bill.

(*f*) Resolution 67–27, "Support for McCloskey Bill to Guarantee Free Choice of Physician and Facility." This bill was supported by the Medical Society of the State of New York but failed to pass.

(*g*) Resolution 67–37, "Legal Immunity for Members of Hospital and Nursing Home Utilization Committees." This resolution was the subject of considerable comment. It was pointed out that (1) many physicians are unwilling to serve on utilization review boards without immunity from legal action; (2) the patient's need for protection, and (3) responsibility lies with the hospital for any malpractice suits. The committee decided that further investigation was required and that a bill would be considered for introduction next year.

(*h*) Resolution 67–38, "Opportunity to Study Pending Health Legislation." The members discussed the fact that this proposal cannot be written into law. The problem has been brought to the attention of State government officials who indicated they will cooperate with us.

(*i*) Resolution 67–62, "Revision of Laws Concerning Autopsy and Dead Human Body." This proposal has been annually considered and will be taken up again in 1968.

(*j*) Resolution 67–65, "Disapproval of Legislation Outlawing Nondisposable Hypodermic Syringes and Needles." This was introduced at the 1967 session of State Legislature but died in committee.

(*k*) Resolution 67–66, "Disapproval of Mandatory Semiannual Physical Examinations for Food Handlers." This proposal is to be followed up with the Health Department.

A report on our May 19 meeting, submitted by your chairman to the Council at its June meeting, was accepted.

Legislation Information Center. For the third successive year, the Legislation Information Center, inaugurated in 1964 at State Society headquarters, proved that it is a most effective medium for not only disseminating news about legislation, but likewise for supplying answers to questions concerning Federal and State legislation. As a means of supplying up-to-the-minute data concerning proposed laws at both the Federal and State levels, the Center maintains an up-to-date filing system which features copies of important pending bills.

While the Legislation Information Center reaches its peak load of activity during the session of the State Legislature, requests for assistance are continuously received throughout the entire year. Recent trends have been not only for pending bills but for information and copies concerning bills which have been enacted into law both on the State and Federal levels. During the past year, the services of the Center included not only the furnishing of "instant information" by answering numerous inquiries immediately over the telephone, but the sending out of numerous quantities of literature in the forms of pamphlets and copies of statutes.

A special service rendered by the Center was the supplying of background data and other related information concerning proposed laws and enacted statutes, copies of which were also supplied. Most of the requests for information came from county medical society legislation chairmen, executive secretaries, health organizations, hospitals, individual physicians, and State Medical Society division directors. During the year, also, there was a growing number of requests from other state medical societies, not only for copies of bills and laws, but for extensive related information requiring a great deal of research which the Center was able to supply.

Requests received by the Center from staff members of the New York State Legislature were filled, whenever feasible, but were referred to legislative counsel, when necessary. Numerous requests for assistance from the public on general topics pertaining to both State and Federal legislation also were handled.

The publication of our State Society's legislative bulletin, *Capitol News*, continues to be one of the principal and growing functions of the Legislation Information Center. Fourteen weekly issues of the bulletin were published. A strong indicator of the effectiveness of the publication was the growing number of requests received by the Center not only from physicians but from hospital administrators and others to be included on the mailing list. We regret to report that shortly after the midway mark of the 1967 State Legislature session, we lost the services of our very able and capable editor, Ralph

D. Semerad, Esq., due to a sudden illness. Martin J. Tracey, Esq., coordinator, legislation activities, assumed the duties of editor until the end of the session.

A popular and effective innovation in the makeup of *Capitol News* during the past year was the incorporation of a sheet entitled "Legislation Opinion Report." Through this special sheet, readers were able to express their views concerning bills which were reported in the publication. They had an excellent opportunity to recommend that the State Medical Society should support, oppose, or take no action on these bills. Both the individual opinions of the readers on bills reported in the publication were invited as well as the official opinions of the county medical societies. We are pleased to report that numerous individuals and many county medical societies took advantage of this opportunity, and we look forward to receiving similar expressions of opinion during the 1968 session of the State Legislature.

The Center also continues to function as a clearing house for the distribution of reports on pending State legislation, notices of public hearings by committees of the State Legislature, as well as reports on hearings which the coordinator attended and monitored.

Beginning on April 4, the date on which the Constitutional Convention convened, the Center undertook another project. This project involved the watching of developments during the sessions of the convention. In order to accomplish this purpose, the services of the Legislative Index Company, which supplies us with the data concerning pending bills and other matters during the regular sessions of the State Legislature, were contracted for by our State Medical Society. Through this service our coordinator, legislation activities, was able to keep abreast of developments and to advise the proper parties concerning matters involving the medical profession.

Continuing the practice of previous years, a close liaison was maintained between the office of the legislative counsel in Albany and the coordinator, legislation activities, in New York City. Through the cooperative efforts of both parties, a successful system of communications was maintained.

Your committee wishes to call to the attention of the House that we are making every effort to bring the latest complete legislation information to our State Medical Society officials and to the members of our component medical societies. We are doing this particularly through the Legislation Information Center and our publication, *Capitol News*. We strongly feel that both these media are vital toward the furtherance of the work of our committee and very strongly urge that all our medical society officials at the county level and the members of the societies utilize to the full the facilities of our Center. Both the *Capitol News* and the Center are worthwhile activities and deserve the continuing and wholehearted support of our State Medical Society.

Committee Cooperation. In preparation for the 1968 session of the New York State Legislature, your committee has contacted the Council committees of our State Medical Society. On September 18, your chairman addressed a memorandum to the chairmen of these committees. This memorandum asked them for assistance and guidance in the preparation of our 1968 State legislation program. We invited the committee chairmen to send us their suggestions concerning State legislation. We requested that they give us specific data concerning bills which they wish us to support, oppose, or introduce on their behalf during the coming session. We hope, through this method, to be able to obtain the benefit of the opinions of our State Medical Society's Council committees in conducting our future legislative activities.

Acknowledgments. Your chairman, acting on behalf of the committee and personally, wants to convey a vote of thanks to all those who have been helpful to us during 1967. We wish to voice particular gratitude to: Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs; Joseph J. Kaufman, M.D., chairman, Federal Legislation Committee; C. Stewart Wallace, M.D., chairman, Public Relations Committee; Henry I. Fineberg, M.D., executive vice-president, and J. Richard Burns, Esq., assistant executive vice-president.

A considerable amount of effort and time has been expended on behalf of our committee by the staff of the Division of Communications. For the work done and the cooperation demonstrated, we are grateful to Guy D. Beaumont, director; Martin J. Tracey, Esq., coordinator, legislation activities, who directs the Legislation Information Center and supervises the production of *Capitol News*, as well as Ralph D. Semerad, Esq., who was editor of our *Capitol News*. We wish to express a singular vote of thanks to Mr. Semerad for the work he has done over the years for the benefit of our committee.

During the past eventful year, the office of our legislative counsel in Albany has been particularly helpful to your committee. We, therefore, wish to extend a very special vote of thanks, once again as in the past, to our legislative counsel, George W. Foy, Esq., and the members of his staff, Harry W. Albright, Jr., Esq., and John C. Rice, Esq.

Respectfully submitted,
JOHN H. CARTER, M.D., *Chairman*

Public Relations

To the House of Delegates, Gentlemen:

The members of the Committee on Public Relations are as follows:

C. Stewart Wallace, M.D. *Chairman*	Tompkins
John L. Clowe, M.D.	Schenectady
Paul M. DeLuca, M.D.	Broome
Herbert E. Joyce, M.D.	Erie
Stanley Stark, M.D.	Kings
Saul Zucker, M.D.	Bronx

General. During 1967, numerous important activities were sponsored by your committee with the cooperation of the Division of Communications. Of particular note were nine area conferences, the establishment of a Department of Information, the distribution of Ad Rem bulletin boards to hospitals, and the institution of the "hot line" system of communication.

Keeping our State Society members as fully and quickly informed as possible continues to be one of your committee's primary goals. Our basic communication has been maintained through our regional representatives, *The News of New York*, letters, memoranda, bulletins, and area conferences.

News also has been transmitted to both physicians and the public through our Speakers Bureau, which has supplied many speakers for radio and television programs as well as some for live presentations to lay organizations. Press releases and other materials prepared and distributed through our media relations office have helped to keep the public informed on health matters and Society activities.

Committee Meetings. Your committee held four meetings during 1967. Many and varied projects were discussed and acted on. In addition, your committee studied the philosophy and mechanics of present-day methods of communication and took steps to insure that both our philosophy and our methods would continue to meet current needs. Among innovations approved were the Ad Rem bulletin board and the "hot line" communication plans. Reports of your committee's activities were regularly submitted to the Council for information and approval.

Your chairman and the director of the Division of Communications continue to maintain a system of close communication. Your chairman also held several meetings with the communications staff.

Brief reports on some of the outstanding projects sponsored by your committee follow.

Area Conferences. During 1967, your committee sponsored a series of nine highly successful area conferences, instead of the usual regional conferences. Year after year, the regional conferences seemed to be attended by the same individuals and those mostly from metropolitan areas. Therefore, in order to attract new faces and physicians from the more rural areas of the State we tried to shorten the travel distances. The more localized area conference was developed. These conferences, well dispersed, were held in the following areas:

Cortland	May 11
Garden City	May 31
Alexandria Bay	June 1
Batavia	June 15
Kingston	September 7
Plattsburgh	September 21
Utica	October 12
Olean	October 19
Saratoga Springs	November 2

The innovation did not produce good attendance until we intensified our promotional efforts and modified our program. As a result, the meetings held in the Fall were consistently successful. Both attendance and participation were excellent and of greatest importance approximately 80 per cent of those who attended were members who had never before attended a State Medical Society meeting! The comments by these physicians were highly laudatory and complimentary to our State Medical Society.

Your committee feels that these area meetings must be continued. In 1968, we expect to increase them in number in an effort ultimately to reach the members in all parts of our State.

Audio-Visual Presentation. The audiovisual presentation entitled "Your State Medical Society," which has been in the process of preparation for some time, has been completed. This presentation, graphically depicting the services rendered by our State Medical Society to its members, was prepared by our Communications Division. It has received the approval of our Public Relations Committee. At the present time, it is being used at county medical society meetings. Our plans call for its use in 1968 at area conferences and, if possible, in hospital staff meetings.

Speakers Bureau. Another major undertaking during the year was the revitalization of our State Society's Speakers Bureau in many sections of the State. As part of this revitalization program, your committee produced a new pamphlet *Your Doctor Speaks*, which was designed by our Communications Division. This pamphlet is strikingly illustrated with the snake (from the staff of Aesculapius) coiled around the gavel (symbolic of public speaking). Periodically, the pamphlet will be mailed throughout the State, offering the services of our Speakers Bureau and suggesting nine health subjects and 34 individual discussion topics ranging from allergies to diets, sex education, and physical fitness.

A special feature of the new pamphlet is that it is designed to be used either by our State Medical Society or the county medical societies. This feature has been very well received by the county medical societies. Although the program has been in operation only a short time, more than 2,500 copies have been ordered by county medical societies.

President's Citation Certificate. For a long time, your Public Relations Committee has felt that the certificates awarded to the recipients of our President's Citation did not satisfactorily reflect the high honor it conferred. We found a great deal to be lacking in regard to form and design. The committee, therefore, directed the redesign of this certificate. It will be used for the first time at our 1968 annual meeting.

Information Department. In recent years, the number of requests received by our State Medical Society for various information has been continuously increasing through the mail and by the telephone. Your committee, therefore, sponsored the establishment in May of a Department of Information within the Communications Division. The Department centralizes, for the first time, the dissemination of general information from MSSNY headquarters. Specific questions of a technical or scientific nature are routed to appropriate State Medical Society departments or committees. The new service also assists county medical societies in filling requests for and in tracking down vitally needed information

In the short time this project has been in operation, it has achieved great success and much commendation. Innovations are already being made to make the Department even more valuable to both physicians and the public.

Annual Convention. In keeping with its policy to continuously improve facilities to get the best possible news media coverage, our Communications Division has developed a press room which we feel produced, in 1967, the best results ever. The news medias made extremely good use of the facilities provided. Excellent news coverage was given to our convention by New York City newspapers, radio and television stations, and also by the Upstate press and electronic media. The wire services and national magazines covered the meeting effectively. Numerous convention speakers were interviewed and extensive photographic coverage was arranged.

One of the principal reasons for the outstanding 1967 news coverage was the preconvention preparation by the Division of Communications. Prior to the meeting, many announcements and news releases were sent to the press, radio, and television.

Empire State Awards. As in past years, your committee cooperated with the State Health Department in the presentation of the Empire State Awards for Excellence in Medical Reporting. These awards, given jointly by our State Medical Society and the New York State Department of Health, were established to encourage development of sound medical reporting and to recognize significant contributions to public knowledge of health made by reporters and newspapers in New York State.

Ad Rem Bulletin Boards. Stepping up its campaign to keep physicians better informed, your committee directed the installation of Ad Rem bulletin boards in over 400 hospitals throughout the State. The boards, light blue in color and measuring $10^1/_2$ by 14 inches, were designed by our Communications Division. They are used to display important communications from our State Medical Society. These boards are receiving high praise from physicians. The cooperation of the hospital administrators has been so exceptional, that your committee strongly advises that additional cooperation with this group should be encouraged in future communication projects.

"Hot Line" Communications Concept. One of your committee's progressive moves during 1967 was the initiation of a communication distribution method called "hot line." The primary function of the "hot line" is the transmitting of priority information to members of our State Medical Society as quickly as possible.

The reaction to this innovation has been notable. Members, verbally and in letters, have praised the "hot line" as another step in the direction of improved communication with the members of our State Society. Your committee plans to use it as a regular medium of communications during 1968.

Environmental Health Congress. Your committee worked closely with the AMA in conducting the Congress on Environmental Health Problems in New York City, April 24 through 26. Our State Society was one of the sponsors of the Congress, the purpose of which was to explore concepts, functions, and responsibilities involved in the development of integrated research programs and full utilization and effective coordination of professional, administrative, and technologic resources. Emphasis was placed on regional operations and the application of imagination and advanced technology.

MSSNY Handbook. For some time, your committee has had under development a new handbook which describes the services of our State Medical Society to its members. All the preliminary preparations have been completed, and we hope to have this handbook ready for distribution in 1968.

Communications Institute. Your chairman and the director of the Communications Division participated in the AMA's Communications Institute held August 24 and 25 at the Drake Hotel, Chicago. Your chairman attended the panel discussions. Mr. Beaumont was invited to explain our Ad Rem bulletin board and our "hot line" communications system. We were very proud of the excellent reception which these two new projects were given by those attending this important meeting.

It was one of the best conferences on communications that we have had the privilege of attending. Your chairman was encouraged by the fact that five New York State physicians, representing their county medical societies, participated in this meeting. Your chairman feels that many more physicians should participate in these AMA communication conferences.

News of New York. Our monthly publication, *The News of New York*, continued to improve in both format and content during 1967. Innovations for improvement will be noticed in 1968. Your criticisms will be appreciated.

Field Service. One of our State Medical Society's most effective methods of communications continues to be the personal contact and the direct services to the county medical societies and to the individual physician rendered by our regional representatives. In addition to their basic duties of visitation with societies and members, during the past year each regional representative planned and conducted the area conferences in his own region. Another of their projects was the installation of the Ad Rem bulletin boards in hospitals throughout the State.

Many commendations on the work of the regional representatives have been received by them and by your committee. Evidence that the field service is a successful MSSNY service is the ever-increasing number of requests for their assistance.

Mr. Coleman Fineberg joined our field service in mid-September as regional representative for the First, Second, and Ninth District Branches, replacing Mrs. Alice Davis, who had resigned in July, 1967.

Medical Assistants Association. Your chairman continues to serve as an adviser to the New York State Medical Assistants Association with Irving M. Pallin, M.D., and Walter F. Harrison, Jr., M.D.

The Communications Division staff cooperated with the Medical Assistants Association in many ways including the production of their publication, *Reflex*. Your committee wishes to express its gratitude to the medical assistants for the extensive assistance they have rendered the State Society by helping with the registration of guests at our area conferences.

Proposed Program–1968. Public and professional relations projects for 1968 are underway. The VD Education Test Program in the schools of Buffalo and the greater Utica area is a study which will determine the feasibility and advisability of our Society's attempt to bring, forcefully, to high school students information regarding venereal diseases.

Our members will begin to see around the State, a billboard poster publicizing the fact that 200 medical career opportunities are available and encouraging those interested in careers to contact your State Medical Society.

As its new effort for 1968 and 1969, your Public Relations Committee has launched its exciting program for the development of the MSSNY Mobile Medical Show. The basis of this program is a self-contained, travelling exhibit and theatre which will eventually tour New York State parks, playgrounds, and beaches, bringing to the people factual health messages regarding a great variety of subjects such as immunization, first aid, personal hygiene, "old wives tales," and quackery.

This project represents a significant departure from our past normal projects, and it is a substantial undertaking. In selecting this means of reaching the public, your Public Relations Committee is demonstrating its attitude that with local and Federal governments so actively and munificently bidding for the attention and good will of the public in all areas of public health and safety, your State Society should tailor its future activities to avenues of contact and influence which will be as unique and stimulating as possible. We believe the Mobile Medical Show, which you will hear more about during 1968, will provide us the opportunity to relate directly and effectively to the public in our public and professional efforts of the future.

Acknowledgments. Your committee, and especially the chairman, is grateful to all who assisted us during 1967. Our thanks are extended to the many officers of the State Society who participated in our area conferences: The chairman of our Commission on Public and Professional Affairs, Solomon Schussheim, M.D.; executive vice-president, Henry I. Fineberg, M.D.; and to the staff of the Division of Communications under the direction of Guy D. Beaumont.

Respectfully submitted,
C. Stewart Wallace, M.D., *Chairman*

To Study Revision of Education Law

To the House of Delegates, Gentlemen:

The Ad Hoc Committee To Study the Revision of the Education Law is composed of the following members:

Walter T. Heldmann, M.D., *Chairman*	Richmond
John M. Galbraith, M.D.	Nassau
Francis A. Stephens, M.D.	Albany
Victor J. Tofany, M.D.	Monroe
William L. Wheeler, Jr., M.D.	New York

At the 1967 session of this House, your committee reported that it had presented, on behalf of our State Medical Society, a statement concerning recommendations on the proposed revision of the Education Law, at a public hearing conducted by the Joint Legislative Committee to Revise and Simplify the Education Law in January, 1967, in Albany. In our report we spelled out the highlights of this statement, which was approved by the House, and at the same time submitted several additional recommendations concerning the proposed revision for inclusion in a supplementary statement, which also were approved by this House.

Shortly following the adjournment of the 1967 session of this House, your committee filed with the New York State Legislature's Joint Legislative Committee a supplementary statement concerning the Fourth Working Draft, Revision of Title VIII—Education Law (Professional Practice) which contained the recommendations approved by this House. For the information of the delegates, the following are some of the highlights of the supplementary statement.

Supplementary Statement Highlights.

1. *Board of Medical Examiners.* Strongly reiterated recommendation that a separate medical board for licensure and discipline of doctors of medicine be established outside Education Department.
2. *Practice of Medicine.* Re-emphasized our position that the proposed definition of the practice of medicine include the addition of the word "mental" so that the new statute would cover both mental and physical conditions.
3. *Mental Illness.* Strongly recommended: (*a*) the deletion of the entire complicated formula with respect to insanity spelled out in the proposed new law; (*b*) modification of the proposed language in the new law to state as a broad ground that incurable insanity shall be the only reason for revocation of licenses, not only for medicine, but for all other professions; and (*c*) formation by the State Society of its own committee made up of three psychiatrists who would serve in an advisory capacity to control any possible problems within the profession, thereby providing a safeguard to the public and at the same time an appellate body for the physician confronted with charges of insanity.
4. *Advertising.* Suggested that proposed law be amended to include as grounds for revocation, suspension, or annulment of license, unprofessional conduct as defined by the Regents, including, but not restricted to, advertising in *any media of communication* and fee splitting.
5. *Chiropractic.* Reiterated uncompromising opposition to the licensure of chiropractors and urged that every possible step be taken to insure that not only the new provisions of the statute, but future regulations, properly safeguard the health and welfare of the people of the State, and that all such statutes and regulations be strictly enforced.
6. *Podiatry.* Reiterated original opposition to proposed section expanding the definition of podiatry. Strongly opposed the inclusion of major surgery and the prescription and use of general anesthesia and narcotics in podiatry.
7. *Psychology.* Emphasized State Medical Society's position that the practice of psychotherapy is the practice of medicine and should not be practiced by persons, such as psychologists, who are not licensed to practice medicine.

Study Bill S. 4415. The attention of the House is called to the fact that the two statements, previously mentioned in this report, which had been submitted on behalf of our State Medical Society to the State Legislature's Joint Legislative Committee to Revise and Simplify the Education Law, were directed to working drafts of proposed changes in the law. At the time they were prepared and submitted, no formalized bill was before the State Legislature. Subsequent to the filing of our supplementary statement, a study bill was introduced in the State Legislature, known as S. 4415, an Act to amend the Education Law in relation to the professions. While some of the recommendations made in our two statements concerning the working drafts were included in the 1967 study bill, the proposed statute also contained several new provisions which were not in the previous drafts and which were objectionable to our State Medical Society. Adapting itself to the new situation, your committee concentrated its efforts on S. 4415.

As a major step in our activities, copies of our State Society's supplementary statement, as well as a copy of S. 4415, were sent to all county medical society presidents, secretaries, legislation chairmen, and executive secretaries. In our communications to these officials, we strongly urged that they study very carefully both the supplementary statement and S. 4415, and requested that they submit specific comments to our committee. As a result of this endeavor, 25 replies were received from county medical societies. A great number of these responses endorsed the actions which had already been taken, as set forth in the two statements which had been submitted to the State Legislature's Joint Legislative Committee. Many of the responses contained specific and constructive suggestions which were given very careful consideration.

Further Developments. In order to evaluate and utilize the data which had been assembled, your chairman met in late June with J. Richard Burns, Esq., assistant executive vice-president, and Martin J. Tracey, Esq., coordinator, legislation activities. At this meeting, a list of amendments to, and comments on, S. 4415 were drawn up as the basis for discussion with the legal counsel of the State Legislature's Joint Legislative Committee, Brainard Prescott, Esq.

In mid-July, the participants in the late June meeting conferred with Mr. Prescott in Albany. Henry I. Fineberg, M.D., our executive vice-president, and John C. Rice, Esq., from the office of our legislative counsel, George W. Foy, Esq., joined in this conference. Progress was made at this meeting, since Mr. Prescott looked with favor on many of our recommendations and assured us that many of them would be accepted by the Joint Legislative Committee.

On the other hand, there were several points that Mr. Prescott advised us to present formally in a written statement to the committee. These included mental illness, laymen on grievance committees, and unanimous vote by grievance committees. Following up these suggestions, Mr. Foy and Mr. Rice met again with Mr. Prescott in late July.

After these meetings had been held, a written statement was drawn up which was sent to each member of the committee for his evaluation and comment. In order to obtain committee agreement before submitting the statement to the Council, your committee met at State Society headquarters, on September 12. Your chairman presided. Members present were Francis A. Stephens, M.D., and Victor J. Tofany, M.D. Members excused were John M. Galbraith, M.D., and William L. Wheeler, Jr., M.D. Both Dr. Galbraith and Dr. Wheeler, however, sent word that they approved the statement sent to them by mail and also approved inclusion in the statement of additional provisions concerning mental illness. Mr. Burns, Mr. Tracey, and Mr. Rice also participated in this meeting.

The main point of discussion at the meeting involved the portion of the written statement which reiterated our State Medical Society's opposition to the provisions concerning mental illness. In discussions with Mr. Prescott, we had been advised that the committee of the State Legislature would not accept our outright opposition and that the final bill would include provisions concerning mental illness. We had also learned that they would be receptive to language involving mental illness, less objectionable to medicine as long as reasonable safeguards were provided. The dilemma facing the committee was either to stand firm on outright opposition, or to reiterate our opposition with a statement to the effect that if the committee was going to reject our stand and include a provision on mental illness, we suggest that more acceptable language be included.

The committee decided on the latter course, which was concurred in by Dr. Galbraith and Dr. Wheeler.

The committee reviewed the written statement most carefully, made certain changes and added a provision concerning the voluntary admission of licensees to mental institutions. This statement was submitted by your committee to the Council at its September 28 meeting and was unanimously approved.

Third MSSNY Statement. In order that the House may be aware of the numerous recommendations made by our State Medical Society, along with the reasons therefor, the following is the complete text of the third statement made on behalf of our State Medical Society to the State Legislature's Joint Legislative Committee to Revise and Simplify the Education Law.

> On two previous occasions, the Medical Society of the State of New York has submitted statements to this committee concerning the proposed revision of the Education Law in New York State. On January 25, in Albany, Walter T. Heldmann, M.D., secretary of the State Medical Society and chairman of the Ad Hoc Committee to Study the Revision of the Education Law, testified in person at the public hearing conducted by this Joint Legislative Committee and submitted a statement on behalf of the State Medical Society. Following the annual session of the Medical Society of the State of New York House of Delegates held February 12 through 16 at the Americana, New York City, a supplementary statement was filed with this committee. Since the filing of this supplementary statement, our representatives have been working closely with Brainard Prescott, Esq., legal counsel to your Joint Legislative Committee, in regard to S. 4415 which was introduced during the 1967 session of the Legislature after the filing of our reports. We are grateful to Mr. Prescott for his cooperation, and we wish to thank the committee for the time and effort he has given to us.
>
> The primary purpose of this memorandum is to focus the attention of this committee on the principle portions of the proposed revisions of the Education Law as now spelled out in S. 4415, which are of major concern to us, while at the same time reiterating our urgent request that the recommendations made in our two previous statements as well as in suggestions made to your legal counsel be again reviewed by this committee and acted favorably on by the members.
>
> *Independent Licensing Agency.* We note with deep regret that one of our major recommendations made in both our statements has not, thus far, been accepted by the members of your committee. We had strongly recommended that an independent agency for the licensure of doctors of medicine be established outside the Education Department.
>
> For the third time we specifically recommend that the licensing be an independent entity within the executive branch of government, consisting of ten members who are residents of New York State, to be divided into three classes: (1) seven doctors of medicine, nominated by the Medical Society of the State of New York; (2) one doctor of osteopathy, nominated by the New York State Osteopathic Association; and (3) two public members.
>
> We repeat, briefly, some of the reasons already submitted to this committee for our position. Only three states within the United States now license the medical profession through an education department. (A survey on this subject was submitted to your committee's legal counsel). Precedent already exists in New York State for such a transfer, since members of the legal profession are not licensed and disciplined by the Education Department but by the courts. Only doctors of medicine are properly equipped to judge who is qualified to practice medicine and only doctors of medicine have the experience and training necessary to evaluate with objectivity whether or not a doctor of medicine should be disciplined. Under the present system, the lay-oriented group must, of necessity, call on doctors of medicine for advice concerning both licensing and disciplining. We repeat—our proposal would strengthen, not weaken, the present outdated mechanism.
>
> In the event that this, our third, appeal for an independent licensing agency outside of the State Education Department is not granted, we wish to point out that the proposed revisions for the continuance of the present system in the State Education Department, as set forth in S. 4415, are not entirely acceptable to the Medical Society of the State of New York.
>
> In regard to provisions concerning the boards responsible for examinations and for disciplining, we should like to call to the attention of the committee some fundamental principles in which the State Medical Society firmly believes and strongly advocates. Proposed boards responsible for examinations

and for disciplining of the medical profession should be manned solely by members of the medical profession. When disciplinary action must be taken we firmly believe that this action should be done only by unanimous consent.

We note with satisfaction that the principle of having only members licensed in their professions on a board has been carried out in the provisions of S. 4415 concerning the State Board of Medical Examiners as set forth in Section 6505, page 10.

Grievance Committees. We commend the committee for restricting the Board of Medical Examiners to members of the medical profession. We note, however, that the provision concerning the committees on professional practice does not restrict membership to members of the profession but mandates a number of laymen as members.

In Section 5411, Subdivision 2, page 21, S. 4415 requires layman representation on professional practice committees. We recommend the deletion of this paragraph and the substitution of the following new paragraph:

"The composition of each committee on professional practice shall be set forth in each article relating to each profession. The members of such committees shall be appointed by the Regents. The members of the medical committee on professional practice shall all be duly licensed physicians. For every four licensees appointed to every other committee, the Regents shall also appoint one member who is not licensed in that profession, so that there shall be one unlicensed person for every four licensed persons."

As we have repeatedly maintained, only doctors of medicine have the experience and training necessary to evaluate with objectivity whether or not a doctor of medicine should be disciplined. Lay-oriented persons, no matter how competent, are not qualified by training or experience to form sound judgments on matters involving the disciplining of physicians.

We, therefore, respectfully request that the above amendment to S. 4415 be adopted by the committee. In order to comply with the limitation of members of the medical committee on professional practice to physicians, related sections, such as Section 6724, page 85, would also have to be amended, and we so recommend.

We should also like to call to the attention of the committee that the Board of Regents, which has a veto power over the committees on professional practice, consists chiefly of laymen. If the committee feels that laymen must be involved in the disciplining of members of the medical profession, there is adequate provision already contained in the law through the member-composition of the Board of Regents. Representation of the lay public in the disciplining of doctors is also provided through the involvement of the Attorney General's office in any disciplinary proceedings.

In Section 6512, Subdivision 5, page 25, provision is made for the composition of subcommittees as well as for a four-fifths rule for arriving at disciplinary decisions. We recommend the deletion of the present paragraph in S. 4415 and strongly recommend the substitution of the following new paragraph:

"A committee on professional practice shall conduct an initial hearing through a subcommittee thereof. Such subcommittee, after hearing, shall make a written report of findings and recommendations and the same shall be forthwith transmitted together with a transcript of the evidence to the full committee on professional practice.

"Said committee on professional practice may thereupon act upon the recommendation of its subcommittee as it shall deem appropriate, or take further testimony, if the same shall seem desirable in the interests of justice. If by the unanimous vote of the members present and voting the respondent is found guilty of such charges, or any of them, such committee shall make findings and recommendations which shall include the vote of each member of such committee and their recommendations, and the committee shall transmit to the Director of the Division of Professional Conduct a transcript of the hearing, findings, and determinations wherein such respondent has been found guilty."

The two changes proposed by the State Medical Society in the suggested language for insertion in the proposed law involves the omission of laymen on subcommittees of the professional practice committee and the substitution of a unanimous vote for the suggested four-fifths vote. Our State Medical Society is very strongly opposed to the four-fifths proposed rule for disciplining doctors of medicine and reiterates its strong recommendation that a unanimous vote be included in the proposed law.

We maintain that a review of the records of the actions taken by the present Medical Grievance Committee will show conclusively that a unanimous vote, which is currently the law, does not prevent disciplinary action, since there have been numerous such actions taken under the current unanimous vote rule. The records also will show that the unanimous consent rule has not been detrimental in the application of strict disciplinary measures. On the contrary, under the unanimous consent rule, the committee has been more stringent than the Board of Regents which operates under a more liberal rule.

In order for an individual to become a licensed practitioner of medicine, he must not only attend a medical school approved by the State of New York, but must take a most comprehensive and difficult licensing examination. Before such an individual is deprived of the opportunity to practice, which was most difficult to obtain, the State Medical Society maintains that great care be exercised in the process of revoking this privilege. We believe, therefore, that unless his fellow physicians, who are by far his most critical judges, unanimously agree, he should not be deprived of the opportunity to practice his profession.

Two Boards. We understand that the committee is considering combining the Board of Examiners with the committees on professional practice in regard to some of the professions governed by the State Education Law. We voice strong objections to this procedure being used in regard to the medical profession. We believe that the two boards should be kept separate and distinct and not combined into one board.

Our reasons are that the Board of Medical Examiners is primarily concerned with the educational qualifications for licensure, while the professional practice committee is primarily concerned with the conduct of the profession in accordance with the laws of the State.

We, therefore, respectfully suggest that if a definition of the word "board" is included in S. 4415 in its amended form, that language along the lines of the following should be included:

"A *board* is used to designate the state board established for one or more professions coming under the regulatory provisions of this title, except that in respect to the professions of medicine and accountancy, the term "board" shall mean one of the two boards established for each of such professions under this title, as the context may require."

Committees on Professional Practice. Another matter which we would like to call to the attention of the committee is subdivision 6 of Section 6511 in S. 4415. This section refers to committees, and we suggest the following revision of the language of this particular subdivision:

"6. Each committee shall elect from its members a chairman and a vice-chairman annually and shall meet on call of the department. At any meeting a majority of the membership shall constitute a quorum. *The chairman shall appoint the members of each subcommittee, subject to the approval of the whole committee.*"

The underscored new language provides for control of the subcommittees by the committees which is the usual procedure.

Mental Illness. Although we note that S. 4415 contains changes in the proposed law, set forth in the Fourth Working Draft, concerning mental illness, these changes do not meet the recommendations made in our supplementary report to this committee, which was based on the actions of our governing body, the House of Delegates of the State Medical Society, at its 1967 annual meeting.

Before reiterating the action taken by our House of Delegates, we should like to ask this committee to consider several important factors. The House of Delegates of our State Medical Society represents almost 27,000 physicians from all parts of the State of New York. When the House acted in February, 1967, on this proposal, they were reflecting the views of the physicians of this State. When they acted, they were taking a position in an area in which they were well qualified. The proposition before them was one basically of a medical nature, namely, mental illness. They were not taking action on an economic subject or some other nonmedical proposal but on a proposal that physicians are qualified to act on as expert witnesses. We respectfully request, therefore, that the position taken by the House of Delegates in regard to a medical matter should be carefully considered by this committee before a final decision in regard to mental illness is taken by your committee.

We wish, therefore, to reiterate that at its February, 1967, session the State Medical Society's House of Delegates studied the section involving mental illness as set forth in the Fourth Working Draft and made specific recommendations for the consideration of this committee. The first recommendation was that Section C6510, Subdivision 3 (Insanity and Mental Illness), should be deleted in its entirety. In taking this position, the delegates stated:

"This proposal is wholly and totally unsatisfactory. We object to it primarily because such a law would serve as a deterrent to members of *all* of the professions from seeking psychiatric assistance, for fear that it might cause the revocation of one's license to practice his profession."

In other words, in our supplementary statement, we stressed that individuals who could be helped in the early formative stages of mental illness might forgo treatment and might continue working in their professions until beyond help, with resulting harm to their clients or patients, rather than risk suspension and to avoid the stigma of mental incapacity. You will recall that we recommended in our supplementary statement that Section C6510, Subdivision E, be amended to read:

"Habitual drunkenness; addiction to the use of morphine, cocaine, or other drugs having similar effect *or incurable insanity*."

The recommendation of the addition of the words "or incurable insanity" was intended to recommend to the committee that incurable insanity be the sole reason for suspension or revocation of license because of mental illness.

In connection with this entire problem, the State Medical Society believes that there is a misconception among the laity about mental illness and mental incompetency. The language in the bill seems to be based on the philosophy that any kind of mental illness necessarily involves mental incompetency and should be handled as such. We strongly maintain that most mental illnesses are of a temporary nature which do not involve mental incompetency and should not be dealt with as harshly as under the proposed revision of the Education Law.

We should like to call to the attention of the committee that in our judgment the proposed revision will create more problems than it will solve. In addition to being a great deterrent to those people who might be considering treatment, the suspension of a license will put an unjustified stigma on the person involved and also unjustifiably deprive him of the means of his livelihood. It would appear that the proposed law could readily be circumvented. Patients afflicted will simply not go into an institution for the mentally ill in New York State but will go outside the State and will be admitted and discharged within the proposed time sequence and thus thwart the law.

While we are adamantly opposed to the routine reporting of mental illness included in the bill and the philosophy of equating mental illness with professional incompetency, which the bill implies, in the event that the committee decides to retain such provisions in the final proposal, and in order to minimize the difficulties that might ensue following enactment, we propose that the present language be changed.

We suggest that paragraph 3b, Section 6510, page 19, be deleted entirely and that the following new paragraph be substituted:

"Upon the voluntary admission of a licensee to a state mental hospital or other mental institution, and, if such licensee shall remain as a patient therein for more than thirty days, and if no formal adjudication of incompetency or insanity is rendered by a court of record of this State, it shall be the duty of the attending physician to certify, and the institution to report, to the department, only when in the attending physician's opinion, the condition of such licensee is such as to render him incompetent to practice his profession. Such report and certification shall be referred to the committee on professional practice of the profession in which such person is licensed. If the attending physician certifies that the condition of such licensee is such as to render him incompetent to practice his profession, then it shall inquire into the facts and circumstances and thereupon if such committee shall consider it to be in the public interest that such person be temporarily suspended from the practice of his profession, the committee shall recommend to the Regents that such license shall be suspended and the Regents after review may suspend the same, if it deems such suspension in the public interest."

Mental Illness: Re-examination. We strongly oppose all references to the suspension or revocation of licenses on the grounds of mental illness as emphasized previously in this statement. We feel, however, that it is necessary to call to the attention of your committee language in S. 4415 which stands in great need of clarification. We refer specifically to Section 6510, subdivision 3C, page 20. The specific language states:

"The department may require such person to pass such *examinations* as it deems appropriate to determine the present fitness to practice."

This language could be interpreted to mean technical ability and subject the applicant to another examination similar to that which he took when he applied for his original license. The language should be clarified to specifically involve his mental and physical condition and not his technical ability.

We, therefore, suggest that the word "psychiatric" be inserted before the word "examinations" in the above quoted sentence so that the new sentence will read:

"The department may require such person to pass such *psychiatric examinations* as it deems appropriate to determine the present fitness to practice."

Injunctive Relief. Under Section 6514 of S. 4415 we note with appreciation that the provision concerning injunctive relief has been retained. While the section rightfully provides for injunctive relief on application of the Attorney General, we feel that such injunctive relief should be extended to professional groups.

The following amendment, therefore, is recommended so that the first sentence of Section 6514, Injunctive Relief, will be changed to read as follows:

"1. The Attorney General or *any duly organized professional association or society consisting of authorized practitioners of the profession involved* may apply to the Supreme Court within the judicial district in which a violation of this title is alleged to have occurred, for an order enjoining or restraining commission or continuance of the acts complained of."

Definition—Practice of Medicine. In our previous statements we complimented the committee for including the word "mental" in the definition of the practice of medicine in the drafts previous to S. 4415. We were greatly surprised and disappointed to note that in spite of the fact that the House of Delegates of the Medical Society of the State of New York endorsed the improvement made in the proposed revision of the statute by the inclusion of the term "mental," it has been dropped in the version now known as S. 4415.

Despite the number and kind of objections that may have been raised to the inclusion of the word "mental" in the proposed new statute, we in the medical profession strongly maintain that the inclusion of the word is necessary not only to clarify the definition of the practice of medicine but also to reveal to the layman what the practice of medicine embraces. By such an omission, the entire field of psychiatric medicine is being ignored. In spite of the fact that a great portion of the hospital beds in New York State are occupied by the mentally ill who are diagnosed and treated by doctors of medicine practicing in the field of psychiatry, this entire field is not specifically included in the proposed definition of the practice of medicine in the new statute. This significant omission can be interpreted as an attempt to further divorce the practice of medicine from the mental health field. We strongly urge, therefore, that the word "mental" be reinserted in the definition of the practice of medicine as spelled out in Section 6721, page 76.

Construction of Article. In regard to Section 6723, Construction of Article, page 79, we should like to make two recommendations in regard to improvement in the language of said section.

For purpose of clarification we suggest that Section 6723, subdivision b(1), be revised to read as follows:

"The practice of medicine by unlicensed physicians employed in hospitals, clinics, or other institutions operated by the State or any other political subdivision thereof *while practicing within such institutions*." The suggested new language is italicized.

We further suggest that the language of Section 6723, subdivision D, page 81, should be changed to read as follows:

"D. Any lawfully qualified physician in other states or countries meeting legally registered physicians in this State, in consultation or *who are conducting lectures, clinics, or demonstrations in a duly accredited hospital or medical school for the purpose of advancing medical education*."

The purpose of the additional language is to cover situations which apparently were intended under the original language and a practice which is now common in the United States. In other words, the section would protect visiting physicians who are here for the purpose of advancing medical education in the United States.

Unprofessional Conduct. We note with satisfaction that S. 4415 contains a revision of Section 6510, Subdivision 2n, pages 18 and 19, which states, "Unprofessional conduct as defined by the regents, including but not restricted to, advertising in any media of communication and fee splitting." We had suggested the addition of the words "in any media of communication." We are grateful to the committee for accepting this recommendation.

We should like to point out, however, a further clarification of this particular subdivision which would be beneficial. We feel that the term "fee splitting" should be further defined as it now is under the present law. Under present Section 6514, revocation of certificate—annulment of registrations, subdivision 2f spells out in detail what "fee splitting" is. At the same time, it also details exceptions to the condemned practice of fee splitting. It contains such language as:

"Nothing contained in this chapter shall prohibit physicians from practicing medicine as partners nor in groups nor from pooling fees and money receipts." and

"Nothing contained in this chapter shall prohibit a medical expense indemnity corporation pursuant to its contract with the subscriber from prorating a medical expense and indemnity allowance among two or more physicians in proportion to the services rendered by each such physician at the request of the subscriber."

We respectfully request that language similar to that contained in the present law be inserted into the proposed revision of the State Education Law concerning fee splitting.

Secretary, Board of Examiners. We also note with regret that the committee has not seen fit to accept our recommendation that the secretary of the Board of Medical Examiners be a member of the medical profession. In S. 4415, Section 6505, Subdivision 6, permits a person who is not a member of the medical profession to be secretary of the Board of Medical Examiners. The State Medical Society restates its original recommendation that the secretary of the Board of Medical Examiners be a doctor of medicine. The scientific nature of the duties involved, including the supervision of technical examination for candidates applying for licenses and the decisions, requiring medical knowledge and background, which must be made necessitate that the secretary be a doctor of medicine.

Registration. In Section 6509, Registration, of S. 4415 we also observe that no provision has been made to carry out the suggestion made by us that registration be brought up to date, in some manner, every two years. We respectfully suggest that even if this provision is not written into the law that it should be made mandatory on the administrators of the act to see that such a procedure is followed.

Revocation of Licenses. We should like to call attention to a subdivision of section 6510, Revocation of Licenses and Registration, namely, subdivision 2G, page 18, which states "practice beyond the legally authorized scope of a profession." We believe that this language is ambiguous and that the phrase "legally authorized scope of a profession" be clearly defined and delineated.

Title "Doctor." Primarily for the protection of the public, we repeat our request that a provision be included in the revision of the Education Law that would require the proper use of professional titles. We firmly believe that no person should be allowed to use the title "Doctor" or "Dr." in connection with the practice of medicine, surgery, osteopathy, dentistry, psychology, or any other profession or business unless he actually has graduated and holds a valid doctor's degree from a school, college, university, or institution, authorized by its governing board to confer such a degree and recognized by the State of New York. Moreover, a person who legitimately holds a doctorate degree should not be permitted to use the phrase "doctor" in any letter, statement, card, prescription, or any other writing, without affixing suitable words or letters designating the particular doctorate degree held by such person. This is self-evident in order to protect the public from deception and confusion. Such a provision in the proposed revision of the State Education Law would be a material improvement over the present situation.

Podiatry. On the subject of podiatry, we are pleased to note that the committee has retained the present wording of Section 7001, Subdivision 2C, of the State Education Law. We strongly urge the committee to retain this language in the final version of the proposed revision of the law. We call to your attention, again, that at the recent session of our State Medical Society's House of Delegates the members went on record as being strongly opposed to the inclusion of major surgery and the prescription and use of narcotics in podiatry in the proposed revision of the State Education Law.

We reiterate that we strongly oppose the use of narcotics by podiatrists and maintain that the prescribing of narcotics by them could not be conceivably in the public interest in this present day and age. We believe that, particularly in view of the Governor's program on narcotic addiction and the special efforts of the Federal government in this field, the authority for the extension of these dangerous drugs by podiatrists would be inexcusable.

At the present time, podiatrists are limited to the use of local anesthetics for therapeutic purposes, and no more. We maintain that we should continue the restrictions currently provided under existing law since the administration of anesthesia is a facet of medical practice most fraught with danger.

We urge you to maintain your present position of allowing them to use only local anesthetics for therapeutic purposes as well as for anesthesia and to use only non-narcotic postoperative sedatives.

Optometry. Concerning the subject of optometry, we note that our recommendations concerning this field have not been included in S. 4415. We therefore repeat our suggestions with the desire that they be included in the final proposed revision of the bill.

We had recommended that the phraseology "students in a school of optometry in this State" be deleted from the proposed revision. This language is now found in Section 6763, Construction of Article, Subdivision 1, of S. 4415, page 97.

We also recommend the addition of the following paragraphs in the appropriate place in S. 4415:

A. "Every optometrist shall, within ten days after completion of an optometric refraction, refer to a physician for a medical eye examination every person whose visual acuity the optometrist does not improve to at least twenty over forty Snellen in each eye and every person whose field of vision is found subnormal. The optometrist shall not thereafter prescribe, provide, furnish, or adapt lenses, prisms, or ocular exercises for such person unless and until the optometrist receives written approval from a physician."

B. "Nothing in this article shall be construed to authorize or permit any optometrist to diagnose or treat any disease of the human eye.

"Nothing in this article shall be construed to authorize or permit any optometrist to prescribe or fit contact lenses to any patient unless there is delivered to such optometrist a certificate signed by a physician stating that a medical examination of the eyes of such patient, made within three months prior to the fitting, reveals no medical reason why such patient should not use contact lenses."

Psychology. Although the Fourth Working Draft of the proposed revision of the State Education Law included therein Article 56, Psychology, under Section 7604, the wording "nothing herein shall authorize any person to engage in any manner in the practice of medicine as defined in the laws of this State," we note with great regret that this same language has been omitted from S. 4415. We respectfully request that this language be reinserted in the final revision of the Education Law. We underscore the fact that at the recent session of our State Medical Society's House of Delegates, the members emphasized their position that psychotherapy is the practice of medicine and should not be practiced by persons not licensed to practice medicine, such as psychologists.

We further recommend that the following language be added to the proposed revision:

"The practice of psychology, as herein defined, is hereby declared not to be the practice of medicine within the meaning of the laws of New York defining the same, but nothing in this article contained shall be construed to restrain or restrict any licensed physician in the practice of the profession."

Pharmacy. We are pleased to observe that the committee has favorably considered our request that certain changes be made in regard to the article on Pharmacy in the Fourth Working Draft of the revised law, since S. 4415 has been reworded in some areas involving this profession.

There are, however, additional observations we should like to submit to the committe concerning Article 141, S. 4415.

Under the present law, Section 6816, Construction of Article, Subdivision 1, reads as follows:

"This article shall not apply to the practice of a physician who is not the proprietor of a pharmacy, drug store, or registered store, or who is not in the employ of such a proprietor. Except as to the quality of drugs dispensed, it shall not prevent physicians from supplying their patients with such drugs as the physician deems proper; provided, however, that all such drugs be dispensed in a container the label of which bears the name and address of the dispenser, the name and address of the patient, directions for use, and the date of delivery."

In S. 4415, Section 6823, Construction of Article, Subdivision 1, deletes the first sentence exempting the practice of a physician but adds the words "when necessary" to the provision that "this article shall not prevent physicians from supplying their patients *when necessary* with such drugs as the physician deems proper."

Since the present section has worked satisfactorily both in the interests of patients and physicians for many years, we submit that the present language should be retained. We believe that the exemption is proper and has been justified by experience. We further maintain that the words "when necessary" are unnecessary and redundant since the language contains the words "physician deems proper."

Conclusion. For the third time, the Medical Society of the State of New York has been privileged to submit its views to your committee in regard to the proposed revision of the State Education Law. We again express our thanks to you for the opportunities which you have afforded us. The recommendations we have presented have been based not only on our State Medical Society's attitudes as expressed principally by our House of Delegates, but on suggestions requested from, and furnished by, our component county medical societies. The statements, therefore, presented by our State Medical Society have been carefully researched and documented and represent an authoritative expression of opinion expressed by the medical profession in this State. We are grateful for the favorable consideration you have given some of our suggestions but at the same time strongly urge you to reconsider the other matters we have brought to your attention and have reiterated herein

> and to act with approval on the new proposals we have made.
>
> In a vast undertaking such as the over-all revision of the Education Law, your committee has the responsibility of weighing very carefully the merits of suggestions made by the various professions and groups affected.
>
> We trust that you will give the proper relative weight to the views of the Medical Society of the State of New York, which has spoken on behalf of the medical profession, the group primarily responsible for the health of the people of our State.

Following unanimous approval by the Council, the statement was officially transmitted by a letter from Henry I. Fineberg, M.D., executive vice-president, to Senator D. Clinton Dominick, III, committee chairman. Your chairman also sent copies of the statement to the presidents, secretaries, legislation chairmen, and executive secretaries of county medical societies. Copies of the statement also were sent to each member of the New York State Joint Legislative Committee, accompanied by a letter from the office of our legislative counsel.

At the time this report is being prepared in late October, your committee anticipates that a new bill embodying suggestions made by the various physicians and, hopefully, those made by our State Medical Society, will be introduced at the 1968 session of the State Legislature. Such a bill may be filed before the first of the new year, 1968. In view of this anticipated introduction and of other circumstances which may arise, a supplementary report will be submitted to the House in February, if necessary.

Your committee feels, to date, that we have been able to present a representative cross section of the views of our members throughout the State to the members of the New York State Legislature's Joint Legislative Committee in regard to the proposed revision of the Education Law. This accomplishment is due, in great part, to the fine cooperative spirit that has prevailed among the county medical societies. We commend the county medical societies for their efforts and urge them to carry on their good work throughout the 1968 session of the State Legislature.

Your committee, and especially your chairman, wishes to thank all who have assisted us, including Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; George W. Foy, Esq.; John C. Rice, Esq.; and particularly Martin J. Tracey, Esq., coordinator, legislation activities, for the time and effort expended on behalf of our committee.

Respectfully submitted,

WALTER T. HELDMANN, M.D., *Chairman*

Organization, Policies, and Legal Matters

Malpractice Insurance and Defense

To the House of Delegates, Gentlemen:

The members of the Malpractice Insurance and Defense Board are as follows:

David Kershner, M.D., *Chairman*	Kings
Thomas M. d'Angelo, M.D., *Vice-Chairman*	Queens
Raymond S. McKeeby, M.D.	Broome
A. L. Loomis Bell, M.D.	Kings
Arthur J. Mannix, Jr., M.D.	Westchester
John J. Della Porta, M.D.	Monroe
Frank H. Peters, M.D.	New York
Walter T. Heldmann, M.D., *ex officio*	Richmond
Thomas F. McCarthy, M.D., *ex officio*	Bronx
William F. Martin, counsel, *ex officio*	New York
James M. Arnold, indemnity representative, *ex officio*	New York

Because data concerning loss experience for the current year is not available either at the time its annual report is prepared or prior to the meeting of the House of Delegates, the Board must make a special report each year to the Council so that timely action on rate schedules or other changes may be taken. Such a report was made this year on April 20, was approved by the Council on May 25, and was published in the July 1, issue of the NEW YORK STATE JOURNAL OF MEDICINE. The report reads as follows:

> In its annual report last year, the Board pointed out that a substantial increase in professional liability insurance premiums for the year commencing September 1, 1967, must be anticipated. Because of the marked increase required, we believe that a detailed explanation of the reasons therefor should be given to the Council and to members insured in the State Society program.
>
> For the ten-year period 1956–1965, while many revisions were made on the basis of both county and specialty experience, the *average* State-wide premium for basic ($5,000/$15,000) limits increased by only $8.00—from $111 in 1956 to $119 in 1965. During the same period, the *average* premium paid by insured members increased from $199 to $247, a large part of which was due to decisions of most insureds to raise their limits of coverage.
>
> As of the end of 1965, the Company noted an upward trend in loss experience of such severity that an over-all increase of 25 per cent in total premium income seemed to be warranted. In order to modify the effect of such a large increase, and also in the hope of some improvement in the near future, only one half of the indicated increase was made. Instead of an improvement, a further deterioration during 1966 was noted, adversely affecting nearly all past policy years including the few that had previously shown an acceptable loss ratio.
>
> While it is possible that the experience of more recent years will improve should outstanding cases be closed for less than present reserves, it is apparent that the older policy years have resulted in losses to the Company even when reserves are not taken into account. This means that losses as they developed from year to year were greater than those anticipated at the time premium rates were computed.
>
> The following comparison of the cost of closed cases during the past few years illustrates the marked trend toward higher disposal costs. These figures are the result of dividing the total cost of all closed cases during the year shown by the number of suits closed plus the number of claims settled, thus eliminating reported events that did not develop into suits or claims, as well as claims that were closed with no payment to the claimant. The figures are as follows:

1963	$4,740
1964	5,760
1965	6,790
1966	8,810

> The simplest answer to why closing costs have increased is inflation. A survey of suits closed during 1966 shows that the policy year in which the alleged malpractice occurred preceded the year of closing by an average of more than five years. This means that premium rates, if they are to be adequate, must take into account future inflation, which it is generally conceded will amount to from 3 to 5 per cent a year, provided it is kept within "acceptable" limits.
>
> In addition to payments for pain and suffering and for lost wages, both of which are increased by inflation, a jury verdict or settlement demand includes the cost of doctor and hospital bills, whether or not these have been paid by the plaintiff. These costs too are subject to inflation. An article in the *AMA News* of March 20, 1967, states that hospital daily charges during 1966 increased 16.5 per cent and that the average annual increase from 1960 to 1965 was 5.8 per cent.
>
> Based on the loss experience of the last three expired policy years, an over-all rate increase of 30 per cent is indicated. For the

TABLE I. Percentage changes

Premium Class	Territory			
	Metropolitan	Suburban I*	Suburban II†	Upstate
1A (Otolaryngology including cosmetic plastic surgery, orthopedic surgery, neurosurgery)	40	40	40	40
1 (Anesthesiology, surgical specialties other than those listed under 1A and 2)	39	27	40	20
2 (Ophthalmology, proctology, general practice including major surgery)	35	23	40	16
3 (General practice including limited major surgery)	40	32	40	25
4 (Radiology, general practice, and specialties including only minor surgery)	37	25	40	19
5 (Internal medicine, pathology and/or hematology, pediatrics, general practice, and specialties that do not include surgery)	26	13	40	6
6 (Physical medicine, preventive medicine, public health, psychiatry and/or neurology)	11	−2	40	−10

* Westchester and Orange Counties.
† Suffolk, Rockland, Sullivan, and Ulster Counties.

TABLE II. Old and new rates for $100,000/$300,000 limits

Premium Class	Metropolitan		Suburban I		Suburban II		Upstate	
	Old	New	Old	New	Old	New	Old	New
1A	$834	$1,168	$665	$931	$724	$1,013	$440	$617
1	742	1,029	595	754	645	902	394	472
2	454	615	368	454	400	561	245	285
3	360	505	287	380	314	438	191	239
4	217	297	185	231	203	283	117	139
5	173	217	137	155	149	209	96	103
6	129	143	107	105	117	163	78	70

Additional Charges (State-wide)

	Old	New
Superficial x-ray therapy	$ 50	$ 64
Deep and superficial x-ray therapy	80	105
Electroshock therapy	141	183

reasons outlined above, the Company feels that nothing less than this is acceptable. Commencing September 1, 1967, however, the Company has agreed to decrease its expense loading to a new low of 20 per cent, which means that 80 cents of every premium dollar will be available for losses.

Having decided on the amount of the overall increase, the next problem was how best to allocate the increase among the premium classes and territorial divisions of the State. Unfortunately, the heaviest losses continue to be in the same specialties and areas that bore the brunt of last year's increase. By a formula worked out by the Company's actuaries and approved by the Society's consulting actuary and the New York State Insurance Department, percentage changes have been allocated as shown in Table I. This formula takes into account the general trend toward increased costs and the relative severity of losses among the territorial divisions and premium classes. The maximum increase is 40 per cent, even though in certain instances this is less than that indicated by losses.

The old and new rates for $100,000/$300,000 limits of insurance are shown in Table II.

The Board recommends that the Council approve the new rate schedule as proposed.

In its report to the Council, the Board pointed out that it takes an average of over five years from the date of alleged malpractice to dispose of a suit. To further illustrate this delay, the following shows the number of suits and claims closed during 1966 and the policy years to which they were charged:

Closures	Policy Year
12	1949–1956
13	1957
26	1958
30	1959
43	1960
58	1961
59	1962
67	1963
65	1964
53	1965
17	1966

The significance of these figures is that premium rates are based on past experience while disposal costs are based on dollar values existing at the time of closure. In a period of continued inflation, it is increasingly difficult accurately to determine future costs.

Underwriting. In its 1966 report the Board noted that our insurance carrier would assign an underwriter to examine loss records and make suggestions to the Board regarding acceptance of applications and continuation of insurance. The Board now has the assistance of a company underwriter, who brings to our attention situations that indicate a greater than normal risk and, if the Board agrees, proposes a special rate. At present, over 40 insureds are paying rates ranging from $1^1/_2$ to 5 times the filed rate for their specialty or type of practice. Before the higher rate can become effective, it must be accepted by the insured and approved by the New York State Insurance Department. The higher rate is for a period of one year, at the end of which it may be continued under the same procedure, or increased or decreased depending on whether the insured's loss experience becomes worse or better.

The Board is occasionally called on to consider applications from members of the State Society who have been insured elsewhere and to whom renewal has been refused for no apparent reason except age. While the Board has adopted no hard and fast rule in dealing with these applications, we believe that somewhat stricter standards should be applied in approving new insurance than in continuing insurance for a member who has been insured in the Society's program for many years. There has never been nor is there now any age limit for insurance in the State Society program.

Partnerships. During the past year the Board has on several occasions been asked about insurance coverage for partnerships. We take this opportunity to call attention to the copartnership laws of New York, which make each partner liable for the debts and obligations of a copartnership incurred by any partner acting within the scope of the partnership practice. Membership in a copartnership, therefore, introduces a malpractice liability beyond that which a doctor would have in the individual practice of medicine. Many companies require an extra premium charge to cover this liability. However, the policy contract used in the State Society Program provides automatic coverage for this additional liability provided that each partner is individually insured by Employers Mutual Liability Insurance Company of Wisconsin.

Aside from the requirement of the policy itself, it is generally conceded to be in the best interest of a partnership to have each member insured with the same company in order to solidify the defense of a malpractice action. The Board has been told that many partnership agreements now being drawn up contain a provision that all partners carry their professional liability insurance in the same company.

The office of the Indemnity Representative tries to keep track of the names of the doctors comprising a particular partnership so that the partnership can be notified in the event that the insurance for any one partner is canceled because of nonpayment of premium or for any other reason. However, the responsibility for seeing that each partner is insured rests with the partnership itself. The Board strongly recommends that the senior partner or the administrator keep an up-to-date record of any changes in the composition of the partnership and notify the office of the Indemnity Representative of these changes.

We have been informed by the office of the Legal Counsel of the State Society that within New York State it is a misdemeanor not to notify the county clerk's office of any changes in the partnership arrangement on file. Thus, in addition to the incentive of keeping proper insurance in force, partners can avoid the possibility of fine by setting up a workable system for reporting changes in the composition of their partnerships.

Conclusion. It is encouraging to note that during 1966 the State Society program reached its high point of participation with 18,414 physicians, or 70 per cent of the membership, insured. We believe that this indicates a realization of the importance of quality and stability of protection. It is also an expression of confidence in and appreciation of the services provided by the offices of our Legal Counsel and of our Indemnity Representative and by our insurance carrier, Employers Insurance of Wausau.

Respectfully submitted,
DAVID KERSHNER, M.D., *Chairman*

Legal Counsel

To the House of Delegates, Gentlemen:

This is my twenty-fifth annual report as counsel for the State Medical Society. When I graduated from Columbia University School of Law in June of 1928, I entered the office of Lloyd Paul Stryker, who was then counsel, and when he resigned, I continued with his associate, Lorenz J. Brosnan, who succeeded him. It was on the untimely death of Lorenz Brosnan that I was appointed counsel so that this spring represents my fortieth year of association with the Society.

Robert J. Bell, the attorney for the Society, has been with the office continuously since 1933 except for a period of time he spent in the Navy as a lieutenant in World War II. This year he is president of the Brooklyn-Manhattan Trial Lawyers Association.

When I first entered the practice of law, Harold Shapero was in the same office. When Mr. Stryker decided to resign as counsel for the Medical Society, Harold went along and assisted him for many years in the preparation and trial of some of the most important civil and criminal trials in this country. Several years before Mr. Stryker's death, when he was becoming comparatively inactive, we all talked things over and Harold decided to come back to this office. Both he and Bob Bell are fellows of the American College of Trial Lawyers.

John J. DeLuca has been with us for twenty-seven years. He has attended thousands of depositions and pretrial hearings. His research and appellate work are of great help to us. He has managed much of the office detail.

An endless number of doctors have told me of the great consolation that they find in the kind, efficient service given them by Bob Bell, Harold Shapero, and Jack DeLuca.

Donald J. Fager, who resides in DeWitt and manages our Syracuse office, has demonstrated his capacity to handle any legal problem that confronts us. He prepares and tries most of our Upstate cases. He has argued cases in the Court of Appeals and the Appellate Divisions of all four departments. The location of the Upstate office enables him to confer on short notice with our Upstate clients.

Anthony Louis Schiavetti, Francis P. Bensel, and Daniel Boone, Jr., are actively engaged in the trial of cases before the Supreme and Civil Courts and all do their share in the vast amount of work such as depositions and pretrial hearings, preparation and argument of motions, and handling the correspondence that we are constantly faced with.

George van Setter and Robert G. Harley help in preparing the cases for trial. Each has tried a number of Civil Court cases, and they appear practically everyday in one court proceeding or another.

Frances C. Cassebaum, now in her second year with us, assists with the office work and attends at depositions.

We have two young law graduates, Walter G. Alton, Jr., Yale College and Columbia Law School, and Steven Mandell, New York University and St. John's Law School, in the office. Just as I write this report, the bar examination results were published, and I am delighted to say they both passed.

The legal work of the State Society embraces a great deal more than the management of malpractice litigation. We attend all meetings of the Council, Board of Trustees, and House of Delegates and many of the committee meetings of the Society. We also participate in the meetings of the Malpractice Insurance and Defense Board and apportion among the lawyers in the office the duty of attending county malpractice committee meetings. With relation to these county malpractice meetings, a lawyer is assigned to a particular county and regularly attends the meetings so that there may be continuity to the discussions.

In addition, we have appeared at and lectured to many organizations over the past year. Some of these include the quarterly conference of the French Hospital staff; the Caducean Society of New York University; the New York Dental Society of Anesthesiologists; the clinical conference at Methodist Hospital of Brooklyn, the Chautauqua County Medical Society; the Long Island Dermatological Society; World Meeting on Medical Law at University of Ghent, Belgium; State Medical Society's regional conference in Plattsburgh; Northern New York Association of Medical Societies of Oneida, Herkimer, Madison, and Chenango; Delaware County Medical Society; New York Regional Society of Plastic Surgeons; and a meeting of the inhalation therapists at St. Luke's Hospital.

Current Problems Which Have Led to Increased Premiums for Malpractice Insurance. The problems are nationwide, and this is illustrated by a quote from a recent article by the attorney for the Alaska State Medical Society.

> What is the problem that the medical profession faces in Alaska, and what is its background? In 1956 and again in 1963 the Law Department of the American Medical Association took a nationwide survey on various problems in the professional liability field. In 1956, 7,577 questionnaires went out to physicians, not including any doctors in Alaska. In 1963 the sample was increased to 20,000, and Alaska was included. The 1963 survey showed that nationwide 17.8 per cent of all physicians had had one or more claims for malpractice made against them. South Carolina was low, where 7.7 per cent of the doctors polled indicated that claims had been made. California was high with 29.2 per cent. In Alaska 25.8 per cent of the physicians reported claims. Since the percentage in the District of Columbia was 27.3 per cent Alaska was third nationwide in the number of physicians who had been subject to one or more claims. The report concluded that the problem areas include California, the District of Columbia, Alaska, Minnesota and Oregon, since these were the jurisdictions in which more than one out of four doctors were reporting claims.

To demonstrate the almost morbid interest the legal and medical profession has in this problem, the Institute of Continuing Legal Education at the University of Michigan conducted a seminar on medical malpractice that was attended by 2,500 doctors and lawyers. The foreword to the case material that was presented at the course stated:

> The ever-increasing number of medical malpractice cases has aroused the concern of the medical and legal professions, as well as the general public. The Institute of Continuing Legal Education has long felt that an objective critical analysis of medical malpractice actions will increase the equitable dispositions of such cases—dispositions that are fair to both plaintiffs and defendants. That is why we have made Medical Malpractice the topic of our Fifteenth Annual Advocacy Institute.

Bernard D. Hirsh, director of the law Division of the American Medical Association, has devoted a great deal of time to the study of this problem, and I quote in part some of his observations:

> A malpractice claim is a harrowing experience for a physician. He will have to spend hours with the investigators and attorneys employed by his professional liability insurance carrier explaining to them what he did and why he did it, recalling every detail that may have even a remote bearing on the case.
>
> To a physician untrained in the law, the legal basis of malpractice liability may be difficult to comprehend. Some physicians feel that a charge of malpractice implies irresponsible and inexcusably poor treatment. Malpractice does involve such conduct but it also includes the mistakes that dedicated, diligent, and competent physicians sometimes make just because they are human beings.
>
> During the past twenty years medical malpractice liability has become a matter of grave concern to the medical profession due to the increasing tendency of the public to seek compensation for real or imaginary damage, more frequent and higher jury awards, and inflation necessitating larger payments for claims, judgments, and legal defense.
>
> Unfavorable articles in the lay press dealing with increased costs of medical care and books aimed at degrading the image of the physician have further engendered antagonism toward the medical profession.
>
> How can a physician avoid being sued for malpractice? Liability is an occupational hazard, but there are a number of ways to minimize the risk. The cardinal rule is to treat each patient as one would want a member of his immediate family treated. A physician should practice only one brand of medicine—the best within his capabilities—and should not encourage the patient to anticipate better results than are reasonably obtainable and not hesitate to call a consultant—someone with independent judgment who won't hesitate to disagree.
>
> Well-kept medical records are essential both to good practice itself and to the proving of it. Judges and juries have been patients and they know, from their own experience, that diligent doctors are guided not by memory but by the patient's written history. The malpractice defendant who is aided in his testimony by detailed records has a great advantage.
>
> Ultimately, avoidance of malpractice claims demands more than ethical practice and good intent on the part of physicians. It requires complete physician-patient communication. The patient must believe that he is getting the best possible treatment from a physician personally concerned about his welfare. From such a relationship and faith, malpractice claims will rarely ensue.

The report of the Malpractice Insurance and Defense Board will demonstrate the financial impact of malpractice claims and cases on the medical profession in New York State. It states that the average cost of disposing of a case in 1963 was $4,740, and by 1966 this figure had risen to $8,810. While the frequency of claims and cases has a lot to do with the poor experience, it is interesting to note some of the larger settlements and verdicts that have contributed to the situation this year.

1. There was a verdict in California of $1,238,514 mentioned in the *Citation*, published by the Law Department of the American Medical Association, as follows: "A woman was paralyzed from the waist down as a result of an operation in 1965 to correct a spinal cord condition. The suit was against a hospital and seven physicians and charged that they were negligent in the performance of the operation and in their postoperative care. The patient has undergone two operations since the one from which her paralysis resulted."

The *News Letter* of the American Trial Lawyers Association, a plaintiffs' bulletin, commented on this case as follows: "Complex action on behalf of plaintiff, who underwent surgery at suggestion of orthopedic surgeon and consulting neurosurgeon to alleviate painful C5–C6 cervical bar defect, was instituted against operating orthopedic surgeon on theory of professional negligence; against associate orthopedic surgeon, who negligently failed to respond to telephone call regarding plaintiff's postoperative paralysis; against consulting neurosurgeon for negligently failing to recommend that operation (Cloward procedure) should be performed by neurosurgeon and not orthopedic surgeon; against radiologist for negligently reporting postoperative x-rays as normal and failing to note subsequently discovered bone plug protruding into spinal canal; against hospital for negligently noting plaintiff's progressive paralysis and against anesthesiologist who participated in original surgery. Various defendants settled out at different stages: $125,000 from original orthopedic surgeon; $200,000 paid by the single insurer who insured radiologist, hospital, and anesthesiologist. Judgment was rendered in favor of consulting neurosurgeon and judgment was rendered against associate orthopedic surgeon. Plaintiff, who had approximately thirty-year life expectancy, was expected to incur $30,000 per year in future medical expenses."

2. In Florida there was a verdict of $1,500,000. A brief press note referred to the damages as caused by the medical negligence of two surgeons and a hospital leading to paralysis of a woman from the neck down. The plaintiff was a thirty-three-year-old mother of three sons, ages ten, eleven, and seventeen years, at the time of the operation in 1959. She went into the hospital for minor elective surgery on varicose veins and for hemorrhoids. Two days after the operation she slipped into a coma, the result of overdosage and excessive medication of pain-killing drugs from which she never recovered. Rumor has it that one of the troublesome things about this case was that the two doctors concerned only had $5,000 coverage each at the time of the claimed acts of malpractice.

3. Recently in New York State there was a case settled in the total sum of $280,000. In 1963, a thirty-three-year-old father of four children, in the course of a routine physical at his place of employment, was told that he had an inguinal hernia. It was operated on by a family doctor, and within two days obstructive symptoms led to a consultation with the chief surgeon at the hospital. Both doctors agreed that a further exploratory operation was necessary. No intravenous pyelogram was done. A large mass was exposed and thought to be a kidney tumor. A call then went out to a urologist who reached the scene in one-half hour. He

agreed that it was a tumorous kidney and removed it. Only when the patient had no urinary output and was rushed to a large medical center did it develop that he had been born with only one duplex kidney. Pathologic examination revealed the organ was not diseased. The patient after a very precarious period during which his life was despaired of, responded to repeated dialysis and then had a transplant operation. Suit was brought against the hospital where the kidney was removed, the family doctor, the chief surgeon, and the urologist.

4. In New York State a settlement in the sum of $175,000 was effected where at the close of an operation to remove a lower lobe of the lung a cautery knife was used which ignited cyclopropane still in the lung causing death instantaneously. While the patient was seventy-eight years of age, he had been retired with a guaranteed income of $85,000 a year. He had a life expectancy of seven years, and while his first wife had died and his children are well to do, he is survived by a comparatively young second wife.

5. Not all the settlements involved surgery. A family doctor in a suburban community, wishing to save a small quantity of formaldehyde, poured the liquid into a small bottle which unfortunately was labeled "saline." A few days later a new assistant working for him put the "saline" bottle on the treatment table, and the doctor, cleansing the eye of an injured workman, applied the formaldehyde causing almost total loss of vision and scarification of the lens. Liability was conceded, and settlement before a judge was effected in the sum of $65,000. Fortunately, the union to which the plaintiff belonged had been able to keep him on the job at almost his full salary.

6. In Illinois recently there was an award of $134,520 against two physicians and a hospital for the death of a wife eighteen months after negligently administered spinal anesthesia, which caused her heart to stop beating for seven and one-half minutes on the delivery table, resulted in irreparable brain damage to both the wife and the undelivered child. The child is not expected to live past five years of age.

7. If you read my report last year, you will recall that I mentioned a $200,000 verdict which subsequently was settled for about half that amount. A private mental institution and the doctor in charge were sued because they had released a violent patient whose final discharge note read "unimproved." Six months later the patient, in an argument about his marital status, bit off the nose of a lawyer, who was the plaintiff in the case.

A suit with overtones of this case was recently brought against the United States Government for negligently releasing a homicidal mental patient who foreseeably murdered his wife. There was an award of $200,000 for the death of the mother, which was put in trust for her three children.

8. We settled three cases involving claimed negligent thoracic disk surgery for a total of over $250,000. In two of these cases, we were very embarrassed because the surgeon had operated and within a day or so left on vacation. While in each case the doctor claimed that he had made it perfectly clear that he was going away, the patients denied this. The lesson to be learned is that when a doctor is going away on vacation he should either postpone elective surgery or turn it over to another surgeon, or, should he operate, have a written consent which spells out in detail the patient's understanding of the situation.

9. There are malpractice claims being brought today which one would not have conceived of a generation ago involving failure to diagnose and treat phenylketonuria, improper administration of oxygen causing retrolental fibroplasia, and mismanagement of an incompatible Rh factor causing erythroblastosis.

10. As an illustration of the inflationary cycle in which we live today, there was returned in Kings County a verdict of $105,000 for the death of a five-year-old asthmatic child. The award was divided as follows: $55,000 for wrongful death and $50,000 for conscious pain and suffering. Because of the inflammatory nature of the summation of the plaintiff's attorney, the verdict for pain and suffering was cut to $3,500 and the verdict for wrongful death was cut to $25,000; however, the case will still be appealed. While the judge reprimanded plaintiff's counsel for his conduct, he did not declare a mistrial. In setting the verdict aside, he called attention to some of the remarks made by plaintiff's counsel, as follows; "Is this what medicine has come to, folks? Is this what we are going to condone medically in our community when a member of our family is deathly sick for a doctor to say to himself 'I'm too big to visit you, I'm a specialist.' Well, if that is the specialty of medicine, then maybe we have had enough of it." The judge then said that "such wholesale castigation was indefensible because such alleged conduct constituted the very gravamen of the malpractice cause. It is common knowledge that there has been a considerable reduction in house calls due to the present-day dearth of doctors and the increase of medical specialization. The indictment, thus, had the effect of putting the defendants in the dock, so to speak, for the sins of others, and to hold them vicariously responsible therefor." Then the plaintiff's attorney went on to say: "We have another item of damage, the damage of Mindy's taking care of her mother as the years pass." Mindy (the deceased infant plaintiff) had two older brothers, and plaintiff's counsel commented that boys get married and move away but that daughters take care of their mothers, and should the mother have to go to a senior citizen's home at a rate of $100 a week the daughter would have to take care of her. The judge said this was "fantasy."

These cases are illustrative of some of the adverse results that have taken place. However, not in every case with a bad result does the jury find against a doctor and/or hospital. We have tried many cases where the jury has been able to appraise the situation objectively and find that the patient's plight was not due to any fault of the doctor.

Whether a claim never goes to suit, and then whether it goes to suit and is won or lost, a great amount of expense is incurred which runs up the cost of the insurance premiums. There are of course settlements which are effected in relatively smaller amounts, but in the aggregate add up to a considerable sum. There is the expense of investigation, preparation, and trial. Stenographic minutes are a constant expense as these usually cost about a dollar a page and half again as much when daily copy is ordered, and when an appeal is taken, the record must be printed. It is a fact that we have won cases and have incurred thousands of dollars in disbursements for investigation, stenographic minutes, travel expenses, witnesses, and soon. Very often today, when a case is tried some five years after the events which are the subject matter of the lawsuit, you will find that the doctors and some of the nurses have departed for other parts of the country, and they must be brought back and maintained while the case is on trial. One interesting fact is that years ago if, for instance, a resident in a hospital did something which was the cause of complaint and then left for another part of the country, he could not be sued unless he returned to the state. Now, under the so-called "Illinois Long-Arm Statute" which has been adopted in New York State, service on such a person anywhere is sufficient to grant jurisdiction to a New York court.

Rest assured that while the two verdicts mentioned in this report which exceeded a million dollars are really unique, verdicts in six figures are not uncommon, and I have given only a sample of some of the verdicts we have heard about recently.

Further Comments on the Doctrine of Informed Consent. In my report last year I dwelt at length on this doctrine, which the plaintiff's bar is pushing for all it is worth. This doctrine does away with all necessity of proof of wrongdoing other than that there was an unexpected complication, the possibility of which had not been explained before the treatment or operation. A number of cases seem to lend credit to this theory. I have mentioned a shock therapy case where neither the patient nor relatives were told there might be fractures of the long bones, and actually both hips were broken.

Treatment for chronic arthritis by gold therapy resulted in a massive exfoliative dermatitis. The defense offered was that this could happen with the best of care and skill, but the judge held that the patient should have been told about this risk in order to make an informed decision whether or not to have the treatment.

There was a recent case in Pennsylvania involving disk surgery resulting in paralysis. The surgeon testified that with the best of care and skill there is a 20 per cent chance of this happening. The court said if that is so, and no emergency existed, the risk should have been explained to the patient.

In the main, however, exaggerated attempts to apply this doctrine have been frustrated by sensible court appraisal. One of the classic decisions was handed down by the Appeals Court in California in the famous *Salgo v. Leland Stanford, Jr., Hospital* case, which reads in part as follows:

> The physician must place the welfare of his patient above all else, and this very fact places him in a position in which he sometimes must choose between two alternative courses of action. One is to explain to the patient every risk attendant upon any surgical procedure or operation, no matter how remote; this may result in alarming a patient who is already unduly apprehensive and who may as a result refuse to undertake surgery in which there is a minimal risk; it may also result in actually increasing the risks by reason of the physiological results of the apprehension itself. The other is to recognize that each patient presents a separate problem, that the patient's mental and emotional condition is important and in certain cases may be crucial, and that in discussing the element of risk a certain amount of discretion must be employed consistent with the full disclosure of facts necessary to an informed consent. . . . Moreover, and for a different reason, policy militates against imposing liability upon the hospital. For to do so would tend to discourage hospitals from permitting physicians to use their facilities to perform novel medical procedures or would induce hospitals to discourage patients from undergoing them.

There is further language on this problem of informed consent. In a Delaware case, decided in 1959, involving hepatitis resulting from a blood transfusion, the Court adopted the view of a doctor who testified as follows: " . . . it is not my practice or the practice generally within the medical profession in this locality to advise patients of the risk of such infection, since the psychological and psychosomatic effect of the alarm which would be produced by such advice would run counter to the beneficial effect sought to be produced by the transfusion itself."

This whole subject of informed consent was discussed in an article which appeared in the *New York Times*, July 2, 1967, entitled "Doctors Must Experiment on Humans, But What Are the Patient's Rights?" One interesting paragraph reads as follows:

> Deciding what constitutes informed consent, however, can be a complicated and unsatisfying quest. In explaining an experiment a researcher, by his choice of words, his emphasis, his manner, may quite innocently raise a patient on the wings of euphoria or drive him into a panic. Patients have an understandable tendency to believe what they want to believe. It is, for example, possible to transplant an organ, say a kidney, from an identical to his sibling, and we may assume that no sane physician would perform such an operation unless the healthy twin or his parents expressed an unconditional willingness to sacrifice a kidney to save the brother's life. But asks an experienced researcher, "what words do you choose to explain what it means to live for the rest of your days with one kidney instead of two? You can make it sound fairly innocuous or pretty grim." If an experiment will not help the patient whose consent is being requested, that fact should assuredly be impressed on him. But suppose a new drug offers a remote chance of success along with an established risk? At what point does the patient cease being a patient and become just the subject of an experiment?

> There are several drugs in existence that have proved of use in fighting leukemia; unfortunately, all have adverse effects on bone marrow. Can a layman be expected to make a judgment about the possible effects and side effects of a new drug over which the physician himself is still puzzling? Dr. Moore thinks not and cautions that "an experienced lawyer could successfully attack any such consent, written or oral, on the basis of a lack of understanding by the subject."

An important case was recently tried by Mr. Bell of this office which led to a dismissal by the trial court, which dismissal was affirmed by the Appellate Division, and leave to go to the Court of Appeals was denied. In this case a distinguished surgeon had referred to him a young boy who had previously been operated on for the removal of a large tonsil which was later diagnosed as lymphosarcoma. The defendant doctor submitted the patient to radiotherapy treatment which extirpated the malignancy but caused a partial destruction of the jaw bone. While the father knew that the boy was going to be subjected to radiotherapy, it was his contention that the effects of the radiotherapy on the jaw had never been explained and that he would not have consented to the treatment had he known of it. The father was an attorney. The defendant and several other doctors testified that the extensive radiotherapy was necessary to save the boy's life. The main issue was: when the father gave his consent, was it an informed one?

There was a verdict within the last year or so against a surgeon and a hospital where it was claimed that the surgeon did a spine jack operation of a type that was his own invention. He inserted a type of metal prosthesis into the spinal region to correct scoliosis. There was testimony that this was not in accordance with any generally accepted type of practice in the field of orthopedics. The case against both defendants was appealed to the Appellate Division and affirmed as to both defendants. The case against the doctor was not appealed to the Court of Appeals; however, the hospital appealed to the Court of Appeals. (A verdict was returned against the hospital because it had allowed the operation to take place.) The Court of Appeals reversed the Appellate Court. The opinion by Judge Breitel of the Court of Appeals reads as follows:

> A private proprietary hospital does not have an obligation to a patient and his family using its facilities to make certain that they have given an informed consent to an unusual, dangerous operation performed by their privately retained surgeon. . . Where a professional person provided (employed) by the hospital commits an act of malpractice the hospital may be liable derivatively under the doctrine of *respondeat superior*. But this of course does not apply where the malpractice is performed by a physician retained by the patient himself. Where the treatment is provided by independent physicians, the hospital, and this is especially true of a private proprietary hospital, serves the function only of a specialized facility, not a direct service healing institution. . . . Moreover, it would not be just for a court, having the benefit of hindsight, to impose liability on a hospital for its failure to intervene in the independent physician-patient relationship. That relationship is always one of great delicacy. And it is perhaps the most delicate matter, often with fluctuating indications, from time to time with the same patient, whether a physician should advise the patient (or his family), more or less, about a proposed procedure, the gruesome details, and the available alternatives. Such a decision is particularly one calling for the exercise of medical judgment. In the exercise of that discretion, involving as it does grave risks to the patient, a third party should not ordinarily meddle.

When I recently spoke at the First World Meeting on Medical Law in Belgium, I was preceded by Page Keeton, dean of the University of Texas Law School, who read a very interesting paper in which he cautioned the courts to be extremely circumspect in applying this doctrine. He read with approval the decision in the Texas case of *Bell v. Umstattd*, which I quote in part as follows:

> Plaintiff brought an action against an anesthesiologist for injuries sustained in the administration of an anesthetic during an aortic graft. Plaintiff claimed that the specialist should have informed her of the process contemplated. The lower court sustained defendant's motion for an instructed verdict. The appellate court affirmed, holding that the anesthetic was incidental to the main operation and that, barring injury, the defendant was under no duty to disclose the method either he or the surgeon would select in administering the anesthetic. The court noted that it would be both unreasonable and undesirable to place a burden of full and complete disclosure upon each and every specialist involved as to the specific methods intended to be used in an operation and all of the possible risks involved in each step of an operation.

A number of other jurisdictions have discussed this problem. A North Carolina court, in a case involving a complete abductor paralysis of the vocal cords following a subtotal thyroidectomy, held that the surgeon's primary duty is to do what is best for his patient, and any conflict between that duty and that of a frightening disclosure should be resolved in favor of the primary duty.

A Missouri court exonerated a psychiatrist, even though he did not fully explain the risk involved in electric shock and insulin therapy, because the plaintiff was "real shook."

An Arizona Appeals Court found that an ophthalmologist who performed a cataract operation and failed to disclose the possibility of hemorrhage was relieved of liability. The court recognized that all reasonable people must understand that there is some risk inherent in surgery, and in view of the psychosomatic problems involved in disclosure by the doctor, it would be too great a penalty to inflict on a surgeon to hold him liable when he withheld risks because of therapeutic reasons.

Recent Decisions Relating to Blood Transfusions. One of the cases, mentioned in my discussion of informed consent, refused to apply that doctrine to blood transfusions which later resulted in hepatitis. There is some interesting new law in this field. Some years ago the New York Court of Appeals decided by a 4 to 2 vote that there was no implied warranty of fitness for use, and that blood supplied by a hospital is not a sale but merely the rendering of a service. Several Florida decisions, however, have led a committee of the American Medical Association to recommend legislation absolving a hospital from warranty obligations for blood furnished to a patient. I do not read these Florida decisions to impose any warranty obligation, but at least one case, *Hoder v. Sayet*, calls attention to some precautions, which, if not taken, might expose a hospital to liability. The usual routine in checking on a donor consists of asking questions which have as their purpose the elimination of those who have a history of jaundice or any other condition that might expose a donee to undue risk. I would suggest that the blood bank have the prospective donor fill out the answers to a written questionnaire and sign his name. This should then be signed by a witness and dated. The language in the Sayet case, which I again say does not impose warranty but rather an obligation to take all known precautions in obtaining blood, involved the death of a patient from homologous serum hepatitis. A report of the decision reads in part as follows:

> A hospital cannot escape liability for use of impure blood for transfusion when it or its agent had reason to know that minimum standards in selection of donors and the processing of blood were not being followed by the blood bank from which the blood was obtained by the hospital asserting that its sole duty was to obtain blood from a licensed blood bank. . . . It appears that the blood used in the Hoder transfusion was obtained by the blood bank from two donors, one of whom gave a fictitious name and address and was never located. The other donor was located and deposed concerning the procedures followed by the blood bank in the taking of his blood. A blood bank, in order to be accredited by the proper authorities, is required to ask certain questions concerning the donor's general health, well-being, diseases, and other relevant matters before taking his blood. He testified by deposition that he was asked none of these questions prior to the taking of his blood by the blood bank. Even though he stated that he would have answered any such question in the negative, a jury might reasonably infer that there had been a similar failure to screen the other donor at the time his blood was taken and that this amounted to a breach of the blood bank's implied warranty to take necessary precautions to minimize the risk of obtaining impure blood. . . . Dr. Sayet acted in the dual capacity of hospital pathologist and owner-operator of the blood bank. A jury might reasonably have found that the hospital entrusted him with a measure of responsibility in selecting the supply source for the blood acquired by the hospital. Any purchase then by the hospital from a blood bank which Dr. Sayet knew or should have known to be operating below minimum standards of care would have constituted a breach of the hospital's duty to use due care in the acquisition of blood for its patient.
>
> We do not presently hold that there has been any breach of implied warranty or act of negligence or that the plaintiff is entitled to recovery. We hold merely that the movant for summary judgment has not conclusively shown the nonexistence of any material issues of fact and that there is possible evidence from which a jury might find for the plaintiff if this evidence is proven and credible. We reverse and remand, for further proceedings consistent herewith, on the issues of negligence against both the hospital and the blood bank, as well as on the issue of a breach of an implied warranty by the commercial blood bank.

Compensatory and Punitive Damages. In a number of recent decisions there have been awards for both compensatory and punitive damages particularly in actions against drug companies where it is charged that the company callously disregarded the results of its testing procedures or misrepresented the same and sold the drug in large quantities to the injury of a great number of people. One particular product has led to a large number of suits against the manufacturer, and in some of these suits, the physician who prescribed the medication has been named as a codefendant. Usually the doctor is only charged with damages actually sustained, and it is not claimed that he should be punished for deceit, but in some cases, the doctor has also been accused of participating in the deceit.

In Westchester County, a drug manufacturer and a doctor were sued by a young married couple. It was charged that the wife took the drug which was supposed to inhibit cholesterol production and that it actually caused cataracts, exfoliative dermatitis, and hair loss. The exfoliative dermatitis and hair loss were of a temporary nature, but it was necessary to perform cataract surgery, following which, by the use of corrective lenses, she was able to see quite well. The jury, having heard much about the drug's history including the fact that an $80,000 fine had been levied against the company by the Federal government for erroneously reporting data, brought in a verdict of $375,000 for compensatory damages and $800,000 for punitive damages. Mr. Shapero of this office represented the doctor, and the case against him was dismissed. The Court in a long opinion displayed great concern about the punitive damage award. The Court realized that the company could be repetitively punished almost to the point of confiscation of its assets; however, it still felt there was a precedent for punitive damages and cut the verdict from $800,000 to $100,000.

In a similar case in California, where it was proved that the drug had been placed on the market without adequate and proper warning, an award was returned in the sum of $175,000 for compensatory damages and $500,000 for punitive damages. On a rehearing the punitive damages were cut to $250,000.

Again, there was an action brought against the same drug company in the United States District Court for the Southern District which resulted in a verdict of $17,500 for compensatory damages and $100,000 for punitive damages. In this case the small amount of compensatory damages was based on the fact that the cataracts did not cause any permanent loss of vision. The Circuit Court of Appeals for the Second Circuit then considered the matter, and Judge Friendly, in a long and most interesting opinion, reversed the award of punitive damages in this case. One interesting fact is that two of the executives of the company had been using the drug themselves at the same time the patients were. The Circuit Court found that while some of the results of tests should not have led to exaggerated claims on the part of the company, there was no evidence of a wilfull attempt to deceive; the company already had been fined $80,000 by the government and there was available to injured parties adequate recompense for the harm done them. It, therefore, felt it would be most unfair to the stockholders to destroy their investment in a reputable company for an unfortunate mistake which came about through no evil intent. This decision has been characterized by a plaintiffs' lawyer in *News Letter* as: "a three judge panel narrowly concluded, with one dissent, that the record contained insufficient evidence to submit question of punitive damages to the jury."

This is an incorrect statement of what the court decided. The court went at great length into the proof and did not find there was "insufficient evidence" to submit to the jury, but rather that the total picture did not in their opinion spell out the necessity to impose this harsh type of relief. Judge Hays, who did not join with the majority of the Court, did not write any opinion which disagreed with their fundamental reasoning. All he said was that he preferred to wait until he read what the Court of Appeals in New York did with the Westchester County case.

The Need for All Physicians to Have Malpractice Insurance. Many times I have cautioned doctors to make sure that their temporal assets are protected by adequate insurance. Mr. Shapero just tried a case for a number of days involving events which occurred many years ago, and in which our defendant, an elderly physician, had forgotten to renew his insurance. The plaintiff demanded a very substantial figure to settle. While there was an excellent chance that the doctor would prevail and although the codefendants were offering a substantial amount in settlement, the doctor's family finally decided that his remaining assets would be imperiled if he took a chance, and they added to the settlement a modest amount on his behalf.

I call attention again to the $1,500,000 Florida verdict where I mentioned that rumor has it that the two physician-defendants had a $5,000 policy each.

Doctors call me to complain that their hospitals insist that they carry insurance in a six-figure amount. Since hospitals no longer have immunity and the institution may be involved in a suit along with a doctor, it seems sensible to me that all members on the staff be required to carry adequate insurance.

Acknowledgements. Again, I wish to pay tribute to James Arnold and Frank Appleton of H. F. Wanvig, Inc., who so successfully manage the insurance program and who are so helpful to us in organizing the original receipt of the legal papers and tabulating the statistics of the program. We are most grateful to the members of the Malpractice Insurance and Defense Board who spend many hours considering applications for insurance and interviewing doctors who have had a heavy or special type of loss experience.

I again wish to acknowledge my appreciation for the cooperation extended to us by John Linster, vice-president of the Claim Department, Employers Mutuals of Wausau, the insurance carrier, and his associates who have acquired much knowledge in this field and are ever helpful to us, and to Messrs. Marx, Hanner, Gordon, Bourbeau, Andreotta, Aversa, and Vitacco, of the New York City Office, who continue to furnish us with efficient claim and investigation services and consult with us on a daily basis as to the management of our cases. Upstate this fine work is carried on by Messrs. Bollman, Duggan, and Byrne of the Syracuse office. We were all very saddened this year by the death of Carl Rogge, one of the staff of the Employers, who for many years played an important role in the company's management of our cases.

Respectfully submitted,

WILLIAM F. MARTIN, *Legal Counsel*

Judicial Council

To the House of Delegates, Gentlemen:

The members of the Judicial Council are as follows:

A. W. Martin Marino, Sr., M.D., *Chairman*	Kings
Gerald D. Dorman, M.D.	New York
William P. Reed, M.D.	Westchester
William L. Wheeler, Jr., M.D.	New York
Joseph G. Zimring, M.D.	Nassau

As required by Section 1, Chapter VI of the Bylaws, the Judicial Council held an organizational meeting immediately at the close of the annual meeting of the State Society on February 16, 1967, in New York City. A. W. Martin Marino, Sr., M.D., was elected chairman.

Walter T. Heldmann, M.D., secretary; William F. Martin, Esq., legal counsel, and J. Richard Burns, Esq., assistant executive vice-president, also attended the meeting.

The Council is happy to report that no appeals were presented during the year and, therefore, no further meetings were held.

Respectfully submitted,

A. W. MARTIN MARINO, SR., M.D., *Chairman*

Constitution and Bylaws

To the House of Delegates, Gentlemen:

The members of the Council Committee on Constitution and Bylaws are:

John E. Lowry, M.D., *Chairman*	Queens
Marvin Brown, M.D.	Oswego
Leo S. Drexler, M.D.	Kings
William F. Martin, Esq., *ex officio*	New York

At the March Council meeting the committee reported that the proposed revised version of the constitution and bylaws of the Medical Society of Jefferson County was not in conflict with the constitution and bylaws of the State Medical Society but that several changes were considered desirable. The Council adopted the committee's recommendation that the revised constitution and bylaws be approved and that the desired changes be transmitted as suggestions to the county medical society.

At the recommendation of the committee, the Council, in September, approved proposed changes in the bylaws of the Medical Society of the County of Schenectady.

Changes in the bylaws of the Eighth District Branch are now under consideration. Action which may be taken by the Council in November or January regarding these proposals will be included in a supplementary report.

Respectfully submitted,
JOHN E. LOWRY, M.D., *Chairman*

New York State Delegation to the AMA

To the House of Delegates, Gentlemen:

The members of the delegation participated in the 116th annual convention of the American Medical Association in Atlantic City, New Jersey, June 18 to 22, where they attended the meetings of the House of Delegates.

Twenty-seven delegates represented the State Medical Society (two were excused because of illness; and alternate delegates were appointed to take their places). Others present were: two alternate delegates, our AMA trustee, the delegate to the Section on Proctology, and a New York past president of the AMA.

Since the convention was held close to "home" 11 members of the staff were with us, at varying times, also a few county medical society executives.

The delegation held six meetings, including three breakfast sessions. Matters coming before the House were discussed at length. We acted on some of the issues. Also, several candidates for offices of the AMA appeared briefly and addressed the delegation.

Seven members of our delegation served on reference committees. Also, we assigned delegates to each reference committee conference, so that the views of the Medical Society of the State of New York would be heard.

Three former delegates who had died during the past year were among the group of deceased AMA delegates who were honored by a moment of silence. They were: Walter P. Anderton, New York City, who served as a delegate from 1945 to 1960; E. Dean Babbage, Buffalo, who served in 1966 and would have served in 1967 except for his untimely death; and Cary Eggleston, New York City, who served as delegate in 1924, 1925, 1931, 1935, and 1937.

Resolutions. Five resolutions were introduced by the New York delegation. Actions taken by the AMA House were as follows:

1. *Resolution 24* (*New York resolution 67–63*)—"Hospital Staff Tenure," introduced by Dr. Rawls, referred to Reference Committee D (Hospitals).

Action: The reference committee amended the resolution as follows:

> *Resolved*, That the AMA urge hospitals, hospital medical staffs, hospital associations, and medical societies to consider procedures similar to the following when a physician who has completed a probationary period is not recommended for reappointment to his hospital staff position or it is recommended that his staff privileges be curtailed; (for "following" see original resolution)
>
> *Resolved*, That this House of Delegates instruct the Board of Trustees to direct the AMA Commissioners to the J.C.A.H. to strongly urge the J.C.A.H. to incorporate the principle of "due process" in its Standards of Accreditation, and further to require evidence that medical staff bylaws, rules, and regulations set forth specific procedures that serve to insure "due process."
>
> The House adopted this resolution as amended.

2. *Resolution 25* (*New York resolution 67–32*)—"Policy on Insurance Payments for Services of 'Hospital-Based' and Salaried Phy-

sicians," introduced by Dr. Himler, referred to Reference Committee D (Hospitals).

Action: The reference committee amended the resolution as follows:

Resolved, That the American Medical Association reaffirm the principle that payment, however rendered, for the services of "hospital-based" physicians regardless of their contractual arrangement with the hospital or institution be separated from the charges made by hospitals and that payments to hospitals and physicians not be intermingled.

The House adopted this resolution as amended.

3. *Resolution 26* (*authorized by the Council of the Medical Society of the State of New York at its meeting, May 25, 1967*)—"Recommendation to Manufacturers of Disposable Hypodermic Syringes," introduced by Dr. Pisani, referred to Reference Committee E (Scientific and Public Health). The text of the resolution follows:

WHEREAS, The Medical Society of the State of New York has received reports that physicians frequently discard disposable hypodermic syringes leaving the needles intact; and

WHEREAS, Such intact devices may be picked up and reused by narcotic addicts; and

WHEREAS, Failure to break these disposable hypodermic needles may contribute to more widespread use of narcotics by addicts; and

WHEREAS, Reminder warnings to destroy such equipment may be helpful to physicians and their office personnel; now therefore be it hereby

Resolved, That the American Medical Association request manufacturers of disposable hypodermic needles and syringes to include, in the packaging of these, clear directions for their correct disposal, so that reuse by narcotic addicts may be prevented.

Also with the approval of the Council (June 8), Dr. Moore suggested to the reference committee that manufacturers of disposable hypodermic needles and syringes adopt designs to prevent resuse of such syringes.

Action: The reference committee found the intent of this resolution to be commendable, made some changes for clarification, and presented the following substitute resolution:

WHEREAS, It is alleged that physicians sometimes discard disposable hypodermic syringes leaving the needles intact; and

WHEREAS, Such intact devices may be picked up and reused by narcotic addicts, children, and others; and

WHEREAS, Reminder warnings to destroy such equipment may be helpful to those who use disposable hypodermic syringes; now therefore be it hereby

Resolved, That the AMA request that manufacturers of disposable hypodermic needles and syringes adopt designs to prevent reuse, and include in the packaging clear directions for their correct disposal.

The House adopted the substitute resolution.

4. *Resolution 27* (*New York resolution 67–41*)—"Surveys of Physicians' Qualifications by State Licensing or Regulatory Bodies," introduced by Dr. Schussheim, referred to Reference Committee G (Miscellaneous).

Resolved, That the American Medical Association recommend to appropriate licensing or regulatory bodies of the states that, when surveys on physician qualifications are made, the questionnaires have space for the listing of all information pertinent to physicians' qualifications, certification, and training.

Action: The reference committee reported as follows: "Your reference committee is in sympathy with the intent of this resolution. However, we feel that this is primarily a matter of concern for the individual state medical associations and question whether the American Medical Association should be involved in these local matters. Accordingly, your reference committee recommends that this resolution not be adopted."

The House voted not to adopt the resolution.

5. *Resolution 105* (*authorized by the Council at its meeting June 8*—"H.R. 6418 entitled 'Partnership for Health Amendments for 1967,' " introduced by Dr. Pallin, referred to Reference Committee A (Insurance and Medical Services). The text of the resolution follows:

WHEREAS, Federal Public Law 89–749 (S. 3008) 89th Congress, entitled "Comprehensive Health Planning and Public Health Services Amendments of 1966," was enacted on November 3, 1966; and

WHEREAS, Prior to the enactment of this Federal law, the American Medical Association submitted objections and constructive proposals concerning the proposed law (S. 3008) at public hearings conducted by the Committee on Interstate and Foreign Commerce, House of Representatives, October 11, 1966; and

WHEREAS, The House of Delegates of the Medical Society of the State of New York, at its February, 1967, session, approved, with some modifications, these amendments; and

WHEREAS, There is now before Congress a bill, known as the "Partnership for Health Amendments of 1967" (H.R. 6418), which would, among other provisions, extend for a period of four years PL 89–749; and

WHEREAS, The basic objections and constructive proposals concerning S. 3008, submitted by the AMA in October, 1966, and endorsed by the Medical Society of the State of New York in February, 1967, apply with equal force to the present proposal, H.R. 6418; now therefore be it hereby

Resolved, That the American Medical Association present to Congress a statement of objections and constructive proposals concerning H.R. 6418 similar to the statement presented to the Committee on Interstate and Foreign Commerce, House of Representatives, October 11, 1966, concerning S. 3008, 89th Congress; and be it further

Resolved, That the AMA include in said statement the following principles:

1. The operation of any service center shall not infringe on the private practice of medicine;
2. Health services shall be rendered at a cost to the patient commensurate with his level of need;
3. There shall be adequate medical representation on all national, state, or local bodies having supervision or jurisdiction in the development and operation of these health service projects; and
4. Projects shall in no way be developed, operated, or influenced in a manner which could lead to a government-controlled system of medical practice.

Action: The reference committee commended the New York delegation for its interest in this important bill and suggested that the Board of Trustees may wish to review material contained in the resolution in preparation for future presentation before Congress.

The House voted to refer Resolution 105 to the Board of Trustees.

One of the important controversies in the House was the question of where the annual convention of 1969 should be held. There was opposition to the report of the AMA Board of Trustees that the meeting, as scheduled, be convened in New York City.

The reference committee declared that this meeting be scheduled for Miami Beach and that the clinical convention be held in St. Louis, Missouri, December 1 to 4, 1969. After considerable discussion, the House voted to adopt the report of the Board of Trustees, thereby disapproving the recommendation of the reference committee. *The 1969 convention will be held in New York City.*

Elections. The New York delegation voted to use the unit rule in voting and to support certain candidates in office who, we believed, were best qualified. Thurman B. Givan was re-elected to the Council on Constitution and Bylaws.

Hospitality. Under the chairmanship of Dr. McClintock, the New York hospitality suite in the Garden Room of the Haddon Hall Hotel was open according to the following schedule: Monday, Tuesday, and Wednesday, from 12:00 noon to 2:00 p.m.; Monday and Wednesday, from 5:00 p.m. to 7:00 p.m.

As usual, we are grateful to our delegates who attended the meetings. We thank the wives for all they did for us, and we are grateful to the staff and others who participated in our activities.

AMA Report. The following is a summary of the actions of the House of Delegates, as prepared by F. J. L. Blasingame, M.D., executive vice-president of the American Medical Association.

ATLANTIC CITY, June 22—Between the speaker's call to order at 10:00 a.m. Sunday in the Pennsylvania Room of Haddon Hall and the last voice vote at 1:12 p.m. Thursday afternoon, the American Medical Association's House of Delegates set two records.

One was attendance. After 95 per cent of the authorized delegates attended Sunday's opening session, 100 per cent—242 delegates out of 242—were in their seats for both the Tuesday and Wednesday deliberations. Thursday, the final day, attendance still stood at 240.

The other was accomplishment. All told, the House was presented with 151 items of business on which action had to be taken, including a record total of 123 resolutions from state medical associations; 18 reports from the Board of Trustees, 3 of which were nominations to fill Council positions; 4 reports from the Council on Medical Service; 3 reports from the Council on Constitution and Bylaws, one produced during the convention in order to implement an adopted resolution; 2 reports from the Council on Medical Education; and 1 report from the Judicial Council nominating affiliate members of the Association.

Dwight L. Wilbur, M.D., San Francisco, California, was elected president-elect. Dr. Wilbur has been a member of the Board of Trustees since 1963. He will serve in his new capacity for one year and will be installed as the Association's 123rd president at its annual convention in his home city in June, 1968.

Malcom E. Phelps, M.D., El Reno, Oklahoma, who has been field director of the Volunteer Physicians for Vietnam program, was elected vice-president of the Association.

Walter C. Bornemeier, M.D., Chicago, Illinois, was re-elected speaker of the House, and Russell B. Roth, M.D., Erie, Pennsylvania, was re-elected vice-speaker of the House.

Four Trustees were elected to succeed themselves: Wesley W. Hall, M.D., Reno, Nevada; Irvin E. Hendryson, M.D., Denver, Colorado; Alvin J. Ingram, M.D., Memphis, Tennessee; and Robert C. Long, M.D., Louisville, Kentucky.

Edward R. Annis, M.D., Miami, Florida, was elected to complete the term on the Board of Trustees vacated by the death of Homer L. Pearson, M.D., Miami, Florida; and Burt L. Davis, M.D., Palo Alto, California, was elected to complete the term as Trustee vacated by the resignation from the Board of president-elect Wilbur.

Thurman B. Givan, M.D., Brooklyn, New York, was elected to succeed himself on the Council on Constitution and Bylaws.

Earle M. Chapman, M.D., Boston, Massachusetts (succeeding himself), and Vernon E. Wilson, M.D., Columbia, Missouri, were elected to the Council on Medical Education.

George W. Slagle, M.D., Battle Creek, Michigan, was elected to succeed himself on the Council on Medical Service.

On the nomination of President Rouse, Elmer G. Shelley, M.D., North East, Pennsylvania, was elected to succeed himself on the Judicial Council.

The American Medical Association's Distinguished Service Award was presented by the House of Delegates to E. W. Alton Ochsner, M.D., of New Orleans, Louisiana.

At Sunday's opening session, the House heard outgoing president Charles L. Hudson, M.D., Cleveland, Ohio, urge physicians of the United States to "take the initiative and apply local solutions to local problems" in order to "persuade people that the proper function of government is to confine its activities to the support of private enterprise rather than to act as a competitor." Dr. Hudson stressed that it remains a continuing charge of physicians "to seek out and meet any discovered needs for health care" and observed that "one of the greatest challenges facing the medical profession now and in the immediate future. . .is the organization of community health care."

At his Tuesday evening inauguration as the Association's 122nd president, Milford O. Rouse, M.D., Dallas, Texas, followed a similar theme in pointing out that "the federal government is making its moves into areas where, to its own satisfaction at least, it is able to demonstrate unfilled needs for health care or health care planning. If we are alert to our responsibilities for filling all of the apparent vacuums in communitywide health programs, we can eliminate areas which may seem to demand government involvement.

"Leadership will be provided," Dr. Rouse said, "in these areas of community planning and the provision of community health services for all people. The only undefined factor is the source of that leadership. If it is not the physicians of the community, it will be government in one of its many forms."

President Rouse listed some of the many problems now facing the medical profession, asserting however that "this is a time not for despair, but for a clear recognition of crises that are approaching; a time not for anger and frustration, but for unswerving determination to face our problems and solve them; a time not for philosophy alone, but for action to make our philosophy a reality."

In his report to the House, President Rouse elaborated on that theme and listed what he considers to be some of the solutions to the problems facing medicine. Among the items he included were more unity within the medical profession; greater interprofessional harmony with all other elements of health care; better communications between physicians and their societies at every level, and between physicians and the public; increased participation by physicians in the deliberations and programs of the medical associations; more activity by physicians in the political and civic affairs of their communities; and the development of citizen interest in matters of over-all health.

"As we have done in the past," the president told the House, "we shall gladly respond to requests from government or from any other source for advice on health matters. . . But, as in the past, we shall insist that we be approached in good faith, with the assurance that our freedom of judgment and freedom of action will be preserved.

"Our future," he concluded, "will not be determined by those who oppose us, but by our own willingness to accept the responsibilities which are naturally ours."

Actions of the House. Of the 10 reports from councils considered by the House, all were adopted in their presented form except two from the Council on Medical Service which were amended and adopted. Of the 18 Board of Trustees reports, 13 were adopted as presented; two were amended and adopted; two were accepted for information; and one was referred back to the Board along with state resolutions on the same subject.

After many hours of reference committee hearings and additional debate on the floor of the House, 27 of the 123 state resolutions were adopted; another 25 were amended and adopted; 27 were referred to the Board or to one or more councils; 22 were combined with one or more others into substitute resolutions; 8 were replaced by substitute resolutions; and 14 were not adopted.

The will of the House was expressed on a great variety of subjects.

Therapeutic Abortion. One subject that has generated interest not only in the profession but among legislatures and the public is therapeutic abortion.

The House updated the Association's 1871 policy on the subject which, according to the reference committee report which was adopted, was not only antiquated but lacked even the rudiments of adaquate safeguards to prevent abuse. The updated policy, the House agreed, is in keeping with modern scientific knowledge, contains necessary safeguards, and permits the physician to exercise his personal conscience and medical judgment in the best interest of his patient, over-riding objectives in any medical decision.

The following was established as policy of the American Medical Association:

> ". . .Recognizing that there are many physicians who, on moral or religious grounds, oppose therapeutic abortion under any circumstances, the American Medical Association is opposed to induced abortion except when:
>
> "(1) There is documented medical evidence that continuance of the pregnancy may threaten the health or life of the mother, or
>
> "(2) There is documented medical evidence that the infant may be born with incapacitating physical deformity or mental deficiency, or
>
> "(3) There is documented medical evidence that continuance of a pregnancy, resulting from legally established statutory or forcible rape or incest may constitute a threat to the mental or physical health of the patient;
>
> "(4) Two other physicians chosen because of their recognized professional competence have examined the patient and have concurred in writing; and
>
> "(5) The procedure is performed in a hospital accredited by the Joint Commission on Accreditation of Hospitals.
>
> "It is to be considered consistent with the principles of ethics of the American Medical Association for physicians to provide medical information to State Legislatures in their consideration of revision and/or the development of new legislation regarding therapeutic abortion."

Health Care Cost. "Today. . .the ability of the physician to serve his patient is being handicapped by the rapidly rising prices of the various components of health care." That is a statement from the Board of Trustees report adopted by the House with the provision that it be widely disseminated for study and evaluation as to its applicability in local areas.

"Indeed," the report continued, "if the price of health care continues to outrun slower increases in consumers' income, the problem of medical indigency will assume alarming proportions."

Basic problems in the over-all design of the nation's health care system, as shown in the adopted report, include inadequate numbers of new physicians and shortages of other individuals trained to function as part of the health care team; the present organization and management of the nation's hospitals, with respect to their "privilege of automatically translating all higher costs into higher prices" which "must now be questioned;" diagnostic and therapeutic care outside of a hospital; and legislation in the health field.

A number of actions were taken to outline possible solutions to the problems of higher health care costs. One important one was the adoption of a progress report on strengthening and improving voluntary health insurance programs, submitted by the Council on Medical Service. The House accepted the Council's statements that it would "continue to study the scope and patterns of benefits, public demands for coverage, the performance of health insurance and prepayment programs and accumulation of data for future use;" and that the Council would "proceed to develop guiding principles for health insurance and prepayment programs."

As further efforts in this direction, the House referred to the Board and to the Council on Medical Service a resolution that the AMA "consult with insurers in an effort to change their policy of insurance coverage so that payment can be made for diagnostic procedures and minor surgery performed in the physicians' office and/or in the hospital outpatient department;"

adopted a resolution that the Association petition Congress to remove the restriction on first-dollar deduction from income tax laws for health care expenditures; and adopted the over-all policy that "physicians. . . continue to do everything possible to help the public conserve its health care dollars."

Government Health Programs. As might be expected, a great many reports and resolutions dealt directly or indirectly with the Association's relationships with government and with the multitude of government programs existing or proposed in the health field.

The House reaffirmed Association policy that "the medical profession has long and consistently held to two basic positions concerning personal health care and its financing: that no one should go without needed care because of inability to pay, and that responsibility for payment rests first on the individual himself and then, to the extent that he is unable to pay, on his family, the community, the county, the state, and, to the extent that lesser levels of government are unable to finance the care, the Federal government."

Regarding the Title 19 program, the House made it policy that "the medical profession should now take a firm stand in support of the Title 19 approach in improving the health and the delivery of health care services to the needy of the nation."

Recommendations adopted by the House are that the medical profession take a strong stand in support of implementation of Title 19 "while still seeking such changes in the Federal legislation and/or regulations as will improve this program; that it urge organized medicine to take a leading role in formulating and directing Title 19 programs at the state and local level. . .and that it incorporate in such planning the use of existing voluntary nechanisms and private insurance carriers, wherever feasible, utilizing the usual and customary fee principle, thus bringing within the mainstream of present medical care systems the provision of quality health care for all Americans."

Appalachian regional health programs were the subject of a number of resolutions, and the House adopted the following guidelines for setting up any such programs: (1) demonstrated need for the proposed project; (2) local control; (3) participation of a significant proportion of local physicians in planning and development of the project; (4) the operation of any regional, area, or county health service facility shall not infringe on the private practice of medicine; (5) all health services, whether preventive, prophylactic or therapeutic, shall be rendered at a cost to the patient commensurate with the social and economic status of the patient; (6) there shall be adequate medical representation on all national, state, and local bodies having supervision or jurisdiction in the development and/or operation of such health service facilities; and (7) these health service projects shall in no way be developed, operated, or influenced in any manner which could lead to a government-controlled system of medical practice.

More generally, in connection with any and all government medical care programs, guidelines were adopted by the House:

"The medical profession in any community is best represented by the local medical society and its officers. They should be consulted initially, and during the process of planning of any and all projects for the care of the sick and the preservation of health."

In proposing any new facility, "It shall be first determined that existing facilities are so inadequate that only a completely new facility will provide a solution.

"The responsibility for the health needs of a community basically resides at the community level, and all the local resources. . .shall be examined before the community accepts government monies.

"If it is deemed advisable to operate a government-financed facility in a community, it shall in no way be binding on a physician to refer his patients there; to coerce a physician to service the facility; and this facility must in no way infringe on the private practice of medicine.

"These projects should not be developed or operated in such a manner as to establish a precedent that could lead to a government-controlled medical care system in this country."

Physician Control Over Collection and Disbursement of Professional Fees. In adopting a report of the Council on Medical Service regarding collection and disbursement of professional fees, the House reaffirmed past action and provided clear, consistent policy statements reflected in these thoughts which are elaborated in the full report:

1. It is proper for the physician to establish the fee he charges to any patient for professional service rendered, with the recognition that a duly constituted committee of his peers may appropriately review and pass on the equity and justice of his charge.
2. It is proper for third-party agencies to make payment of professional medical fees for patients.
3. It is proper for a physician to work with other physicians in a team approach to the provision of medical service, recognizing that each is entitled to compensation according to the value of his services and that charges attributable to each physician's service shall be made clear to the patient.
4. It is proper for a physician who provides personal supervision and direction for a physician-in-training to charge for the professional medical service rendered.
5. A physician should not enter into a contract or agreement with a hospital whereby the hospital acts as the agent for him unless it is with the consent of the physician and of the medical staff.
6. Physicians, collectively in hospitals, may properly establish special medical staff funds, wholly under their own control, which they may support as they see fit and disburse as they may agree.
7. Fees for professional medical services are properly paid only to the responsible physicians and may not be appropriated by any other person or agency.
8. The physician is the sole arbiter as to the ways he may dispose of his professional income, without duress, consistent with the laws of the land and the *Principles of Medical Ethics of* this Association.

Millis Commission and Commission on Research. Because the contents of the Millis Commission report (Citizens Commission on Graduate Medical Education) relate so specifically to the roles of the Councils on Medical Education and Medical Service, the two councils have assumed responsibility for assembling critiques and information. At a later date, they will bring to the Board, and subsequently to the House, recommendations for implementation of parts or the whole of the report. The House urged all interested members of the Association or groups to submit comments, suggestions, or recommendations for consideration by the two councils.

With respect to the Commission on Research, the Board has established a Committee on Research to review reports on the subject from the Councils on Medical Education and Medical Service; refer portions of the report to other councils and committees; and confer with those groups in addition to receiving their reports.

Again, the House urged any interested individuals and groups to forward comments and suggestions to the executive vice-president for transmittal to the committee.

Medicine and Osteopathy. The House adopted the following recommendations of the Board regarding the medical profession's relationships with osteopathy:

1. Authorize the Board of Trustees to begin promptly negotiations directed toward beginning official

change of schools of osteopathy to schools of medicine. (It is understood that from the American Medical Association funds will be required to conduct these negotiations, and assistance in identifying and securing additional funds from other sources to support efforts toward changing the schools.)

2. Authorize the Council on Medical Education to undertake negotiations to establish means by which selected students with proved satisfactory scholastic ability in schools of osteopathy may be considered by schools of medicine for transfer into medical school classes.

The primary issue in the relationship of medicine and osteopathy, as recognized by the House, seems to be not that of cultism as opposed to science. Rather the issue appears to be one level of medical education and practice as opposed to another and lower level of education and practice. The extensive and growing licensure of osteopathic physicians for the unrestricted practice of medicine and the nature of osteopathic education strongly indicate that time alone will resolve shortly the problem of cultism in relation to osteopathy.

Medical Manpower. The House accepted for information a report from the Board which pointed out that "the production of well-qualified physicians in adequate numbers is necessary to meet effectively both social and economic demands for health care." It reviewed some of the activities of the Committee on Health Manpower and concluded that "the AMA should continue to study the effect of new roles for health personnel and new interrelationships and interdependencies between health professionals, as well as the impact of innovative concepts on the organizational structure evolving in the general system of health care delivery. . . .

"In any event, our resolve should always be as it is now: to use the best tested and most forward looking measures to provide excellent health care for all of our citizens through an ample number of able, educated, and highly skilled physicians."

The House also referred to the Board, for consideration by the committee, a resolution that "deliberations include strong emphasis on sound ways of accelerating medical education in all its phases, including post-M.D. and graduate education, and of increasing the supply of physicians in all categories."

In addition, the House adopted reports calling for revision of the *Essentials of Approved Residencies* in radiology, obstetrics, and gynecology; adopted a resolution calling for the promotion of better practices in inhalation therapy; and adopted a resolution that the AMA reaffirm its support of all forms of nursing education; that hospitals which conduct diploma schools of nursing be commended; that such hospitals be urged to continue their schools and increase enrollment; and that the AMA take appropriate action in consultation with professional nurses' associations and the American Hospital Association to encourage increasing enrollment in diploma schools and at the same time improve educational standards.

Committee on Planning and Development. At the June, 1966, convention of the House, the Board announced the appointment of a committee to study planning and development technics within the Association. The report of the committee was received, and the Board submitted its final report to the House at this convention.

The Board voted to (1) establish a permanent Committee on Planning and Development and (2) select seven active members of the AMA as members. The following charges were established for the committee:

1. Study and make recommendations concerning the long-range objectives of the Association and the resources, programs, and organizational structure by which the Association attempts to reach them.

2. Serve as a focal point for the planning activities of the Association and stimulate and coordinate planning activities throughout the organization.

3. Study, or cause to be studied, medicine and the environment in which the Association must function and transmit the conclusions of these studies to the Board.

In the report adopted by the House, the Board earnestly solicited nominations to the committee from delegates, constituent associations, component societies, and other interested groups and individuals.

Two resolutions on the subject were referred to the Board.

It is noteworthy that in his report to the House, President Rouse stated that "we now have an established Committee on Planning and Development at the AMA level. I hope that every county and state association will likewise make use of a comparable committee, to plan wisely and develop properly the policies and programs needed in the decades ahead—far beyond just the next year."

Members' Disability Insurance Program. The House adopted the report of the reference committee on this subject, and referred to the Board a number of resolutions pertaining to it.

The committee's report, as adopted, recommended that the House authorize the Board to make every effort to continue the AMA Members Group Disability Insurance Program with the same premium-benefit structure. It also recommended the following guidelines to aid the Board in negotiating and executing the necessary contracts and in the future operation of the program:

1. The contract should provide ample assurance that disability claimants will be treated equitably and justly.

2. The carrier should guarantee benefits and premiums for a period of at least five years in order to assure the stability of the program.

3. Promotional literature should be approved in advance by the Board or its designee. All measures within the bounds of dignity and ethics should be utilized to promote the program.

4. A continuous ongoing review of the entire program should be maintained. The insureds and other members should be made aware that such a review may reveal in the future the necessity for a revision of the program at the end of the five-year period.

5. Information regarding the operation of the program, its financial aspects, and the processing of claims should be available to the Board for review at any time.

6. An AMA Disability Insurance Review Committee should be continued and should provide a mechanism for claims review.

Political Action. Several resolutions were offered to the House questioning whether the administration of government programs is truly carrying out the intent of Congress in its passage of laws. They were combined by the House into one resolution stating, "That if legislation is introduced to investigate the activities of the Department of Health, Education, and Welfare and its executive personnel who are concerned with health matters to determine if the intent of Congress is being carried out, the American Medical Association will provide to such an investigation any information that its Board and councils may secure in these matters."

The resolution also pointed out that since the most effective method to preserve the private practice of medicine is to elect proper officials at all levels of government, "the American Medical Association urges that physicians, as individuals, redouble their efforts in political activities."

It was also resolved that the Association "continue and expand its efforts to inform our membership of its activities to represent them, particularly before the Congress and the Federal agencies."

The House also adopted a resolution, "That medical societies be urged to investigate, document, and report to the Law Division. . .all violations of Public Law 89–97 by officers or employees of the Federal government" and that "a status report be provided to this House at the 1967 Clinical Convention."

The House also reaffirmed the Association's opposition to S. 260 (the Hart Bill) and its support of direct billing under Part B of Medicare on the basis of a physician's itemized statement of charges.

The House supported AMPAC (American Medical Political Action Committee) and the state political action committee organizations by adopting a resolution recognizing "that leadership at all levels of medicine should make individual commitment to state PAC-AMPA membership and local political action committee programs, wherever this is legally possible."

Generic Prescribing. A resolution combining several state resolutions was adopted by the House, asserting "that the AMA again reaffirm its policy that physicians should be free to use either the generic or the brand names in prescribing drugs for their patients; and encourage physicians to supplement medical judgments with cost considerations in making this choice."

Other Actions. During the convention, the House welcomed 15 physicians who have served in the Volunteer Physicians for Vietnam program; conducted a memorial service for 27 members of the House and/or officers of the Association who had died since the 1966 annual convention; heard a report on AMPAC from Blair J. Henningsgaard, M.D., chairman of the AMPAC board; heard a report on AMA-ERF from immediate past president James Z. Appel, M.D., president of AMA-ERF; permitted a representative from the Oregon Woman's Auxiliary to introduce to the House the "Doctor's Wife," a new rose developed by the Oregon auxiliary; and heard a talk by David Kindig, president of the Student American Medical Association.

Adopted many other resolutions, including these:

Amending the bylaws so that recipients of the Distinguished Service Award and the Citation of a Layman for Distinguished Service will be nominated at the clinical convention and the presentations will be made at the next Annual Convention.

Confirming that there is nothing in the military officers' oath that conflicts in any way with the ethics of the medical profession.

Noting that a double standard of policy often exists between so-called "hospital-based specialists" and other types of practitioners with respect to hospital staff appointments and endorsing "the principle of a single standard with respect to staff appointments among all physicians having equivalent credentials in all hospital departments and services as a means of assuring maximum freedom of choice of physicians by patients, and of consultants by staff members."

Requesting the Joint Committee on Hospital Accreditation to "encourage. . .the acceptance, wherever possible, of physicians elected or appointed by the medical staff to the Board of Trustees with full voting rights as the most effective form of liaison between the medical staff and hospital-governing authorities."

Opposing the establishment of a racial quota system for hospitals.

Encouraging farm equipment manufacturers to establish standards for basic overturn protective frames and crush-resistant cabs.

Reaffirming the Association's policy regarding tobacco and health and promising vigorous continuation of its measures for corrective action.

Urging that disposable hypodermic syringes be thrown away in such a way as to prevent their possible reuse.

Encouraging state associations to inform state legislators of the need to re-examine existing "battered child" laws so child abuse is to be reported by physicians as well as medically oriented social services.

Supporting continued research and control measures for venereal disease.

Reaffirming the Association's opposition to requirements for certification and recertification.

Stating the Association's continuing concern for the prevention of death and injury from burns by "stepping up its education campaign to make the public more aware of the dangers inherent in flammable fabrics and other related flammable materials" and resolving that "the AMA cooperate with other voluntary associations in the furtherance of this program."

Finally, the House welcomed as its guests at the opening session the winners of the AMA's top awards at the 18th International Science Fair, held in San Francisco. They were Susan T. Bertrand, New Albany, Indiana, whose exhibit was "Electrophoretic Analysis of Blood Serum"; and Stephen R. Igo, Winterset, Iowa, with an exhibit showing the design, construction, and operation of a small, synchronous intrathoracic auxiliary ventricle. Both winning exhibits were on display during the convention.

Respectfully submitted,
HENRY I. FINEBERG, M.D., *Chairman*

Necrology

Raymond John Brown, M.D., of Rochester, died on July 24, 1967, at the age of seventy-seven. Dr. Brown graduated in 1916 from Georgetown University School of Medicine. He was an honorary consulting obstetrician at Park Avenue Hospital and an emeritus obstetrician at St. Mary's Hospital. Dr. Brown was a member of the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Arthur Bullard, M.D., retired, of St. Louis, Missouri, formerly of New York City, died on November 14, 1967, at St. Luke's Hospital at the age of eighty-six. Dr. Bullard graduated in 1906 from Dartmouth College Medical Department. He was a consulting surgeon in obstetrics and gynecology at St. Luke's Hospital, Manhattan, Woman's Hospital Division. Dr. Bullard was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Surgeons, and a member of the New York Obstetrical Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Donald Langworthy Burdick, M.D., of New York City, died on November 12, 1967, at his summer home in Rockville, Rhode Island, at the age of sixty-seven. Dr. Burdick graduated in 1938 from Albany Medical College. He was director of anesthesiology at Doctors Hospital. Dr. Burdick was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Clinical Hypnosis, the American Society of Anesthesiologists, Inc., the New York Academy of Medicine, the New York State Society of Anesthesiologists, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Daniel H. Eichner, M.D., of New York City, died on November 17, 1967, at the age of sixty-five. Dr. Eichner graduated in 1930 from New York Homeopathic Medical College and Flower Hospital. He was a member of the New York Cardiological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Albert Flemming, M.D., of Glendale, died on November 19, 1967, at St. Vincent's Hospital of the City of New York at the age of eighty-three. Dr. Flemming graduated in 1906 from Columbia University College of Physicians and Surgeons. He was a consulting obstetrician and gynecologist at Queens Hospital Center. Dr. Flemming was a Fellow of the American College of Surgeons and a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Fred S. Friedenberg, M.D., of Brooklyn, died on November 20, 1967, at University Hospital at the age of sixty-six. Dr. Friedenberg received his medical degree from the University of Prague in 1926. He was an assistant attending neuropsychiatrist at Jewish Hospital of Brooklyn, an adjunct neuropsychiatrist at Lutheran Hospital, and senior supervising psychiatrist at the Pride of Judea Child Guidance Clinic, Brooklyn. Dr. Friedenberg was a member of the American Psychiatric Association, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

David Gross, M.D., of New York City, died on October 31, 1967, at The New York Hospital at the age of sixty-six. Dr. Gross received his medical degree from the University of Vienna in 1937. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Nicholas Ivan Klimow, M.D., of Johnson City, died on October 18, 1967, at the Charles S. Wilson Memorial Hospital at the age of sixty-one. Dr. Klimow graduated in 1933 from Syracuse University College of Medicine. He was chief of industrial medicine at the Charles S. Wilson Memorial Hospital and director of medical services of the Broome County Civil Defense Department. Dr. Klimow was a member of the American Academy of Occupational Medicine, the American Geriatrics Society, the Industrial Medical Association, the Binghamton Academy of Medicine, the New York State Society of Industrial Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Henry Kober, M.D., of Lima, died on September 29, 1967, at the Frederick Ferris Thompson Hospital, Canandaigua, at the age of seventy-four. Dr. Kober graduated in 1916 from New York Homeopathic Medical College and Flower Hospital. He was a member of the Livingston County Medical Society, the Medical Society of the State of New York, and the American Medical Association

Jerome Louis Leon, M.D., of Forest Hills, died on November 14, 1967, at his home at the age of sixty-two. Dr. Leon graduated in 1934 from New York Homeopathic Medical College and Flower Hospital. A former hospital administrator, he had been executive director of the Medical Society of the County of Queens for the past twelve years. Dr. Leon was a Fellow of the American College of Chest Physicians and a member of the American Thoracic Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Thomas F. Manley, M.D., of Norwich, died on October 29, 1967, at the Chenango Memorial Hospital at the age of ninety-three. Dr. Manley graduated in 1901 from Syracuse University College of Medicine. He was a Fellow of the American College of Surgeons and a member of the Chenango County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Conrad Alexander Mietus, M.D., of Buffalo, died on July 10, 1967, at the age of sixty-seven. Dr. Mietus graduated in 1924 from the University of Buffalo School of Medicine. He was an attending ophthalmologist at Mercy and Millard Fillmore Hospitals. Dr Mietus was a Diplomate of the American Board of Ophthalmology and a member of the American Academy of Ophthalmology and Otolaryngology, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Eric Henry Nahm, M.D., of New York City and New Rochelle, died on November 13, 1967, at Columbia-Presbyterian Medical Center, Neurological Institute, at the age of seventy. Dr. Nahm received his medical degree from the University of Heidelberg in 1922. He was an associate attending (affiliate) dermatologist and serologist at Lincoln Hospital. Dr. Nahm was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Daniel Joseph Riordan, M.D., of Tonawanda, died on October 5, 1967, at Roswell Park Memorial Institute at the age of sixty-two. Dr. Riordan graduated in 1931 from the University of Buffalo School of Medicine.

Frederick Monroe Rosen, M.D., of Farmingdale, died on November 18, 1967, at Brunswick Hospital Center (Amityville) at the age of fifty-six. Dr. Rosen graduated in 1936 from Long Island College of Medicine. He was an assistant attending psychiatrist and chief of the Psychiatric Liaison Service at Meadowbrook Hospital (Hempstead) and an attending psychiatrist at Brunswick Hospital Center. Dr. Rosen was a member of the American Psychiatric Association, the Nassau Academy of Medicine, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alexander Schomer, M.D., of New York City, retired, died on November 12, 1967, at the Veterans Administration Hospital, Manhattan, at the age of seventy-three. Dr. Schomer graduated in 1918 from University and Bellevue Hospital Medical College.

Joseph Schroff, M.D., of Great Neck, died on November 12, 1967, at the age of eighty. Dr. Schroff graduated in 1920 from Columbia University College of Physicians and Surgeons. He was a consulting oral surgeon at Presbyterian, The Mount Sinai, and Jewish Memorial Hospitals. Dr. Schroff was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Thomas J. Tobin, M.D., of New York City, died on November 14, 1967, at St. Clare's Hospital at the age of eighty-one. Dr. Tobin graduated in 1913 from the University of Vermont College of Medicine. He was a senior attending gynecologist at St. Clare's Hospital. Dr. Tobin was a Fellow of the American College of Surgeons, a Fellow of the International College of Surgeons, and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis S. Werner, M.D., of the Bronx, died on October 2, 1967, at Montefiore Hospital at the age of fifty-nine. Dr. Werner graduated in 1932 from University and Bellevue Hospital Medical College. He was an assistant attending physician at Harlem Hospital and an assistant attending dermatologist at Harlem Hospital Outpatient Department. Dr. Werner was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herman Edwin Wirth, M.D., of Albany, died on October 30, 1967, at his home at the age of sixty. Dr. Wirth graduated in 1932 from Cornell University Medical College. He was a tuberculosis field consultant with the State Department of Health. Dr. Wirth was a Fellow of the American College of Chest Physicians and a member of the American Geriatrics Society, the American Public Health Association, the American Thoracic Society, the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Roy B. Woodward, M.D., of Bath, died on October 8, 1967, at Strong Memorial Hospital (Rochester) at the age of seventy-eight. Dr. Woodward graduated in 1916 from the University of Georgia Medical Department. He had been a Veterans Administration physician for many years before his retirement.

Medical Meetings

Albany Medical College offers postgraduate courses

The Department of Postgraduate Medicine of Albany Medical College is presenting a postgraduate course in Basic Science Correlations in Disease States to be held at the medical college on successive Thursdays, January 4 through 25, from 9:00 A.M. to 12:00 NOON. Subjects for each session are: January 4—"Alcohol and the Heart"; January 11—"Basic Science in Relation to Dermatology"; January 18—"Basic Science in Relation to Endocrinology"; and January 25—"Basic Science Program in Oncology—Genetics and Cancer."

Tuition is $10 per session. For further information write: Department of Postgraduate Medicine, Albany Medical College, 47 New Scotland Avenue, Albany, New York 12208.

Intrauterine infections topic of symposium

An all-day symposium on Intrauterine Infections, sponsored by the New York Chapter of the National Foundation-March of Dimes, and New York University School of Medicine, is to be held on January 10, at The Americana, New York City. Saul Krugman, M.D., professor and chairman, Department of Pediatrics, New York University School of Medicine, will serve as chairman of the symposium.

The purpose of the meeting is to provide an opportunity for presentation and discussion of the latest data including differential diagnosis, prevention, research, and treatment of infections which damage an embryo, a fetus, or a neonate. Among the guest speakers will be Charles A. Alford, Jr., M.D., Meyer professor of pediatric research, University of Alabama Medical College; Louis Z. Cooper, M.D., assistant professor of pediatrics, New York University School of Medicine; James B. Hanshaw, M.D., associate professor of pediatrics, University of Rochester School of Medicine; Jack S. Remington, M.D., assistant professor of medicine, Stanford University School of Medicine; and Samuel L. Katz, M.D., assistant professor of pediatrics, Harvard Medical School.

For further information write: executive director, New York Chapter, The National Foundation-March of Dimes, 315 Park Avenue South, New York, New York 10010.

Downstate New York internists to meet

The American College of Physicians will hold its scientific regional meeting for specialists in internal medicine in Downstate Districts I and II on January 16 and 17 at the Biltmore Hotel, New York City. Among the special guests will be H. Marvin Pollard, M.D., Ann Arbor, Michigan, president-elect of the College and professor of internal medicine, University of Michigan Medical School; and Francis L. Land, M.D., commissioner of medical services administration, U.S. Department of Health, Education, and Welfare, will report on "Medicaid–1968" at a luncheon meeting.

For further information write: Julius E. Stolfi, M.D., 116 79th Street, Brooklyn, New York 11209.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Medical News

Children's psychiatric institute established in Syracuse

A new children's psychiatric institute encompassing a broad spectrum of services and offering unique opportunities for the development of professional training and research in child development and child psychiatry is being developed in Syracuse by the State University of New York Upstate Medical Center, the Department of Mental Hygiene, and the Community Mental Health Board of Onondaga County.

The new unit will provide residential treatment for 40 mentally ill children from Cayuga, Madison, Cortland, Oswego, and Onondaga Counties. It will also have a day treatment center for 60 to 80 children, and provide night hospitalization for about 20 children. The services of the institute will be available on referral from the patient's physician, parents, educators, and social agencies.

Booklet on immunization information for international travel published

The 1967–1968 revised edition of *Immunization Information for International Travel* has recently been published. The revisions include: (1) information concerning smallpox vaccinations or revaccinations performed on or after January 1, 1967, which must be recorded on the revision of the International Certificate of Vaccination or Revaccination Against Smallpox approved by the 18th World Health Assembly; (2) an up-to-date map of the yellow fever receptive areas in the United States, Section 8; (3) current information on immunization requirements for entrance into other countries, Section 5; (4) changes in recommendations concerning typhoid, tetanus, plague, and diphtheria immunizations, Section 2; and (5) the change in the smallpox vaccination requirement for persons traveling between the United States and Mexico.

Copies of the booklet may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, at 40¢ a copy.

Directory available listing maternity homes and residential facilities for unmarried mothers

A *Directory of Maternity Homes and Residential Facilities for Unmarried Mothers* has been prepared by the National Council on Illegitimacy. The Council is jointly sponsored by the Child Welfare League of America and the Family Service Association of America. This directory is available to all physicians without charge.

Physicians interested in obtaining copies of the *Directory* may do so by writing: Miss Ruth Chaskel, director, National Council on Illegitimacy, 44 East 23rd Street, New York, New York 10010.

Physicians needed for Care-Medico teams

Care-Medico needs general practitioners, pediatricians, internists, and a surgeon to fill the upcoming assignments to medical teams stationed in hospitals in Honduras and Malaysia. Seven posts are due to be available at intervals from January to June, 1968, on a two-year contractual basis.

For details write: personnel director, Care-Medico, 660 First Avenue, New York, New York 10016.

Deadline for medical papers for American Public Health meeting

Authors of papers for possible inclusion in the Medical Care Section program of the 96th annual meeting of the American Public Health Association should write to Donald C. Riedel, Ph.D., associate professor of public health, Yale University School of Medicine, 60 College Street, New Haven, Connecticut 06504, to obtain standard abstract forms. Two types of papers will be considered: research reports and descriptions of programs or demonstrations. The deadline for submitting abstracts is April 15, 1968. Authors of papers selected for the program will be notified in early June.

Personalities

Appointed. James W. Bartlett, M.D., Rochester, as medical director of the University of Rochester's Strong Memorial Hospital . . . Olive E. Pitkin, M.D., New York City, as director of school health, New York City Department of Health.

Speakers. At the annual meeting of the Radiological Society of North America, held in Chicago, on November 26 through December 1: Harold L. Atkins, M.D., Brookhaven National Laboratory; E. Robert Heitzman, M.D., Edward W. Carsky, M.D., and Edward J. Lane, Jr., M.D., of Syracuse; and Raymond Gramiak, M.D., and Paul A. Ross, Jr., M.D., both of Rochester.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Books Received

*The following books were received during the month of October, 1967.**

Textbook of Anatomy. By W. Henry Hollinshead, Ph.D. Second edition. Quarto of 994 pages, illustrated. New York, Harper & Row, 1967. $18.75.

Abnormal Sexual Development: A Genetic and Endocrine Approach to Differential Diagnosis. By Daniel D. Federman, M.D. Quarto of 206 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $8.75.

Insurance for the Doctor. By Harvey Sarner, LL.B. and Herbert C. Lassiter, LL.B. Quarto of 193 pages. Philadelphia, W. B. Saunders Company, 1967. $9.00.

Club-Foot. By Alfred T. Fripp, M.B., and Norman E. Shaw, Ch.M. Quarto of 122 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd. (Baltimore, The Williams & Wilkins Company), 1967. $8.25.

A Synopsis of Children's Diseases. By John Rendle-Short, M.D., and O. P. Gray, M.B. Fourth edition. Duodecimo of 681 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $10.50.

Hamilton Bailey's Demonstrations of Physical Signs in Clinical Surgery. Edited by Allan Clain, M.B. Fourteenth edition. Quarto of 627 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. $16.75.

Racial and Geographical Factors in Tumour Incidence. Edited by A. A. Shivas. Quarto of 291 pages, illustrated. Edinburgh, Edinburgh University Press (Baltimore, The Williams and Wilkins Company), 1967. $11.

An Introduction to Diagnostic Neurology. Volume 1 and 2. By Stewart Renfrew, M.B. Second edition. Duodecimo. Illustrated. Edinburgh, E. & S. Livingstone Ltd. (Baltimore, The Williams and Wilkins Company), 1967. Paper, $4.50.

Hamilton Bailey's Emergency Surgery. Edited by T. J. McNair, M.D. Eighth edition. Quarto of 1,026 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $32.

Orthopaedics: Principles and Their Application. By Samuel L. Turek, M.D. Second edition. Quarto of 996 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1967. $27.

Sense and Symbol: A Textbook of Human Behavioral Science. By Paul R. Miller, M.D. Octavo of 398 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. $9.75.

Physical Bases of Circulatory Transport: Regulation and Exchange. Edited by E. B. Reeve, B.M., and Arthur C. Guyton, M.D. Quarto of 381 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $20.

Introduction to Anesthesia: The Principles of Safe Practice. By Robert D. Dripps, M.D., James Eckenhoff, M.D., and Leroy D. Vandam, M.D. Third edition. Quarto of 529 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $10.50.

Renal Transplantation. By Roy Yorke Calne, M.S. Second edition. Octavo of 220 pages, illustrated. London, Edward Arnold Publishers Ltd. (Baltimore, The Williams and Wilkins Company), 1967. $11.75.

Diabetes Mellitus: Diagnosis and Treatment. Volume II. Edited by George J. Hamwi, M.D., and T. S. Danowski, M.D. Octavo of 250 pages, illustrated. New York, American Diabetes Association, 1967. $2.50.

Hysterosalpingography. By Alvin M. Siegler, M.D. Quarto of 406 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. $21.

Roentgenologic Diagnosis. A Complement in Radiology to the Beeson and McDermott Textbook of Medicine. Volume I and II. By J. George Teplick, M.D., Marvin E. Haskin, M.D., and Arnd P. Schimert, M.D. Quarto of 1,198 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $38. the set.

Emergencies in Medical Practice. Edited by C. Allan Birch, M.D. Eighth edition. Octavo of 852 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd. (Baltimore, The Williams and Wilkins Company), 1967. $12.50.

Essentials of Roentgen Diagnosis of the Skeletal System. By Lester W. Paul, M.D., and John H. Juhl, M.D. Quarto of 280 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. $12.50.

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*Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

Labat's Regional Anesthesia: Techniques and Clinical Applications. By John Adriani, M.D. Third edition. Quarto of 565 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $14.

Boyd's Pathology for the Surgeon. By William Anderson, M.B. Eighth edition. Quarto of 842 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $18.50.

Functional Gastrointestinal Disease. By Eddy D. Palmer, M.D. Octavo of 126 pages. Baltimore, The Williams & Wilkins Company, 1967. $7.25.

Multilingual Guide for Medical Personnel. By Bernard Finch. Duodecimo of 159 pages, illustrated. Flushing, N.Y., Medical Examination Publishing Company, 1967. Spiral Binding, $2.00.

The Truth About Cancer. By Charles S. Cameron, M.D. Duodecimo of 285 pages, illustrated. New York, Collier Books, 1967. Paper, $1.50.

Case of the Day. By Benjamin Felson, M.D., and Jerome F. Wiot, M.D. Quarto of 83 pages, illustrated. Springfield, Ill., Charles C Thomas, 1967. $8.50.

Hypertensive Vascular Disease: Diagnosis and Treatment. By Marvin Moser, M.D., and Arthur G. Goldman, M.D. Octavo of 343 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1967. $12.

Books Reviewed

United States Army in World War II. The Technical Services. The Medical Department: Medical Service in the Mediterranean and Minor Theaters. By Charles M. Wiltse. Octavo of 664 pages, illustrated. Washington, D.C., Office of the Chief of Military History, Department of the Army, 1965. Cloth, $5.00.

This is one of three volumes on the overseas administrative history of the U.S. Army Medical Department during World War II, which, with a volume devoted to the Zone of the Interior, constitute a companion series to the regular combat history and to the separate clinical series. Ably written by a recognized historian, it is an interesting as well as authoritative account based on official documents, the recalled experience of participants, and the expert interpretations of military medical professionals. Fifteen chapters provide comprehensive, commonly exciting details of the operations which, notably in the geographically variable, "pilot" theater of the Mediterranean, often established the patterns for what proved to be the more major campaigns in Western Europe and the Pacific. Besides the logistic problems incurred over the range of strategic and tactical commitments, diseases of special interest are described in subsections that help to sustain a medical perspective throughout the presentation. An extensive appendix identifies the principal medical units that participated in the Mediterranean Theater, outlines the over-all pattern of hospitalization, and briefly describes the policies and practices of the medical departments of the French Expeditionary Corps and of the German Army as observed in that area. An extensive glossary and an excellent index further enhance the value of this outstanding work.

Physician veterans among those to whom the volume is dedicated may wish to recall, or perhaps to learn for the first time, details of the difficult days nearly a quarter of a century ago—at Anzio and in equally exacting situations. Those now serving in the military medical departments may wish to review the evolution of present programs and procedures. Civilian medical administrators may wish to adapt some of the practices that proved so effective in the Armed Forces. All will find this book worthwhile—as will every other "medic" at every echelon, who, irrespective of involvement in the great mass of balanced text, tables, and illustrations, devotes a few minutes to the pithy and poignant prologue: "The Gift of Life."—Robert W. Hillman, M.D.

Clinical Stomatology. Edited by Edward V. Zegarelli, D.D.S., and Austin H. Kutscher, D.D.S. Octavo of 303 pages, illustrated. New York, The Blakiston Division, McGraw-Hill Book Company, 1966. Cloth, $15.95.

Case reports of 194 oral disease are presented, including the first volumes from *The Journal of Clinical Stomatological* conferences. Small chapters of routine introduction to diagnosis and another to tumors of mouth and jaws preface the general presentation. Oral manifestations of blood diseases, keratoses, keratotic-like diseases, ulcerative diseases, infectious diseases, diseases of the salivary glands, dental abnormalities, gum and periodontal diseases, fibrous tissue disease, tumors, cysts, neoplastic, psy_ chogenic, and miscellaneous categories are presented. The usual routine of clinical, diagnostic, and in most cases, therapeutic phases are introduced.

A collaboration effort of this type from numerous contributors results in moderate variation in quality and considerable repetition in the same chapters.

The case reports, according to the editors, are for the dental student, practitioners, and scientists and emphasize the diagnostic approach to oral disease. The illustrations are in black and white and color and are frequent and used to advantage.

There are many authoritative texts relative to the subject of oral pathology in its various phases. *Clinical Stomatology* was not compiled to supplant any of these. The case reports and lessons are there.

The dental or medical reader will probably manifest interest in some of the material but for more ample coverage would prefer the conventional texts.—SIDNEY N. NEICHIN, D.D.S., M.D.

Defeating Alcoholism: The Fairview Way. By Maxie C. Collins, B.A., Th.M. Duodecimo of 327 pages. Philadelphia, Whitmore Publishing Co., 1966. Cloth, $5.00.

The essence of this message is in its title. The Fairview Way obviously is only one of many to treat alcoholism. That it may be the most effective way is implied but not critically documented by the clergyman-author, whose more than thirty years of experience in the management of alcoholism surely has established his right, indeed almost his obligation, to record his observations and impressions. The overview derived through close associations with the allied disciplines of internal medicine, psychiatry, psychology, and social work has enabled him to represent his own special contribution in appropriate context. As a member, and presumably the principal organizer and sustainer of this therapeutic team, he has acquired sufficient knowledge and understanding to permit a reasonably authoritative and comprehensive presentation of aspects outside his own area of special expertness. Consideration is given to the history, causation, pathogenesis, and specific management (in excessive detail), as well as to the personal, familial, and community impacts of alcoholism. Case histories, anecdotes, and what amount to little sermons are liberally employed in a largely data-less description of his group's perspectives and practices.

In general the book is well written—perhaps too easily written, for the commensurate easy reading tends to blur essential distinctions between fact and opinion, reporting and editorializing. If it is sometimes difficult to infer for which audience the book is primarily intended—the material reflects varying levels of scientific and sociologic sophistication—its purpose in any case obviously is to exhort as well as to enlighten, to reform as well as to inform. But as long as a variety of treatments signifies the preeminence of no one approach, it is scarcely inappropriate to emphasize the generic ingredient of motivation that is essential to any type of success.

This book probably will not be useful to all physicians or to all of their alcoholic patients. However, it may help many in each of these categories whose backgrounds, persuasions, or overriding needs render them receptive to this welcome, if not altogether unique addition, to the inadequate armamentarium presently available for contending with one of the most persistent problems for much of mankind.—ROBERT W. HILLMAN, M.D.

Comprehensive Textbook of Psychiatry. Edited by Alfred M. Freedman, M.D., and Harold I. Kaplan, M.D. Quarto of 1,666 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. Cloth, $24.75.

This prodigious effort on the part of well-known psychiatrists brings together in one textbook a comprehensive reference of present-day thinking on psychiatry.

Drs. Friedman and Kaplan, both professors in psychiatry, New York College of Medicine, have done a yeoman's job in obtaining the help of 174 contributors, each a specialist in his own field, to bring this book to fruition.

It is a multidisciplinary approach to psychiatry which will serve as a basic textbook for medical students and residents in psychiatry. It has arisen from the authors' experience in teaching and establishing an undergraduate and graduate program in psychiatry.

There are three aspects of psychiatry which are discussed in the book—fundamentals, clinical issues, and related. These have been covered thoroughly and adequately by the various contributors.

It is a big book, over 1,600 pages, too big to carry about, but an excellent book to keep on the reference shelf for frequent perusal.—JOSEPH L. ABRAMSON, M.D.

The Physical Aspects of Diagnostic Radiology. By Michel M. Ter-Pogossian, Ph.D. Octavo of 426 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1967. Cloth, $13.50.

This book should be a valuable addition to the library of any diagnostic radiologist who really wants to understand the physical principles of radiology and the operation of x-ray equipment and its accessories. Not many radiologists do have a very complete understanding. There long has been a need for such a comprehensive and well-organized book in this field.

The author covers the physics of radiation and its interaction with matter, x-ray apparatus, and the various elements that contribute to a satisfactory radiologic examination that will result in the maximum amount of information including both radiography and fluoroscopy. There is a discussion of all the newer and more sophisticated accessories used in image-intensification, cinefluorography, and photofluorography. There are particularly useful sections to help the radiologist understand the principles of operation and the characteristics of different types of fluoroscopic and intensifying screens, x-ray films, grids, and such, to help him make wise selections of such devices.

Although the author scientifically has been correct without compromise for the purpose of simplification, he has the knack of making the book quite readable to a person without extensive scientific training. The text is generously illustrated with well-chosen and useful photographs, drawings, tables, and graphs.—HANSON BLATZ

The Psychiatric Dilemma of Adolescence. By James F. Masterson, Jr., M.D. Octavo of 217 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $9.00.

In this book the author provides answers to the ever-perplexing problem of how to diagnose and manage the adolescent turmoil. He was supported in his research by various agencies.

The work was carried out at Cornell University Medical College by its staff of psychiatrists, social workers, and consultants. The research consisted of a longitudinal study of 101 outpatient adolescents. These were referred because of their problems by a school, the family, a doctor, other social agencies, or the courts. They were of at least average intelligence and did not have a long history of previous treatment. The subjects were seen by two psychiatrists and other members of the staff. The controls, also numbering 101, were selected at random from the same schools attended by the patients. They never had been seen hitherto for consultation or treatment by a psychologist, psychiatrist, or social worker.

There are sections relating to the problem and the approach; the diagnostic dilemma including discussions of schizophrenia, personality disorders, character neurosis, and epilepsy.

The author concludes that adolescent turmoil is not of significant moment in the onset, course, and end result, in the absence of previous evidence of psychiatric illness. One of the major problems is the difficulty in the diagnosis of the psychiatric illness. The psychiatric effects of adolescent turmoil are least on the previously healthy adolescent and most on those with personality disorders and schizophrenia. The latter require psychotherapy.

This book is well organized. There are case reports and an appendix including the clinical method of study and a bibliography. It would be of value for anyone concerned with the problems of adolescence.—STANLEY S. LAMM, M.D.

Infant Nutrition. By Samuel J. Fomon, M.D. Octavo of 299 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $10.50.

The author has seen fit to go to the trouble of writing this book because there are many unanswered questions concerning what constitutes optimum nutrition in infancy. In the more socially advanced nations the availability of milk, milk substitutes, vitamins, and commercially prepared ready-to-feed foods balances the scales toward overeating. Failure to thrive is more likely to be caused by temporary or long-lasting disease or psychologic disturbances connected with eating habits.

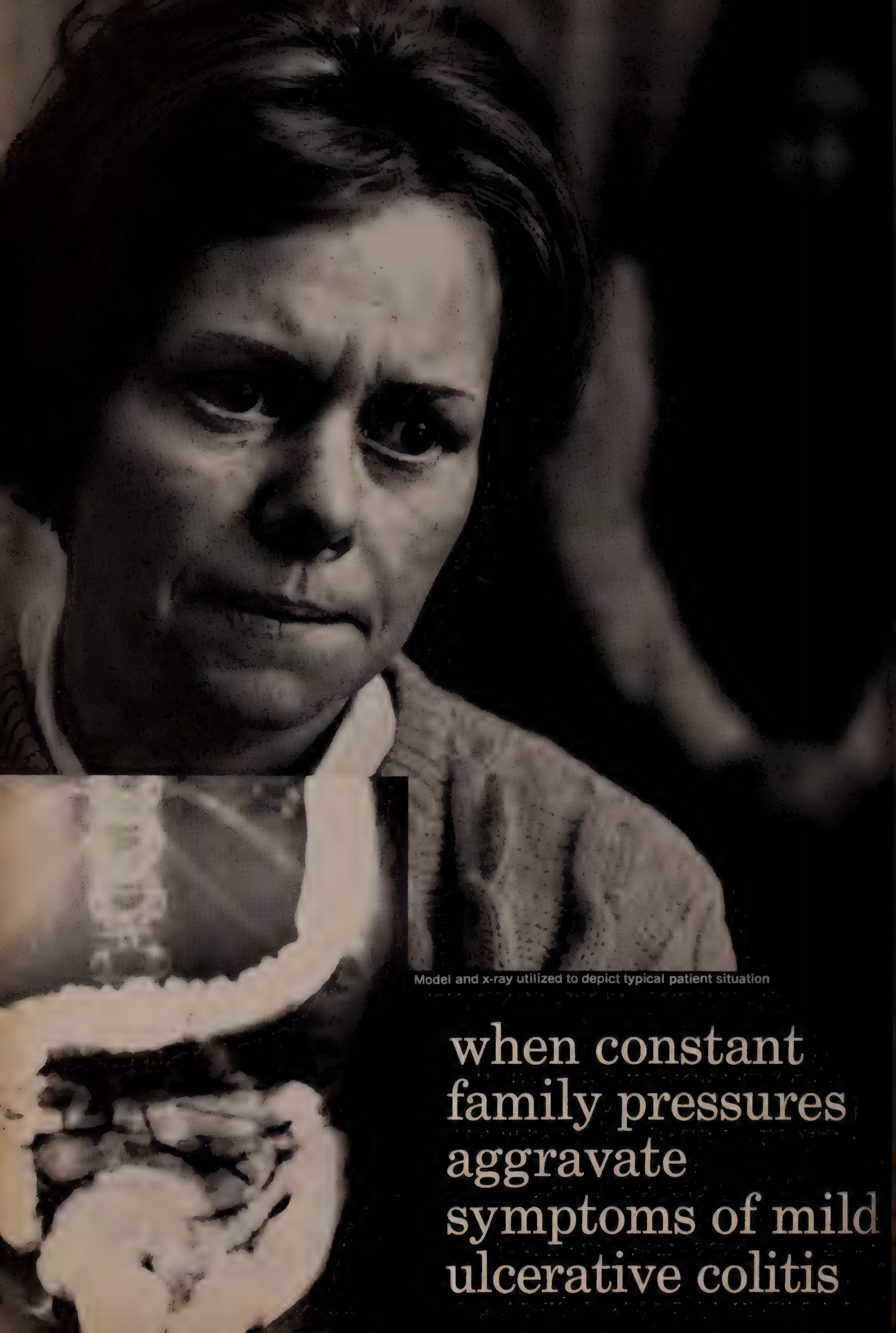
The large fund of proved nutritional knowledge provides the opportunity now for the medical and nutritional scientists to seek answers to more specific long term problems. Dr. Fomon mentions the following: Does the relatively large amount and the types of fat, other than human, and the excess of cholesterol fed during infancy play any part in adult arteriosclerosis? Does the high salt content of the infant diet have any relation to the hypertension of grownups? Does the habit of overfeeding in infancy and childhood set the pattern for obesity in later life? He points out many other equally important problems for solution.

In an interesting and scientific manner Dr. Fomon takes the reader through normal growth and failure to thrive, through recommended and advisable dietary allowances, through the knowledge of voluntary food intake and its regulation.

The elementary knowledge of human, cow milk, and milk substitute formulas are set forth and adequately discussed. Their advantages and disadvantages are assessed, both in routine feeding in health and their use in diseased states.

A wealth of figures and tables are provided to fortify and illustrate the opinions expressed. There is a short appendix portraying the type of metabolic equipment the author uses in his studies and a short treatise warning of the pitfalls of metabolic studies and their statistical usage.

Perusal of this book will greatly enhance a pediatrician's ability to better the nutritional care of his patients.—KENNETH G. JENNINGS, M.D.



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C. The Wrestler's Ear
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Program—Afternoon Session—2:00 p.m. Moderator, M. Laurens Rowe, M.D.,
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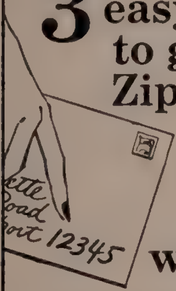

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References: 1. Selesnick, S. T., and Clemens, T. L.: From research film "Motion Picture Films in Psychosomatic Research," available from Roche Laboratories. **2.** Clemens, T. L., and Selesnick, S. T.: *Dis. Nerv. System, 28*:98, 1967.

Before prescribing, please consult complete product information, a summary of which follows:

Contraindications: Infants, patients with a history of convulsive disorders, glaucoma or known hypersensitivity to drug.

Warning: Not of value in the treatment of psychotic patients, and should not be employed in lieu of appropriate treatment.

Precautions: Limit dosage to smallest effective amount in elderly or debilitated patients (not more than 1 mg, one or two times daily initially) to preclude ataxia or oversedation, increasing gradually as needed or tolerated. As is true of all CNS-acting drugs, until correct maintenance dosage is established, advise patients against possibly hazardous procedures requiring complete mental alertness or physical coordination. Driving during therapy not recommended. In general, concurrent use with other psychotropic agents is not recommended. If such combination therapy is used, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium (diazepam), such as phenothiazines, barbiturates, MAO inhibitors and other antidepressants. Advise patients against simultaneous ingestion of alcohol or other CNS depressants. Safe use in pregnancy not established. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Periodic blood counts and liver function tests advisable in long-term use. Cease therapy gradually.

Side Effects: Side effects (usually dose-related) are fatigue, drowsiness and ataxia. Also reported: mild nausea, dizziness, blurred vision, diplopia, headache, incontinence, slurred speech, tremor and skin rash; paradoxical reactions (excitement, depression, stimulation, sleep disturbances, acute hyperexcited states, hallucinations); changes in EEG patterns during and after drug treatment. Abrupt cessation after prolonged overdosage may produce withdrawal symptoms (convulsions, tremor, abdominal and muscle cramps, vomiting, sweating) similar to those seen with barbiturates, meprobamate and chlordiazepoxide HCl.

Dosage—*Adults:* Mild to moderate psychoneurotic reactions, 2 to 5 mg b.i.d. or t.i.d.; severe psychoneurotic reactions, 5 to 10 mg t.i.d. or q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; muscle spasm with cerebral palsy or athetosis, 2 to 10 mg t.i.d. or q.i.d. *Geriatric patients:* 1 or 2 mg/day initially, increase gradually as needed and tolerated. (See *Precautions.*)

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Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.

Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment with Tofrānil. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy.

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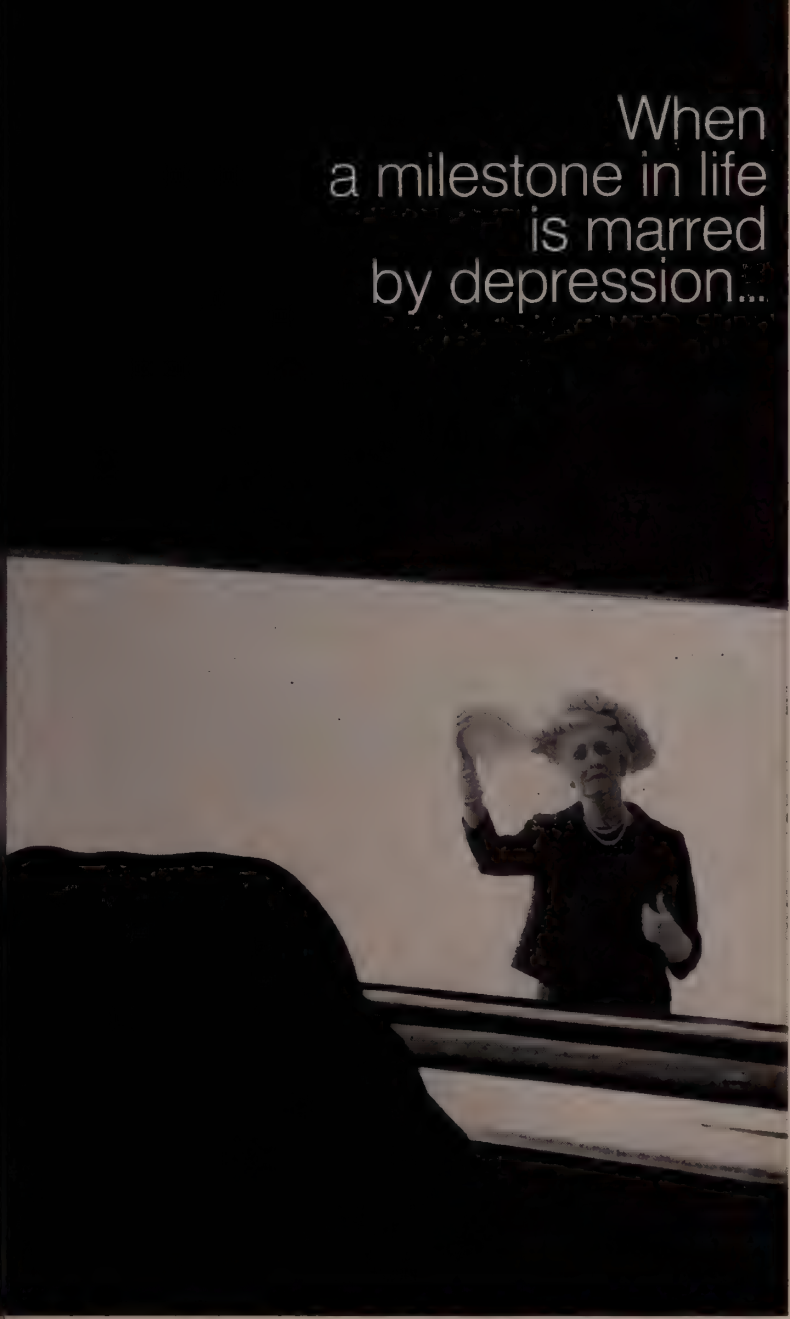

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ing hypomanic and manic episodes) which may require dosage reduction and/or addition of a tranquilizer or temporary discontinuation of the drug, epileptiform seizures, orthostatic hypotension and substantial blood pressure fall in hypertensive patients, purpura, transient jaundice, bone marrow depression including agranulocytosis, sensitization and skin rash including photosensitization, eosinophilia, and mild withdrawal symptoms on sudden discontinuation after prolonged treatment with high doses. Occasional hormonal effects (impotence, decreased libido, and estrogenic effects) may be observed. Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those using anticholinergic agents (including antiparkinsonism drugs).
Outpatient Adult Dosage: **Initially, 75 mg. daily, increased, if necessary, to 150 or 200 mg. Maintenance dosage may be lower, 50 to 150 mg. daily, if possible.**
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A lag in therapeutic response, lasting from a few days to a few weeks, should be expected. When dosage recommendations are already being followed, increasing the dosage does not normally shorten this latency period and may increase the incidence of adverse reactions.
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New York State Journal of Medicine

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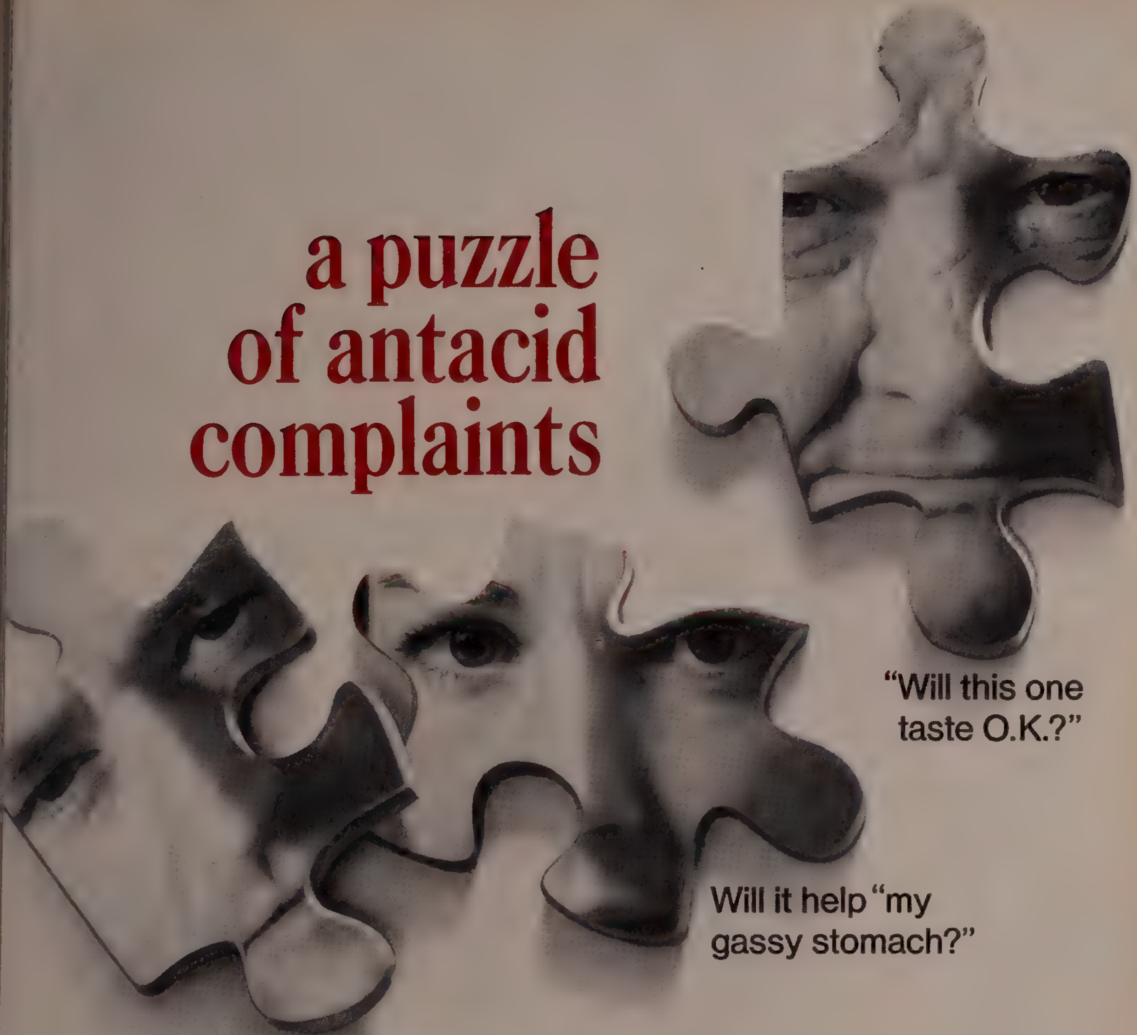
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References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

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Month in Washington

The National Advisory Commission on Health Manpower reported that the nation's health care system must be improved to assure that quality health care is available to all Americans at a reasonable cost. The 15-member Commission, in its report to President Johnson, urged a substantial expansion in the capacity of existing medical schools and continued development of new schools. At the same time, the advisory group said that "although the need for more physicians is urgent, the costs and dangers of a crash effort to increase production appear to outweigh the benefits."

The Commission, headed by J. Irwin Miller, chairman of the Cummins Engine Company, Columbus, Indiana, was set up in May, 1966, by President Johnson to recommend bold, imaginative ways to meet health manpower needs. Five physicians signed the report, including Dwight Wilbur, M.D., president-elect of the American Medical Association. The Commission members agreed that tackling the problem of manpower, alone, would not cure present ills.

". . . If additional personnel are employed in the present manner and within the present patterns and systems of care, they will not avert, or even perhaps alleviate, the crisis," the Commission said.

"Unless we improve the system through which health care is provided, care will continue to become less satisfactory, even though there are massive increases in costs and in numbers of health personnel."

The Commission's recommendations were accompanied by an assertion that government alone is not big enough to solve the problems of health care for the American people.

The American Medical Association's House of Delegates at its recent meeting in Houston, Texas, approved a report of the Board of Trustees on the Commission's report. The Board stated: "The 'Report of the National Advisory Commission on Health Manpower' reflects much of the serious attention given to the evolving needs of health care long recognized, studied, and implemented by the American Medical Association and other professional groups in the health fields.

"The House of Delegates and the Board of Trustees of the AMA have not had time to study the report carefully . . . . However, it appears to recognize the needs arising from the rapid growth of the public's desire for health care. This attitude is the result of increasing awareness of the great advances in medical science and technics, and of the prolongation of life for millions into middle and advanced ages . . . .

"The report will receive the intensive study of the various expert groups within AMA and reports on their recommendations will be issued as soon as they can be developed properly. There appear to be some areas in which modifications will be necessary to assure attaining the objectives sought for advancement of health care for all citizens."

The Commission's proposals included:

—Federal funds in support of capital or operating costs of education should be provided to a medical school in such a way that they create economic incentives for the school to expand enrollment while improving its quality.

—The Federal government should make available to any medical student loans to cover the full costs of tuition and living expenses during formal professional education. The student should be able to choose between repaying the loan from earnings over a period of years or giving two years of his time to approved national service apart from Selective Service obligations.

Dr. Wilbur commented on these two recommendations as follows: "I believe the principle is not sound and that the recommendations are impractical, unnecessary, will not serve the purposes intended, and will be largely unacceptable to most students."

—The Federal government should give high priority to the support, under university direction, of experimental programs which train and utilize new categories of health professionals.

—At a minimum, foreign-trained physicians who will have responsibility for patient care should pass tests equivalent to those for graduates of United States medical schools.

—The Selective Service Act should be amended to provide for the automatic transfer of the records of every draft-eligible health professional, on his graduation from professional school, from the local board of his original registration to the local board in whose jurisdiction he works and for subsequent transfer with each change in the location of his work.

—The Selective Service Act should be amended to provide equal draft-liability for United States and foreign medical graduates.

—Service with the U.S. Public Health Service should be phased out as a substitute for the military obligation of health professionals.

—The Department of Defense should be instructed to encourage the greater use of the Military Medicare Amendments of 1965 and should study the feasibility of utilizing volun-

continued on page 202

Prepared by the Washington, D.C., Office of the American Medical Association.

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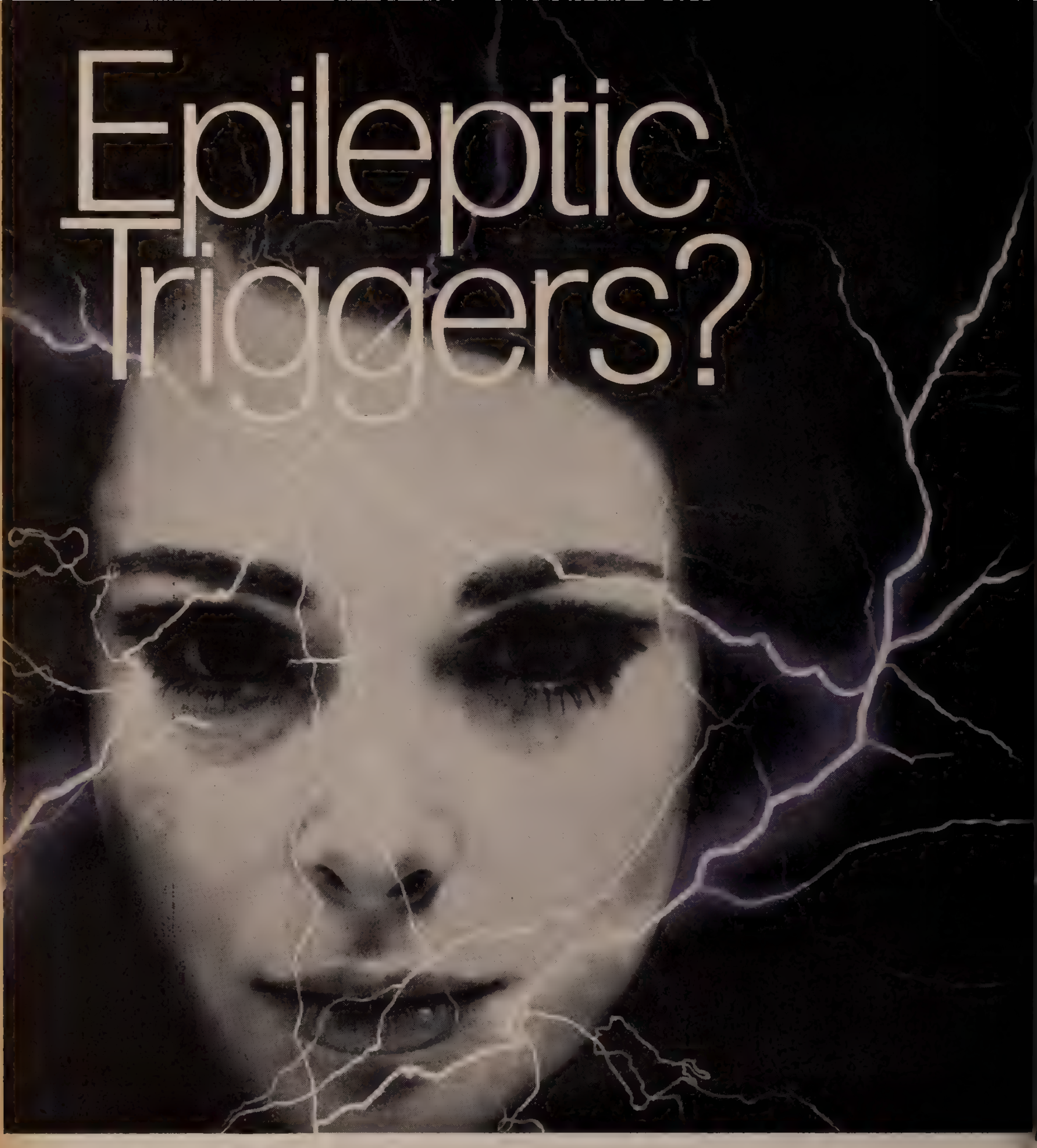
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ily, without the necessity of discon-
nuing therapy.

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MYSOLINE (Primidone) is available in the United States by arrangement with Imperial Chemical Industries Ltd.

helps put her out of range of epileptic triggers

When the agitated geriatric disrupts the home...

His teen-age granddaughter won't invite friends home because of his outbursts.

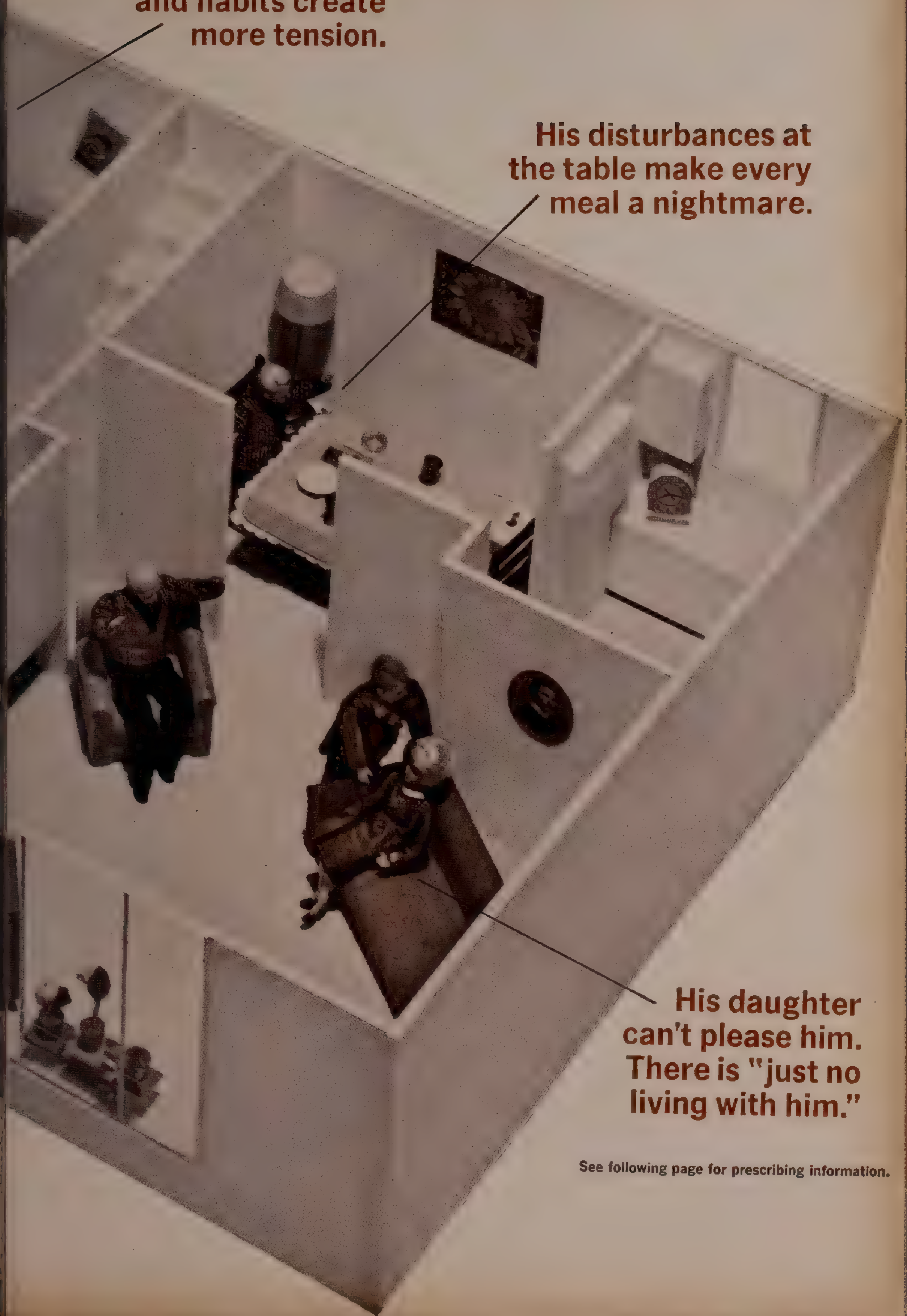
for moderate to severe anxiety

Mellaril®

(thioridazine)

25 mg. t.i.d.

SANDOZ



His slovenly room and habits create more tension.

His disturbances at the table make every meal a nightmare.

His daughter can't please him. There is "just no living with him."

See following page for prescribing information.

When the agitated geriatric disrupts the home...

Anxiety that *seriously interferes* with the individual's performance at work, at home, or in the community may be regarded as *moderate to severe* in degree.

Mellaril often recommends itself to treatment of moderate to severe anxiety because it

- helps control the most frequent symptoms: marked tension, agitation, apprehension, restlessness, hypermotility
- often alleviates anxiety-induced somatic complaints
- frequently helps strengthen emotional resources
- helps the patient maintain realistic contact with environment, closer harmony with family

Thus, when you consider the anxiety moderate to severe . . . consider Mellaril.

Contraindications: Severely depressed or comatose states from any cause, and in association with or following MAO inhibitors; severe hypertensive or hypotensive heart disease.

Precautions: Hypersensitivity reactions (e.g., leukopenia, agranulocytosis) and convulsive seizures are infrequent. Pigmentary retinopathy has been observed where doses in excess of those recommended were used for long periods of time. May potentiate central nervous system depressants, atropine, and phosphorus insecticides. Where complete mental alertness is required, administer the drug cautiously and increase dosage gradually. In addition, orthostatic hypotension (especially in female patients) has been observed. Epinephrine should be avoided in treatment of drug-induced hypotension.

Side Effects: Pseudoparkinsonism and other extrapyramidal disorders are infrequent; drowsiness, especially in high doses early in treatment, may occur; nocturnal confusion, dryness of the mouth, nasal stuffiness, headache, peripheral edema, lactation, galactorrhea, and inhibition of ejaculation are noted on occasion; photosensitivity and other allergic skin reactions may occur but are extremely rare.

Before prescribing, see package insert for full product information.

for moderate to severe anxiety
Mellaril®
(thioridazine)
25 mg. t.i.d.

SANDOZ

continued from page 196

tarily obtained health professionals in military facilities located in the United States.

—Nursing should be made a more attractive profession by such measures as appropriate utilization of nursing skills, increased levels of professional responsibilities, improved salaries, more flexible hours for married women, and better retirement provisions.

—Programs for health care of the disadvantaged should be given highest priority and made available wherever needed.

—Professional societies, universities, and state governments should undertake, with Federal support, studies on the development of guidelines for state licensure codes for health personnel.

—Professional societies and state governments should explore the possibility of periodic relicensing of physicians and other health professionals.

—Professional societies, health insurance organizations, and government should extend the development and effective use of a variety of peer review procedures in maintaining high quality health and medical care.

* * *

President Johnson signed a $281 million mental retardation bill with a statement that the nation still is not doing enough to solve the problem. He said that in dealing with the problem of mental retardation it was clearly the obligation of the nation to act. "We are not doing enough, we must do more, we are going to do more," Johnson said.

The bill strengthens Federal aid for the construction of new facilities for the mentally retarded.

He also signed a three-year $589-million extension of Federal aid for state public health programs. It provides for Federal licensing of clinical laboratories operating in interstate commerce unless they are run by pathologists, in which case the facilities would have to meet standards set by the American College of Pathologists or the American Hospital Association. Individual physicians operating laboratories for their own patients would not be affected by the new law.

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An uncommon steroid for common inflammatory dermatoses

In everyday topical steroid therapy, Synalar produces rapid resolution of inflammation and itching in steroid-responsive dermatoses—and at relatively low cost to the patient.

Advanced molecular design enhances potency

Synalar combines the advantage of earlier corticosteroid compounds with unique structural innovations. As a result, preparations of Synalar 0.01% and Synalar 0.025% have been reported to be more potent topically and significantly more effective than hydrocortisone 1.0%. The unique fluocinolone acetonide molecule provides one of the most useful topical corticosteroids for everyday practice.

Impressive clinical results in a wide range of dermatologic problems

The clinical efficacy of Synalar has been extensively documented in the world literature. Commonly encountered diseases such as allergic and contact dermatitis, eczematous and seborrheic dermatitis, and neurodermatitis respond rapidly to Synalar, often where previous therapy with other topical corticosteroids has failed.

Low patient cost for wider usefulness

With Synalar, a high degree of efficacy does not mean high price. And—a small quantity goes a long way. Thus, your patients can often obtain the "economy" of a hydrocortisone preparation with the proved efficacy of a potent, truly advanced steroid.

Synalar®
fluocinolone acetonide

Turn page for contraindications, precautions and side effects.

For everyday topical steroid therapy
Synalar® 0.01%
fluocinolone acetonide
provides economy in two practical dosage forms

For general use, the most economical and widely applicable concentration of Synalar is 0.01% Cream in a water-washable, vanishing cream base. Synalar Solution 0.01% is especially valuable in dermatoses involving moist, intertriginous areas or hairy sites where creams and ointments do not spread or penetrate readily. Synalar Solution is a unique dosage form—clear, nongreasy, cosmetically elegant.

Product Information

Contraindications: Tuberculous, fungal, and most viral lesions of the skin (including herpes simplex, vaccinia, and varicella). Not for ophthalmic use. Contraindicated in individuals with a history of hypersensitivity to any of the components. *Precautions:* Synalar preparations are virtually nonsensitizing and nonirritating. However, the solution may produce burning or stinging when applied to denuded or fissured areas. In some patients with dry lesions, the solution may increase dryness, scaling or itching. Where severe local infection or systemic infection exists, the use of systemic antibiotics should be considered, based on susceptibility testing. While topical steroids have not been reported to have an adverse effect on pregnancy, the safety of their use on pregnant females has not absolutely been established. Therefore, they should not be used extensively on pregnant patients, in large amounts, or for prolonged periods of time. *Side Effects:* Side effects are uncommon with topical corticosteroids. As with all drugs, however, a few patients may react unfavorably to Synalar under certain conditions. In such cases the agent should be discontinued and appropriate measures taken. *Availability:* Synalar (fluocinolone acetonide) Cream 0.025%—5, 15 and 60 Gm. tubes and 425 Gm. jars. Cream 0.01%—15, 45 and 60 Gm. tubes and 120 Gm. jars. Solution 0.01%—20 and 60 cc. plastic squeeze bottles. Ointment 0.025%—15 and 60 Gm. tubes. Neo-Synalar® (neomycin sulfate 0.5% [0.35% neomycin base], fluocinolone acetonide 0.025%) Cream – 5, 15 and 60 Gm. tubes.

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[FLUOCINOLONE ACETONIDE]
CREAM
SYNT
LABORATORI
Palo Alto,
U.S.A.
120 Gm.
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
CREAM
SYNTEX
20 cc
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
SOLUTION
15 Gm.
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
CREAM
SYNTEX
LABORATORIES INC.
Palo Alto, Calif.

When the talk turns to oral contraceptives, it makes medical sense to remember low-dose Norinyl®-1.

(norethindrone 1mg. c̄ mestranol 0.05mg.)

Turn page for contraindications, precautions and side effects.

Reduction of oral contraceptive dosage to the lowest effective levels is a well-accepted principle of conservative medical practice. In keeping with this view, Norinyl is now also available as Norinyl-1, containing exactly one half the previous dosage of norethindrone and mestranol. Clinical experience has established that effective fertility control can be achieved with the same degree of reliability and safety with new Norinyl-1 when taken as directed.

What about switching patients from higher dosage forms?

In transferring patients to low-dose Norinyl-1 from higher-dosage oral contraceptives, some breakthrough bleeding may occur in the early cycles. In the majority of cases the bleeding episode is mild and self-limited. The long-term advantages of the lower dosage form should be weighed against the inconvenience of possible breakthrough bleeding in the individual patient.

Prescribing Information

Contraindications: Patients with any symptoms or history of thrombophlebitis, pulmonary embolism, liver dysfunction or disease, carcinoma of breast or genital organs, or undiagnosed vaginal bleeding.

Warnings: Discontinue medication pending examination if there is sudden partial or complete loss of vision, proptosis, diplopia or migraine. If examination reveals papilledema or retinal vascular lesions, medication should be withdrawn. The safety of Norinyl-1 in pregnancy has not been demonstrated. If a patient misses two consecutive periods, pregnancy should be ruled out before continuing the medication. If she has not adhered to the prescribed schedule, pregnancy should be considered at the first missed period. Active ingredients of oral contraceptives have been detected in the milk of mothers who received these drugs; the significance to infants has not been determined.

Precautions: Pretreatment physical should include examination of the breasts and pelvic organs, as well as a Papanicolaou smear. If endocrine or liver function tests are abnormal during therapy, repeat tests are recommended after the drug has been withdrawn for two months. Following administration of drug, preexisting uterine fibromyomata may increase in size. Careful observation and caution are required for patients with symptoms or history of epilepsy, migraine, asthma, cardiac or renal dysfunction, cerebrovascular accident, psychic depression, and diabetes. In cases of undiagnosed vaginal bleeding, adequate diagnostic measures are indicated. Possible long-term effects of the drug on pituitary, ovarian, adrenal, hepatic or uterine function must await further studies. The physician should be alert to the earliest manifestations of thrombophlebitis and pulmonary embolism. The drug should be used judiciously in those young patients in whom bone growth is not complete. The age of the patient constitutes no absolute limiting factor, although treatment with Norinyl-1 may mask symptoms of the climacteric. The pathologist should be advised of Norinyl-1 therapy when relevant specimens are submitted.

Side Effects: The following have been observed with varying incidence in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms, breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement and secretion), change in weight (increase or decrease), changes in cervical erosion and cervical secretions, suppression of lactation when given immediately postpartum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals, mental depression. Although the following side effects have been reported in users of oral contraceptives, no cause and effect relationship has been established: anovulation posttreatment, premenstruallike syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption, and itching. The following occurrences have been observed in users of oral contraceptives (a cause and effect relationship has neither been established nor disproved): thrombophlebitis, pulmonary embolism, neuroocular lesions.

The following laboratory tests may be altered by the use of oral contraceptives: increased sulfobromophthalein and other hepatic function tests, coagulation tests (increase in prothrombin, factors VII, VIII, IX and X), thyroid function (increase in PBI and butanol extractable protein-bound iodine and decrease in T^3 values), metyrapone test, pregnanediol determination.

norethindrone — an original steroid from

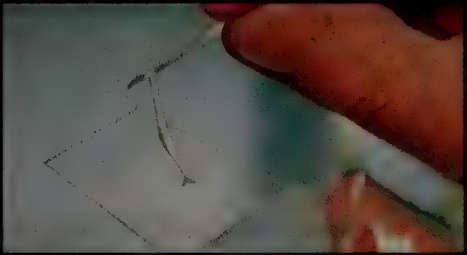
SYNTEX

LABORATORIES INC., PALO ALTO, CALIF.

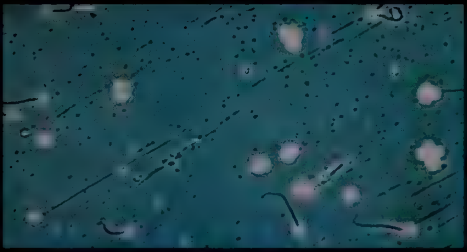
Here's why Norinyl-1 makes medical sense.

The effectiveness of Norinyl-1 as a low-dose oral contraceptive may be explained by its possible multiple action. In addition to its primary action of suppression of ovulation, Norinyl-1 may offer additional protective mechanisms... (1) creation of a cervical mucus that may be hostile to sperm penetration, and (2) development of an endometrium that may be out of phase with nidation. These effects are illustrated below.

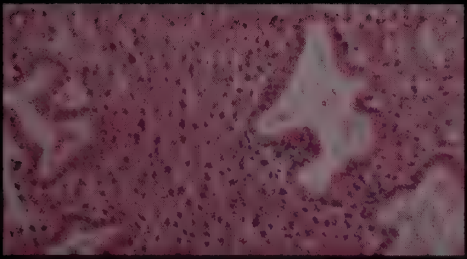
Untreated Patient



Cervical mucus at midcycle is usually thin and watery, with Spinnbarkeit (stretchability) of 15 to 20 cm.

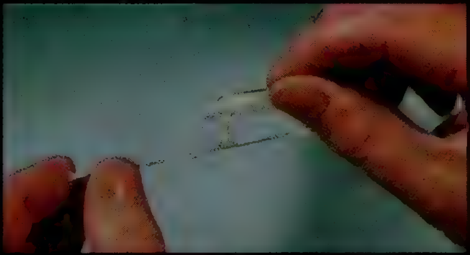


Spermatozoa appear healthy, active, freemoving.

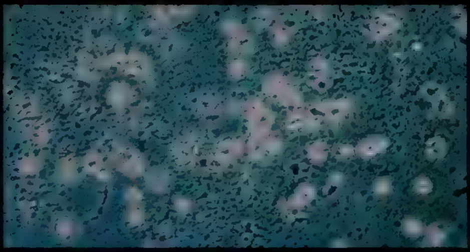


Endometrium of untreated patient is receptive to the fertilized ovum during secretory phase.

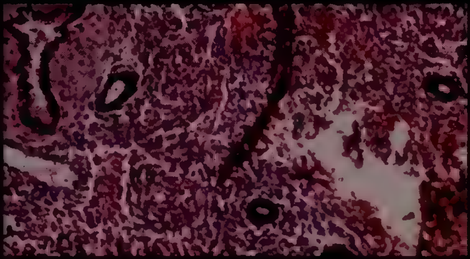
Norinyl-1 Patient



Cervical mucus at midcycle is scanty, viscous—with Spinnbarkeit of 1 cm. or less.



Immobile spermatozoa as they appear in cervical mucus taken from patient treated with Norinyl-1.



Norethindrone in Norinyl-1 accelerates secretory phase, suppresses glandular and vascular development.

Norinyl®-1 tablets
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- new low dose of time-proved ingredients
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- lower patient cost

Medical Meetings

Internists to hold regional meeting

The American College of Physicians will hold its scientific regional meeting for specialists in internal medicine in Downstate Districts I and II on January 16 and 17 at the Biltmore Hotel, New York City.

The Tuesday morning program will include a panel discussion on "The Hyperlipidemias: Differential Diagnosis, Mechanisms, and Plans of Management," by E. H. Ahrens, Jr., M.D., Laboratory of Lipid Metabolism, The Rockefeller University, which will be followed by brief clinical presentations. The luncheon speaker will be John Z. Bowers, M.D., president, The Josiah Macy, Jr. Foundation, who will speak on "Minority Groups in Medicine Today." The afternoon session will feature the A.C P. regional meeting lecture on "Hypertension of Adrenal Origin" by John H. Laragh, M.D., professor of clinical medicine, Columbia University College of Physicians and Surgeons.

The Wednesday morning program will feature the following A.C.P. regional meeting lectures: "Mechanisms by Which Some Hemoglobinopathies Produce Their Effects," C. Lockard Conley, M.D., professor of medicine, Johns Hopkins University School of Medicine; and "Viruses and Cancer," Frank L. Horsfall, Jr., M.D., president and director, Sloan-Kettering Institute for Cancer Research. Following this, the New York State Society of Internal Medicine will hold a luncheon which will feature, as guest speaker, Francis L. Land, M.D., commissioner of medical services administration, U.S. Department of Health, Education, and Welfare, who will report on "Medicaid–1968."

For further information and advance registration contact: William Grace, M.D., governor, New York Downstate I, 153 West 11th Street, New York, New York, or Julius E. Stolfi, M.D., governor, New York Downstate II, 116 79th Street, Brooklyn, New York 11209.

Medical practice topic of lecture

Nobel laureate Frederick C. Robbins, M.D., dean of the Western Reserve University School of Medicine, will give the second Harold Jacobziner Memorial Lecture at 4:00 P.M. on February 13, in Alumni Hall of the New York University School of Medicine, 550 First Avenue, New York City. Dr. Robbins will discuss "The Intellectual Challenge of Medical Practice."

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Cardiologists to meet in San Francisco

The American College of Cardiology will hold its seventeenth annual scientific session February 28 through March 3 at the San Francisco Hilton Hotel, in San Francisco. The program will feature progress reports on the current frontier efforts of heart specialists, such as development of the artificial heart and the use of homograft valves to repair heart defects, and discussions by experts on day-to-day heart disease management problems faced by the doctor and his patients, which will include topics such as sudden deaths in babies and the choice of drugs for different kinds of heart ailments.

Eye and Ear Infirmary to hold clinical conference

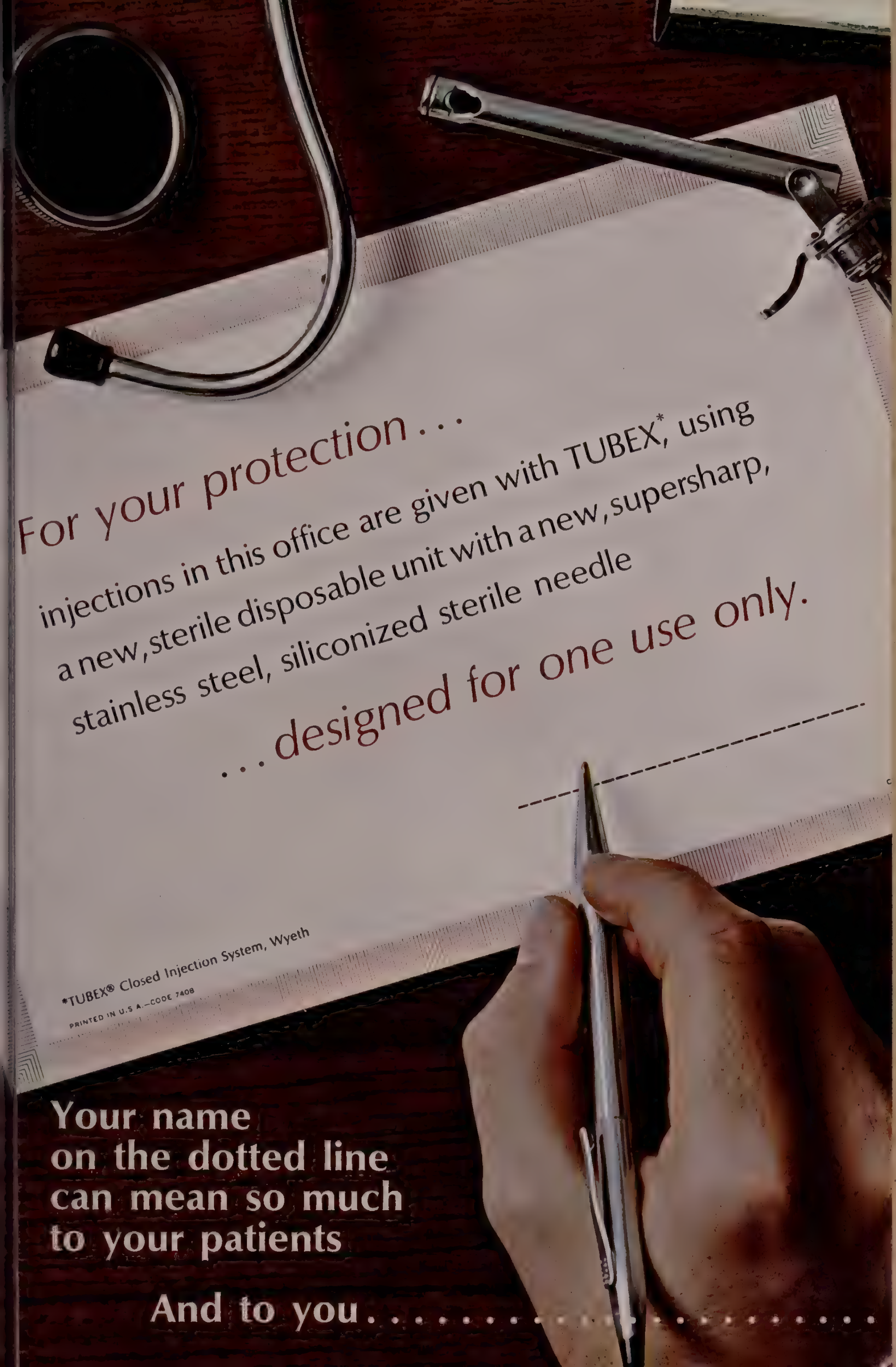
The forty-first clinical conference in ophthalmology and otolaryngology, sponsored by the Alumni Association of The New York Eye and Ear Infirmary, is to be held on April 1 and 2 at the Biltmore Hotel in New York City.

The ophthalmology program will include the discussion of new and controversial methods of cataract extraction, and papers on diabetes, muscle surgery, glaucoma, ocular trauma, aphakic detachment, and war injuries. The otolaryngology program will feature the following guest speakers: Howard House, M.D., John Lindsay, M.D., J. H. T. Rambo, M.D., John Cinelli, M.D., John Daly, M.D., and Maurice Miller, PhD.

Registration fee is $20 which includes luncheon. For reservations and further information contact: Jane Stark, registrar, Alumni Association, The New York Eye and Ear Infirmary, 218 Second Avenue, New York, New York 10003.

Columbia offers course in head and neck surgery

Columbia University announces a course in head and neck surgery to be given April 22 through 27. Instructor for the course will be John Conley, M.D., clinical professor of otolaryngology. Registration fee is $300, and the course is limited to 15. For further information contact: Melvin D. Yahr, M.D., assistant dean, Columbia University College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032.



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Medical Communications Day

FRIDAY
February 16, 1968

THE AMERICANA
New York City

sponsored by

NEW YORK STATE JOURNAL OF MEDICINE
Official publication
Medical Society of the State of New York

and

AMERICAN MEDICAL WRITERS' ASSOCIATION
Metropolitan New York Chapter

Morning Session

VALENTINO D. B. MAZZIA, M.D., Pelham, New York, *Presiding*
Professor and Chairman, Department of Anesthesiology, New York University School of Medicine; Member, Editorial Council, *New York State Journal of Medicine*

9:00 A.M. Registration, *Royal Ballroom Foyer, second floor*

9:30 A.M. Welcome, *Royal Ballroom A, second floor*
WILLIAM HAMMOND, M.D., Scarsdale, New York
Editor, *New York State Journal of Medicine*

PANEL: ETHICS IN MEDICAL RESEARCH AND REPORTING
VALENTINO D. B. MAZZIA, M.D., *Moderator*

1. **The Clinical Investigator: The Middle Man or the Man in the Middle**
   DAVID M. ENGELHART, M.D., Brooklyn, New York
   Professor of Psychiatry, Downstate Medical Center, State University of New York

2. **Ethics and the Design and Reporting of Multi-Clinic Trials of New Drugs**
   IRWIN C. WINTER, PH.D., M.D., Chicago, Illinois
   Vice-President of Medical Affairs, G. D. Searle & Co.

3. **The Square Root of Information**
   EARL UBELL, New York City
   Science Editor, WCBS-TV

4. **Between Sensation and Silence—The Peril of Press Relations in Science**
   JOHN E. FLETCHER, Rahway, New Jersey
   Director of Public Relations, Merck & Co., Inc.

Panel Discussion

12:00 NOON Reception, *Royal Ballroom B, second floor*
(Courtesy Hoffmann-La Roche, Nutley, New Jersey)

12:30 P.M. Luncheon, *Royal Ballroom B, second floor*

Presiding:
WILLIAM HAMMOND, M.D., Scarsdale, New York
Editor, *New York State Journal of Medicine*
M. J. SCHIFFRIN, Ph.D., Nutley, New Jersey
Director, Drug Regulatory Affairs, Hoffmann-LaRoche, Inc.; President, Metropolitan New York Chapter, American Medical Writers' Association

continued on page 220

Symposium on

MEDICAL ASPECTS OF SPORTS

Sponsored by the

Medical Society of the State of New York
Committee on Medical Aspects of Sports

Saturday, February 10, 1968 **9:00 a.m. to 5:00 p.m.**

Imperial Ballroom, Americana Hotel, New York City

Registration—8:30 a.m.

Program—Morning Session—9:00 a.m. Moderator, Alexius Rachun, M.D.
Cornell University, Chairman, Scientific Program

A. Long Range Effects of Trauma in Athletes
B. Heat Exhaustion
C. The Wrestler's Ear
D. The Cleatless Heel
E. When Is an Accident not an Accident?

Luncheon—12:30 p.m.—Guest Speaker: Mr. Tom Cahill,
Coach, *United States Military Academy, West Point*

Program—Afternoon Session—2:00 p.m. Moderator, M. Laurens Rowe, M.D.,
University of Rochester

F. Anatomy with Reference to the Mechanics of Injury
G. Significance of Data and History
H. Proper Physical Examination and Demonstration Movie
I. Absolute and Relative Indications of Surgery

Send reservation form to:

Ralph S. Emerson, M.D., *Chairman*
Committee on the Medical Aspects of Sports
Medical Society of the State of New York
750 Third Ave., New York, N.Y. 10017

I will ☐ attend the Symposium I will ☐ will not ☐ attend the luncheon

Please send_____tickets for the luncheon at $5.00 per person.

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Make check payable to: Medical Society of the State of New York.

162nd ANNUAL CONVENTION

MEDICAL SOCIETY of the STATE OF NEW YORK

February 11-15, 1968 ***Americana of New York*** **New York City**

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Arrive: Date...........AT............A.M. P.M.

(Reservations held only until 6:00 PM unless later arrival is indicated)

Probable Departure Date ....

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☐ $21.00	☐ $22.00	☐ $23.00	☐ $25.00

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TWIN-BEDDED ROOM FOR TWO

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☐ $24.00	☐ $26.00	☐ $28.00	☐ $30.00

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☐ $22.00	☐ $23.00	☐ $24.00

STUDIO ROOM FOR TWO

☐ $25.00	☐ $26.00	☐ $28.00	☐ $30.00

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☐ $45.00	☐ $49.00	☐ $55.00 & UP

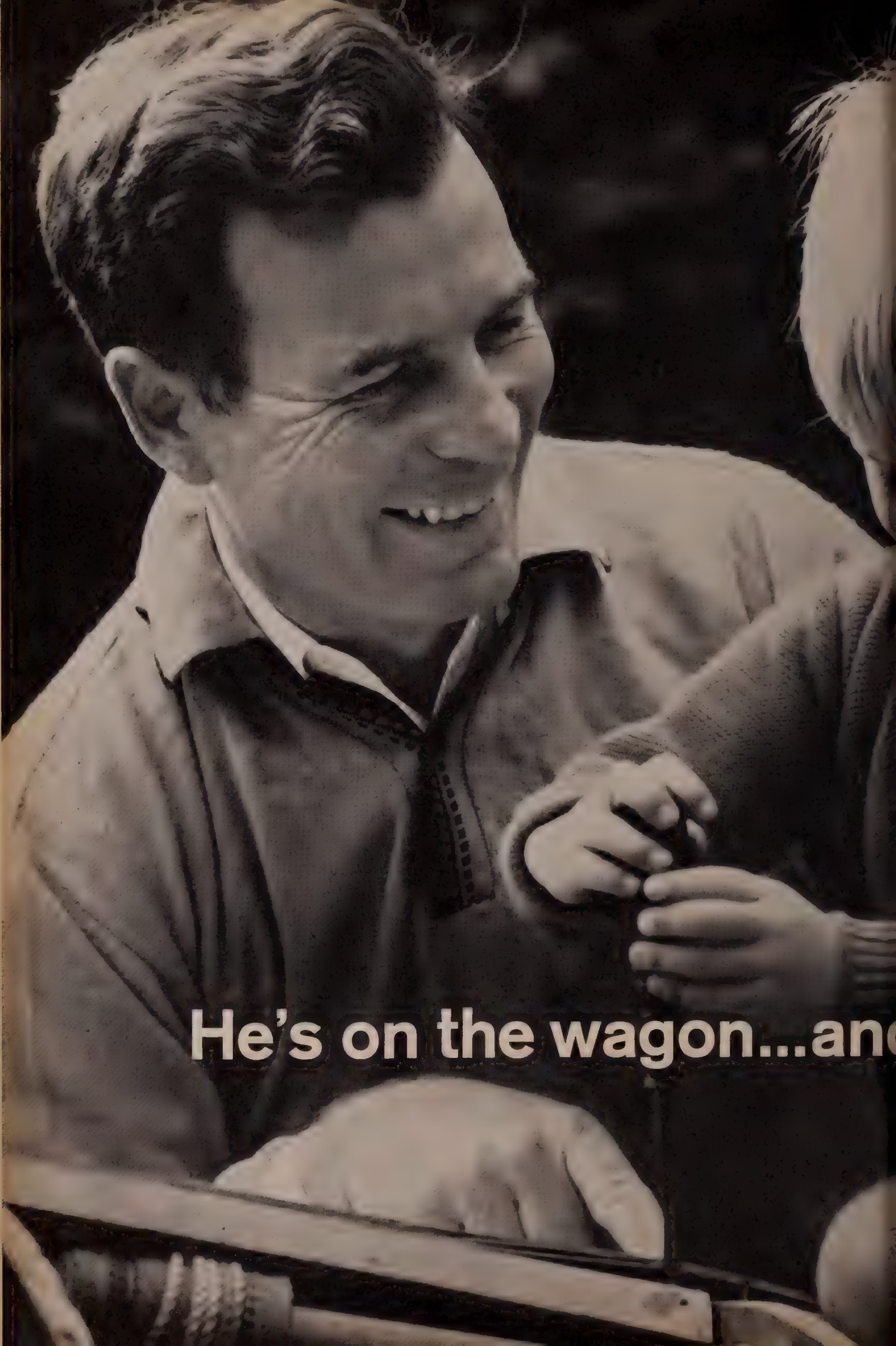
PARLOR AND TWO BEDROOMS

☐ $68.00	☐ $74.00	☐ $80.00 & UP

NOTE: If a room at the rate requested is not available, reservation will be made at the nearest rate possible.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

February 11-15, 1968


He's on the wagon...an

How well does Vistaril relieve the symptoms that plague an alcoholic during the recovery period? Doctors Knott and Beard of the Alcoholic Rehabilitation Unit, Tennessee Psychiatric Hospital and Institute, recently conducted a double-blind study comparing Vistaril and another well-established antianxiety agent with placebo in 60 chronic alcoholic patients.[1]

The investigators conclude: "It was the opinion of the staff that hydroxyzine was generally more effective than chlordiazepoxide, for the following reasons: hydroxyzine was equally if not more effective in reducing anxiety and tension and it produced less daytime sedation...."[1] (See results on succeeding pages.)

Here is new evidence that Vistaril can ease tension, allay anxiety in chronic, hospitalized alcoholic patients. *But you might also choose Vistaril for what it doesn't do.* Although not evaluated in this study, Vistaril is reported to be non-euphoriant, and its low toxicity makes it relatively safe. Best of all, Vistaril is non-habituating. To date, after more than ten years of clinical use, there have been no reports of dependency in patients receiving Vistaril.

With Vistaril, it is as easy to stop therapy as it is to start.

Vistaril®

(HYDROXYZINE PAMOATE)

PLEASE SEE LAST PAGE FOR PRESCRIBING INFORMATION

the study:[1] Sixty chronic alcoholic patients were hospitalized and randomly assigned to one of three oral double-blind treatment regimens for three weeks. Twenty patients received hydroxyzine (Vistaril®), 100 mg. q.i.d.; twenty others were given chlordiazepoxide, 25 mg. q.i.d.; and the remaining twenty received placebo capsules q.i.d. The capsule code was not made known until after completion of the study and analysis of the data. Response was measured with a modification of the Brief Psychiatric Rating Scale as originally outlined by Overall and Gorham.* Subjects were rated daily by trained staff members.

SYMPTOM RATING KEY

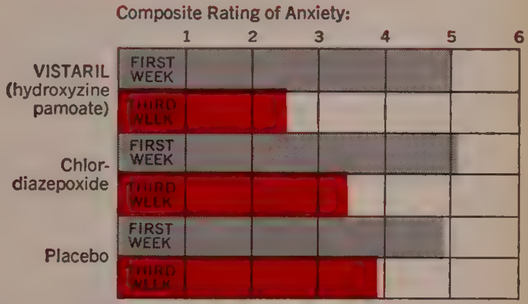
1=Not Present	4=Moderately Severe
2=Mild	5=Severe
3=Moderate	6=Extremely Severe

The figures which are given below represent the composite conclusions of the staff based on daily ratings during initial and final weeks of the study.

*Psychological Reports 10:799, 1962

the results[1] ▨ DURING FIRST WEEK 🟥 DURING THIRD WEEK

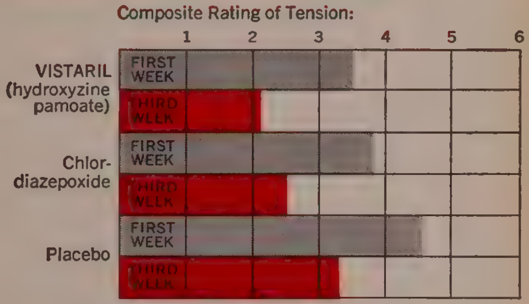
Anxiety reduced with Vistaril



OVERALL REDUCTION OF ANXIETY (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
50%	33%	20%

Tension eased with Vistaril



OVERALL REDUCTION OF TENSION (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
40%	34%	27%

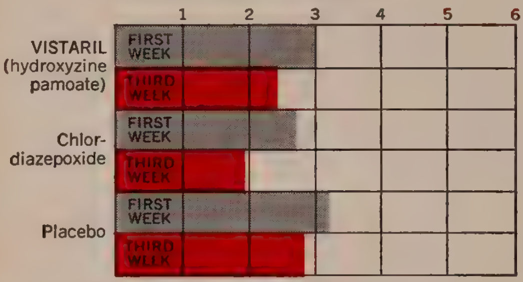
In Alcoholism...

"Both hydroxyzine and chlordiazepoxide were generally more effective than the placebo. In some aspects, hydroxyzine was superior to chlordiazepoxide, which is currently the most frequently used psychotropic drug in the management of alcoholism."[1]

▨ DURING FIRST WEEK 🟥 DURING THIRD WEEK

Depressive mood improved with chlordiazepoxide

Composite Rating of Depression:

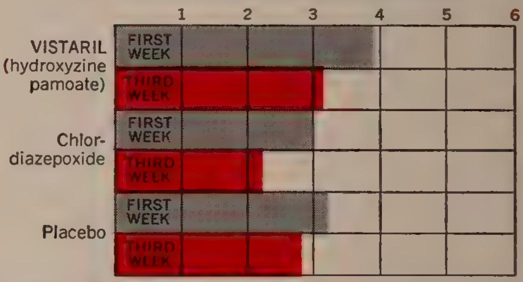


OVERALL IMPROVEMENT IN DEPRESSIVE MOOD (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
20%	30%	13%

Emotional withdrawal counter-acted with chlordiazepoxide

Composite Rating of Emotional Withdrawal:

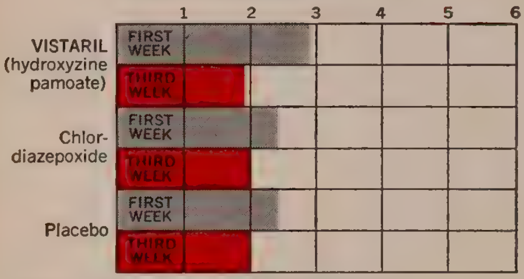


OVERALL IMPROVEMENT IN EMOTIONAL WITHDRAWAL (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
21%	27%	13%

Guilt feelings allayed with Vistaril

Composite Rating of Guilt Feelings:

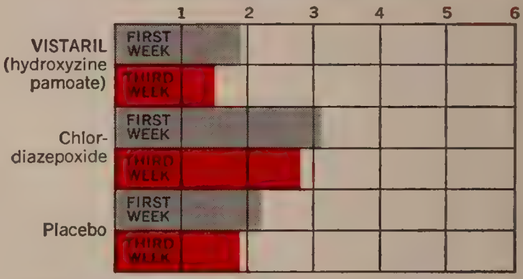


OVERALL DECREASE IN GUILT FEELINGS (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
34%	17%	17%

Somatic concern alleviated to minor degree in each group

Composite Rating of Somatic Concern:



OVERALL ALLEVIATION OF SOMATIC CONCERN (%)

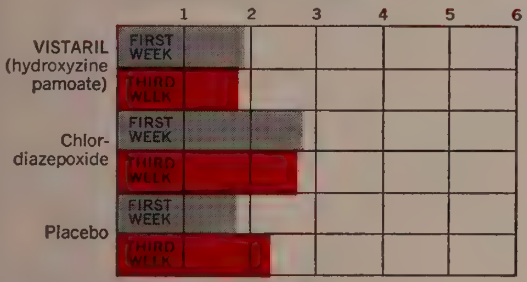
VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
17%	13%	14%

Less drowsiness with Vistaril

	Drowsiness	Dizziness	Mouth Dryness	Increased Motor Activity	Ataxia	Nausea	Comments
VISTARIL (hydroxyzine pamoate)	6 patients (mild)	3 patients (mild)	2 patients (moderate)	—	—	—	Side Effects Not Treated
Chlor-diazepoxide	10 patients (severe in 6)	4 patients (mild)	—	1 patient (moderately severe in first week but gradually subsided)	—	—	Side Effects Not Treated
Placebo	2 patients (mild)	2 patients (mild)	—	—	1 patient (mild)	2 patients (mild)	Side Effects Not Treated

Increase in hostility minimized with Vistaril and chlordiazepoxide

Composite Rating of Hostility:

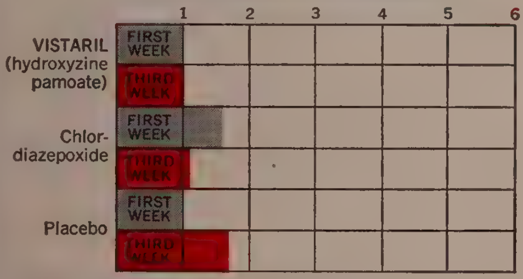


OVERALL CHANGE IN HOSTILITY (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
5%	4%	−28%

Cooperativeness not a significant problem

Composite Rating of Uncooperativeness:



OVERALL CHANGES IN COOPERATIVENESS (%)

VISTARIL (hydroxyzine pamoate)	Chlordiazepoxide	Placebo
No change	31%	−70%

In Alcoholism...

Vistaril®

(HYDROXYZINE PAMOATE)

BRIEF SUMMARY

Contraindications: Hypersensitivity to hydroxyzine. The parenteral solution, for intramuscular or intravenous use, *must not* be injected subcutaneously or intra-arterially.

Hydroxyzine, when administered to the pregnant mouse, rat, and rabbit induced fetal abnormalities in the rat at doses substantially above the human therapeutic range. Clinical data in human beings are inadequate. Until adequate data are available to establish safety in early pregnancy, hydroxyzine is contraindicated during this period.

Precautions: Hydroxyzine may potentiate the action of central nervous system depressants such as narcotics and barbiturates. In conjunctive use, dosage for these drugs should be decreased, as much as 50%. Because drowsiness may occur, patients should be cautioned against driving a car or operating dangerous machinery. The usual precautions for intramuscular injection should be followed; soft-tissue reactions have rarely been reported when proper technique has been used. Hydroxyzine parenteral solution for intramuscular use should be injected well within the body of a relatively large muscle. In adults, the preferred sites are the upper outer quadrant of the buttock (i.e., gluteus maximus), or the mid-lateral thigh. In children, preferably the mid-lateral muscle of the thigh. In infants and small children the upper outer quadrant of the gluteal region should only be used when necessary, as in burn patients, in order to minimize the possibility of damage to the sciatic nerve. The deltoid area should be used only if well developed, such as in certain adults and older children, and only with caution to avoid radial nerve injury. Injections should not be made in the lower and middle thirds of the upper arm. Aspiration should be done to help avoid intravascular injection. On reported intravenous injection a few instances of digital gangrene have occurred distal to the injection site, considered to be due to inadvertent intra-arterial injection or possibly periarterial extravasation. Therefore, particular caution (aspiration and site injection) should be observed to insure injection only into intact veins; avoid either intra-arterial injection or extravasation. Intravenous administration should be accomplished slowly, no faster than 25 mg. per minute, and not to exceed 100 mg. in any single dose. In order to avoid possible adverse effects it is recommended that hydroxyzine parenteral solution be diluted to at least 50 cc. with sterile normal saline and administered over a period of four minutes or more, preferably into the tubing of a running intravenous infusion.

Adverse Reactions: Drowsiness may occur; if so, it is usually transitory and may disappear in a few days of continued therapy or upon dosage reduction. Dryness of the mouth may occur with higher doses. Involuntary motor activity, including rare instances of tremor and convulsions, has been reported, usually with higher than recommended dosage.

When this product is given intravenously undiluted, minimal amounts of intravascular hemolysis occur at the site of injection. Giving the maximum recommended intravenous dose (100 mg.) to adults results in immediate transient hemolysis with the liberation of a total of 2-3 grams of hemoglobin, which, in some individuals, can cause small amounts of hemoglobinuria. This compares with the normal red cell destruction from which approximately 8 Gm. of hemoglobin are liberated every 24 hours. If the hydroxyzine is diluted with 50 cc. of normal saline and given during a period of four minutes or more, this phenomenon does not occur.

Supply: Vistaril (hydroxyzine pamoate) Capsules: Equivalent to 25 mg., 50 mg., 100 mg. hydroxyzine HCl. Vistaril (hydroxyzine pamoate) Oral Suspension: Equivalent to 25 mg. hydroxyzine HCl per 5 cc. teaspoonful. Vistaril (hydroxyzine HCl) Parenteral Solution: 25 mg./cc.—10 cc. vial and 50 mg./cc.—2 cc. and 10 cc. vial; Isoject,® 25 and 50 mg. per cc., 1 cc. per unit.

More detailed professional information available on request.

Reference: 1. Knott, D.H. and Beard, J.D.: GP 36:118, September, 1967.

Pfizer **LABORATORIES DIVISION**
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continued from page 213

ADDRESS: The Impact of Mass Media on Health Sciences
MARTIN TOLCHIN, New York City
Reporter, *The New York Times*

Afternoon Session

EDWARD VAN VLAANDEREN, New York City, *Presiding*
Senior Account Executive, National Communication Associates, Inc.

2:30 P.M. **PANEL: ETHICS IN MEDICAL COMMUNICATIONS**
M. J. SCHIFFRIN, PH.D., *Moderator*

1. **Ethics, Law, and Regulations in Medical Promotion and Advertising**
    ROBERT OPPENHEIMER, Pearl River, New York
    Assistant Advertising Manager, Lederle Laboratories
    CORTEZ F. ENLOE, M.D., Washington, D.C.
    Pharmaceutical Industry Consultant
    RAYMOND D. MCMURRAY, Esq., New York City
    Partner, McLean, Morton and Boustead
2. **Ethics, Freedom, and Responsibility in Medical Publishing**
    WALTER MODELL, M.D., New York City
    Professor of Pharmacology, Cornell University Medical College; Editor, *Clinical Pharmacology and Therapeutics*
    JULIUS HAUSER, Washington, D.C.
    Assistant for Regulations, Office of the Associate Commissioner for Compliance, Food and Drug Administration
    WILLIAM HAMMOND, M.D., Scarsdale, New York
    Editor, *New York State Journal of Medicine*

Panel Discussion

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*Medovy, Harry: *Canad. M.A.J.* 90:1354, June 13, 1964.

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Medical News

Arthritis Foundation announces deadline for Cecil Award entries

Entries for the 1967 Russell L. Cecil Arthritis Writing Awards, sponsored by the Arthritis Foundation, for the outstanding news stories, articles, and television and radio scripts on the subject of arthritis must be submitted by January 31, 1968.

The number of awards and the total in honoraria have been increased over those offered in prior years. Three awards, of $500, $200, and $100, will be given in each of three media categories, newspaper, magazine, and broadcast writing. All entries must have been published or broadcast in media available to the public during the year ending December 31, 1967.

Entry blanks and rules governing the competition may be obtained from The Arthritis Foundation, 1212 Avenue of the Americas, New York, New York 10036, or from any of the 79 foundation chapters located in major cities throughout the country.

Clinical Center studies malignant lymphoma

A study of lymphosarcoma and reticulum cell sarcoma in children and young adults is being conducted by the medicine branch of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Referring physicians must submit slides of pathologic material for review before patients can be accepted. Of particular interest are those patients with clinical and histologic features similar to the malignant lymphoma of African children (Burkitt tumor). These patients generally present symptoms of jaw, ovarian, or abdominal masses. The purpose of this study is to conduct immunologic, virologic, pathologic, and chemotherapeutic studies.

Physicians who wish to have their patients considered for the study may write or telephone: Paul P. Carbone, M.D., The Clinical Center, National Institutes of Health, Building 10, Room 12–N–226, Bethesda, Maryland 20014. The telephone number is 656–4000, Ext. 64251, area code 301.

Volunteer physicians in Viet Nam under AMA program

Adib Karam, M.D., Ithaca, and Albert Lesser, M.D., Garden City, are in South Viet Nam for two months, serving the civilian population under the American Medical Association Volunteer Physicians for Viet Nam. The program, administered by the American Medical Association and financed by the United States Agency for International Development, supplies medical care to the civilian population of South Viet Nam.

Physicians sent to South Viet Nam under the program serve a sixty-day tour of duty at one of 18 provincial civilian hospitals. The volunteer receives only his transportation and an expense allowance of $10 a day; otherwise his services are entirely unpaid.

Twenty-four to 32 physicians are needed every sixty days to keep hospital staffs at full strength. Most needed are general practitioners, internists, general surgeons, and orthopedic surgeons.

Information about the program may be obtained by writing: AMA Volunteer Physicians for Viet Nam, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

Personalities

Appointed. As members of a newly formed commission to stimulate interest in health careers among the State's youth: G. Alexander Galvin, M.D., Ithaca; Norman Moore, M.D., New York City; and Mrs. James A. Moore, Albany, president of the Woman's Auxiliary to the Medical Society of the State of New York . . . John D. Porterfield, M.D., as chairman of a committee on tuberculosis of the New York City Health Services Administration . . .Erwin Lear, M.D., New York City, as chairman of the Department of Anesthesiology of the Catholic Medical Center of Brooklyn and Queens . . . John B. Wright, M.D., of Canada, as assistant commissioner for mental health in the State Department of Mental Hygiene.

Installed. As officers of the New York State Society of Industrial Medicine Inc. at its annual scientific meeting and dinner in New York City: George S. Craft, M.D., New York City, president; Thomas G. Rigney, M.D., Beacon, vice-president; Charles P. Giel, M.D., New York City, secretary-treasurer; and Frederick W. Holcomb, Jr., M.D., Kingston, and Thomas J. Doyle, M.D., New York City, as directors.

Awarded. The Medal of the American Cancer Society to Frank S. Butler, M.D., of Garden City.

Honored. George G. Deaver, M.D., New York City, by the presentation of his portrait on the occasion of his retirement from The Institute for the Crippled and Disabled, New York City.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic?)

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Book Notes

A Modern Pilgrim's Progress with Further Revelations for Diabetics. By Garfield G. Duncan, M.D. Second edition. Duodecimo of 227 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $3.75.

This book is primarily for those who have diabetes and for their relatives to give them a broader understanding of diabetes and to qualify them to be better able to follow the guidance of their family doctors. It is, secondarily, for the physician who will find many pointers on the approach to and the management of his diabetic patients. The text is presented in narrative form and tells the story of a fictitiously-named female diabetic. Not only are personal experiences with diabetes presented but also observations of many diabetic individuals seen in the home, the clinic, the physician's office, the hospital, and even in the children's camp. In this way a composite picture of diabetes and diabetics is given. An appendix permits the inclusion of a great amount of detailed instruction on diabetic self-care and a glossary defines unfamiliar words found in the story.

The Principles and Practice of Medicine. By Sir Stanley Davidson, M.D. Eighth edition. Octavo of 1,342 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1966. Cloth, $11.25.

The first edition of this popular textbook was published in 1952. Since then it has gone through eight editions and seven large reprints. In this new edition the policy which proved so successful in the past has been continued. That is, no attempt has been made to describe every rare disease or syndrome but most of the space is devoted to those disorders mostly encountered in medical practice. The rarer diseases included and the amount of space devoted to them is based principally on their cultural interest or their educational value as examples of applied anatomy or physiology. Each section has been carefully revised and the one on diabetes mellitus has been largely rewritten. Two new chapters have been added: "Genetics in Relation to Medicine" and "Acute Poisoning." Also, new colored plates have been added.

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A code of conduct worth knowing

The Pharmaceutical Manufacturers Association, a nonprofit professional and trade organization representing the responsible companies that produce more than 95 per cent of the drugs for prescription use in this country, has adopted a revision of its 1958 statement of principles in regard to Fair Practice in the promotion of their products.

The code consists of a definition of terms, six clear-cut directives, and a final section dealing with the administration of the code and punitive measures for enforcing the code among its members.

The code is based on the sense of responsibility the industry has long held and is not so much new as it is current. It meets the challenges of quality and competition.

We print this declaration so that the prescribers of drugs promoted by members of the Pharmaceutical Manufacturers Association may know the rigid rules that govern this activity.

> Recognizing the importance to the public health of providing the medical profession with accurate information on drug products, and the need to assure that PMA members, their employees and agents present such information fairly and objectively.
>
> The Pharmaceutical Manufacturers Association hereby promulgates and adopts the following Code of Fair Practices in the Promotion of Drug Products as a revision of its 1958 Statement of Principles on the same subject:
>
> A. Code Standards
>
> 1. As used in this Code:
>
> (a) The term "drug product" means any pharmaceutical or biological product intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in humans, or to affect the structure or any function of the human body, which is promoted and advertised to the medical profession rather than directly to the lay public.
>
> (b) The term "promotional communications" means (1) journal advertising, mailing pieces, and similar written materials (including, to the extent reasonably practicable, films, exhibits and similar visual presentations) directed to members of the medical profession by the pharmaceutical industry for the purpose of promoting a drug product and (2) written instructions and materials prepared for sales or professional representatives containing representations to be made by them to members of the medical profession. Where compliance with the requirements of this Code is not reasonably practicable within the format of a film, exhibit or similar visual presentations, written materials meeting those requirements shall be distributed to all members of the medical profession attending the presentation.
>
> (c) The term "medical profession" includes allied professions in the health field.
>
> 2. Complete and accurate information concerning marketed drug products should be made available promptly to the medical profession. Promotional communications to the medical profession which include a description of indicated uses or dosage recommendations for a prescription drug product should also include a summary (or full disclosure where required by law) of side effects, precautions, warnings and contraindications, and of effectiveness for the described indicated uses. Such summary should have sufficient prominence in terms of type size, location and similar factors to provide reasonable assurance that it will be observed.
>
> 3. Statements in promotional communications should be based upon substantial scientific evidence or other responsible medical opinion. Claims should not be stronger than such evidence warrants. Every effort should be

made to avoid ambiguity. Whenever statistical or background information or references to unpublished literature or observations are used in promotional communications, the source material should be available to the medical profession upon request.

4. Statements with respect to or quotations from medical literature or from the personal communications of clinical investigators in promotional communications should not distort the intended meaning of the author or the significance of the study.

5. Any comparison with other drug products should be made upon a valid scientific basis.

6. No public communication by a manufacturer shall be made with the intent of promoting a drug product as safe and effective for any use before the required approval of the drug product for marketing for such use is obtained. However, this provision is not intended to abridge the right of the scientific community and the public to be fully informed concerning scientific and medical progress. Thus it is not intended to restrict a full and proper exchange of scientific information concerning a drug product, including appropriate dissemination of investigational findings in scientific or lay communications media, nor to restrict public disclosure to stockholders and others concerning any drug product as may be required or desirable under law, rule or regulation.

7. Promotional communications should have medical clearance before their release.

B. Code Administration

It is the unqualified intent of the Association that each member shall follow strictly the principles set forth in the Code. To that end the members of the PMA are encouraged to submit information to the President with respect to any alleged breach of this Code by any other member. On the basis of such information and any other information available to him, the President shall take appropriate action including, if required, referral of the information to an ad hoc committee of the Board. The committee shall be chosen by the Chairman of the Board unless the member company represented by the Chairman has submitted such information or is the subject of such information, in which case the President shall make the appointments. The General Counsel of the Association shall act as secretary of each ad hoc committee and shall report the committee's findings to the President who in turn will refer the findings to the Board of Directors.

Any member firm which clearly and persistently violates the Code may be asked by the Board of Directors to resign from the Association.

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February 11 through 15, 1968

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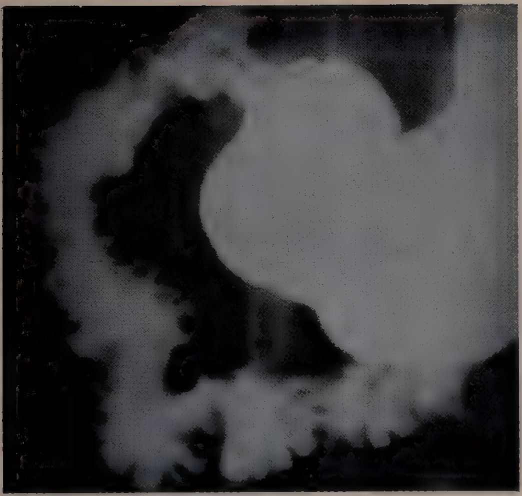

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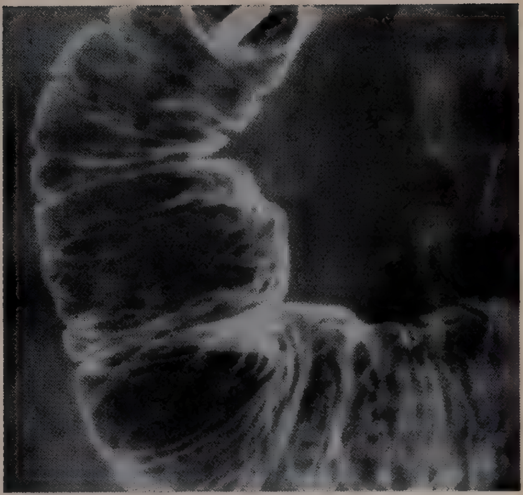
The restless duodenum makes radiographic diagnosis difficult, uncertain and often unproductive: Is this duodenum abnormal?



Hypotonic Duodenography
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calms the gastrointestinal tract

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How the X-rays were taken
In the hypotonic duodenograph[1,2] reproduced above, the gastrointestinal tract was relaxed with Pro-Banthīne. The duodenum was intubated. Pro-Banthīne in a dose of 60 mg. intramuscularly was used to assure prompt aperistalsis and double-contrast visualization was achieved with ordinary barium and air.

The same pharmacologic efficiency has proved of pronounced value in such conditions as: *peptic ulcer, pylorospasm, biliary dyskinesia, functional hypermotility and irritable colon.*

Contraindications: Glaucoma; severe cardiac disease.

Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

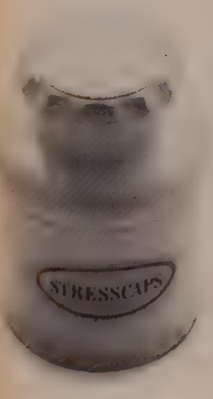
Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most *adult* patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthīne (brand of propantheline bromide) is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology, 89:438-443 (Sept.) 1967.

SEARLE *Research in the Service of Medicine*



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Scientific Articles

SYMPOSIUM

Modern Aspects of Therapy of Hypertension

Chairman
ROBERT L. WOLF, M.D., New York City, Department of Medicine, Circulatory Physiology Laboratory and Hypertension Clinic, Mount Sinai School of Medicine and The Mount Sinai Hospital

Introduction

ROBERT L. WOLF, M.D.
New York City

THE THIRD INTERNATIONAL Pharmacological Congress, under the auspices of the International Union of Pharmacology, was convened in Sao Paulo, Brazil, from July 24 to 30, 1966, with Prof. M. Rocha e Silva as the chairman of the local organizing committee. During this meeting a round-table discussion entitled "Modern Aspects of Therapy of Hypertension" was held. Many international investigators in hypertensive disease attended this meeting and presented manuscripts at the round-table discussion.

Reports

Julius Axelrod, M.D., described the effects of cardiovascular drugs on the disposition of norepinephrine in the heart. His experiments indicate that many drugs produce their effects on the blood pressure by influencing the uptake, storage, release, or metabolism of cardiac norepinephrine. Many drugs (sympathomimetic amines, cocaine) prevent uptake of norepinephrine and thereby enhance its physiologic actions. Other sympathomimetic amines (amphetamine, tyramine) increase the blood pressure by releasing norepinephrine from the sympathetic nerve endings. Still other sympathomimetic amines (octopamine, metaraminol) are accumulated in the storage vesicles and are subsequently released in place of norepinephrine. These false neurotransmitter compounds, which have less pressor activity than norepinephrine, produce a hypotensive effect when discharged from their vesicles. A portion of the hypotensive activity of monoamine oxidase inhibitors is produced by the accumulation of endogenous octopamine in the nerve storage granules. Alpha-methyldopa is an example of a hypotensive agent which is metabolized to a false neurotransmitter in the body. The storage of norepinephrine in the vesicles is in-

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Presented at the Third International Pharmacologic Congress under the auspices of the International Union of Pharmacology, Sao Paulo, Brazil, July 24 to 30, 1966.

hibited by reserpine. Guanethidine depletes the norepinephrine in the intraneuronal storage granules and also prevents release of the neurotransmitter, norepinephrine.

J. Roblero, M.D.'s manuscript, presented by Hector Croxatto, M.D., was addressed to the subject of vasoactive substances formed in blood serum by incubation at 37 C. at normal pH. These observers describe two zones of pressor activity designated "peak_1" and "peak_2," consisting of nondialyzable proteins, separated by gel filtration from the incubate of human dog and rat serum at 37 C. at normal pH. Although substance "peak_1" produces a rise in the blood pressure of the nephrectomized hypotensive rat, it reduces the blood pressure of the normal rat, in contrast to substance "peak_2." Reaction of substance "peak_1" and substance "peak_2" with various enzymes produces characteristic changes in their pressor activity which are due to the release of dialyzable peptides. One active dialyzable peptide from substance "peak_1" has bradykinin-like activity, and the active peptide from substance "peak_2" has anephrotensin-like activity. These studies emphasize the participation of the kidneys in the endogenous degradation of the blood proteins.

John H. Moyer, M.D., discussed recent aspects of therapy of hypertension. He emphasized the progress in the treatment of hypertension that has occurred in the past five to ten years. New drugs, with a minimum of side-effects, effectively reduce the blood pressure of hypertensive patients and have largely replaced the drastic measures of extensive sympathectomy and the rice diet. The thiazide and phthalimidine diuretics are frequently effective therapeutic drugs which reduce the blood pressure of patients with mildly elevated blood pressures. The addition of Rauwolfia compounds, which act synergistically with the oral diuretics, further reduces the blood pressure in patients with mild hypertension which was not accomplished by the use of the oral diuretics alone. Guanethidine monosulfate, the most powerful of the recently introduced hypotensive agents, has an antihypertensive effect approximately equal to that of the ganglionic blocking agents with the distinct advantage that side-effects are milder. This drug is indicated for the treatment of patients with moderate or severe hypertension. Alphamethyldopa is a useful agent for the treatment of moderate hypertension. It also has few side-effects and may help to maintain renal blood flow. Blood pressure reduction should be accomplished gradually in patients with severe hypertension and azotemia. The flexibility of individual dosage adjustment of oral hypotensive agents is a virtue of the drug treatment of hypertension.

Experimental hypertension, the effect of neuroleptic and antihypertensive drugs, and the effect of chlorprothixene in the treatment of catecholamine-secreting tumors was discussed by Aimo Pekkarinen, M.D. Experimental hypertension may be produced in rats by the daily administration of epinephrine, norepinephrine, or hydrocortisone combined with salt. The hypertension produced in rats by the continuous administration of oral nicotine may be partially inhibited by certain neuroleptic, thymoleptic, and antihypertensive drugs. Many of these neuroleptic and thymoleptic drugs are also effective inhibitors of the increased urinary epinephrine excretion produced by insulin shock in rats. Guanethidine and alpha methyldopa do not inhibit this effect, and reserpine only partially inhibits this effect. This inhibition of increased urinary epinephrine excretion in rats is partially dependent on the inhibition of the decrease in blood sugar. Chlorprothixene treatment was moderately successful in controlling the paroxysmal blood pressure elevations in one patient with a catecholamine-secreting tumor but was ineffective in the treatment of another patient with a malignant pheochromocytoma and metastasis.

Edward D. Freis, M.D., outlined diuretic therapy in the modern treatment of hypertension. The antihypertensive effects of oral diuretic treatment are associated with a reduction in body sodium. The blood pressure reduction is associated initially with a decrease in plasma and extracellular fluid volumes. The mechanism of action of the oral diuretics is unknown since, following long-term administration of these drugs, the plasma volume and extracellular fluid volume turn to normal values while the blood pressure remains lowered. Hypokalemia and hyperuricemia are the most frequent side-effects of oral thiazide antihypertensive therapy. Spironolactone or triamterene may control the hypokalemia. Probenecid or allopurinol may reduce the hyperuricemia. Although the oral thiazide diuretics may be effective when administered alone, their greatest usefulness in the treatment of hypertensive disease is in enhancing the hypotensive effectiveness of other blood pressure-lowering drugs.

Treating hypertension with drugs was discussed by A. E. Doyle, M.D. The results of treating hypertension in 200 patients indicate that antihypertensive therapy virtually eliminates heart failure as a cause of death. The most frequent causes of death in treated hypertensive patients are associated vascular disease and renal failure. The thiazide diuretics, reserpine and alpha-methyldopa, are effective in controlling the hypertensive disease of approximately 70 per cent of patients with hypertension. The remainder of the hypertensive population require, in addition, either guanethidine monosulfate or ganglionic blocking drugs. The side-effects of the various antihypertensive drugs include hyperuricemia, gout, and hypokalemia with the thiazide diuretics; depression with reserpine; diarrhea and postural hypotension with guanethidine monosulfate; and signs and symptoms due to parasympathetic ganglionic blockade with the ganglionic blocking drugs.

Adriano Marino, M.D., discussed psychopharmacotherapy in the treatment of essential hypertension. He noted that the use of psychotropic drugs may be valuable in the management of essential hypertension and other "psychogenic" cardiovascular diseases. He emphasized that "psycho drugs" together with "petite psychothérapie" should be used in the treatment of essential hypertension.

C. Heymans, M.D., as presented by D. Schaepdryver, M.D., discussed baroreceptors and hypertension. It was emphasized that experimental observations indicate that systemic blood pressure is regulated by the reflex action of baroreceptors located mainly in the aortic and carotid sinus areas. These baroreceptors provide homeostatic regulation of the blood pressure. The baroreceptors sense differences in stretch in the blood vessel walls produced by the arterial blood pressure. Clinical and experimental hypertension are associated with a resetting of the homeostatic baroreceptor mechanism to a level higher than normal.

Comment

The reports presented emphasize the many clinical and experimental approaches that are being used throughout the world for the treatment of hypertension. They also stress that rational treatment of hypertensive disease is based on a rational understanding of the pathogenesis and etiology of hypertensive disease. It is almost axiomatic that fit and proper therapy of a disease is dependent on a respectable understanding of the cause of the disease.

100TH STREET AND FIFTH AVENUE

Vasoactive Substances Formed in Blood Serum By Incubation*

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ACIDIFICATION (pH 3.8) and incubation at 37 C. of sera of different species for several hours (from twenty-four to one hundred) bring about the formation of dialyzable vasoactive peptides. From the serum of dogs nephrectomized from forty-eight to seventy-two hours before bleeding, four active peptide fractions were separated, two having angiotensin-like activity and two plasmakinins: bradykinin and kallidin.[1] In the sera used as controls, whose

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Presented at the Third International Pharmacologic Congress under the auspices of the International Union of Pharmacology, Sao Paulo, Brazil, July 24 to 30, 1966.

* This research was supported partially by the Research Office of the U.S. Army.

pH was not modified and which were kept in the incubator for the same time under similar conditions to the acidified serum, the evidence was obtained that at normal pH, changes also take place giving rise to vasoactive substances which accumulate progressively.

The substance formed during incubation at normal pH would be different from anephrotensin, angiotensin, and plasmakinins.[2,3] Moreover in samples of sera taken from nephrectomized dogs and rats, from twenty to forty-eight hours after the operation, the yield of vasoactive substance is significantly decreased.[3]

Studies were undertaken, to establish the chemical nature of the active substances formed during incubation at normal pH and the conditions required for a better yield.

Material and methods

Sera from human beings and from normal **and** nephrectomized dogs and rats were **used**. Blood from mammals was collected in siliconized syringes and glassware. Immediately after thirty-minute centrifugation in a refrigerated apparatus, the serum was placed in siliconized stoppered flasks and kept in an incubator at 37 C. Only serum completely free from the cellular elements of the blood was used. In some experiments sterilized material was employed and a few drops of toluene were added to the serum to prevent infection. During incubation, samples of sera were taken every five to ten hours to measure the formation rate of the vasopressor activity. Samples of serum (0.1 to 0.2 ml.) were injected intravenously in rats nephrectomized from fifteen to eighteen hours before the experiment. The rats were anesthetized either with pentobarbital (Nembutal) sodium or with a mixture of dial-urethane: 10 Gm. diallylbarbituric acid, 40 Gm. urethane, 40 Gm. monoethylurea, and water to 100 ml. The latter solution in a dose of 0.1 ml. per 100 Gm. of body weight produces in the nephrectomized rat a persistent lowering of the blood pressure which increases the sensitivity of the animal to the vasopressor effect of the incubated serum. Valyl-5 angiotensin II was used as a standard.

PURIFICATION PROCEDURES: GEL FILTRATION. A column of 100-cm. length and 5-cm. diameter was packed with 85 Gm. of cross-linked dextran (Sephadex G-100) and 40 ml. of serum were introduced in the top. Either distilled water or 0.05 M., pH 6 of ammonium acetate was used as a solvent. The flow rate was adjusted to 160 drops per tube. The effluent solution in each tube of the fraction collector was tested in two biologic preparations: (1) rat blood pressure, injecting 0.1 to 0.2 ml. by intravenous route; (2) on isolated uterus submerged in a small bath (20 ml. capacity) containing Tyrode's solution at 37 C. through which a constant bubbling of air was maintained. The solutions containing active fractions were separately lyophilized and their biologic activity per milligram measured. Furthermore the effect of proteolytic enzymes on these fractions was investigated.

EFFECT OF PROTEOLYTIC ENZYMES. For 100 mg. of substrate the following amounts of enzymes were employed: pepsin* 0.5 mg. (3 times crystallized), chymotrypsin* 1 mg. (2 times crystallized), trypsin* 1 mg. (3 times crystallized), and 10 micrograms of a special enzyme preparation of carboxypeptidase B* diisopropyl fluorophosphate treated. The assays were carried out at pH 7.4 except in the case of pepsin, where the pH was adjusted to 2.5. The mixtures were incubated at 37 C. for from five to sixty minutes. Solutions containing the substrate with no enzyme at the same pH were used as controls. The biologic activities of the different solutions were tested at different intervals using the aforementioned biologic preparations. Furthermore the effect of these substrate enzyme mixtures were assayed also on isolated rat duodenum prepared under identical conditions as described for isolated uterus.

The split products liberated by proteolytic enzymes were separated by dialysis for twenty hours against distilled water using cellophane tubes. Both the inside and outside solutions were assayed on the blood pressure of intact as well as nephrectomized hypotensive rats and on smooth muscles of isolated rat uterus and duodenum.

ELECTROPHORESIS. Samples of serum (6 lambdas) before, during, and at the end

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* Enzymes obtained from Worthington Biochemical Corporation, Freehold, New Jersey.

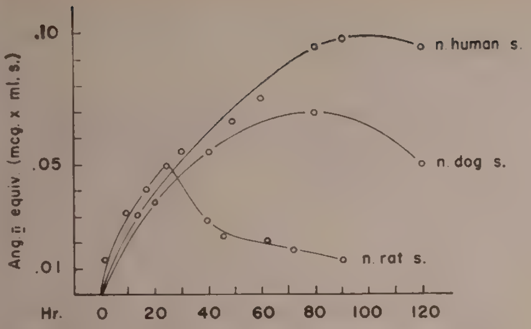

FIGURE 1. Rate of pressor activity formation from human, normal dog, and rat sera, incubated at neutral pH. Activity per milliliter of serum expressed in micrograms of valyl-5 angiotensin II.

of the incubation period were applied on paper strips (Whatman 1). Electrophoresis was performed in a Beckman Spinco apparatus at 75 volts for sixteen hours in barbital (Veronal) buffer at pH 8.6. At the end of the operation the paper strips were dried in an oven for thirty minutes at 120 C., and the proteins were stained with bromophenol blue, dissolved in methanol, washed three times with acetic acid (5 per cent), and finally fixed with a solution containing 10 Gm. of acetic acid and 2 Gm. of sodium acetate per 100 ml. of water. The electrophoresis changes were analyzed with a densitometer.

Results

The time required to attain the maximum vasopressor activity with the incubated serum varies according to species differences: it was eighty hours for man and dog sera and thirty hours for rat serum (Figs. 1 and 2).

If incubation is prolonged, the vasopressor activity after reaching the optimum decreases slowly in man and dog sera but rapidly in rat serum (Fig. 1). Human serum is the most active on blood pressure. In most of the experiments at the end of eighty hours of incubation the vasopressor activity of 0.1 ml. of the human serum corresponds to 0.01 micrograms of valyl-5 angiotensin II (Fig. 1). In one experiment the activity of a human serum was approximately equivalent to 0.015 micrograms. Constantly, with the different sera studied, a vasopressor effect was obtained in the intact rat with normal blood pressure, anesthetized with pentobarbital sodium, but less intense than that observed in the nephrectomized hypotensive rat. The rise in blood pressure is not due to an increase of the heart rate; electrographic recording shows no significant changes in the heart frequency after injection. Adrenalectomy prior to injection neither prevents nor reduces the hypertensive reaction, which excludes a discharge of catecholamines from adrenal gland as a responsible factor. No tachyphylaxis was observed.

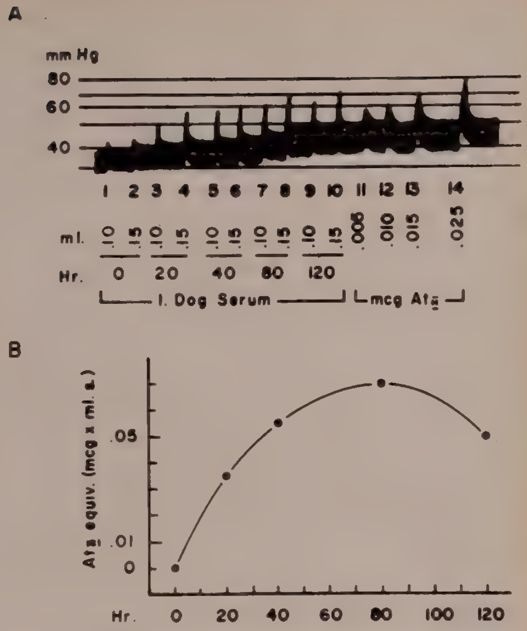

FIGURE 2. (A) Vasopressor effects on nephrectomized hypertensive rat of 0.1 and 0.15 ml. of samples of normal dog serum incubated for twenty, forty, eighty, and one-hundred twenty hours at pH normal 37 C. (B) Rate of formation of vasoactive substances in normal dog serum during one-hundred twenty hours of incubation. Vasopressor effects expressed in micrograms of valyl-5 angiotensin II.

No significant difference was obtained in the pharmacologic activity between the incubated sera withdrawn from an intact animal and from that of an animal whose renal arteries were ligated immediately before bleeding. However, there was a significant decrease (40 to 60 per cent) in the vasopressor activity when the blood was obtained from a dog or a rat after from twenty to forty hours of nephrectomy (Fig. 3). This result is in contrast with the finding that nephrectomy increases the yield of anephrotensin in serum incubated at pH 3.8.[4,5]

Incubation of the sera in conditions

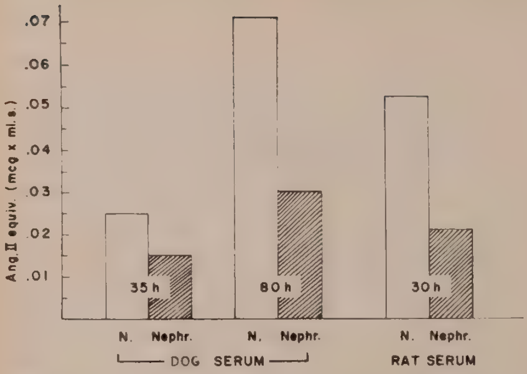

FIGURE 3. Vasopressor activity of incubated sera of normal and nephrectomized dogs. Activity expressed in micrograms of angiotensin II per milliliter tested at thirty-five- and eighty-hour incubation of serum of normal and nephrectomized dogs and at end of thirty hours of sera of normal and nephrectomized rats.

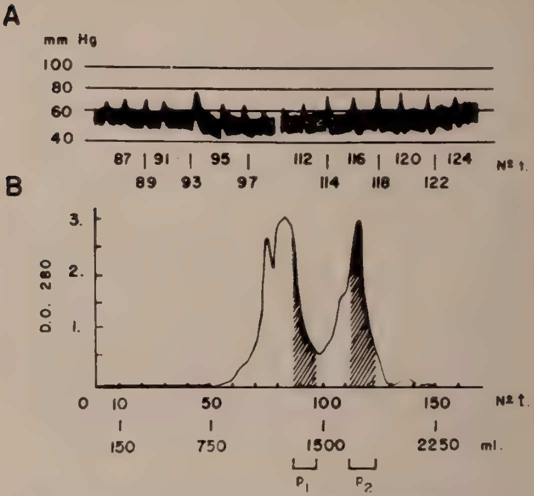

FIGURE 4. (A) Blood pressure changes in nephrectomized rat given 0.1 ml. of solution draining from gel column of cross-linked dextran charged with 40 ml. normal dog serum incubated for eighty hours at pH normal. From each tube, which contained 15 ml. of effluent solution (number indicated), 0.1 ml. intravenously injected. (B) Optical density (D.O.) found in each tube of effluent solution. Hatched areas correspond to solutions with pressor activities (peak$_1$ and peak$_2$). Two rows of figures indicate number of tubes and total volumes of effluent solutions respectively.

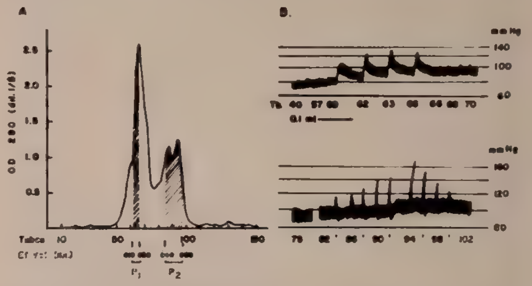

FIGURE 5. Gel filtration through cross-linked dextran of normal rat serum incubated forty hours (normal pH 37 C.). (A) Curve indicates optical density (O.D.). Hatched zones correspond to effluent solution containing active substance of peak$_1$ and peak$_2$. (B) Vasopressor activity of 0.1 ml. of effluent solutions collected in tubes of fraction collector. Figures underneath correspond to tube numbers.

which prevent infection do not modify the results described.

Gel filtration of the incubated serum through columns of cross-linked dextran permitted the separation of two zones of biologic activity designated substance peak$_1$ and substance peak$_2$ (Figs. 4, 5, and 6). The first one in the case of human serum is found in the effluent volumes of 675 to 1,125 ml. and the second in the effluent volume of 1,725 to 2,025 ml. Optical density measurements established that the effluent fractions containing each of the active substances are situated in one of the two zones containing the majority of the proteins. The solutions endowed with biologic activities were separately lyophilized. The vasoactive substances corresponding to peak$_1$ and peak$_2$ proved to be nondialyzable proteins; with prolonged dialysis they do not lose their vasopressor effect when given to nephrectomized hypotensive rats, but the rise produced by substance peak$_1$ is less intense and longer lasting when compared with substance peak$_2$ (Figs. 4, 5, 6, 7, and 8B). Another difference between the two substances is the incubation time required to get the maximum activity. A substance corresponding to peak$_1$ appears first and attains its maximum more rapidly than that of peak$_2$, but substance peak$_1$ starts declining when substance peak$_2$ is still increasing (Fig. 7). Between both substances there exist very important pharmacologic differences. The one corresponding to peak$_1$ induces a depressor effect in the intact rat with normal blood pressure; on the contrary, peak$_2$ constantly raises the blood pressure (Fig. 8A). In both cases the effects are proportional to the dose (Fig. 8A). Peak$_1$ exhibits oxytocic activity (Fig. 5 and 8C): 1 mg. has an uterotonic effect equivalent to 0.66 microns of oxytocin, peak$_2$ has practically no oxytocic activity (Fig. 8C). Both substances produce re-

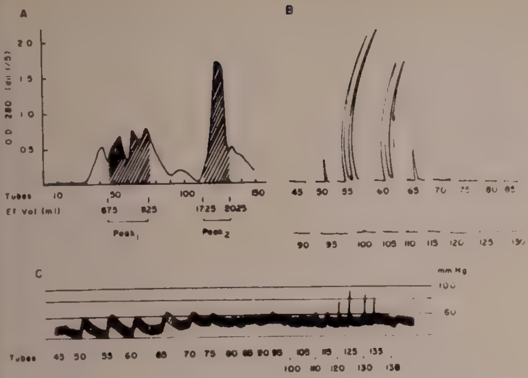

FIGURE 6. (A) Curve indicates optical density found in effluent solution of column of cross-linked dextran charged with 40 ml. human serum. Hatched areas correspond to solutions with pressor activities ($peak_1$ and $peak_2$). Rows of figures indicate number of tubes and accumulative volumes of effluent solutions. (B) Effects on isolated rat uterus of 0.1 ml. of effluent solutions, corresponding to different tubes with numbers indicated. (C) Effects on blood pressure of hypotensive nephrectomized rat of same solutions.

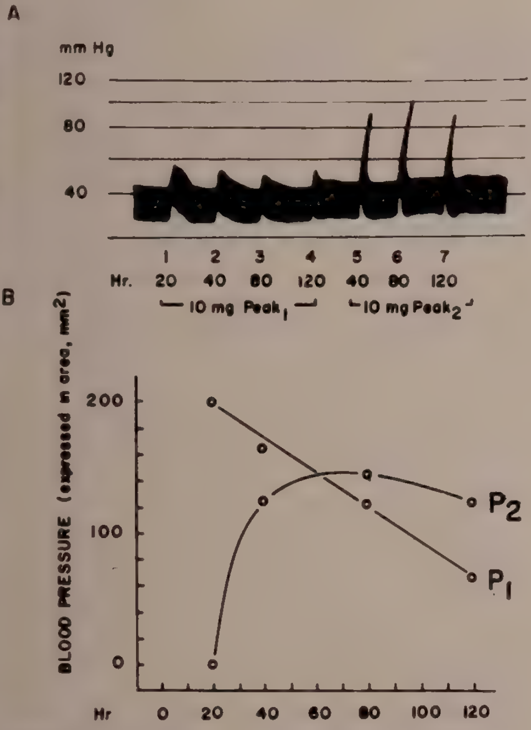

FIGURE 7. (A) Effect on blood pressure of hypotensive nephrectomized rat of 10 mg. of substances $peak_1$ and $peak_2$ formed at twenty, forty, eighty, and one-hundred twenty hours of incubation (pH normal 37 C.). (B) Rate of pressor activity formation at twenty, forty, eighty, and one-hundred twenty hours corresponding to substances $peak_1$ and $peak_2$. Vasopressor effects expressed in areas calculated in (A).

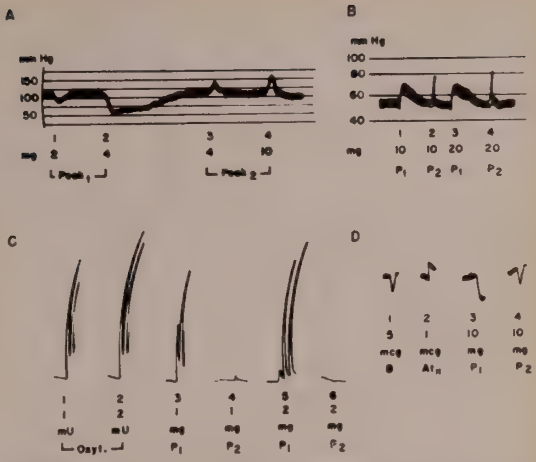

FIGURE 8. Pharmacologic activity of substances $peak_1$ and $peak_2$. Effect on (A) blood pressure of normotensive rat, (B) blood pressure of hypotensive nephrectomized rat, (C) isolated rat uterus, and (D) isolated rat duodenum.

laxation of the isolated rat duodenum similar to that induced by bradykinin (Fig. 8D). The effects on the duodenum produced either by $peak_1$ or bradykinin are rapidly destroyed by carboxypeptidase B, but the activity of $peak_2$ is not modified by this enzyme (Fig. 9). Chymotrypsin (pH 7.4) inactivates substance $peak_1$ and substance $peak_2$, but when they are incubated with pepsin (pH 2.5) for few minutes they undergo a striking augmentation of their pharmacologic action, especially substance $peak_2$, which increases 40 to 60-fold its effect on the blood pressure (Fig. 9). Hydrolysis of $peak_1$ with trypsin (pH 7.4) produces a marked increase in its oxytocic potency (Fig. 9).

These changes are due to the release of dialyzable peptides by the action of proteolytic enzymes. The peptide set free by the action of pepsin from substance $peak_1$ has bradykinin-like activity: a strong effect on isolated uterus; hypotensive effect in the normal rat, but causing a rise in blood pressure of the hypotensive rat; oxytocic-vasopressor ratio very similar to bradykinin; and relaxation effect on the isolated duodenum (Fig. 9). Also like bradykinin it is destroyed by chymotrypsin and carboxypeptidase B and withstands pepsin (Fig. 10). The dialyzable peptides obtained by the action of pepsin acting on $peak_2$ produce a constant rise in blood pressure of intact and nephrectomized animals; it relaxes the duodenum and has

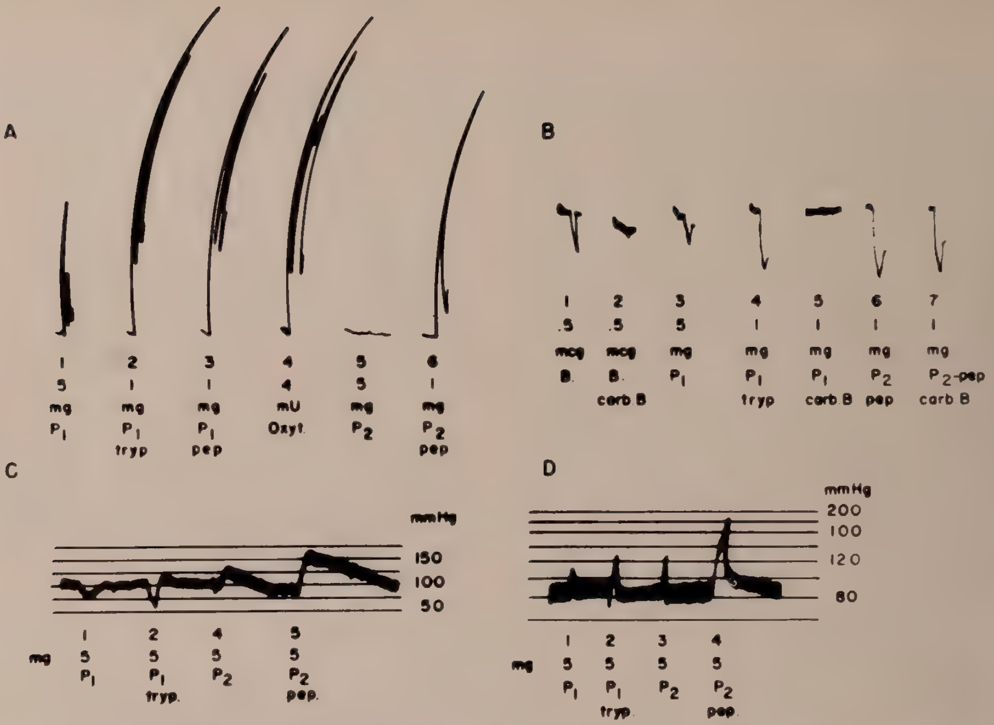

FIGURE 9. (A) Oxytocic activity of substances peak$_1$ and peak$_2$. In (1), 5 mg. of peak$_1$; (2), 1 mg. of peak$_1$ incubated with trypsin; (3), 1 mg. of peak$_1$ incubated with pepsin; (4), 4 microns of oxytocin; (5), 5 mg. of peak$_2$; and (6), 1 mg. of peak$_2$ incubated with pepsin. (B) Effect on isolated rat duodenum. In (1), 0.5 micrograms of bradykinin; (2), 0.5 micrograms of bradykinin incubated with carboxypeptidase B; (3), 5-mg. substance peak$_1$; (4), 5-mg. peak$_1$ incubated with trypsin; (5), peak$_1$ incubated with carboxypeptidase B; (6), 1-mg. substance peak$_2$ incubated with pepsin; and (7), 1-mg. peak$_2$ incubated with pepsin (pH 2.5) and later on with carboxypeptidase B at pH 7.4. (C) Effect on blood pressure of normotensive rat of substances peak$_1$ and peak$_2$. In (1), 5-mg. peak$_1$; (2), 5-mg. peak$_1$ treated with trypsin (pH 7.4); (4), 5-mg. peak$_2$ and (5), 5-mg. peak$_2$ incubated with pepsin (pH 2.5). (D) Effect on blood pressure on hypotensive nephrectomized rat. Same solutions as (C) given.

little oxytocic effect. It is inactivated by chymotrypsin but resists the action of carboxypeptidase B and pepsin (Fig. 11). The resistance to the latter enzyme is the only difference found so far between this active substance and pepsitensin or angiotensin II, the most active vasopressor component found in anephrotensin.[1]

The electrophoretic pattern of the incubated serum obtained at different intervals during the incubation period (from ten to one hundred twenty hours) did not disclose significant changes as compared to the control samples analyzed before incubation.

Comment

Incubation of the serum of diverse animal species, at 37 C. and normal pH shows that significant biochemical changes affecting the proteins occur in spite of the negative results obtained by electrophoretic studies. An endogenous mechanism is set in motion notwithstanding the gentle

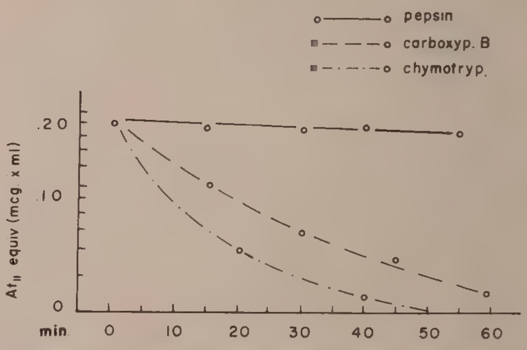

FIGURE 10. Action of pepsin (pH 2.5), carboxypeptidase (pH 7.4), and chymotrypsin (pH 7.4) on dialyzable peptides obtained by action of pepsin on substance peak$_1$. Changes of vasopressor activity observed during sixty minutes of incubation expressed in equivalent effects of valyl-5 angiotensin II.

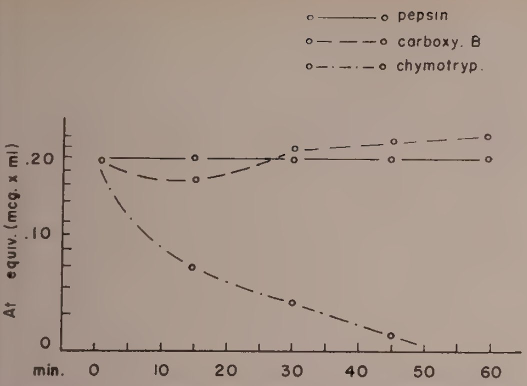

FIGURE 11. Action of pepsin (pH 2.5), carboxypeptidase (pH 7.4), and chymotrypsin (pH 7.4) on dialyzable peptides obtained by action of pepsin on substance peak$_2$. Changes of vasopressor activity observed during sixty minutes of incubation expressed in equivalent effect of valyl-5 angiotensin II.

manipulations. Obviously some proteins, apparently globulins, undergo an hydrolytic breakdown. The vasoactive substances were identified as large molecules (peak$_1$ and peak$_2$); but it is likely that smaller peptides are released also during incubation, but the neutral pH prevents their accumulation and favors their rapid inactivation in the presence of peptidases. The substances of peak$_1$ and peak$_2$ increase their pharmacologic effect after pepsin and trypsin hydrolysis. Substance peak$_1$ behaves like a source of plasmakinins, and substance peak$_2$ appears as a precursor of vasoactive substance whose identity has not been established yet, but the peptide set free by pepsin has many pharmacologic properties common to those exhibited by angiotensin II, one of the peptides which accumulates during acid incubation.[1] One noteworthy difference is that the peptide derived from peak$_2$ is resistant to pepsin, and angiotensin II and such angiotensin-like peptides are easily inactivated.

The proteins of peak$_1$ and peak$_2$ are nonstable substances which progressively break down to products which are inactivated by serum itself. The question arises as to the physiologic significance of the substances peak$_1$ and peak$_2$. No evidence can be provided as to whether or not they are formed in the circulation. Considering that their formation takes place under very mild conditions and it is known that there is in vivo a rapid turnover of blood proteins, it is not too unlikely that a similar process could take place in the circulating blood. An important feature is the influence of the kidney. The serum of nephrectomized animals gives a lesser yield of vasopressor substances if the serum is incubated at normal pH. This result is contrary to that found when the pH of the incubation is 3.8 to 4.[4] No explanation can be given for this difference, but it has been established that the active products obtained at pH 3.8 are mostly small peptides, whereas at neutral pH the active products are nondialyzable proteins. These might be the precursors of the peptides formed in acid incubation. It is possible that the kidneys participate in some way in the endogenous mechanisms which break down the blood proteins.

Summary

The vasoactive substances formed in the serum of man, dog, and rat during incubation at 37 C. and normal pH were separated through gel filtration, in cross-linked dextran. Two zones of activity were found corresponding to substances peak$_1$ and peak$_2$. Both are nondialyzable proteins, which produce a rise in the blood pressure of the nephrectomized hypotensive rat. Substance peak$_1$ provokes a lowering of the blood pressure in the normal rat, in contrast to substance peak$_2$ which always produces a rise. Both are inactivated by chymotrypsin, but under the action of trypsin and pepsin they become more active. These changes are due to the release of dialyzable peptides. The active dialyzable peptides from substance peak$_1$ has bradykinin-like activity and exhibits identical behavior to bradykinin in the presence of proteolytic enzymes. The active peptide released by pepsin from substance peak$_2$ has striking vasopressor activity in intact and nephrectomized animals and shows many pharmacologic properties similar to angiotensin II as already described.[1]

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New Approaches to Antihypertensive Therapy

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THE TREMENDOUS ADVANCES that have been made within the past five to ten years in the therapeutic approach to hypertensive vascular disease can best be appreciated by glancing through medical textbooks published around 1957 or 1958. Drugs then available for reducing the blood pressure consisted of reserpine, veratrum alkaloids, hydralazine, and ganglion-blocking agents. Of these, only reserpine is still widely used, principally in combination with other drugs but also alone for parenteral use in hypertensive emergencies. Surgical treatment in the form of sympathectomy, which up until ten years ago was recommended as the therapy of choice for control of severely elevated blood pressure (diastolic pressure greater than 120 mm. of mercury) is now rarely used. It is resorted to only as an extreme measure for the treatment of patients who either have not responded to medical therapy, or are unable, for any reason, to follow the prescribed medical regimen.

Sodium, salt restriction, and diuretics

The restriction of dietary sodium as an important principle of therapy found its most extreme expression in the rice diet, which received a great deal of publicity but was never well accepted as a standard method of treatment because few patients could tolerate its unrelieved monotony for any length of time. The use of diuretics as an alternative to stringent sodium restriction did not become practical until the potent nonmercurial oral diuretics were developed. The first of these, chlorothiazide, was introduced in 1957. Although the first reports on its use in the treatment of hypertension appeared in the same year,[1-4] it was not commercially available until 1958. Since then, its place in the treatment of hypertension has been firmly established.

Other thiazide diuretics have been synthesized in an attempt to achieve greater potency, but these are not substantially more effective than chlorothiazide in equivalent doses. As can be seen in Figure 1, much smaller doses of the more complex thiazides are required to produce the maximum natriuretic effect, but with all of these drugs approximately the same "ceiling" is reached, beyond which an increase in dosage fails to increase natriuresis significantly. These differences in potency per milligram are also not significant in the relative antihypertensive effectiveness of the various agents.

Theories of antihypertensive action of oral diuretics

Although the antihypertensive effect of the thiazide diuretics is generally in proportion to their natriuretic effect, we still do not really know precisely how they act to lower the blood pressure of the hypertensive patient. No appreciable decrease occurs in the blood pressure of normotensive subjects after administration of any of these drugs, even following a fairly substantial diuresis. Hollander and Wilkins,[1] in one of the earliest reports on the antihypertensive properties of chlorothiazide, noted that these properties could not be explained solely on the basis of alterations in water and electrolyte balance produced by the drug. Grollman,[5] however, asserted that

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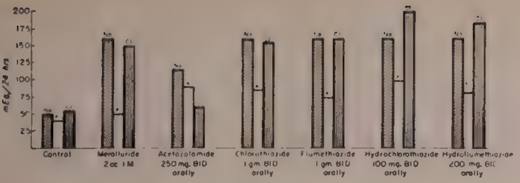

FIGURE 1. Despite marked differences in dose required to achieve desired natriuretic effect, all thiazides about equally effective in doses of comparable potency. Although chloruresis slighty less with original compound, chlorothiazide, differences in electrolyte excretion produced by various thiazides insignificant.

since the results obtained with chlorothiazide were comparable to those obtained by severe salt restriction in the treatment of hypertension, there was little convincing evidence for a hypotensive action of the drug independent of its natriuretic effect.

Another explanation that was at first advanced to account for the blood pressure-lowering effect of the thiazide diuretics was the decrease in plasma volume that followed the use of these drugs. Subsequent studies, including those of Conway and Lauwers,[6] have shown that although plasma volume and cardiac output are reduced during the first weeks of treatment with chlorothiazide, both return to normal while the reduction in blood pressure is maintained, indicating that the hypotensive effect is related to a decrease in peripheral vascular resistance. These authors were also of the opinion that loss of electrolytes, sodium in particular, could not entirely account for the hypotensive effect of the thiazide. They observed that fluid loss occurred in nearly all of the patients they studied, despite the fact that the volume of extracellular fluid, including plasma volume, remained largely unchanged. It would appear, therefore, that the drug promotes loss of intracellular fluid, which might lower peripheral vascular resistance in one or more of the following ways: (1) Changes in distribution of water or electrolytes could alter vascular reactivity; (2) loss of water from the cells in the vessel wall could contribute to a lessening of pressure within the vascular smooth muscle; and (3) loss of fluid in surrounding tissues could serve to reduce pressure on the vessels.

The work of Friedman and Friedman[7] lends some support to the first of these possibilities. Their experimental studies indicate that peripheral resistance is related to intracellular concentrations of sodium and potassium, that it decreases with an ionic shift of sodium out of and potassium into the cells of the vessel wall and increases when this ionic transfer of electrolytes is reversed. Laragh's[8] studies also provide evidence that vascular reactivity to pressor substances depends on the intravascular content of sodium, rather than on the total sodium content of the body. If their interpretation of these experimental findings is correct, it offers a partial explanation for the antihypertensive effect of the potent oral diuretics. However, it must be borne in mind that the results of such studies are at present controversial and cannot be regarded as conclusive. Taquini,[9] for instance, not only points out that contradictory results have been obtained by different investigators, but also suggests that shifts in the distribution of water and electrolytes may be the result rather than the cause of changes in blood pressure. Hollander's[10] work on vascular changes produced by hypertension in an isolated portion of the dog aorta following surgical coarctation tends to support the latter theory; the salt and water content of the vessel wall was found to be increased in the hypertensive segment of the aorta proximal to the coarctation but not in the distal, normotensive segment.

The one fact that emerges from these various studies is that shifts in the distribution of water and electrolytes, especially sodium and possibly also potassium, appear to be an integral part of the hypertensive process. Precisely how they are related remains to be determined.

Autonomic blocking agents and newer drugs in antihypertensive regimen

Regardless of the disagreement concerning the biochemical or physiologic mechanism whereby oral diuretics lower the blood pressure of hypertensive patients, there is no disagreement about their efficacy for that purpose. The thiazides and other potent oral diuretics which are similar in chemical structure and effectiveness (such as the phthalimidines and quinolazines) are at present well established as cornerstones of antihypertensive therapy. Alone, or in combination with one of the reserpine compounds, they may be all that is needed to reduce to normal levels the blood pressure of the patient who is only mildly hypertensive. For such patients, the dietary sodium intake should also be moderately restricted, but as a rule this can be accomplished simply by omitting a few foods with a high sodium content and either adding no salt or using a salt substitute. If reserpine is used, its tranquilizing effect helps to minimize the response to environmental stress, which is generally considered an important factor in the etiology of hypertension.

In the treatment of moderate to severe hypertension, hydralazine hydrochloride and the ganglionic blocking agents have been largely superseded by two newer drugs that lower the blood pressure without causing intolerable or dangerous side-effects. Two other new drugs have also been found clinically effective as hypotensive agents but at present have not been as widely used. All are given with one of the oral diuretics, which enhance their effectiveness and permit the use of smaller doses, thus further lessening the incidence of side-effects. The hypotensive effect of all four drugs is predominantly orthostatic, a disadvantage common to nearly all of the potent antihypertensive drugs. It is of interest that each of these newer drugs is chemically different from the others and from older hypotensive agents. Two are enzyme inhibitors; two are sympathetic blocking agents that inhibit the transmission of sympathetic impulses at the postganglionic level without affecting the transmission of parasympathetic impulses as the ganglionic blocking agents did.

METHYLDOPA. Methyldopa has almost entirely replaced hydralazine in the treatment of moderate hypertension that does not respond to a combination of an oral diuretic and reserpine. It is a decarboxylase inhibitor and is believed to lower the blood pressure by interfering in some way with the action of norepinephrine. While not ordinarily effective in the treatment of severe hypertension, it is sometimes used to supplement more potent agents. Methyldopa has a hypotensive effect in the supine patient and reduces peripheral vascular resistance to a greater extent than cardiac output, thereby helping to maintain renal function at pretreatment levels. These advantages make it particularly useful for administration with other drugs. Side-effects are usually mild, consisting chiefly of drowsiness and occasional orthostatic hypotension.

GUANETHIDINE. Among the drugs used for control of severely elevated blood pressure, including malignant hypertension, guanethidine has become the standard in place of the ganglioplegic drugs. It is a sympathetic blocking agent, but its pharmacologic action is unique in some respects. Unlike other drugs in this category, guanethidine has a bradycrotic effect. Although sometimes described as an adrenergic blocking agent, it potentiates the effect of norepinephrine. For that reason, it should never be used to treat hypertension that may be caused by pheochromocytoma. In some manner, guanethidine affects the release or distribution of catecholamines, including norepinephrine. Most investigators believe it inhibits the release of these substances, in contrast to the action of reserpine, which depletes the storage sites. Actually, there is evidence of a rather complex effect. Early experimental studies showed that the catecholamine content of the heart and vascular tissue decreased when guanethidine was administered to dogs.[11] Allowance must be made for species differences, but the results of other studies suggest similar pharmacologic effects in man. Immediately after guanethidine is given by injection, a brief initial pressor response occurs. This would also seem to indicate an initial mobilization and release of at least a portion of the stored catecholamines.[12] Further studies are needed to clarify the precise mode of action underlying the hypotensive effect of this potent drug.

When guanethidine is taken orally, the onset of action is slow, and the antihypertensive effect is correspondingly prolonged. The most prominent side-effects—weakness, morning hypotension, diarrhea in the form of frequent bowel movements, and, in men, inability to ejaculate—are not as troublesome as those of the ganglionic blocking agents; nevertheless, they are

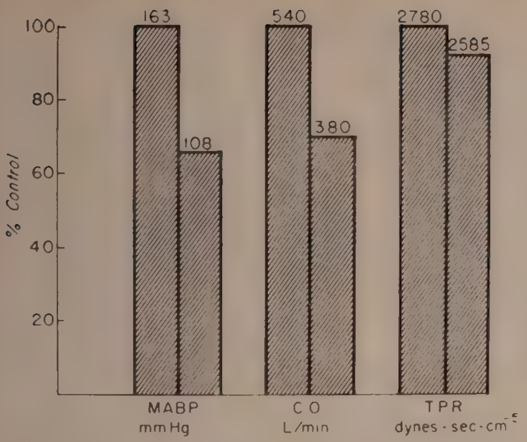

FIGURE 2. Effects of intravenous guanethidine on cardiac output. Hypotensive action of guanethidine not initially accompanied by significant decrease in peripheral vascular resistance and apparently due primarily to substantial reduction in cardiac output following administration of drug (from Brest, A. N., Novack, P., Kasparian, H., and Moyer, J. H.: Guanethidine, Dis. Chest **42:** 359 (1962)).

disturbing to some patients. Fortunately, these effects are lessened by administering guanethidine with milder hypotensive agents, which potentiate its action and permit reduction of dosage.

There are few cases of hypertension that cannot be controlled by a regimen based on guanethidine together with other antihypertensive drugs. A useful combination for the treatment of refractory hypertension is guanethidine and hydralazine, given with an oral diuretic. Since guanethidine slows the heart rate and reduces cardiac output (Fig. 2), it tends to offset the cardiostimulatory action that is one of the more serious side-effects of hydralazine. On the other hand, hydralazine reduces renal vascular resistance and is helpful in maintaining renal blood flow when kidney function has been impaired by vascular damage. The synergistic effect of these two drugs is thus capable of lowering severely elevated blood pressure without significantly increasing the incidence of untoward reactions.

PARGYLINE HYDROCHLORIDE. The monoamine oxidase inhibitor, pargyline hydrochloride, although approximately equal in potency to guanethidine, has not achieved such widespread acceptance. Not only is orthostatic hypotension a frequent problem, but in addition many drugs and even some foods may precipitate hypertensive crises in patients who are taking this drug. Impotence is also a fairly common side-effect in men. Pargyline cannot be given with other antihypertensive agents, except for the oral diuretics. It is useful principally for the treatment of patients who, for any reason, cannot tolerate guanethidine, and possibly for depressed patients, in whom it may exert a beneficial mood-elevating effect.

DEBRISOQUIN. One other new drug, a sympathetic blocking agent like guanethidine but unrelated to it in chemical structure, has been under investigation. This drug, debrisoquin sulfate, has been reported as effective in reducing moderately elevated blood pressure when given with an oral diuretic (chlorthalidone) and reserpine, while causing only mild side-effects.[13] Its cardiovascular effects are similar to those of guanethidine: It decreases cardiac output but does not significantly alter peripheral vascular resistance.[14] Present experience with debrisoquin is too limited to permit an accurate assessment of its overall efficacy. The apparently low incidence of severe side-effects is encouraging, however, in view of the fact that the drug does have a moderate hypotensive action. Possibly it will prove helpful in treating patients who do not respond adequately to methyldopa but who do not need a drug as potent as guanethidine. This seems all the more likely when one considers that debrisoquin differs from methyldopa both chemically and pharmacodynamically, although its range of action appears to be approximately the same.

Recognition of need for individualized treatment

The careful clinician has always been aware of the need for adjusting treatment to the requirements of each patient. In recent years, this general principle has received increasing emphasis in the treatment of hypertension. Obviously, as new drugs with different characteristics become available, the choice of medication grows more difficult. The planning of a suitable regimen is now a problem of some complexity, since two or more of these drugs are usually combined to achieve greater effectiveness with smaller doses and thus mini-

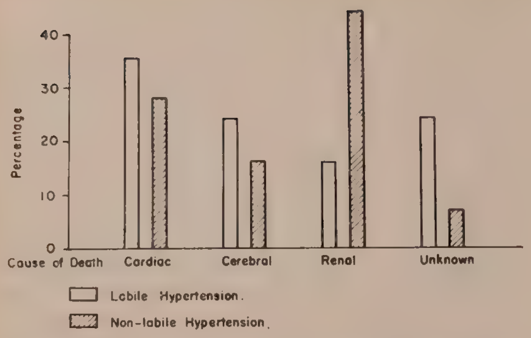

FIGURE 3. Relationship of lability of blood pressure to primary causes of death. Labile hypertension less likely to cause generalized vascular damage and progressive deterioration than prolonged, unremitting elevation of blood pressure, but more often associated with two most common causes of "sudden" death: myocardial infarction and cerebral vascular accident. These occur most often when blood pressure rises sharply, either in response to stress or because of inadequate control.[15]

TABLE I. Degree of blood pressure reduction, dependent on amount of pre-existing renal damage

Blood Urea Nitrogen (mg./per 100 ml.)	Upright Blood Pressure Reduction (mm. Hg)
Normal	130–150 to 80–100
30 to 60	150–170 to 100–110*
60 to 100	180–190 to 110–120*
>100	No reduction

* Do not reduce blood pressure further if blood urea nitrogen rises.

mize the severity of their side-effects. The success of the therapeutic regimen selected often depends on the precision with which the dosage of each drug is adjusted in accordance with the patient's response at progressive stages of treatment.

CONTROL OF CIRCUMSTANCES. The finding that myocardial infarctions and cerebral vascular accidents occur somewhat more frequently among patients with labile hypertension than among those with fixed hypertension suggests the need for individual attention to the control of circumstances that may cause the blood pressure to fluctuate dangerously (Fig. 3).[15] Measures to reduce environmental stress are especially important in treating these patients.[16] Maintenance of adequate therapy is also essential to prevent a sudden rise in blood pressure, which may follow even a brief discontinuance of medication or the development of tolerance and resistance to further therapy as a result of suboptimal dosage.[17]

RENAL FUNCTION. The individualized approach also includes recognition of the need to consider the status of renal function before starting treatment. If the blood urea nitrogen is greatly elevated, any reduction of blood pressure may be inadvisable; the immediate decrease in renal blood flow can lead to further deterioration and offset the beneficial effects.[17] Moderate elevation of the blood urea nitrogen is an indication for gradual lowering of the blood pressure (Table I), and for choosing a combination of drugs that will help to maintain renal blood flow by decreasing renal vascular resistance. Methyldopa and hydralazine are particularly valuable for this purpose when used with other drugs (Fig. 4).

As the hypertensive process has become better understood, the basic approach to the treatment of hypertension has changed, as well as the drugs employed and the manner in which they are used. Large-scale studies involving extended observations on both treated and untreated patients have provided fairly convincing evidence that sustained elevation of the blood pressure can eventually cause vascular damage. Even mildly elevated blood pressure appears to accelerate the development of atherosclerosis.[18,19] More severely elevated blood pressure leads to impairment of renal function on the basis of arteriolar nephrosclerosis; the small vessels of the kidney appear to be particularly susceptible to degeneration when subjected to increased pressure.[20] As a rule, the adequacy of renal function is inversely related to the severity and duration of the hypertensive disease (Fig. 5).[21] Renal damage may, in turn, aggravate the severity of the hypertension. This vicious cycle is reflected in the high mortality rate due to uremia and other renal causes of death among patients with severe elevation of the blood pressure. The correlation is especially striking when the hypertension is of the accelerated or malignant type (Fig. 6).[15] Patients with long-standing hypertension that is severe but not progressive also have a high mortality rate from congestive heart failure (Fig. 6).[15] Consequently, the present tendency is to begin therapy to reduce the blood pressure at earlier and milder stages

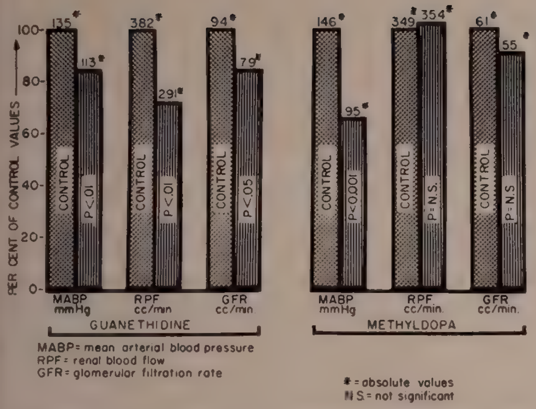

FIGURE 4. Comparison of effects of intravenous guanethidine and methyldopa on renal function. Methyldopa, like hydralazine, exerts hypotensive action primarily by decreasing peripheral vascular resistance, so that renal blood flow maintained at pretreatment levels. By contrast, drugs such as guanethidine, which lower the blood pressure by reducing cardiac output while peripheral vascular resistance relatively unchanged, cause significant decrease in renal blood flow.[16]

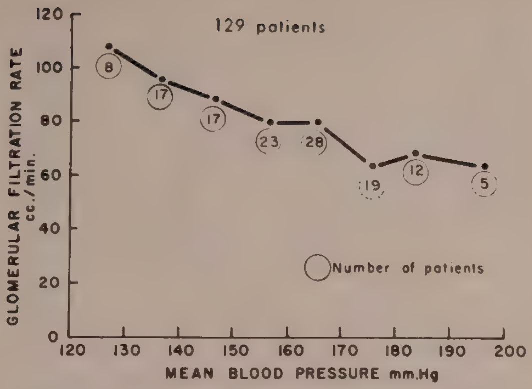

FIGURE 5. Mean blood pressure plotted against glomerular filtration rate. Relationship between severity of hypertension and degree of renal damage shown in graph by progressive decrease in glomerular filtration rate as level of mean blood pressure increases.[21]

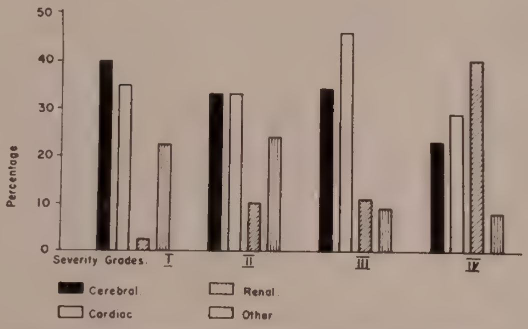

FIGURE 6. Primary causes of death relative to severity index. Among patients with severely elevated or malignant hypertension (Grade IV), renal complications predominate as cause of death. Of interest is higher incidence of fatal renal damage in patients with fixed or nonlabile hypertension (Fig. 3), indicating that sustained elevation of blood pressure impairs renal function. Cardiac deaths among patients with severe nonmalignant hypertension (Grade III) due largely to congestive heart failure, whereas cardiac deaths among patients with mild or labile hypertension (Fig. 3) usually result of coronary occlusion.[15]

of hypertension than were formerly thought to require treatment.

Directions in current research

Early investigations into the nature and activity of endogenous substances that affect the blood pressure date back twenty years or more, but interest in this type of research has greatly increased over the past decade. Improved methods of research have enabled us to discover, within the past few years, more of the biochemical mechanisms that underlie the development of hypertension. Following intensive exploration into the role of catecholamines, there has been greater emphasis on the investigation of substances produced by the kidney, which apparently have an important function in regulating the blood pressure.

Endogenous vasopressor substances. Increasing attention has been given to the action of angiotensin and of renin, the enzyme active in its production, as contributory factors in the abnormal pressor response that maintains the blood pressure at an elevated level. The research being done on these substances is particularly applicable to essential hypertension and its treatment but may also be of some value in the approach to toxemia of pregnancy.

It has long been known that hypertension is more likely to occur in some families than in others, and the existence of a genetic factor that predisposes some persons to increased vascular reactivity is fairly well accepted. A possible connection between such predisposition and a biochemical aberration in the renin-angiotensin system is suggested by the results of a study reported by McCubbin *et al.*[22] Angiotensin was administered to dogs by continuous infusion in amounts too small to raise the blood pressure initially. After periods of time ranging from twenty-four hours to nine days, all the animals had significantly elevated blood pressure. An interesting feature of the hypertension thus produced was its lability, especially in response to environmental stimuli. The blood pressure remained elevated during the period of infusion as long as the animals were kept in the usual laboratory surroundings, with normal amounts of noise, motion of laboratory personnel, and similar minor disturbances. When they were placed in quiet surroundings, however, their blood pressure decreased so that it was normal or only slightly elevated as long as they were not disturbed in any way. Pressor responses to various stimuli were exaggerated in proportion to the degree of hypertension, which tended to be higher and more persistent when the infusion of angiotensin was continued over a fairly long period of time. The rise in blood pressure appeared to be due to increased peripheral vascular resistance rather than to any significant increase in cardiac output. It is of interest that subcutaneous injections of guanethidine reduced the blood pressure to control levels. The authors suggest that the continued presence of subpressor amounts of angiotensin may exert a hypertensive effect through an indirect action involving the sympathetic nervous system as well as through direct vasopressor action.

A similar response was noted in normotensive human subjects by Laragh,[8] who found that prolonged infusion of angiotensin led to increased vascular reactivity associated with increased retention of sodium. This response was progressive in degree, so that the amount of angiotensin needed to maintain the pressor response gradually decreased. By contrast, norepinephrine increased the excretion of sodium and lost much of its pressor effect after prolonged administration. Very large doses of angiotensin are known to promote the excretion, rather than the retention, of sodium in normotensive subjects. Much smaller doses produce a natriuretic effect in hypertensive subjects, which may well indicate an increased sensitivity to angiotensin in hypertension such as that induced in normotensive persons by prolonged infusion of angiotensin.[23]

While no definite conclusions can be drawn from these studies, they raise the possibility that a constant level of an endogenous pressor substance may produce heightened sensitivity to potential pressor stimuli even though it may be present only in small amounts. In view of a recent study by Pickens *et al.*,[24] one could further speculate on whether a "steady state" of angiotensin production might exist in at least some individuals with essential hypertension. In Pickens' study, plasma renin activity in the peripheral venous blood of patients with essential hypertension was found to be much more stable than the plasma renin activity measured in normotensive control subjects. Even though the values recorded for the control subjects were generally higher, they varied widely in the same subject at different times, whereas in most of the patients with essential hypertension, plasma renin activity was approximately the same at different times.

Certainly, any connection between the results of these studies and their possible bearing on the development of essential hypertension is largely hypothetical at present. For one thing, as Pickens *et al.*[24] point out, studies on plasma renin activity by different investigators have shown no consistent pattern in hypertensive patients or consistent differences, if any, between hypertensive and normotensive subjects, except that it is usually elevated in patients with malignant hypertension. Conflicting results have been reported, and these authors conclude that as yet no satisfactory method is available for measuring and interpreting plasma renin activity as an isolated factor. This is readily understandable, since it is only one part of a complex feedback system in which levels of sodium, aldosterone, renin, and angiotensin are closely interdependent, with the sodium level being the primary determinant. Under normal circumstances, production of these pressor substances varies inversely in relation to the amount of sodium that is present in the blood.

Tobian[25] has reported that many hypertensive patients appear to have an increased sensitivity to salt, in that they excrete more sodium than normotensive subjects on a diet with the same sodium content, and also show a natriuretic response to administration of desoxycorticosterone acetate, unlike the normotensive subject. Dahl and Schackow[26] have also shown, by selective breeding in rats, that salt sensitivity can be inherited; those that are salt sensitive become hypertensive on a diet of normal sodium content, whereas others do not. This may be related to abnormal retention of sodium and water in the vascular wall, as suggested by Friedman and Friedman,[7] Laragh,[8] and also Tobian.[25] Since aldosterone secretion, renin activity, and the production of angiotensin increase as the level of sodium decreases, and decrease as the sodium level rises, it is also possible that the constant low level of plasma renin activity reported by Pickens *et al.*[24] in patients with essential hypertension is related to an inherent salt sensitivity. It may be that normal or even relatively low levels of sodium in these patients are interpreted as higher levels by the receptors in the renin-angiotensin feedback system.

As yet, these are only hypotheses, some of them conflicting; but as more is learned about the endogenous vasopressors and their interactions, we inevitably come closer to an understanding of the hypertensive process.

ENDOGENOUS SUBSTANCES WITH HYPOTENSIVE ACTION. Another new area of exploration concerns the nature of vasodepressor and hypotensive substances that are apparently produced by the normal kidney and presumably help to maintain the blood pressure at normal levels.[27–29] Small quantities of a vasodepressor substance have been isolated from hog kidneys. Several hypertensive patients to whom this was given experimentally showed a gradual but significant decrease in blood pressure.[30] A similar renal extract was found to cause a rapid decrease in blood pressure when administered to rabbits made hypertensive by ligation of the renal arteries.[31] The subsequent gradual rise of the blood pressure to previous hypertensive levels appears to indicate an extended protective effect of moderate duration.

Along somewhat different lines is the work that has been done on antirenin, which was produced in animals of different species following injections of renin.[32] Hog antirenin has been found to exert a moderately lasting antihypertensive effect even in animals of other species with experimentally induced hypertension.

The objection has been raised that any foreign protein or similar noxious substance may lower the blood pressure when administered parenterally; but according to Milliez *et al.*,[31] no hypotensive effect was observed when extracts prepared from organs other than the kidney were administered to hypertensive rabbits. Furthermore, all of these investigators believe that the extracts which they used were sufficiently purified to avoid the likelihood of a nonspecific reaction to the injected substance. None of these endogenous substances that have a natural antihypertensive effect can be produced at present in quantities sufficient for large-scale studies, but it may be possible in time to synthesize compounds that resemble them in structure and action, if efforts in this direction appear to be warranted.

Comment

Undoubtedly, many variables influence the results of studies such as those reviewed here. Under these circumstances, present investigations are perhaps more valuable in suggesting avenues for future investigation than in providing information that can be applied directly to an understanding of the hypertensive process. It is well to keep in mind that, in attempting to assign a causative role to any of the various biochemical abnormalities discovered in hypertensive patients, we may err as the blind men did when trying to determine the shape of the elephant by grasping an ear, a tusk, or a leg. More than likely, no single factor will be identified as the cause of so-called essential hypertension. Ultimately, however, our discoveries should make it possible for us to approximate a physiologic correction of malfunctioning vasoregulatory mechanisms in our pharmacologic approach to the treatment of hypertension.

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Regulation of Blood Pressure and Hypertension

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Some aspects of the physiologic regulation of the arterial blood pressure and its relation to the problem of the pathogenesis of arterial hypertension will be considered. There is no need, I think, to stress the fundamental importance of the physiology of blood pressure regulation with regard to the problem of the pathogenesis of hypertension.

Hypertension is, indeed, characterized by a displacement, a "resetting," of the blood pressure and its regulation from normal to higher levels.

Regulation

How is the arterial blood pressure regulated and maintained at normal levels? Experiments performed in different laboratories have shown that the arterial blood pressure is regulated reflexly by the action of arterial pressure itself on receptors sensitive to pressure and located into the walls of the blood vessels of the aortic and carotid sinus areas. These receptors, also called presso- or baroreceptors, are connected by means of the aortic and carotid sinus nerves to the nerve centers regulating and maintaining arterial blood pressure at normal

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levels. Any deviation of arterial pressure induces, by means of the aortic and carotid sinus baroreceptors, compensatory reflexes and adjustments so as to restore arterial pressure at normal levels. The efferent pathways of this self-adjustment of arterial pressure, of this physiologic blood pressure homeostasis, are the vagus and sympathetic nerves adjusting heart rate, myocardial contractility, and cardiac output: the sympathetic vasomotor nerves adjusting the peripheral vasomotor tone of the resistance and capacity vessels and the sympathetic nerves regulating the epinephrine and norephinephrine secretion of the suprarenal glands. These hormones may also act, in a humoral way, on heart rate, myocardial contractility, cardiac output, and peripheral vascular resistance and capacity. These different factors regulate and adjust the systemic arterial pressure. It has also been shown since the experimental observations of Cyon and Ludwig in 1866 and the observations of Hering, Koch, and myself since 1925, that the aortic and carotid sinus baroreceptors have, under normal conditions, a continuous inhibitory influence on the level of the systemic arterial pressure. Elimination of the aortic and carotid sinus nerves will, indeed, result in a marked rise of blood pressure, so that a condition of acute or chronic hypertension is induced.

These experimental observations also show that, under normal conditions, the organism has at its disposal an important "blood pressure reserve" to be used by means of the blood pressure baroreceptive regulating mechanisms to compensate for a fall of arterial pressure and restore blood pressure at higher or normal levels. This "blood pressure reserve" may be used up, until exhaustion, by any factor inducing a decrease of arterial pressure. It has thus to be kept in mind that once this "blood pressure reserve" has been used up to counterbalance a fall of arterial pressure, the systemic blood pressure may still be at normal level; but in such conditions any new fall of arterial pressure can no more be compensated, and, hence, a failure of blood pressure homeostasis occurs, which may induce a condition of orthostatic hypotension, a fall of arterial pressure, circulatory failure, and eventually a condition of shock.

Effect on baroreceptors

The question now arises: How does arterial pressure act on the baroreceptors to regulate and maintain blood pressure at normal levels?

It was first accepted that baroreceptors were directly sensitive to the arterial pressure. But it was shown that the baroreceptors are located inside the arterial wall, not close to the intima, the lumen of the artery, but in the media and the adventitia layers. This location of the baroreceptors thus suggested that the arterial wall could also play a role in the mechanisms of blood pressure regulation and homeostasis.

This suggestion was confirmed by the following experimental observation. It was shown, indeed, that an increase of tension or stretch in the baroreceptive arterial walls, induced by local application on the carotid sinus arterial walls of such drugs as epinephrine, norepinephrine, serotonin, or vasopressor drugs, provokes a stimulation of the baroreceptors and induces a "resetting" of the blood pressure homeostasis to lower levels. Decrease of tension or stretch in the baroreceptive arterial walls, on the other hand, induced by local application of drugs such as papaverine, tolazoline (Priscoline), or nitrite, provokes a decrease of stimulation of the baroreceptors and, thus, a "resetting" of the blood pressure homeostasis from normal to higher levels.

Comment

These experimental observations thus show that the degree of intramural tension, stretch, or distortion of the baroreceptive arterial walls depends not only on the level of the arterial pressure, but also, and maybe even more so, on the response of the baroreceptive arterial walls to a given arterial pressure level.

On the basis of these experiments it may be concluded that a decrease of intramural tension or stretch of the arterial baroreceptive walls would induce a "resetting" of the blood pressure homeostasis at higher levels; consequently, a higher arterial pressure would then be induced. This condition may be of importance in the mechanisms of arterial hypertension. Experiments at our laboratory support this suggestion. It has been shown, indeed, that in chronic renal hypertension, provoked in dogs, the arterial pressure is "reset" from high to normal or to low levels when the intramural tension and the pressure response of the baroreceptive arterial walls is increased.

Fate of Norepinephrine in Sympathetic Neurone and by Cardiovascular Drugs

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THE NUMBER and effectiveness of drugs available for the treatment of hypertension and other cardiovascular diseases has increased considerably in the past few years. Much of this can be attributed to an increased understanding of the action of sympathetic nerve endings and the neurohumor, norepinephrine. It is now possible to describe in some detail the processes involved in the synthesis, metabolism, uptake, storage, and release of norepinephrine in the sympathetic neurone. These developments were made possible because of the availability of specific and sensitive methods for the measurement of norepinephrine in tissue, the use of radioactive norepinephrine of high specific activity, and the sophisticated application of drugs that affect the adrenergic nervous system.

This report will describe the natural history of norepinephrine in the sympathetic nerve ending and its modification by certain cardiovascular drugs and pathologic states.

It has been recognized for many years that the sympathetic nerve is rich in norepinephrine.[1] Most of this catecholamine in heart and blood vessels is synthesized within the nerve; and a small fraction is taken up from the circulation. The synthesis of norepinephrine starts with the uptake of the amino acid tyrosine by the adrenergic neurone and its oxidation to the catechol dopa.[2] This compound is then decarboxylated to produce the catecholamine dopamine,[3] which in turn is oxidized to norepinephrine.[4] Almost all of the norepinephrine within the heart is actually found in its sympathetic nerves. Within the sympathetic nerve norepinephrine is highly localized in a special subcellular particle, the granulated vesicle.[5–7] Although the total content of norepinephrine in the heart and other tissues remains relatively constant, the amine molecule is in a dynamic state of formation, release, and destruction. Small amounts of norepinephrine are continuously released from the storage particle; most of the released neurohumor is destroyed within the sympathetic neurone by the mitochondrial enzyme, monoamine oxidase, which is also present in the nerve.[8] A small fraction is liberated unchanged from the nerve in a physiologically active form. When the nerves are stimulated, larger amounts of the pressor amine are released.

The norepinephrine discharged from, or destroyed within, the nerve is rapidly replaced by newly synthesized material or by amines taken up from outside the nerve.

The norepinephrine released from the sympathetic nerve endings undergoes a complex fate.[9] Some of the neurotransmitter interacts with the adrenergic receptor, thus helping to maintain blood pressure and cardiac work. Since the circulating norepinephrine can be taken up by the sympathetic nerve ending, it was possible to label the neurotransmitter in the nerve and study its fate.[10,11] Most of the released amine is inactivated rapidly by reuptake into the nerve ending and binding in the granulated vesicle. Another fraction of the released norepinephrine is inactivated by enzymatic transformation, mainly by O-methylation of the enzyme catechol-O-methyltransferase, and the remainder is removed from its site of action by being washed away in the circulating

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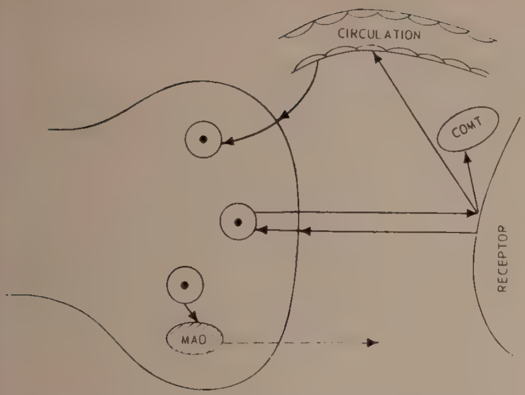

FIGURE 1. Model of sympathetic neurone.

blood. The circulating catecholamine is ultimately inactivated by O-methylation or deamination by enzymes in the liver. Only a tiny fraction of the norepinephrine stored in the heart is functionally important.[12] The remainder serves as a reservoir within the nerve which is continuously replenished by synthesis and destroyed by intraneural monoamine oxidase. A model of the sympathetic neurone is shown in Figure 1.

Many cardiovascular drugs can produce their effects by altering the disposition of norepinephrine in the sympathetic nerve ending. These drugs can act at various sites of the neurone as follows:

Granulated vesicle. Drugs can deplete norepinephrine from the norepinephrine storage granule; take the place of the neurotransmitter or prevent its release.

Neuronal membrane. Drugs can interfere with the transport of norepinephrine into or out of the nerve ending.

Intraneural monoamine oxidase. Drugs can inhibit the action of monoamine oxidase resulting in an accumulation of norepinephrine and other amines.

Receptor. Drugs can act on the adrenergic receptor by unknown mechanisms to alter their activity as well as their response to norepinephrine.

A given agent can act at more than one site to increase or decrease the amount of norepinephrine available for the receptor. Whether it produces hypo- or hypertension depends on whether the sum of its actions results in less or more active norepinephrine reacting with the adrenergic receptor. Certain drugs can have biphasic effects on blood pressure, initially making more norepinephrine available and later reducing the level of the amine.

Agents that deplete norepinephrine from storage granule

The prototype of norepinephrine-depleting drugs is reserpine. The injection of reserpine has been shown to cause a profound reduction in tissue norepinephrine[13] and serotonin.[14] This depletion of the biogenic amine persists for as long as four weeks. When the depletion of norepinephrine reaches more than 90 per cent, nerve stimulation no longer results in the release of norepinephrine from the nerves.[15] The norepinephrine released from the storage granules by reserpine is discharged into cytoplasm and then penetrates the intraneural mitochondria when it is deaminated by monoamine oxidase.[8] Thus the norepinephrine released by reserpine leaves the nerve terminal in a physiologically inactive form.

Animals can recover from the pharmacologic effects of reserpine at a time when the catecholamines are profoundly lowered. However, the ability of the nerves to take up norepinephrine returns within forty-eight hours at a time when the adrenergic nerve function returns.[16] Reserpine has no effect on the uptake of circulating norepinephrine across the neural membrane, but it prevents the accumulation of the catecholamines in the storage vesicle.[17]

Another type of drug that depletes catecholamines from the storage granule is guanethidine. Unlike reserpine, guanethidine appears to replace norepinephrine in the granule.[18] The depletion in the catecholamine by reserpine and guanethidine results in a reduced store of norepinephrine. Thus the amount of the pressor amine norepinephrine that is normally released spontaneously and available for the receptor is also reduced after the administration of reserpine and guanethidine.

Agents that displace norepinephrine from storage granule

The granule in sympathetic nerves can also take up and retain synthetic compounds that are closely related in structure to norepinephrine. Many of these compounds, such as alpha-methyldopa (Aldo-

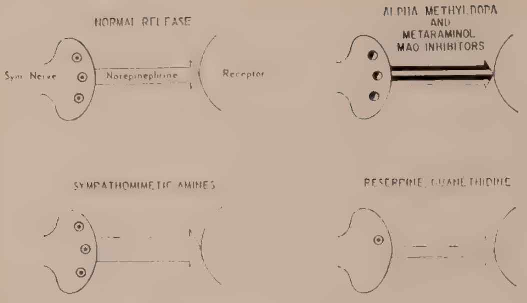

FIGURE 2. Effect of drugs that release norepinephrine.

met) and metaraminol (Aramine), have been found to be effective hypotensive agents. Alpha-methyldopa, an amino acid related in structure to dopa, is decarboxylated in the body and then beta hydroxylated to methyl norepinephrine.[19,20] This latter compound displaces norepinephrine from the granule and is retained and then liberated on nerve stimulation.[21] Day and Rand[22] proposed that the hypotensive action of alpha-methyldopa is due to the displacement of the normal transmitter with a false transmitter.

This unnatural transmitter, methyl norepinephrine, which is formed from alpha-methyldopa was suggested to be less potent than the norepinephrine, thus resulting in a reduction of response to the sympathetic nerve stimulation and a lowered blood pressure.

Recent observations, however, have demonstrated that the false transmitter methyl norepinephrine is as potent and effective as norepinephrine.[23,24]

It is possible that this false neurotransmitter might reduce blood pressure by being more slowly released from the nerves than norepinephrine.

Another type of false transmitter is metaraminol. This compound can displace norepinephrine without itself undergoing biochemical transformation, and it can also be released on sympathetic nerve stimulation.[25]

Monoamine oxidase inhibitors have a paradoxical action; they prevent the inactivation of norepinephrine within the nerve terminal, and yet they cause a fall in blood pressure.

Although these drugs have a complex action, their hypotensive activity can be explained by a false transmitter mechanism.[26] Another normally occurring sympathomimetic amine in the body is octopamine. This amine, like metaraminol and methylnorepinephrine, can also be taken up and retained by sympathetic nerve granules and discharged on nerve stimulation. The main metabolic pathway for metabolism of octopamine is deamination by monoamine oxidase. When monoamine oxidase inhibitors are administered repeatedly, large amounts of endogenous octopamine accumulate in the sympathetic nerves in place of norepinephrine. The accumulation of octopamine, which is a relatively weak pressor agent, is liberated instead of the more potent norepinephrine. The effect of drugs that release norepinephrine is shown in Figure 2.

Agents that prevent release of norepinephrine

Drugs can also reduce blood pressure by interfering with the spontaneous release of norepinephrine from the adrenergic neurone. These drugs can act at either the ganglion or at the postganglionic fiber. When sympathetic nerves are cut preganglionically, there is a reduced discharge of norepinephrine from the nerve terminal and an accumulation of norepinephrine in the decentralized tissues[27] and ganglion.[28] Ganglionic blocking agents also interfere with the release of norepinephrine from the nerve terminal.

In animals treated with guanethidine there is a block in the release of norepinephrine when sympathetic nerves are stimulated.[27] Thus guanethidine can reduce the amount of available norepinephrine at the adrenergic receptor by two mechanisms: by preventing the liberation of norepinephrine and by depleting the stores of catecholamines. Monoamine oxidase inhibitors might also reduce blood pressure by inhibiting the spontaneous release of norepinephrine from the nerve terminal.[29]

Agents that release physiologically active amine from sympathetic nerve

Certain sympathomimetic amines owe their pressor actions to an indirect action.[30] They can release norepinephrine from the granulated vesicles in the sympathetic nerves. Both reserpine and sympathomimetic amines deplete norepinephrine, but the latter compound releases norepinephrine in a physiologically active form.[6,7] Repeated administration of certain sympathomimetic amines, such as tyramine, can exhaust the releasable store of norepinephrine so that tachyphylaxis results.[31] When these stores are replenished with norepinephrine, the pressor actions of the compounds are restored.[32] Metaraminol has an initial blood pressure-raising action by releasing norepinephrine in a physiologically active form. After repeated administration, sufficient amounts of this drug are stored in place of norepinephrine so that it displaces norepinephrine, thus acting as a false transmitter.

Agents that inhibit uptake of norepinephrine at sympathetic nerve membrane

As has already been described, a major mechanism for the rapid inactivation of norepinephrine is its uptake by the sympathetic neurone and binding by intraneuronal granules. Thus any drug that interferes with the uptake of norepinephrine should prevent its inactivation and make more of the catecholamine available to act at the adrenergic receptor. An example of this type of drug is cocaine; it prevents the uptake of norepinephrine by the neurone and prolongs the physiologic actions of injected catecholamines. This drug also potentiates the physiologic effects of nerve stimulation and also produces a considerable overflow of the neurotransmitter during sympathetic nerve stimulation.[33] Other drugs, such as sympathomimetic amines,[7] guanethidine,[34] and imipramine,[35] also prolong the actions of norepinephrine by blocking its uptake by the neuronal membrane. Figure 3 illustrates the actions of drugs that block the uptake of norepinephrine.

Hyperresponsiveness to catecholamines in various pathologic states

It has been known that subjects with hyperthyroidism and hypertension exhibit an exaggerated cardiovascular response to injected catecholamines. Patients who have been subjected to lumbar sympathectomy as treatment for their hypertension have been found to develop extreme sensitivity to catecholamines in denervated limbs. Hyperresponsiveness to catecholamine can be induced experimentally by the production of a variety of pathologic states, such as hyperthyroidism, scurvy, denervation, immunologic denervation (immunosympathectomy), cardiomegaly produced by aortic constriction, and hypertension, by giving desoxycorticosterone and high sodium. These conditions have been shown to alter the accumulation of H^3-norepinephrine in the pathologic heart (denervation,[36] hyperthyroidism,[37] cardiomegaly,[38] immunosympathectomy,[39,40] and hypertension[41]). The disturbed accumulation of H^3-norepinephrine may result in the availability of more pressor amine for the adrenergic receptor in these abnormal states.

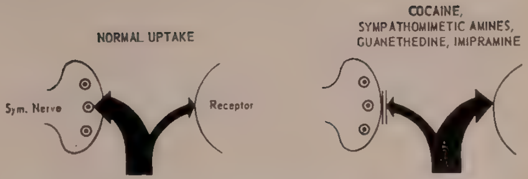

FIGURE 3. Action of drugs that block uptake of norepinephrine.

Summary

Drugs can raise or lower blood pressure by interfering with the physiologic disposition of norepinephrine at several sites in the adrenergic neurone. Hypotensive drugs such as reserpine and guanethidine deplete the norepinephrine in the intraneuronal storage granule while alpha-methyl norepinephrine (a metabolite of alpha-methyldopa) and metaraminol displace the catecholamine in these granules. Blood pressure-lowering drugs (ganglionic blocking agents, guanethidine) can also act by preventing the release of the catecholamine neurotransmitter. Drugs can raise blood pressure by releasing the stored norepinephrine in a physiologically active form or prevent the inactivation of the catecholamine by blocking its uptake into the neurone. Many pathologic states cause supersensitivity by interfering with the accumulation of norepinephrine in the heart.

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Treatment of Hypertension

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THIS REPORT presents the results of treatment in a group of patients with severe hypertension at the Royal Melbourne Hospital, Australia.

All patients attending the hypertensive

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TABLE I. Distribution of initial appearances of fundus

Grade	Per Cent
I	22
II	44
III	18
IV	16

clinic regularly have been included. The series does not include patients who discontinued treatment or patients who have moved to other areas. It includes only those patients considered to need hypotensive drugs and does not include patients who died in the hospital on their first admission. There were 8 of these, all admitted with advanced renal failure.

In all patients, the blood pressure at the time of the first attendance exceeded 210/120 mm. Hg. The ages of the patients ranged from fifteen to sixty-seven years, with a mean age of forty-five to forty-eight years when first seen. Of 200 patients, 78 were male and 122 female.

Initially electrocardiographic evidence of left ventricular hypertrophy was found in 112 of the patients. The distribution of the initial appearances of the fundus are shown in Table I.

The initial renal function was graded according to the initial level of serum urea. There was good renal function with a serum urea less than 35 mg. per 100 ml. in 88 patients, 76 had moderately impaired renal function with a serum urea between 35 and 64 mg. per 100 ml., and 36 had severe renal impairment with a serum urea greater than 65 mg. per 100 ml.

Treatment in all cases was aimed at reducing the blood pressure to approximately 130 to 140 mm. Hg systolic with the patient standing up. After investigation as inpatients, treatment was conducted on an outpatient basis, the patients attending weekly until the blood pressure was stabilized and thereafter at intervals of from one to three months. Supervision between visits to the clinic was undertaken by family physicians.

Results

Blood pressure control. In 2 patients the blood pressure could not be reduced by any of the agents used. One patient, who had Grade IV retinopathy, developed progressive renal failure, of which he died. The other had renal artery stenosis and died after an attempted operative repair of retroperitoneal bleeding.

In the remaining patients, blood pressure control was classified as good if the usual casual clinic blood pressure was below 150 mm. Hg, indifferent between 150 to 180 mm. Hg, and bad if greater than 180 mm. Hg. Using this subdivision 72 per cent of the patients had good control, 23 per cent indifferent, and 5 per cent bad control.

Mortality. Thirty-two patients died, giving a mortality rate of 16 per cent. The causes of death are shown in Table II.

TABLE II. Causes of death

Cause	Number of Patients
Renal failure	16
Cardiac infarction, including sudden death	10
Cerebral hemorrhage	3
Congestive heart failure, including 1 with rheumatic heart disease	2
Dissecting aneurysm	1
Postoperative condition	1

Of the patients who died of renal failure, all but one had severe impairment of renal function when first seen, and 8 had underlying renal disease such as membranous nephritis or pyelonephritis. Thirteen of these patients initially had Grade IV fundal changes.

The mortality rate according to initial fundal appearances are shown in Table III. If the major causes of death in the various fundal grades are examined, the distribution is shown in Table IV.

TABLE III. Number of deaths in relation to initial fundal appearances

Grade	Total Deaths	Cases in Grade (Per Cent)
I	3	6.8
II	5	5.7
III	6	16.66
IV	18	56.00

TABLE IV. Distribution of major causes of death in relation to fundal grade

Grade	Renal Patients	Renal Per Cent	Vascular Patients	Vascular Per Cent	Total
I	...	...	3	6.8	3
II	...	...	5	5.7	5
III	3	8.3	3	8.3	6
IV	13	40.6	4	12.5	18*

* Includes 1 postoperative death.

These mortality figures indicate, as might be anticipated, that hypotensive drugs do little to alter the incidence of death due to renal failure when this has become established before treatment commences. However, the fact that 14 patients with malignant hypertension but without renal failure have survived for from three to nine years, with a mean of five years, without developing renal failure, seems to indicate that provided hypotensive therapy is commenced before severe renal failure develops, renal function may be preserved without further obvious impairment.

The figures indicate also that the other major cause of death in treated hypertensive patients is cardiac infarction, whereas deaths from cardiac failure and cerebral hemorrhage are much less frequent than would be expected from other series. From other series in untreated hypertensive patients the deaths from cardiac infarction and renal failure appear to account for about 40 per cent of deaths in hypertension, and if the assumption is further made that this incidence is unaffected by treatment, then the reduction in mortality rate in this series, which is 50 to 60 per cent lower than in untreated series, is due mainly to the relative absence of congestive heart failure and cerebral vascular accident as a cause of death.

The over-all mortality figures, if the patients with renal failure initially are excluded, are about 8 per cent over a mean period of four years. In comparable series of this severity a much higher over-all mortality rate has been reported. Thus on electrocardiographic criteria, Sokolow* reported a mortality rate in five years of about 75 per cent in those with advanced electrocardiographic changes. In this series 56 per cent had such changes, yet the gross mortality rate was only 16 per cent. Moreover, in many patients electrocardiographic changes reversed with treatment.

It seems possible to conclude that in severe hypertension efficient drug therapy reduces the mortality rate very substantially, the notable exceptions being deaths from pre-existing renal failure and associated coronary artery disease.

Details of hypotensive regimens. All patients in this series received a combination of hypotensive agents. Chlorothiazide was given to all patients, in a standard dose of 500 mg. twice per day. In 5 the drug had to be discontinued because of the occurrence of skin rashes, which in 1 patient advanced to an exfoliative dermatitis requiring the use of corticosteroids. In spite of the continued use of chlorothiazide, hypokalemia has been unusual; potassium supplements are not given routinely and have been required in only 10 patients. The major disadvantage of the long-term use of chlorothiazide has been hyperuricemia, the serum uric acid rising to 7 mg. per 100 ml. or more in 45 per cent of the patients in this series.

Frank clinical gout has developed in 9 patients.

The hypotensive action of chlorothiazide is not in itself very conspicuous, but its use has two major advantages, namely, that it appears to potentiate the hypotensive action of most other drugs, thus permitting the use of smaller doses with correspondingly fewer side-effects; and second, it abolishes the tendency of reserpine and alpha methyldopa to cause sodium and water retention. This latter effect often leads to apparent tolerance, particularly with alpha methyldopa, and occasionally to loss of hypotensive effect and congestive heart failure.

Alpha methyldopa has proved effective, in combination with thiazides, in 60 per cent of the patients treated. The dose used ranges from 250 mg. daily to 8 Gm. daily. Side-effects are unusual, although somnolence is common with overdosage. Postural hypotension is not a conspicuous feature of the action of this drug.

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* Sokolow, M., and Perloff, D.: The prognosis of essential hypertension treated conservatively, Circulation 23: 697 (1961).

Reserpine has been used in 71 per cent of the patients in this series. Side-effects are uncommon; a few patients complain of rhinorrhea. Of the 140 patients treated with reserpine, 5 developed mild depression, which improved when the drug was withdrawn.

Of the total series, 65 per cent have been adequately controlled with the three drugs mentioned. The remaining one-third required in addition either guanethidine or a ganglion-blocking drug, usually either pempidine or mecamylamine.

The proportion of patients requiring the addition of guanethidine or a ganglion-blocking drug to the regimen was highest in the patients with malignant hypertension: 60 per cent of these patients required these drugs, whereas in Grades II and III only about 40 per cent required them, and in Grade I only 25 per cent. When used in combination with chlorothiazide, alpha methyldopa, and reserpine, the average dose of guanethidine required was 10 mg. twice daily, and the average dose of pempidine was 5 mg. twice daily. With this dosage schedule side-effects were in general inconspicuous, although a number of patients taking guanethidine complained of impotence and dyspnea on exertion.

Summary

The results of treatment in 200 hypertensive patients have been reviewed. The over-all mortality rate was 16 per cent, the major causes of death being renal failure due to pre-existing renal disease and vascular disease. Over half the patients could be satisfactorily treated with chlorothiazide, reserpine, and alpha methyldopa. The proportion of patients requiring guanethidine or ganglion-blocking drugs was greater in the more severe types of hypertension.

It is concluded that since side-effects are now comparatively uncommon and the major causes of death can be related to associated vascular disease or renal failure, earlier treatment of hypertension may well reduce the mortality rate still further.

Antihypertensive Action of Benzothiadiazines

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CHLOROTHIAZIDE and other diuretics of similar structure have become established as valuable therapeutic agents in the control of hypertension. While not entirely free of toxicity, these drugs produce few disturbing side-effects. In addition, they have a relatively flat dose response curve in the therapeutic range. This permits fairly uniform dose schedules, which is an important feature of drugs used in general practice. Finally, they have the valuable characteristic of enhancing the antihypertensive effects of other blood pressure-reducing drugs such as reserpine, hydralazine, guanethidine, and methyldopa. This permits lower and, hence, less toxic doses of the latter drugs.

Mechanism of antihypertensive effect

Three possible mechanisms have been advanced to explain the antihypertensive effects of the thiazide diuretics. The first two implicate the sodium-depleting effect of chlorothiazide while the third claims that thiazides act by a vasodilator mechanism that is independent of the saluretic effect.

A specific vasodilator effect of chlorothiazide discrete from its natriuretic action was first proposed by Hollander, Chobanian, and Wilkins.[1] Their evidence was based on the observation that normotensive control subjects did not exhibit an antihypertensive effect, despite a similar diuresis, and that the reduction in blood pressure began prior to a significant diuresis. This view received some support by the later discovery of diazoxide, a chemically related benzothiadiazine compound. The

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latter agent reduces blood pressure and at the same time induces sodium retention.[2-4]

Further analysis of the hemodynamic effects of diazoxide indicate, however, that its mode of antihypertensive effect is quite different from the diuretic benzothiadiazine compounds. The antihypertensive effect occurs immediately following intravenous injection and is rather transient in contrast to the diuretic compounds which require a longer period to act and then exert a more prolonged antihypertensive effect. Diazoxide appears to be a vasodilator compound since the hypotensive response is associated with an increase in cardiac output and a considerable decrease in total peripheral resistance similar to the action of peripheral vasodilators such as amyl nitrite or nitroprusside.[2,4]

The acute antihypertensive effect of chlorothiazide on the other hand is associated with a decrease in cardiac output, while total peripheral resistance usually increases.[5-7] It thus appears that diazoxide has an immediate vasodilator action which seems to be minimal or absent in chlorothiazide.

The argument that chlorothiazide reduces blood pressure prior to a significant saluresis has been disputed by other observers who found that the reduction of arterial pressure occurred only during and after the period of maximum salt loss.[8-10]

Most investigators now agree that the antihypertensive effects of thiazides are related to their ability to produce a sodium diuresis. In fact all drugs which can produce a similar degree of sodium loss will exert a comparable antihypertensive effect such as parenteral mercurials[1] and ethacrynic acid.[11] It is also well known that diets rigidly restricted in sodium will lower blood pressure and will enhance the antihypertensive effects of blood pressure-reducing drugs as well as surgical sympathectomy.[12] However, the manner in which sodium depletion reduces arterial pressure is still in dispute.

There is considerable evidence that the reduction in plasma and extracellular fluid volume which accompanies the diuresis is the important factor in bringing about the initial reduction of blood pressure.[9,13-17] In nonedematous subjects, the diuresis brings about a loss of approximately 2 L. of extracellular fluid volume of which 300 to 400 ml. represent plasma volume.[17a]

The antihypertensive effects of thiazides can be reversed in many patients by reexpanding the plasma volume with salt-free dextran solution[6,9,16,18] or by administering sufficient salt, 15 to 25 Gm. orally per day, to cause a return to control body weight.[13,15]

Depletion of blood volume by even small amounts will enhance the antihypertensive effects of certain agents, particularly of drugs which interfere with sympathetic vasoconstrictor responses.[19] This does not explain, however, how depletion of blood volume by such a relatively small amount could reduce blood pressure in hypertensive patients who are not also receiving other antihypertensive drugs.[20] It is of interest that thiazides do not reduce blood pressure in young normotensive subjects even though they produce a comparable diuresis and depletion of plasma volume.[13]

The reduction of arterial pressure induced by chlorothiazide in hypertensive patients while significant is not of great magnitude.[20] To explain it on the basis of plasma volume depletion, several mechanisms may be considered. The first involves the observation that the pressor response to infused norepinephrine in normal subjects is significantly reduced following diuresis with chlorothiazide or mercurial agents.[21,22] After restoration of plasma volume with salt-free dextran, the blood pressure responsiveness of these normal subjects returned toward and in some cases completely to normal. If the fall in plasma volume (and possibly tissue pressure) diminishes reactivity to any pressor stimulus, then chlorothiazide would also diminish the response to the unknown pressor mechanism which produces essential hypertension. Thus, thiazides reduce blood pressure when an abnormal hypertensive stimulus is in operation. Pressor responses of all types are dampened or diminished.

A second explanation for the moderate depressor effect of relatively small decrements in plasma and extracellular fluid volumes in hypertensive patients involves the baroreceptor mechanism. With aging and hypertension, homeostatic adjustments to either depressor or pressor stimuli tend to become less brisk and effective.[23,24] Moderate decreases in plasma and extracellular fluid volumes are not completely balanced by compensatory vasoconstriction as occurs in young normal subjects. It is pertinent in this regard that elderly normotensive subjects also show some reduction of arterial pressure following thiazide-induced diuresis.[25] Such faulty buffering of blood pressure may be due to reduced compliance of the aorta and carotid artery which occurs with aging and hypertension since the baroreceptor nerves are stimulated by stretching of the arterial wall. Thus, three possible mechanisms have been invoked to support the "volume" theory of blood pressure reduction produced by thiazides, as follows: (1) enhancement of depressor agents or stimuli, (2) damping of pressor stimuli resulting from plasma volume reduction, and (3) reduced baroreceptor responsiveness of hypertensive patients to such volume depletion.

The third explanation that has been advanced to explain the antihypertensive effects of thiazides also involves sodium loss. However, in this case the loss of sodium is said to reduce arteriolar constriction either by "dehydrating" the arteriolar walls or by affecting the concentration gradient of extracellular to intracellular sodium. The latter theory was advanced by Friedman, Nakashima, and Friedman.[26] Tobian *et al.*,[27] however, could find no change in the electrolyte composition of small arterial walls nor of their water content after chlorothiazide. No changes in the electrolyte concentration of the tissues could be found by other investigators either in intact[28] or nephrectomized[29] animals following this drug. This is not surprising since the early studies in man indicated the excreted sodium was derived from extracellular fluid and that water and sodium chloride were lost from that space in isotonic proportion.[17a] Thus, although these theories are attractive in their simplicity there is little objective evidence to support them.

There has been much discussion concerning the difference between the long-term and the short-term effects of thiazides. Whereas, Conway and Lauwers[31] found plasma and extracellular fluid volume depletion in the first week of treatment with chlorothiazide, these were found to return to normal after one month of treatment despite continued reduction of blood pressure. They also found cardiac output reduced after one week but normal after one or more months of continued treatment. For these reasons, they postulated that the thiazides act by some mechanism other than volume depletion during long-term therapy. Since body weight was reduced in their patients despite return to normal of the extracellular fluid volume, they postulated that there was a reduction in intracellular fluid volume during long-term treatment which might play a part in the continued reduction of blood pressure.

Wilson and Freis[17a] also found a return of plasma and extracellular fluid volumes toward but not entirely back to control levels. Body weight returned in equal proportion to extracellular fluid in contrast to the observations of Conway and Lauwers.[31] On withdrawal of chlorothiazide after four to eight months of treatment Wilson and Freis[17a] observed an overshoot of body weight, extracellular fluid, and plasma volumes to above control values. Blood pressure, however, did not rise entirely to control.

It is apparent from studies of the long-term hemodynamic effects of other antihypertensive agents that considerable modification of the initial drug action takes place with time, even though the blood pressure remains reduced. Thus, the reduction of cardiac output found in the initial period of guanethidine treatment disappears with continued treatment, and the hypotension is now due to a reduced total peripheral resistance.[32] Hydralazine initially increases cardiac output which later returns to normal during long-term therapy.[33] Similarly, the abnormalities in plasma volume and extracellular fluid space become modified after long-term treatment with chlorothiazide, but they are not entirely reversed even at six months according to the chronic studies carried out by Wilson and Freis.[17a] Strong evidence that the drug's basic action has not changed is provided by the prompt increase in these fluid compartments when chlorothiazide was discontinued.

Instead of searching for an alteration in fundamental drug action with time, it may be preferable to attempt to clarify the nature of the change in the hypertensive process which produces the return to normal hemodynamic conditions regardless of the type of agent used.

Toxic effects of benzothiadiazines

Hypokalemia is the most frequent side-effect produced by thiazide treatment. Despite initial concern about potassium deficiency, there has been no clinical evidence of renal damage or other serious manifestations of depletion of body potassium even in patients treated continuously for over five years with thiazides. Total exchangeable potassium remains unaltered during long-term treatment in man[34,35] or animals.[36] Thus, despite an initial moderate kaluresis, both clinical and experimental evidence suggests that the hypokalemia probably represents a disturbance in the potassium gradient between the extracellular fluid and tissue cells rather than a serious depletion of the body's stores of potassium.[13] Clinically, the hypokalemia has little significance except in the potentiation of digitalis toxicity.

The mechanism of the reduced serum potassium is not clear. The principal site of action of the drug appears to be at the proximal renal tubules, whereas potassium excretion occurs primarily in the distal tubules. The salt loss is said to stimulate the production of renin, which would, in turn, increase aldosterone production with possible kaluretic effects.[37] Moderate elevation of carbon dioxide-combining power can occur with thiazide administration, and metabolic alkalosis can cause a migration of potassium ions into cells.

Another common side-effect is hyperuricemia as was first pointed out by Laragh, Heinemann, and Demartini.[38] They found that while large parenteral doses were uricosuric, the customary oral doses blocked the renal tubular transport mechanisms for urate.[39] It is apparent clinically that gout is aggravated by benzothiadiazines and possibly may be caused by the drug. The hyperuricemic effect of the thiazides is readily overcome by probenecid or by allopurinol, the latter drug being especially effective in this regard.[40]

The development of hyperglycemia in occasional patients receiving thiazide drugs was first pointed out by Finnerty.[41] Carbohydrate tolerance tests carried out by Shapiro, Benedek, and Small[42] in thiazide-treated elderly hypertensive subjects indicated that further impairment of carbohydrate metabolism occurred in "potential diabetics" as judged by family history and prior glucose tolerance tests but not in "nondiabetic controls." No change in insulin requirement was found in a series of female diabetic patients who received chlorothiazide throughout the course of pregnancy.[43] These patients received supplemental potassium and also did not exhibit hypokalemia while under treatment. Others have found increases in blood sugar, especially postprandial blood sugar.[44-46] Although Wolff *et al.*[44] believed that permanent diabetes may be produced by thiazides in nondiabetic patients, others have found that the hyperglycemia is reversible on stopping the drug.[45,46] In the Veterans Administration Cooperative Study on Antihypertensive Agents the incidence of diabetes was no higher in the group receiving chlorothiazide than in patients treated by other means.[47] The burden of evidence indicates that while thiazides may reduce carbohydrate tolerance, this disturbance is reversible and probably does not lead to diabetes in nonprediabetic patients.

It is possible that the hyperglycemic effect of the thiazides is related to hypokalemia. The hyperglycemic effect of thiazides in both rats[48] and man[49] has been successfully combated by the administration of potassium supplements. Potassium depletion produced by ion-exchange resin resulted in a decrease in carbohydrate tolerance.[50] There is some evidence to suggest that hypokalemia may reduce the production of endogenous insulin.[50,51]

Other toxic effects which have been ascribed to the benzothiadiazine compounds but which are quite uncommon are dermatitis,[52] thrombocytopenic purpura,[53] and pancreatitis.[54]

Summary

Benzothiadiazine drugs enhance the antihypertensive effectiveness of other blood pressure-reducing drugs in man. In the absence of such drugs the antihypertensive effect of benzothiadiazine is of mild degree. The mechanism of the hypotensive action is associated with sodium loss and appar-

ently not to any direct vasodilator effect. Plasma and extracellular fluid volume reduction, secondary to the sodium depletion, explains part if not all of the antihypertensive effect.

The principle side-effects of thiazide administration are hypokalemia apparently without significant depletion of body stores of potassium, hyperuricemia due to interference with renal tubular transport mechanisms for urate, and reduced carbohydrate tolerance.

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Experimental Hypertension by Adrenaline, Noradrenaline, Hydrocortisone, or Nicotine

Effects of Neuroleptic, Antihypertensive, and Ataractic Drugs

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IN THE ETIOLOGY of experimental hypertension, little attention has been paid to the part of injections of adrenaline or noradrenaline in its production and in the treatment, such as prolonged administration of adrenaline or noradrenaline in oil. Hypertension has only occasionally been obtained by short (one to fourteen days) adrenaline treatment.[1] Prolonged intraperitoneal and subcutaneous administration of adrenaline (2 to 4 mg. per kilogram in oil or 0.4 to 1.7 mg. per kilogram in water) for one hundred thirty days in rats caused a considerable temporary increase in blood pressure, but it decreased almost to the initial level during treatment.[2] In dogs daily injections of 1 to 6 mg. (up to 40 mg.) adrenaline for eight months to two years elevated the systolic blood pressure. Later the blood pressure began to return to normal in spite of continued injections.[3] Subcutaneous administration of adrenaline or noradrenaline as a long-acting preparation of oil combined with sodium chloride, desoxycorticosterone, and desoxycorticosterone plus sodium chloride increased the blood pressure of rats in three months, which pressure did not persist but started to decrease and at the end of the treatment was only about 10 mm. Hg higher than initially.[4–6] In these experiments it was not possible to continue treatment with adrenaline or noradrenaline injections after three months, owing to development of necroses and infection at the site of injection.

Adrenaline, noradrenaline, and hydrocortisone hypertension

To prolong the period of treatment we tested the absorption of adrenaline and noradrenaline in glycerol solution from the rat's tail. The blood pressure was measured with a photoelectric tensometer from the rat's leg at twenty-two to twenty-six hours after treatment without anesthesia.[7] In the noradrenaline and adrenaline groups the period of treatment was from eight to eleven months and in the hydrocortisone plus sodium chloride group nearly five months. The last blood pressure was measured in the noradrenaline group at nine to thirteen months and in the adrenaline group from nine to nearly thirteen months after the treatment.

The experimental hypertension was developed in rats by daily administration of adrenaline or noradrenaline in glycerol (0.25 to 0.5 mg. adrenaline base and 0.5 to 1 mg. noradrenaline bitartrate in 1 ml. glycerol) alone or combined with hydrocortisone (2 mg. in 1 ml. glycerol) and 2 per

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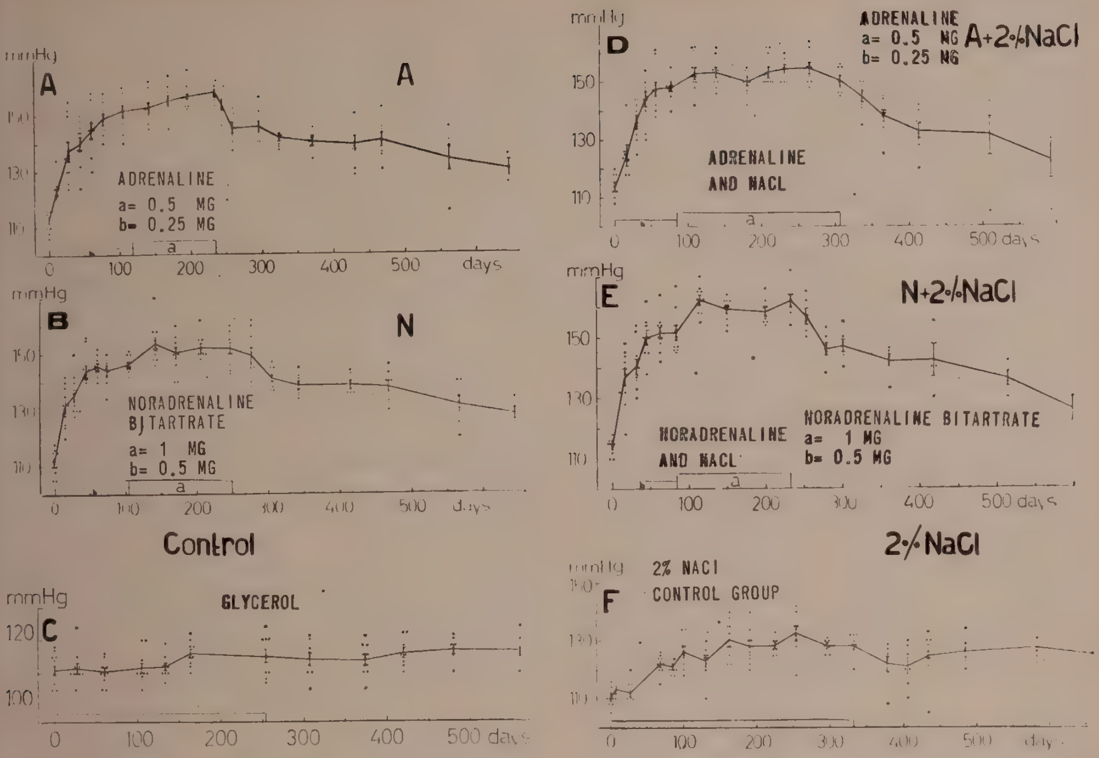


FIGURE 1. Effect of percutaneous daily absorption of adrenaline or noradrenaline in glycerol from tail of rat (0.25 to 0.5 mg. per milliliter adrenaline as base, 0.5 to 1 mg. per milliliter noradrenaline bitartrate and 2 per cent sodium chloride in drinking water) on blood pressure. (A) Adrenaline with glycerol. (B) Noradrenaline bitartrate with glycerol. (C) Glycerol as control group. (D) Adrenaline in glycerol and 2 per cent sodium chloride in drinking water. (E) Noradrenaline bitartrate in glycerol and 2 per cent sodium chloride in drinking water. (F) Two per cent sodium chloride in drinking water as control group. (a = larger and b = smaller doses)

cent sodium chloride solution as drinking water. Adrenaline, noradrenaline, or hydrocortisone are absorbed percutaneously from the tail of the rat, which is dipped once daily in the solutions mentioned without wiping glycerol from the tail.

Adrenaline and noradrenaline. A single administration of adrenaline or noradrenaline increases the blood pressure for three or four hours with the maximum of plus 17 mm. Hg from the control level of 112 to 117 mm. Hg.[8] A chronic glycerol treatment alone as control could not clearly increase the blood pressure of the rat (Fig. 1).

Adrenaline increased the blood pressure in one hundred days to 152 mm. Hg and in eight months to 158 mm. Hg. After this treatment the blood pressure decreased very slowly, being one year later clearly above the control level. Noradrenaline increased the blood pressure to 153.7 mm. Hg in nearly five months ($p < 0.001$). The blood pressure had a tendency to remain partially at the increased level also without treatment, being finally still 17 mm. Hg higher than initially ($p < 0.001$).

Our results show that prolonged percutaneous administration of adrenaline or noradrenaline to rats, the drug in glycerol being absorbed from the tail, increased the blood pressure to a hypertensive level in a few months. In general, the rise occurred slowly (four to five months), but remained significantly higher above the initial level for months, even a year, after the termination of treatment. In our tests, after treatment with adrenaline or noradrenaline, there was a clear, although extremely slow tendency of the blood pressure to decrease, for which reason the experimental hypertension was reversible.

Behind this experimental hypertension obtained there may be a persisting or slowly developing sympathicotonic vasoconstriction after adaptation of the blood vessels

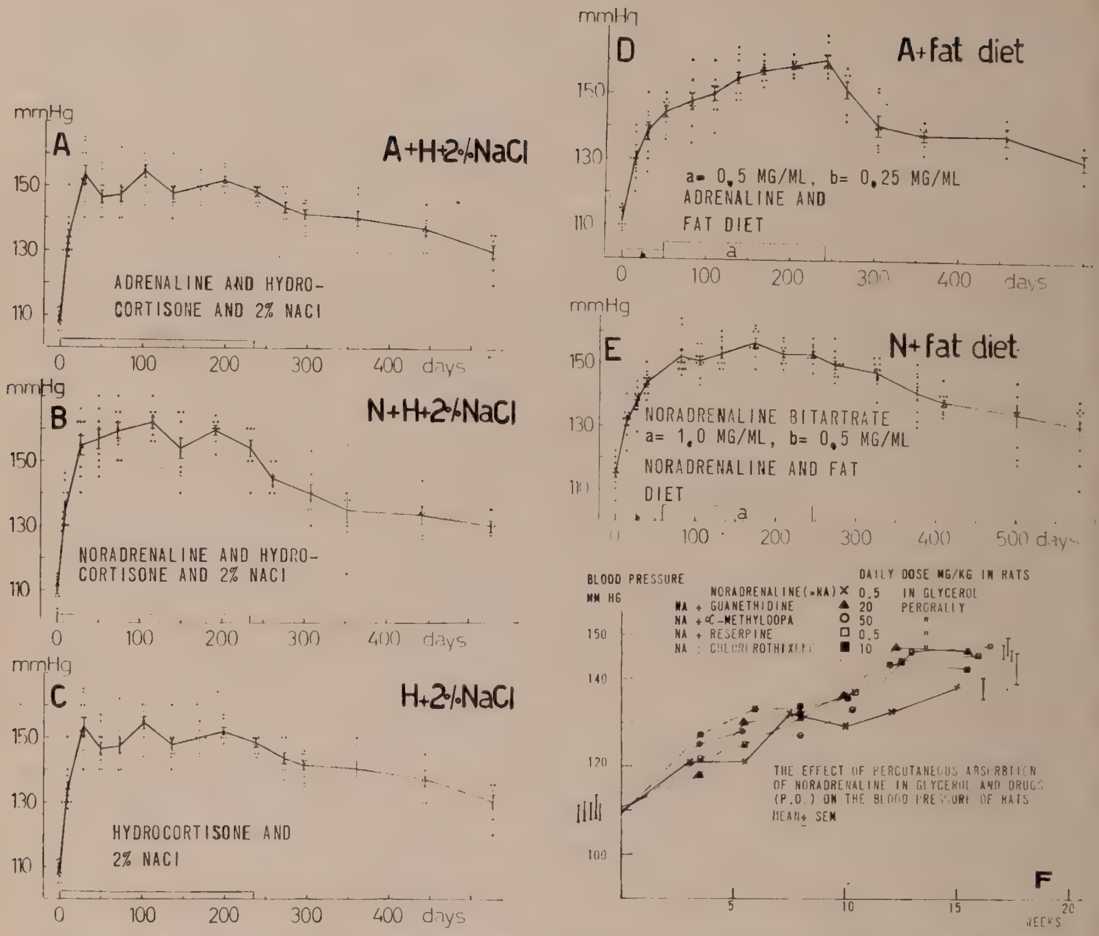


FIGURE 2. Effect of percutaneous daily absorption of adrenaline or noradrenaline and hydrocortisone from tail and 2 per cent sodium chloride in drinking water on blood pressure of rats. (A) Adrenaline 0.25 mg. per milliliter glycerol and hydrocortisone 2 mg. per milliliter glycerol and 2 per cent sodium chloride in drinking water. (B) Noradrenaline bitartrate 0.5 mg. per milliliter glycerol, hydrocortisone 2 mg. per milliliter glycerol, and 2 per cent sodium chloride in drinking water. (C) Hydrocortisone 2 mg. per milliliter glycerol and 2 per cent sodium chloride in drinking water. (D) Adrenaline 0.25 (=b) to 0.5 (=a) mg. per milliliter and high-caloric fat diet. (E) Noradrenaline bitartrate 0.5 (=b) to 1 (=a) mg. per milliliter and high-caloric fat diet. (a=larger, b=smaller doses) (F) Effect of percutaneous absorption of noradrenaline in glycerol and antihypertensive drugs on blood pressure of rats.

to a certain level of vasoconstriction. Prolonged percutaneous administration of adrenaline or noradrenaline during several months might finally stabilize the vasoconstriction to a certain level, which could continue for several months without further treatment with adrenaline or noradrenaline.

Sodium chloride, adrenaline, and noradrenaline. Simultaneous administration of adrenaline and sodium chloride increased the blood pressure to 155 mm. Hg in nearly nine months and that of noradrenaline to 162 mm. Hg in nearly four months. (Fig. 1). The blood pressure decreased slowly, being finally still higher than initially. Sodium chloride 2 per cent as drinking water also increased the blood pressure during eight months treatment to 133 mm. Hg ($p < 0.001$), which continued also a long time after the treatment. In our series the sodium chloride alone (2 per cent in drinking water) increased the blood pressure in eight months by 23 mm. Hg or only slightly, but significantly above the control. The blood pressure-increasing effect of sodium chloride is well known.[9-11] The experimental hypertension, caused by simultaneous administration of adrenaline or noradrenaline and 2 per cent sodium chloride as drinking water, was not higher or more prolonged than the hypertension obtained by administration of adrenaline or noradrenaline alone.

HYDROCORTISONE, ADRENALINE, NORADRENALINE, AND SODIUM CHLORIDE. Simultaneous administration of adrenaline, hydrocortisone, and 2 per cent sodium chloride in drinking water increased the blood pressure during eight months to 154 mm. Hg and that of noradrenaline to 162 mm. Hg. A combination of hydrocortisone with adrenaline or noradrenaline and sodium chloride showed a rapid initial increase of the blood pressure in less than one month. After treatment the blood pressure decreased slowly, being still significantly ($p < 0.001$) higher than initially in both groups. Hydrocortisone combined with 2 per cent sodium chloride treatment as drinking water increased the blood pressure in one month to 145 mm. Hg. After nearly five months treatment it was still on the same level. The increased blood pressure had a tendency to continue also after this treatment (Fig. 2).

In one month during the present investigation, percutaneous administration of hydrocortisone and 2 per cent sodium chloride in the drinking water, but not the sodium chloride alone, was clearly observed to accelerate the increase in the blood pressure caused by adrenaline or noradrenaline almost to the maximum. This points to the fact that the adrenocortical factors may promote and accelerate the increase of blood pressure of rats. In our series also after hydrocortisone and sodium chloride treatment the blood pressure remained elevated for long periods of time, just as after prolonged administration of adrenaline or noradrenaline. In several experiments cortisone and hydrocortisone produced the experimental hypertension in a time of a few days to two weeks.[12-18]

HIGH CALORIC FAT DIET, ADRENALINE, AND NORADRENALINE. A high caloric fat diet combined with adrenaline or noradrenaline increased the blood pressure as did adrenaline or noradrenaline alone, showing during adrenaline administration a tendency to further increase, adrenaline to the maximum 160 mm. Hg and noradrenaline 156 mm. Hg. After treatment the blood pressure was finally still significantly higher than initially ($p < 0.001$) (Fig. 2).

OTHER AGENTS. In the noradrenaline hypertension of rats guanethidine (20 mg. per kilogram daily), alpha-methyldopa (50 mg. per kilogram), reserpine (0.5 mg. per kilogram), and chlorprothixene (10 mg. per kilogram daily) were not effective for inhibiting the increase of blood pressure by exogenous noradrenaline (Fig. 2F). On the contrary, the mean increase of the blood pressures was actually higher (35, 37, 35, and 33 mm. Hg respectively), but significantly higher only in the group with alpha-methyldopa, than in the noradrenaline group without antihypertensive drugs (28 mm. Hg). It is well known that the mechanism of the three antihypertensive drugs is closely connected with the noradrenergic mechanism. The effect of these antihypertensive drugs on the development of experimental noradrenaline hypertension during fifteen and a half to sixteen weeks is not the same as in the treatment of essential hypertension in man. Experimental noradrenaline hypertension therefore is more resistant for the antihypertensive treatment during the administration of exogenous noradrenaline than essential hypertension. However, we have not yet studied the effect of antihypertensive drugs without simultaneous noradrenaline administration after the development of experimental noradrenaline hypertension. Then the effect of antihypertensive drugs could be greater and more comparable to the treatment of essential hypertension because in experimental noradrenaline hypertension without noradrenaline treatment the blood pressure already has a very slow tendency to decrease.

Inhibition of nicotine hypertension by drugs

In the experimental nicotine hypertension the blood pressure increased to its maximum in four or five months,[18,19] confirming the results of Kin,[20] and Wenzel, Wattanapongsiri, and Vedral,[21] and decreased thereafter slowly nearly to normal blood pressure. Nicotine was given to rats with drinking water (average dose 1.7 mg. per kilogram per twenty-four hours). The drugs were administered either in drinking water or in food. The nicotine treatment increased the blood pressure in fourteen weeks from 113 to 146 mm. Hg, after which it decreased slowly in nearly four months to 128 mm. Hg. In the other

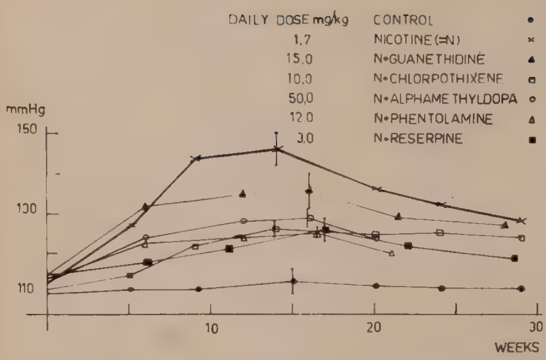


FIGURE 3. Inhibition of nicotine hypertension of rats (1.7 mg. per kilogram nicotine in drinking water daily) by sympatholytic, antihypertensive, or neuroleptic drugs (mean blood pressures in groups of 10 rats).

groups the blood pressure rose to its maximum from fourteen to seventeen weeks, except with thioridazine in twenty weeks and with opipramol in twelve weeks.

Reserpine, alpha-methyldopa ($p < 0.01$) as antihypertensive drugs, phentolamine as sympatholytic ($p < 0.01$), and chlorprothixene as a neuroleptic drug prevented significantly ($p < 0.001$) the development of nicotine hypertension. Maximum blood pressures were 126, 129, 125, and 126 mm. Hg respectively, and the increases of blood pressures were plus 11, 16, 11, and 15 mm. Hg respectively (Fig. 3). The most effective inhibitors of nicotine hypertension were phentolamine (12 mg. per kilogram per twenty-four hours) and a high dose of reserpine (3 mg. per kilogram per twenty-four hours). The maximum increase of blood pressure during reserpine or phentolamine treatment was only 33 per cent of that of nicotine hypertension without these drugs, during alpha-methyldopa treatment (50 mg. per kilogram per twenty-four hours) 49 per cent, and guanethidine treatment (15 mg. per kilogram) 69 per cent (maximum blood pressure 136 mm. Hg). A smaller dose of reserpine (0.5 mg. per kilogram per twenty-four hours) combined with chlorthalidone (10 mg. per kilogram per twenty-four hours) could not inhibit the development of experimental nicotine hypertension (Fig. 4A).

Among neuroleptic drugs the most effective inhibitor of nicotine hypertension in one series was chlorprothixene (10 mg. per kilogram per twenty-four hours). The maximum increase of blood pressure to 126 mm. Hg (plus 15 mm. Hg) was during chlorprothixene treatment, 45 per cent that of nicotine hypertension without this drug; during opipramol (20 mg. per kilogram per twenty-four hours, $p < 0.01$) 57 per cent; chlorpromazine (10 mg. per kilogram per twenty-four hours, $p < 0.05$) 61 per cent; imipramine (18 mg. per kilogram per twenty-four hours, $p < 0$) 64 per cent; thioridazine (25 mg. per kilogram per twenty-four hours, $p < 0.01$) 67 per cent; and amitriptyline (10 mg. per kilogram per twenty-four hours, $p < 0.01$) 76 per cent. The maximum blood pressures were respectively 130, 132, 129, 130, 131, 129, and 131 mm. Hg (Fig. 4B). However, in one series chlorprothixene (10 mg. per kilogram per twenty-four hours) was not effective, showing the variability in the inhibition of nicotine hypertension (Fig. 4A).

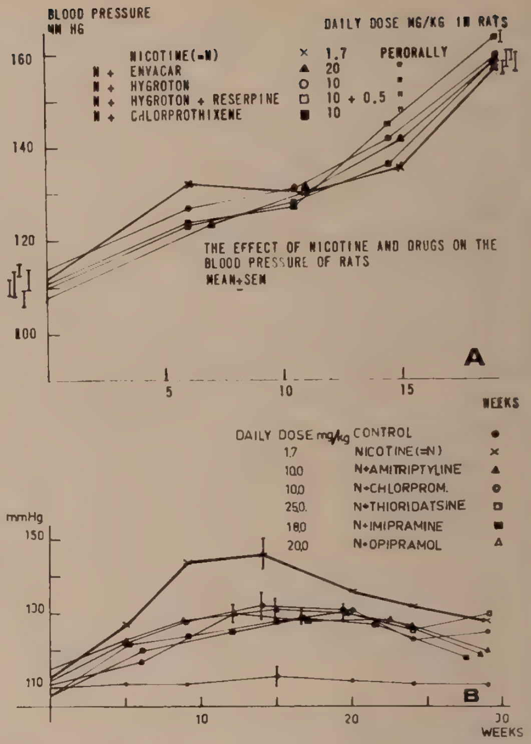


FIGURE 4. Effect of nicotine and drugs (A) on blood pressure of rats. (B) Inhibition of nicotine hypertension of rats (1.7 mg. per kilogram in drinking water) by neuroleptic and thymoleptic drugs (mean blood pressures in groups of 10 rats).

After the maximum increase of the blood pressure by chronic nicotine treatment, it

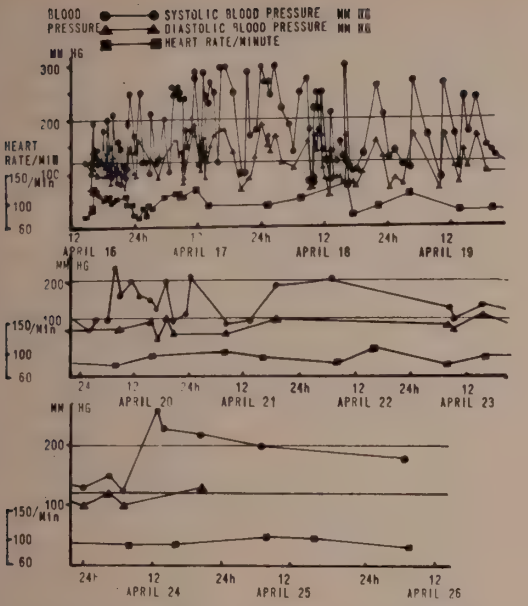


FIGURE 5. Variation of systolic and diastolic blood pressure in patient with paroxysmal hypertension and pheochromocytoma of left adrenal gland during paroxysmal phase, before treatment with chlorprothixene.

decreased slowly in spite of further treatment with nicotine, showing the biphasic response, an initial increase, and secondary decrease, as in the experiments of Kin[20] and Wenzel, Wattanapongsiri, and Vedral[21] (Figs. 3 and 4 B).

The inhibition of nicotine hypertension by high doses of reserpine and guanethidine is due to a depletion of the neuronal reserves of noradrenaline, in the phentolamine group, and partly in the group of neuroleptic drugs due to the alpha-sympatholytic action, in the alpha-methyldopa group to its metabolite, alpha-methyl-noradrenaline acting as a weaker transmitter than noradrenaline in the sympathetic nerves, and in the group of neuroleptic drugs partly either to the inhibition of adrenomedullary secretion or the secretion from the sympathetic nerves or to their weak sympatholytic action.

Chlorprothixene treatment in paroxysmal hypertension and pheochromocytoma

CASE 1. The patient, a dressmaker of fifty-four years, had had paroxysmal increases of blood pressure to 200 to 240 mm. Hg with symptoms of sweating, weakness, tremor,

TABLE I. Systolic and diastolic blood pressure values and daily mean blood pressures in patient with paroxysmal hypertension and pheochromocytoma of left adrenal gland before and during one-month treatment with chlorprothixene (150 mg. per day). (Lower) Number of measurements in parentheses

Blood pressure mm Hg	Number of observations			
	Before treatment 11 days		During treatment 32 days	
	Systolic	Diastolic	Systolic	Diastolic
≦100	12	42	5	52
101-160	70	45	125	5
161-200	16	18	9	0
201-250	27	0	0	0
251-300	19	0	0	0

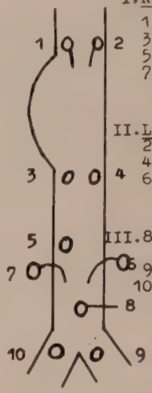
Before treatment			During treatment		
Date	Systolic	Diastolic	Date	Systolic	Diastolic
April	mm Hg	mm Hg	May	mm Hg	mm Hg
16	137 (32)	105 (20)	3	144 (21)	88 (2)
17	203 (48)	137 (35)	4	119 (5)	
18	167 (26)	110 (24)	5	147 (9)	
19	165 (16)	114 (13)	6	128 (7)	
20	159 (13)	101 (5)	7	124 (6)	
21	135 (3)	105 (2)	8	113 (7)	70 (1)
22	200 (1)		9	126 (6)	
23	138 (4)	110 (4)	10	129 (12)	80 (5)
24	197 (5)	117 (3)	11	124 (9)	86 (8)
25	200 (1)		12	123 (7)	90 (3)
26	180 (1)		13	109 (8)	90 (1)
			14	145 (2)	
			15	160 (1)	100 (1)
			16	130 (1)	
			18	130 (3)	90 (3)
			19	135 (3)	97 (3)
			20	128 (7)	86 (6)
			21	138 (9)	97 (9)
			22	123 (6)	85 (6)
			23	136 (4)	93 (4)
			24	138 (5)	95 (5)
			25	135 (1)	85 (1)
			26	130 (1)	90 (1)
			27	145 (2)	100 (2)
			29	130 (2)	85 (2)
			31	130 (1)	80 (1)
			June 1	140 (1)	100 (1)
			2	140 (1)	100 (1)
			3	145 (1)	105 (1)

paleness, headache, and precordial pains and was treated for "thyreotoxicosis" and hypertension in 1951, 1959, and 1961. In 1959 and 1961 the blood pressure varied from 120/100 to 260/150 mm. Hg and from 260/150 to 180/100 mm. Hg. Serum cholesterol (375 to 425 mg. per 100 ml.) and basal metabolic rate (plus 52 per cent) were elevated and serum protein-bound iodine (5.7 micrograms per 100 ml.) and serum creatinine (0.7 mg. per 100 ml.) were normal. Digitalis was given in 1959 for a short period because of slight congestive heart failure. In February, 1965, the patient had a minor cerebral insult with disturbances of consciousness, paresthesias in hand and leg, and partial muscular paralysis of the forearm. She was given chlorthalidone and reserpine by her physician for one month before hospitalization. On April 16, 1965, the patient was sent to the hospital when, in connection with an attack of sweating, palpitations, and tremor, a low blood pressure was found, 90/80 mm. Hg. Myocardial infarction or adrenocortical insufficiency was suspected. She was given dextran 6 per cent (Macrodex) with metara-

TABLE II. Systolic and diastolic blood pressure in patient with pheochromocytoma. Effect of small dose (45 and 60 mg. daily) and short period of administration of large (150 mg.) dose of chlorprothixene and operation of pheochromocytoma on blood pressure

Date	Systolic/-Diastolic Blood Pressure (mm. Hg)	Chlorprothixene (mg. Daily)
1965		
July 31	180–200/110–115	45
Aug. 12	200/110	60
Sept. 6	165/100	60
Sept. 7	175/110	45
Sept. 8	180/110	45
Oct. 5	130/80	45
Oct. 6	165/100–150/100	45
Oct. 7	175/100	45
Oct. 8	180/110	45
Oct. 9	175/110	45
Oct. 15	210/130	0
Oct. 16	170/110	0
Oct. 18	210/110	0
Oct. 19	190/105	45
Oct. 20	200/120	45
Dec. 31	220–190/110–115	45
1966, January		
13	110/180/80–100	0
14	150–190/100–120	0
15	180/120	0
17	180/120	0
18	180/100	0
20	140/80	0
21	150/100	150
22	150/85	150
23	155/95	150
24	145/95	150
25	160–145/105–100	150
28	150/100	150
29	155/95	150
1966, February (postoperative)		
2	115–140/85–90	0
4	105–145	0
5	100–130	0
6	100–135	0
9	110–125/80	0
10	105–110	0
11	105–115	0
13	105	0
14	110	0
15	95–110	0
16	100	0
17	105/70	0
18	115/85	0
19	155/100	0

TABLE III. Concentration of noradrenaline and adrenaline (micrograms per liter) in plasma of left renal vein and vena cava in patient with pheochromocytoma of left adrenal gland before operation. Catheterization through saphenous vein at different levels of vena cava



January 19, 1966	μg/liter	
	N	A
I. Right side of vena cava		
1=anterior cava	4.6	0.1
3=posterior cava	8.7	0.7
5=XII thoracal vertebra	15.8	0.6
7=I lumbar vertebra (v.renalis	9.5	0.5
II. Left side of vena cava		
2=anterior cava	3.2	0.4
4=posterior cava	3.7	0.3
6=I lumbar vertebra (v.renalis)	778.9	0
III. 8=IV lumbar vertebra	3.6	0.4
central part of vena cava	3.2	0
9=v.iliaca comm.sin.	3.9	0.1
10=v.iliaca comm.dx.		

minol and hydrocortisone. The systolic blood pressure varied greatly, from 80 to 295 mm. Hg. The patient had polydipsia, headache, excessive cold chills and sweating, especially when the blood pressure was high, and sometimes vomiting. These symptoms continued for a fortnight and were often very severe. The systolic and diastolic blood pressures showed intensive variations, maximum 300 and 190 mm. Hg respectively (Fig. 5). In the first eleven days in the hospital the systolic blood pressure was measured 27 times over 200 mm. Hg and 19 times over 250 mm. Hg, and paroxysmal increases of the blood pressure occurred 9 to 11 times on the first two days in the hospital (Table I). Between April 22 and 24 the patient complained of very intensive left scapular pain, and the systolic blood pressure showed a tendency to decrease, increasing again when the pain was over, April 26, to 220 mm. Hg. The attacks of weakness, chill, and sweating continued all the time. The diagnosis of coronary infarction was confirmed by electrocardiographic and vectorcardiographic findings as well as by elevated serum lactic dehydrogenase levels (maximum 1,040 units per milliliter). Further x-ray examinations of noradrenaline tumor and possible surgical treatment were therefore postponed. The clinical symptoms of myocardial infarction were masked by the simultaneous paroxysmal attacks of hypertension. The tumor was localized first after catheterization of the posterior and anterior venae cavae and left lumbar vein.

Postoperatively the blood pressure generally decreased to 100–155/70–110 mm. Hg (Table II). From the left adrenal gland the pheochromocytoma was removed (weight 31.04 Gm. without connective tissue, diameters 37 and 42 mm.). It contained 94.42 mg. of noradrenaline and 19.99 mg. of adrenaline. The catheterization for vena cava with x-ray television showed a highly elevated noradrenaline content in the plasma of the left renal vein; 778.9 micrograms per liter of plasma and a clearly elevated content of noradrenaline were observed also in other

TABLE IV. Effect of chlorprothixene treatment on (top) daily and (bottom) weekly excretion of noradrenaline (N) (micrograms per twenty-four hours) and vanilmandelic acid (VMA) (milligrams per twenty-four hours) and urine volume (milliliters per twenty-four hours) in patient with pheochromocytoma

Date	Urine ml/24 h	NA µg/24 h	VMA mg/24 h
April 18	900	1753.0	51.3
19	600	1817.0	34.3
20	720	2443.0	42.6
26	760	4217.0	61.7
27	620	6739.0	62.3
28	555	3029.0	48.5
May 1	treatment with chlorprothixene begins		
4	1950	1815.3	42.5
5	2050	1686.7	29.9
6	1550	1174.1	24.5
7	2100	1529.1	33.9
8	1950	1452.2	31.7
11	1600	941.8	23.2
17	1750	858.4	19.0
18	1950	683.7	19.9
19	2000	822.0	17.3
20	1900	528.0	18.6
21	1800	527.0	16.2
25	1100	311.2	7.9
27	1600	523.4	17.5
29	2400	366.4	14.4
June 6	1100	560.4	17.8
7	1200	484.1	16.2
14 15	2050/24 h	662.8	22.4

Week	Urine ml/24 h	NA µg/24 h	VMA mg/24 h
1st	750	2004.0	42.7
2nd	650	4661.6	57.5
Treatment with chlorprothixene begins			
1st	1900	1301.3	32.7
2nd	1800	1197.0	27.5
3rd	1900	683.8	18.2
4th	1350	417.3	12.7
5th	2400	366.4	14.4
6th	1150	522.3	17.0
7th	2050	662.8	22.4

samples from the vena cava (3.2 to 15.8 micrograms per liter (Table III).

Vanilmandelic acid and noradrenaline excretions. During the paroxysmal hypertensive phase the urinary excretion of vanilmandelic acid and noradrenaline was greatly elevated (Table IV). During the first two weeks in the hospital the daily excretion of vanilmandelic acid ranged from 34.3 to 62.3 mg. per twenty-four hours and that of noradrenaline from 1,753 to 6,739 micrograms per twenty-four hours, higher in the second than in the first week in the hospital. The highest values were measured when the worst attacks of paroxysmal hypertension as well as the pain of coronary infarction seemed to be over (April 26 to 28). The blood pressure was then not measured at short intervals.

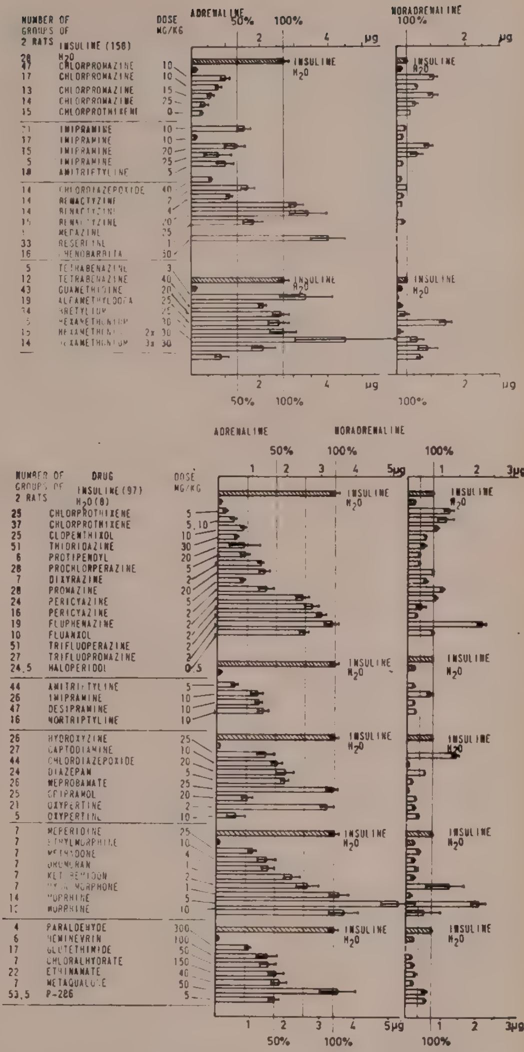


FIGURE 6. Effect of drugs on excretion of adrenaline and noradrenaline (micrograms per five hours) in urine during insulin shock of rats (4 I.U. per kilogram intramuscularly). Excretion of adrenaline and noradrenaline in insulin shock as control for drug groups (100 per cent).

According to our experimental evidence certain neuroleptic drugs, such as chlorprothixene, chlorpromazine, prochlorperazine, thioridazine, and prothipendyl may inhibit and control the increased excretion of adrenaline during insulin shock in rats,[22] although in later studies we observed that this inhibition depends also partly on their good inhibiting effect on hypoglycemia in rats (Figs. 6 and 7).

Chlorprothixene treatment. Chlorprothixene was given perorally to this patient with paroxysmal hypertension, 150 mg. daily (3 times 50 mg.) from May 1 for one month.

The paroxysmal increases of the blood pressure and the subjective neurogenic symp-

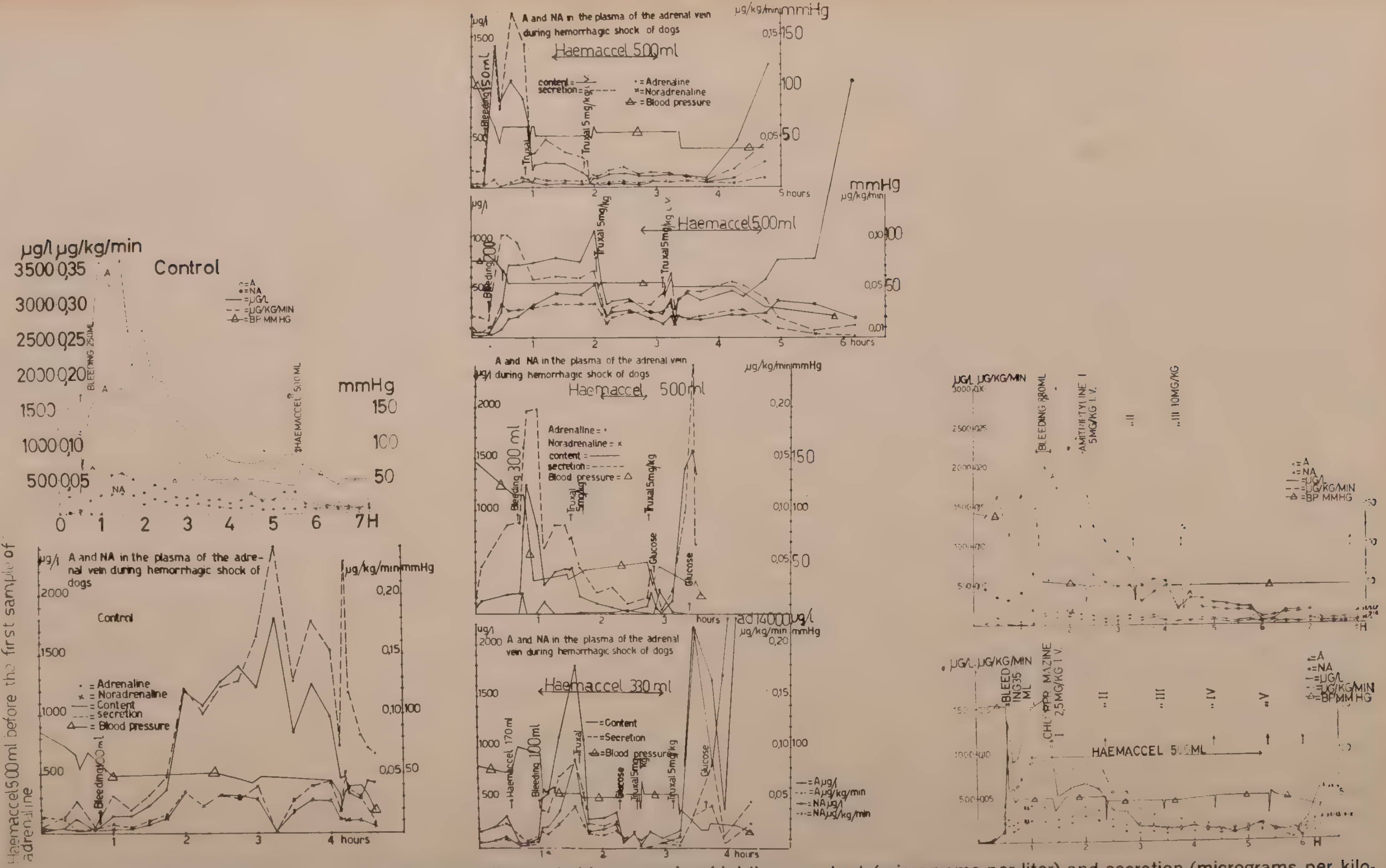


FIGURE 7. Effect of chlorprothixene (center), amitryptyline and chlorpromazine (right) on content (micrograms per liter) and secretion (micrograms per kilogram per minute) of adrenaline and noradrenaline in adrenal vein in irreversible hemorrhagic shock of dogs. Two control groups of hemorrhagic shock (left).

toms in pheochromocytoma, sweating, weakness, tremor, paleness, headache and precordial pains, palpitations, and polydipsia, which often were severe, seemed to have been almost completely checked by this treatment at the hospital. During the thirty-two days treatment in the hospital the systolic blood pressure was only 9 times over 160 mm. Hg and never over 200 mm. Hg (Table I, top). Before treatment the diastolic blood pressure was observed 18 times to be over 160 mm. Hg and 54 times 101 to 160 mm. Hg, and during the thirty-two days treatment it was only 5 times between 101 to 160 mm. Hg and generally under 100 mm. Hg. Where the daily mean systolic blood pressure before treatment generally was between 135 to 203 mm. Hg and the diastolic between 101 to 137 mm. Hg, during the treatment it was between 113 to 160 mm. Hg and 70 to 105 mm. Hg, respectively (Table I, lower).

At home the dose was reduced in June to 45 mg. chlorprothixene daily, and the blood pressure showed a tendency to increase again. The patient however, had no subjective neurogenic symptoms under normal conditions and no paroxysmal increases of the blood pressure (Table II). From August 1 to September 6 the dose was 60 mg. daily and then again 45 mg.

During chlorprothixene treatment, 150 mg. daily, at the hospital, the patient felt well and the vanilmandelic acid excretion decreased slowly in twenty-one days to 16.2 mg. per twenty-four hours, stabilizing at this level, being usually over 15 mg. per twenty-four hours. The excretion of noradrenaline decreased at the same time in twenty-one days to the level of 527 micrograms per twenty-four hours, stabilizing at this level at the hospital (Table IV).

At home after the smaller dose of chlorprothixene in June, 45 mg. daily, the excretion of vanilmandelic acid started to increase slowly and slightly to the level of 25 to 30 mg. per twenty-four hours and that of noradrenaline to the level of 700 to 1,300 micrograms (except one day 5,568 micrograms in twenty-four hours) in summer and to the level of 300 to 900 micrograms per twenty-four hours in the following January. When the patient was one week without chlorprothixene before October 18, the noradrenaline excretion increased to 1,586.3 and 1,655.5 micrograms and that of vanilmandelic acid to the maximum of 43.7 mg. per twenty-four hours, while in January, when without chlorprothixene treatment (January 1 to 20), the excretion of noradrenaline was not higher than that with the smaller dose of chlorprothixene (45 mg. daily). When the dose of chlorprothixene was again increased to 150 mg. daily for nine days, the excretion of noradrenaline decreased first on the ninth day, to 349.1 micrograms and that of vanilmandelic acid to 15.5 micrograms per twenty-four hours, or very slowly, as during treatment in the hospital. It is important to observe that the effect of chlorprothixene with higher dose, 150 mg. daily, on the excretion of noradrenaline and vanilmandelic acid at the beginning of treatment in May, 1965, appeared only gradually, in twenty-one days and not immediately.

After the removal of the pheochromocytoma from the left adrenal gland, the excretion of noradrenaline and vanilmandelic acid to normal ranges (vanilmandelic acid 4.9 to 7.1 mg. and noradrenaline 24.8 to 103.2 micrograms per twenty-four hours) (Table V).

Although the vanilmandelic acid and noradrenaline excretions clearly decreased after beginning treatment with 150 mg. daily of chlorprothixene, this larger dose could not control the increased excretion of these substances completely. In spite of this treatment both excretions were approximately 4 to 6 times above their normal values but several times smaller than before the chlorprothixene treatment of 150 mg. daily. In this case it was most important to control the excretion of noradrenaline and vanilmandelic acid and thus the hypertensive attacks, which could have been fatal for a patient with myocardial infarction. In our opinion the use of chlorprothixene in this patient was favorable and probably lifesaving.

Evaluating the effect of chlorprothixene treatment in the control of noradrenaline-secreting tumors, spontaneous variations of the diseases should be taken into consideration. It is difficult to evaluate the role of a possible spontaneous remission and of simultaneous myocardial infarction in the clinical picture and in the changes of noradrenaline and vanilmandelic acid excretions in this patient. Only further studies on the effects of neuroleptic drugs in patients with pheochromocytoma can give a final assessment of the clinical value of this treatment in the control of noradrenaline and vanilmandelic acid, paroxysmal attacks of hypertension, and subjective symptoms. In the evaluation of the value of chlorprothixene in the control of paroxysmal hypertension and noradrenaline and vanilmandelic acid excretions, antipsychotic large daily doses, 150 mg. daily, are needed. They also have sympatholytic action. Small doses, 45 mg. daily, seem not to be effective in decreasing blood pressure or in controlling the excretion of noradrenaline and vanilmandelic acid effectively. However, the smaller doses also seem to prevent the paroxysmal hypertensive attacks and the unpleasant subjective symptoms. Experience with chlorprothixene in pheochromocytoma is small. In cases of pheochromocytoma, therefore, it is advisable to start the treatment with gradually increasing doses of chlorprothixene to prevent rapid decreases of blood pressure.

Case 2. A fifty-five-year-old woman had only one highly elevated blood pressure, 260 mm. Hg (Table VI). It was usually 130 to

Table V. Excretion of noradrenaline (N), adrenaline (A) (micrograms per twenty-four hours) and vanilmandelic acid (VMA) (milligrams per twenty-four hours) in patient with pheochromocytoma. U = urine volume in milliliters per twenty-four hours

Date	Chlorprothixene (mg. Daily)	A and N		VMA	U
1965					
May 21	150 (from May 1)	305.0		17.0	1,685
May 22	150	618.1		19.3	2,115
May 28	45	642.9		17.7	1,880
May 29	45	668.7		22.1	1,760
June 6	45	645.6		13.4	1,980
June 7	45	632.3		19.7	2,050
June 13	45	849.0		23.9	1,720
July 14	45	749.6		20.2	2,000
July 18	45	924.3		23.4	1,750
July 20	45	851.3		21.3	2,130
July 26	45	1,027.3		23.0	2,000
July 27	45	1,273.7		34.6	2,150
Aug. 2	60	1,347.9		34.1	2,080
Aug. 3	60	952.4		28.9	1,620
Aug. 9	60	1,033.1		25.0	2,050
Aug. 10	60	1,029.6		21.9	2,190
Aug. 16	60	1,364.5		25.5	2,100
Aug. 17	60	5,568.6		27.9	2,050
Aug. 23	60	1,224.9		28.0	2,250
Aug. 24	60	1,127.9		26.2	1,800
Oct. 8	45	545.0		12.9	810
Oct. 18	0 (from Oct. 12)	1,586.3		11.3	1,400
Oct. 19	45	1,655.5		43.7	950
1966, January					
11	0	165.0	601.8	19.6	900
12	0	. . .	618.3	17.7	1,000
13	0	. . .	898.4	25.6	1,450
14	0	143.6	383.4	15.2	1,520
15	0	144.9	385.3	21.8	900
16	0	453.7	702.1	34.5	1,670
17	0	252.4	661.1	25.3	1,750
18	0	246.7	395.7	23.0	1,350
21	150	224.2	825.2	30.2	1,300
22	150	113.7	909.8	29.7	1,550
23	150	151.5	726.2	29.2	1,560
24	150	57.6	764.4	29.4	2,550
25	150	184.3	541.6	24.4	1,700
26	150	151.6	677.2	25.8	1,970
27	150	112.1	668.9	25.5	2,500
28	150	. . .	728.5	23.9	2,090
29	150	. . .	725.2	21.1	2,100
30	150	. . .	724.3	23.7	2,500
31	150	46.0	349.1	15.5	2,040
1966, February (operation Feb. 2)					
4	0	3.2	53.8	7.1	2,190
6	0	16.3	80.2	6.2	650
7	0	22.4	37.8	6.5	550
8	0	12.5	24.8	6.1	450
10	0	23.2	41.9	5.2	750
11	0	17.6	85.0	4.9	1,700
12	0	8.2	70.2	5.3	1,340
13	0	. . .	88.5	6.8	1,760
14	0	5.4	74.7	6.8	1,300
15	0	. . .	96.5	6.5	1,150
16	0	. . .	75.1	6.7	1,500
17	0	5.3	103.2	6.7	1,670
18	0	. . .	88.0	6.4	1,580

TABLE VI. Excretion of noradrenaline and adrenaline (micrograms per twenty-four hours) and vanilmandelic acid (milligrams per twenty-four hours) in patient with metastasizing pheochromocytoma (1965)

Date	A and N		VMA	Chlorprothixene (mg. Daily)
September				
23	129.9*		118.8	. . .
24	190.7*		116.7	. . .
28	140.8*		102.1	. . .
30	172.0*		162.9	. . .
October				
[illegible]	94.1		62.9	. . .
19†	178.0	155.[illegible]	97.3	150 (from Oct. 9)
20	246.9	219.3	152.7	150
22**	147.5	190.4	120.0	150
24	149.1	194.2	119.9	150
25	135.3	206.4	122.5	150
26	263.6	401.6	141.0	150
27	142.6	179.3	140.6	150
28	122.7	197.5	127.5	150
29	99.9	233.0	130.6	150
November				
2	113.1	216.6	112.8	150
3	100.6	226.4	144.9	150
4	103.6	199.8	180.6	150
5	59.1	163.1	161.5	150
8	80.5	182.8	131.6	150
9	131.6	138.6	141.0	150
12	0	323.0	133.9	150
13	129.0	0	95.2	150
29	0	550.4	159.5	150

* A plus N = equivalents.

† Operation October 4, 1965.

** Cytoxan 50 mg. daily from October 19 and 150 mg. daily from October 22.

160 mm. Hg. The patient had tiredness, hematuria, a weight loss of 4 Kg. in two months, pain in the lumbar region, and dizziness. The first time she had hematuria was in 1958. In August, 1965, she had vomiting and nausea, and x-ray studies showed a tumor of the right kidney. In the hospital the general condition was relatively good and the tumor was palpated under the liver on the right side. In the urine were large numbers of leukocytes and gram-negative rods and only a few erythrocytes. Bronchopulmonary sedimentation rate was 68 mm. In the histamine test the blood pressure rose from 120/80 to 270/135 mm. Hg. The excretion of vanilmandelic acid was highly elevated, between 102.1 to 162.9 mg. and that of adrenaline plus noradrenaline between 129.9 to 190.7 micrograms per twenty-four hours. The patient was operated on, and an inoperable metastasizing pheochromocytoma was found in the right kidney region, fixed to liver, where several nodules were observed. After the operation day the blood pressure was between 120–190/70–90 mm. Hg. The patient received 150 mg. of chlorprothixene daily from October 9 to March 15. Cyclophosphamide (Endoxan) treatment was given from October 19, 1965, 50 mg. daily, and from October 22, 150 mg. daily up to December 21, 1965.

During the chlorprothixene treatment the excretion of vanilmandelic acid did not decrease; it was continuously elevated. Also the excretion of noradrenaline plus adrenaline, which was only slightly elevated, did not decrease during this treatment. The effect of chlorprothixene in this case is partly influenced by cytostatic treatment with cyclophosphamide. However, the patient's well-being has continued, in spite of the large inoperable metastasizing pheochromocytoma in renal and liver area found at operation. The effect of chlorprothixene was not sufficient to control the secretion from the metastasizing tumor which was not under nervous control. According to this observation, the effect of chlorprothixene can be seen only in pheochromocytoma. It is also interesting to observe that the metastasizing tumor had a nearly symptomless case history for pheochromocytoma tumor and nearly normal blood pressure in spite of very high vanilmandelic acid excretion. On the other hand the first patient with smaller excretion of vanilmandelic acid and higher excretion of noradrenaline showed much greater influence on the blood pressure than this patient with metastasizing pheochromocytoma.

Comment

In the evaluation of the effect of chlorprothixene in the control of paroxysmal hypertension and excretion of noradrenaline and vanilmandelic acid, as "specific adrenomedullary inhibitor," some of our experimental findings in animals support this fact. This pheochromocytoma had secretion of noradrenaline. If pheochromocytoma includes secretion of adrenaline, chlorprothixene's effect on the blood pressure is not yet known. The possible reversal effect of chlorprothixene on the blood pressure in neurogenic adrenaline hypertension of pheochromocytoma is also an important consideration. For example, neuroleptic drugs can diminish the excretion of adrenaline in the insulin shock of rats, although this inhibition greatly depends on the simultaneous inhibition of hypoglycemia (Fig. 6).[22] In rats the cortisone-like anti-insulin effect is great for chlorpromazine, chlorprothixene, and thioridazine and is smallest for prothipendyl, promethazine, and pipramol.[23] The effect of drugs on the increased excretion of adrenaline during insulin shock (4 I.U. per kilogram) was followed in fasted and hydrated rats (4 ml. water per 100 Gm.) in five-hour urine samples. In the group of antihypertensive drugs no clear inhibiting effect on the excretion of adrenaline was observed, except with high doses of hexamethonium and

TABLE VII. Effect of drugs on urinary excretion of adrenaline and noradrenaline (micrograms per five hours) in insulin shock of rats (4 I.U. per kilogram); five hours urine sample after hydration with water (4 ml. per 100 Gm. of body weight)

Drug	Method	Number of Groups (2 Rats)	A (micrograms) (M ± S.E.M.)	N (micrograms) (M ± S.E.M.)	Dose (mg./Kg.)	Urine Volume (ml.)	A (P*)	N (P*)
Insulin (control)	Intramuscular	41	3.48 ± 0.24	0.16 ± 0.04	4 (I.U.)	16.8	. . .	. . .
Water (control)	By mouth	52	0.12 ± 0.01	0.19 ± 0.01	4†	12.0	. . .	. . .
Insulin and drug								
Promethazine	Intramuscular	38	1.21 ± 0.14	0.34 ± 0.03	25	9.4	1	3
Piperamine	Intramuscular	27	1.12 ± 0.15	0.28 ± 0.03	25	13.7	1	3
Piperamine	Intramuscular	12	1.11 ± 0.18	0.65 ± 0.06	50	12.0	1	1
Ethylbenzatropine	Intramuscular	30	1.49 ± 0.16	0.61 ± 0.11	5	11.6	1	1
Protipendyl	Intramuscular	5	0.86 ± 0.16	0.91 ± 0.09	20	8.4	2	1
Trifluopromazine	Intravenous	2	1.30 ± 0.53	0.53 ± 0.15	10	6.5	(1)	(1)
Meprobamate	Intraperitoneal	14	1.61 ± 0.27	0.15 ± 0.03	160	7.7	2	4
Mogadon	By mouth	10	1.54 ± 0.32	1.10 ± 0.16	100	8.4	1	1
Mepivacaine	Intramuscular	12	1.50 ± 0.13	0.23 ± 0.04	20	9.1	1	4
Pentolinium	Intramuscular	14	0.74 ± 0.12	0.14 ± 0.04	25	8.3	1	4
Pentolinium retard	Intramuscular	5	0.89 ± 0.23	0.30 ± 0.12	25	9.6	1	3
Propantheline	Intramuscular	27	1.04 ± 0.15	0.64 ± 0.10	30	11.9	1	1
EDTA	Intraperitoneal	11.5	1.46 ± 0.34	0.39 ± 0.05	300	7.8	1	1

* P <0.001 = 1; <0.01 = 2; <0.05 = 3; >0.05 = 4.
† ml. per 100 Gm.

only a partial inhibition after high doses of reserpine (Fig. 6). The most effective inhibition of adrenaline excretion in insulin shock was observed in the group of neuroleptic drugs (chlorprothixene, chlorpromazine, prochlorperazine, thioridazine, prothipendyl, dixyrazine, clopenthixol, and opipramol) and in the group of thymoleptic drugs (imipramine, desipramine, amitriptyline, and nortriptyline) (Fig. 6). No clear inhibition was observed with neuroleptic drugs with fluorine atom, used in smaller doses, nor haloperidol. The inhibiting effect of neuroleptic drugs was greater than that of the specific adrenomedullary inhibitor, P-286. Several other drugs, which can decrease the emotional irritability, seem to have the only slight decreasing effect on adrenaline excretion in insulin shock, that is, certain psychosedatives and hypnotics or certain analgesics in large doses.[22]

Antihistaminic drugs promethazine and piperamine, neuroleptic protipendyl, ganglionic blocking drug pentolinium, and spasmolytic propantheline were also effective, and ethybenzatropine, meprobamate, mogadon, and mepivacaine moderately effective inhibitors of adrenaline excretion (Table VII).[23] It is important to study further the specificity of this adrenomedullary inhibition in insulin shock of rats. The effects of piperamine, opipramol, and protipendyl seem to be specific because they do not have anti-insulin action in rats.

Chlorprothixene (5 to 10 mg.), chlorpromazine (2.5 to 10 mg.), and amitriptyline (5 mg. per kilogram intravenously) decrease also the increased secretion of adrenaline and noradrenaline in irreversible hemorrhagic shock of dogs for from one and a half to three hours effectively in adrenal vein (Fig. 7).[23] The hemorrhagic shock was produced by bleeding from the femoral artery into a reservoir placed at a height equivalent to a pressure of 50 mm. Hg which caused a 3- to 35-fold increase of the content of adrenaline in the plasma of left adrenal vein. One or two doses of chlorprothixene (5 to 10 mg. per kilogram intravenously) usually reduced the elevated content of adrenaline and noradrenaline during the hemorrhagic shock or their secretion to the level of the "basal" secretion for one and a half to three hours. This effect was often combined with simultaneous plasma expander (Haemaccel) infusion. The plasma expander can decrease the adrenaline content, although it cannot inhibit the increase of adrenaline content after bleeding without neuroleptic drug. However, in a later phase of shock the content of adrenaline increased in spite of neuroleptic treatment, the secretion sometimes remaining low, because the blood flow was slow.

A great decrease of blood pressure after neuroleptic drug can increase the adrenaline content more than the adrenaline secretion.

A great decrease of the blood pressure before bleeding, or in a later stage of shock, can increase the content or secretion of adrenaline. Prophylactic amitriptyline doses inhibited the increase of adrenaline content after bleeding. Because chlorprothixene and chlorpromazine can decrease the blood pressure, in experimental shock they can be used only in small doses.

The evidence of the inhibition of the increase of blood pressure by adrenomedullary or adrenergic secretion is partly supported by our findings that in cats certain neuroleptic drugs prevent the rise of blood pressure caused by small doses of acetylcholine and only partially by large doses of acetylcholine (up to 300 micrograms per kilogram intravenously) in chloralose anesthesia, after treatment with atropine (5 mg. per kilogram intramuscularly), and prostigmine (0.1 to 0.3 mg. per kilogram intravenously): chlorprothixene, chlorpromazine, opipramol, and thioridazine nearly completely (10, 10, 20, and 20 mg. per kilogram intramuscularly, respectively); amitriptyline, trifluperazine (10 to 20 mg. per kilogram intramuscularly), chlordiazepoxide (20 mg. per kilogram intravenously), and haloperidol (0.5 mg. per kilogram intramuscularly) only partially.[19] Often these drugs then reduce the blood pressure response of noradrenaline only slightly, while they inhibit often completely that of adrenaline, except haloperidol, which only slightly inhibits the blood pressure response of adrenaline. Chlordiazepoxide did not inhibit this reaction. The increase of blood pressure caused by large doses of acetylcholine after atropine and prostigmine treatment derives mainly from the adrenomedullary stimulation. This increase of blood pressure is not observed after ligation of the blood vessels of the adrenal glands, or it is greatly diminished.

Because in cats acetylcholine stimulates the adrenomedullary secretion of adrenaline and noradrenaline in nearly equal amounts (55 per cent noradrenaline),[24] and neuroleptic drugs in cats prevent the blood pressure response of noradrenaline only slightly, the inhibition of blood pressure response of acetylcholine by neuroleptic drugs must derive partially from their inhibiting action on adrenomedullary secretion.

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Rational Application of Psychopharmacotherapy

Psychosomatic and Pharmacologic Bases

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OUR GROUP IN NAPLES is concerned with the experimental approach to psychosomatic medicine, the psychosomatic approach to pharmacology, and the psychopharmacotherapy of psychosomatic disease. We work mainly with experimental methods, while some clinical application of our general principles has been done also.

In previous reports we outlined the theoretic, experimental, and clinical bases for a rational application of psychopharmacotherapy in cardioangiology.[1]

To this purpose we should first differentiate the cardiovascular effects of psychotropic drugs, as follows:

1. Somatic effects, side effects, act independently of the psychotropic activity, directly on heart and blood vessels, or mediately on the cardiovascular neuroregulation. They are available in both psychogenic and nonpsychogenic cardiovascular disease.
2. Somatopsychic effects act on the psychic repercussions of psychogenic and nonpsychogenic cardiovascular disease.
3. Psychosomatic effects act on the psychogenic factor, which determines, precipitates, or contributes to the development of cardiovascular disease.

In any case, the choice of psychotropic drugs should concomitantly direct the three effects against the somatic, somatopsychic, and/or psychosomatic variations induced by the disease.

Somatic effects

The choice of drugs with the same psychotropic activity may depend exclusively on their somatic effects. For instance, reserpine and chlorpromazine are both tranquilizers, but with respect to the circulation the former induces hypotension with bradycardia, the latter hypotension with tachycardia. Therefore, in the case of hypertensive anxiety reaction with tachycardia, we can use reserpine, while chlorpromazine is to be preferred if there is bradycardia.

The somatic effects of psychotropic drugs may provide indications or contraindications for their use apart from any psychological or psychosomatic assumption. In this regard, I would give the example of the highest antiemetic efficacy of the phenothiazine neuroleptic agents which are able to control several somatogenic kinds of vomit, even that induced by digitalis, while reserpine should be contraindicated in such a case because of its emetic effect.

Finally the somatic effects contribute to differentiate the various groups of psychodrugs. For instance, psychostimulants like amphetamine and thymerethics like iproniazid may be differentiated on the basis of their somatic effects, beside the behavioral and biochemical differences. The former increase blood pressure, decrease appetite, and do not show a specific toxicity for the liver; vice versa the latter reduce blood pressure, increase appetite, and have potential hepatotoxicity. From the experimental point of view, the investigation of the somatic effects belongs to the usual cardiopharmacology routine with the addiction of particular devices to avoid the interference of psychological factors in the experimental situation.[1]

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Somatopsychic and psychosomatic effects

We will now consider the somatopsychic effects of psychotropic drugs acting, as we said, on the psychic repercussions of psychogenic and nonpsychogenic cardiovascular disease. In the latter there is not a psychosomatic component, so that the use of psychodrugs is relatively easy. The patient is affected by anxiety or depression secondary to organic disease without a psychogenic component such as rheumatic endocarditis or congenital heart disease. The cardiologist prescribes psychodepressants or respectively psychostimulants, together with the specific somatic therapy, being acquainted with their somatic effects. But the somatopsychic repercussion and the psychosomatic component may be present simultaneously in many psychosomatic diseases. They may be of the same type, being both sensitive to the same psychodrug; vice versa they may be different or opposite, as in the case of psychogenic hypertension in which somatopsychic repercussion with anxiety and agitation and a psychic substrate with depression and hostility are present simultaneously, as authors, such as Alexander,[2] Saul,[3] and Boss[4] have pointed out. Under these circumstances the choice of a psychodrug is quite difficult and its use may be dangerous.

For instance, among tranquilizers, benactyzine is contraindicated in the treatment of psychogenic essential hypertension because of its capability of increasing or precipitating hostility, the psychic substrate of the disease, despite the fairly hypotensive effect and the tranquilizing effect, which could antagonize respectively the somatic and somatopsychic components of psychogenic essential hypertension. In our opinion, even reserpine, the well-known hypotensive and tranquilizing agent, may be contraindicated in psychogenic essential hypertension, because of its specific psychodepressant effect which may aggravate the psychic substrate of the disease. This could explain the higher incidence of depression and suicide found after reserpine in hypertensive than in schizophrenic patients. Among psychostimulants, amphetamine may increase vasoconstriction and anxiety, while its antidepressant effect is too slight, so that the drug is not to be used in the treatment of psychogenic essential hypertension. Vice versa, among antidepressant drugs, amitriptyline could be useful especially in the early treatment of psychogenic essential hypertension. Indeed it is a drug with hypotensive, tranquilizing, and antidepressant effects, which may antagonize respectively the somatic, somatopsychic, and psychosomatic components of the disease.

Following this criterion, 29 patients with essential hypertension and depressive-anxious syndrome, have been treated with amitriptyline (25 to 60 mg. by mouth per day, for from two to six months) in a double-blind experiment. In the cases of severe anxiety, amitriptyline has been combined with chlordiazepoxide (10 to 20 mg. by mouth per day). All the treated patients improved significantly after the treatment, from both the psychological and cardioangiologic points of view. Before the treatment the mean values of blood pressure were as follows: maximum 209 ± 3.75; minimum 109 ± 2.98; differential 100 ± 2.77. After the treatment we found the following values: maximum 157 ± 2.4; minimum 88 ± 1.9; differential 69 ± 2.19. Therefore the treatment reduced the control values respectively 25 to 20 to 31 per cent ($p < 0.01$). Research is in progress to complement the results outlined here. A neurophysiologic interpretation of the mechanisms underlying these clinical results may be found in a recent report by Schmitt and Schmitt[5] who discovered a selective inhibitory effect of amitriptyline and related drugs on the vasomotor centers.

The experimental study of the somatopsychic effects of psychodrugs belongs to the psychopharmacology field. Conventional pharmacology is no longer sufficient to investigate the psychosomatic effects of psychodrugs: Here peculiar technical training and psychosomatic acquaintance are required. First we need suitable tests to evaluate each drug's activity from the psychosomatic point of view. Actually neurophysiology and experimental psychology provide methods suitable for the purpose.

Among the neurophysiologic methods, we could quote the cardiovascular repercussions following the stimulation or ablation of certain areas of the central nervous system which are supposed to have a role in the elaboration and regulation of emotions. A review of these methods would require too much time, but I would remind you of the research of Delgado,[6] Keller,[7] Rushmer,[8] and many other groups, especially in the United States, since Hess in Switzerland first demonstrated, by bioelectric methods, the central nervous regulation of visceral functions. When I was in Los Angeles working in the Magoun group, I had the occasion to follow the research of a neurophysiologist, I. M. Fuster, M.D., with a cardiologist, S. I. Weinberg, M.D., on the bioelectrical changes of the heart cycle induced by stimulation of diencephalic regions.[9] Then I felt that a pharmacologist could have been a proper coworker in that research.

Changes in rhythm as well as changes in the configuration of the electrocardiographic wave components were obtained in cats by stimulation at a number of locations. Effects of sympathetic activation, such as tachycardia and increase in the amplitudes of the QRS complex and the T wave, were much more commonly and consistently seen than those resulting from activation of the parasympathetic system. A zone was delimited from which influences on the heart are most readily exerted. This zone covers most of the lateral and posterior hypothalamus, the zona incerta, and the tegmental fields of Forel. Excitation of these areas frequently resulted in the activation of abnormal foci of impulse formation in the myocardium.

The interferences of psychodrugs with these kinds of neurogenic cardiac changes could be investigated. Actually something has been done by pharmacologists in this regard. For instance, the Berger[10] group investigated the inhibitory effects of meprobamate, mebutamate, reserpine, and phenobarbital (Luminal) on the blood hypertension induced by electrical stimulation of medullary and hypothalamic pressor areas; Dasgupta and Werner[11] investigated the effects of chlorpromazine on hypertensive reactions to hypothalamic and spinal stimulation, and so on. From a psychosomatic point of view the criticisms of this type of method may be summarized as follows: interference of technical artifacts; they are acute experiments; the eliciting factors are neurologic; lack of psychogenic component; and the resulting cardiovascular reactions are elemental, lacking pathogenic complexity. Therefore the experimental condition is too far from the clinical reality and psychosomatic assumption, being more suitable for the investigation of the site of action of psychodrugs than for their psychosomatic evaluation.

More useful to this purpose seem to be the psychological methods, such as motor and autonomic orienting reflex, autokinesis and schizokinesis according to Gantt,[12] visceral and vegetative changes following conflict situations, experimental neurosis, and various kinds of emotional stress ("fighting" rats or mice, the "executive" monkeys developing peptic ulcer, the "jealous" hypertensive baboons, audiogenic stress inducing hypertension, and so on). In this regard, I already pointed out that patients with essential hypertension are psychologically poised for combat but that the aggressive action is unconsciously and powerfully restrained. "An ingenious experimental situation was set up by certain Russian workers at the primate station in Zukhumi. Baboons who had become self-selected mates were separated. The female was placed in a large cage with a strange male. Her mate was placed alone in a smaller cage alongside. The workers observed that the cuckolded mate regularly developed sustained hypertension," according to Wolf.[13] On these complex somatic reactions to specific psychological stress it could be very interesting to test the psychosomatic activity of psychodrugs. More often this activity has been evaluated on elemental reactions. According to the Gantt group, curare and decamethonium do block the motor-orienting and conditional responses, do not block the cardiac ones, while meprobamate abolishes the cardiac conditional or emotional responses, having only a slight effect on the motor-conditional responses; reserpine and chlorpromazine block the orienting tachycardia in the dog.[14,15] Thus in the case of chlorpromazine the psychotropic effect is dominant with respect to the somatic effect. The drug often induces tachycardia to compensate for hypotension.

Finally, there is the method used by our group in Naples, by a combination of psychological and pharmacologic technics. The purpose was to bring the experimental approach closer to the clinical observation by inducing an experimental organ situation which could be compared to the "organ inferiority" of psychosomatic medicine. This is experimentally evoked by means of pharmacologic treatments specifically toxic for that organ. On the other hand, the psychological stress is induced by a conflict situation in animals previously conditioned to an avoidance situation. The influence of the psychological stress on the target organ is evaluated. On the resulting somatopathy we investigate the protective activity of psychotropic and somatotropic drugs, the former acting on the psychogenic factor (psychological stress), the latter on the somatic factor (organ inferiority).

So far we have demonstrated that the psychological stress can potentiate the specific cardiotoxicity of emetine, strophanthin K, vasopressin, angiotensin, adrenaline, and noradrenaline, as well as the vascular toxicity of adrenaline plus ergotamine. The psychostress could also reactivate the signs of the experimental labyrinthitis induced by the intratympanic administration of oil plus chloroform. Moreover, we found promazine, a major tranquilizer, and dipyridamole (Persantin), a coronary vasodilator, especially when combined, to exert a significant protection against the experimental cardiopathy induced by psychostress plus vasopressin. Such a protection was also shown by mebutamate, a centrally acting drug with hypotensive and tranquilizer effects, against the cardiopathy induced by psychostress and strophanthin or angiotensin. Recently we have found chlordiazepoxide, the benzodiazepine tranquilizer, to be highly effective against the experimental cardiopathy induced by psychostress plus adrenaline and the experimental labyrinthitis by the intratympanic administration of oil plus chloroform.

Comment

From our clinical and experimental findings as well as from the present review, no general conclusions may be drawn. However some considerations may be done especially in connection with the psychodynamics and psychopharmacotherapy of psychogenic essential hypertension.

So far psychotropic drugs have shown a high and undoubted efficacy in mental diseases; the psychodynamics of these diseases are at least as complicated as those of the psychosomatic affections: Thus there is no reason to preclude the application of psychotropic drugs in the management of psychogenic essential hypertension and other psychogenic cardiovascular disease.

To this purpose, the practitioner should use psychodrugs together with "petite psychothérapie," but he must become more familiar with psychopharmacology, the psychotropic drugs being much more dangerous and perhaps much more psychospecific than the "petite psychothérapie."

Experimental pharmacology should be applied to cardiovascular psychopathology to make rational and scientific the psychopharmacotherapy of psychogenic essential hypertension and of other cardiovascular diseases with psychogenic components.

S. ANDREA DELLE DAME, 21
VIA CONSTANTINOPOLI, 16

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Recent Advances in Medicine and Surgery

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Artificial Pacing of Heart

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THE EARLY CONCEPTUALIZATION and development of a pacemaking machine by Hyman in 1932[1] is a fascinating historical testament to the factors that determine the survival of a new idea. It was not until 1952 (Zoll)[2] that external pacing was used in a human being and not until 1959 (Furman, Robinson, and Schwedel)[3,4] that long-term pacing of the heart was made possible by utilization of the transvenous endocardial electrode catheter. Although ingenious isolated experiments pertinent to the pacing of the heart were reported over the years, for example in 1942 Butterworth and Poindexter[5] studying the Wolff-Parkinson-White syndrome constructed an apparatus which amplified atrial current and bypassing the normal conduction pathways used it to stimulate the ventricles and Callaghan and Bigelow in 1951[6] developed an artificial pacemaker and bipolar catheter for pacing the sinoauricular node, still it was only after the widespread use of heart catheterization and cardiac surgery made the living human heart psychologically and technically accessible to manipulation that artifical pacing of the heart came into its own. In 1957 Weirich, Gott, and Lillihei[7] treated the acute heart block of cardiac surgery with stimulation of implanted myocardial wires led through the chest wall. Simultaneous technical advances, including the development of the mercury cell and reliable microcircuitry, coupled with increasing awareness that at least in certain centers Adams-Stokes syndrome was a common disease, permitted the development of long-term pacing of the heart, first with external units attached to endocardial wires (Furman, Robinson, and Schwedel),[3,4] then with the totally implantable units reported by Chardack, Gage, and Greatbach,[8] Zoll *et al.*,[9] Kantrowitz *et al.*,[10] and Nathan *et al.*[11] (1960–1962). More than 10,000 such units have been sold in the past five years.[12]

Temporary pacing of heart

Pacing technics were originally conceived with acute arrest or standstill of the heart in mind.[1,2,13] Acute myocardial infarction; myocarditis; electric shock; vagotonia; drug effects, such as quinidine, procaine amide, digitalis, trivalent antimony compounds, and acetylcholine; and electrolyte alterations, for example hyperpotassemia, may present problems of potentially reversible progressive bradycardia, heart block, or arrest. Striking a sudden blow to the chest, irritating the myocardium with a needle, closed or open chest cardiac massage, ephedrine, epinephrine, methamphetamine, isoproterenol (Isuprel), steroids, molar lactate, atropine, oxygen, aminophylline, chelating agents, thyroid extract, and dialysis have been used in acute and subacute resuscitation depending on the individual circumstance.[14,15] When medical therapy fails or is inappropriate, various pacing technics may be used depending on the indications and the availability of equipment and trained personnel. Application of pacing currents externally to the chest wall may be effective, especially when needle electrodes are used to decrease the skin resistance.[16] But failure to pace by this method is often encountered in anoxic hearts, and prolonged external pacing is painful, requiring adequate sedation in conscious patients. In urgent situations bipolar or unipolar pacing wires may be passed through a cardiac needle inserted in the fourth to fifth interspace to the left of the sternum (right ventricle) or at the cardiac apex (left ventricle) and endocardial pacing initiated.[17] When more time is available, a thin Teflon-coated wire* may be passed through an 18-T (thin-walled) needle and floated to a position in the right atrium or right ventricle under electrocardiographic control.[18,19] Unipolar pacing may be initiated in 7 out of 10 patients by this method. Problems of knotting and migration of the pacing tip plague users of this method. Bipolar pacing catheters can also be passed blindly under electrocardiogram control, but positioning is less stable and reliable and may take longer to complete than fluoroscopic positioning in the x-ray department. The lateral vein in the arm should be avoided because the catheter is often held up as it passes the shoulder. External jugular insertions are more difficult technically, and in 10 per cent of patients this vessel is absent. However, this location has the advantage of minimizing dislocations resulting from arm motion.[20] The basilic vein in the antecubital fossa is a reliable route, and the femoral vein may be used passing a number 5 catheter through a 14-T needle.[21] Adequate preparation is crucial to success. This includes experienced personnel, sterilized tray including all necessary equipment (small pacing unit, catheters, and surgical cut-down instruments), adequate resuscitation and monitoring equipment, and battery-operated external pacing equipment for transportation through halls.

Once the catheter is in place the patient may be paced by a battery-powered external generator or one powered by line voltage. If the latter is used the circuitry must be isolated from current variations and all electrical equipment attached to or near the patient fixed to a common ground.[22,23] The patient may then be paced at a continuous fixed rate, on demand, on automatic stand-by, or the catheter may be left in place with no pacing equipment attached. Automatic stand-by pacing is continuous fixed-rate pacing initiated after a preset period of asystole. Demand pacing interposes artificial pacemaker stimuli only when a preset R-R interval is exceeded.[24,25] Thus under ideal circumstances the heart will be paced only when there is slowing of the heart rate or dropping out of ventricular beats and then only at a predetermined interval after the last ventricular beat. In this way competitive pacing is avoided. When two pacing foci compete, there is always a remote hazard of ventricular fibrillation when the pacemaker impulse strikes in the vulnerable period of the preceding ventricular complex. In addition, there is probably some loss of cardiac efficiency because of irregular ventricular depolarization. Stand-by pacing may be artifactually initiated by electrocardiographic lead disruption, and demand pacing may be interrupted by 60-cycle artifact or initiated by electrocardiogram lead disconnection.[26] Therefore, the reliability of systems using other than continuous fixed-rate pacing depends on careful attention to electrode positioning and contacts, grounding of equipment, and proper manipulation of signal thresholds.

Once a pacing wire is in place, a low-resistance electrical conduit is available not only for life-saving stimuli to the heart, but also to fibrillating currents that may arise from ungrounded electrical equipment attached to the patient.[22,23,27] On the positive side, the endocardial wire when attached to the V lead of a well-grounded electrocardiogram machine provides information on the diagnosis of arrhythmias and the location of the tip of the pacing wire.

Indications for emergency or temporary transvenous pacing widened as the relative safety and effectiveness of the technic became apparent. Application of a temporary transvenous pacemaker in Adams-Stokes syndrome is indicated after failure of medical management. Currently many centers would apply pacing devices after the first documented Adams-Stokes seizure. When the Adams-Stokes mechanism is transient cardiac arrest, fixed rate or demand pacing at 60 to 70 per minute is used. Where recurrent ventricular fibrillation or tachycardia is the problem, the rate is set by trial and error, rapid enough to inhibit the offending arrhythmia, and the fixed rate rather than the demand or stand-by mode is used.[28-30] Patients with Adams-Stokes seizures are routinely paced with a temporary system a few days prior to permanent implantation to improve cardiac function and provide a stable and controlled situation before and during surgery. Where epicardial wires are to be sewn directly into the heart, a temporary transvenous device provides short periods of cardiac arrest by speeding the pacing above 100 per minute, exhausting intrinsic pacemaker activity, and suddenly discontinuing artificial pacing for a few seconds.[31]

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* Davis and Geck, Danbury, Connecticut.

Other indications for temporary pacing beyond those associated with Adams-Stokes syndrome include prophylactic placement of endocardial wires for progressive degrees of atrioventricular block and of myocardial transthoracic wires in cardiac surgery where septal injury may be a problem or where a prosthetic tricuspid valve has been placed and transvenous right endocardial pacing would not be possible.[32] Security for elective acetylcholine arrest during coronary angiography has been provided by a previously placed endocardial pacing catheter,[33] and during heart catheterizations in patients with bilateral bundle-branch block, catheters equipped with pacing electrodes have prevented fatal arrest of the heart.[34] Endocardial pacing may permit the use of drugs such as quinidine, procaine amide, and lidocaine as well as digitalis in certain situations where toxic hazards would otherwise outweigh therapeutic indications (note: electrical pacing will break through any usual degree of drug depression of the myocardium). Intractable heart failure associated with slow ventricular rates, presenting symptoms such as exertional fatigue, dyspnea, mental confusion, claudication, angina, or renal failure singly or in combination, may respond to a trial of temporary transvenous pacing as a necessary prelude to placement of a permanent pacemaker.[35-38] Patients with bradycardia or heart block about to undergo surgery benefit from temporary transvenous pacing during induction of anesthesia and the reflex cardiac stimulation or depression of surgery. In at least one center, patients with heart rates less than 40 are subjected to pacing whether or not symptoms are present.[39]

Paired and coupled pacing are still experimental modes of temporary pacing.[40] In the former, the pacing rate is increased until the artificial pacemaker dominates; then every other stimulus is brought closer to the preceding stimulus. At certain intervals the second stimulus of the pair becomes ineffective halving the effective number of cardiac contractions. In addition, probably for electrochemical reasons, the strength of the myocardial contraction increases and cardiac output improves. However, there is a considerable increase in oxygen cost which is out of proportion to the work obtained. Coupled pacing is comparable to paired pacing in that the first depolarization of the pair is initiated by the intrinsic pacemaker and the second by an interposed artificial stimulus. Clinically, these technics have been used to slow rapid heart rates and to reverse intractable cardiac failure or low cardiac output syndromes. Unfortunately, improvements have been temporary in the very sick patients in which paired or coupled pacing has been attempted. Also, ventricular paired pacing is frequently followed by ventricular fibrillation. Where the atrioventricular conduction system is intact, it may be possible to "pair pace" from the atrium avoiding the hazard of ventricular fibrillation. In a new experimental technic deceleration of the animal heart has been achieved by low-amplitude alternating current applied through a transvenous catheter.[41]

Problems with temporary transvenous pacing are both more and less formidable than originally expected. Anticoagulation is not generally used, and yet thromboembolism has not been a problem. Antibiotic coverage for the first few days of placement is used in some centers. Septicemia and endocarditis are rare. Local sepsis at the cutdown site may be minimized by topical antibiotic solutions.

A more serious complication that may occur at the time the endocardial pacing electrode is placed is ventricular fibrillation. This occurs especially in anoxic and failing hearts and those with severe pulmonary hypertension. It may be avoided by the rapid institution of pacing and the liberal use of intravenous lidocaine when ventricular irritability is still a problem shortly after pacing is instituted. Adequate oxygen and rapid institution of defibrillation with a direct current defibrillator, even prior to closed-chest massage, will usually achieve survival without residual damage. In high-risk patients (heart failure and ventricular irritability) an anesthesiologist or equivalent person should be at hand for emergency airway placement.

Placement of the pacing catheter may be difficult when there is venospasm, congenital absence or aberrant course of the external jugular (the internal jugular may be used but the surgery is more complex and potential hazards and complications greater), severe tricuspid insufficiency, and obstruction of tricuspid orifice by a prosthetic tricuspid valve. Placement in the coronary sinus will result in high pacing thresholds. This may be avoided by placing the catheter outside the pulmonary artery to establish its location and then withdrawing it to optimum pacing position in the right ventricle.[42]

Myocardial perforation has been reported on occasion but is usually without symptoms and may respond to simple repositioning.[43–45] The pacing wire of Kimball and Killip[18] carries no risk of perforation, but knotting and entanglement in cardiac structures can occur. Wire breakage and battery failure are rare in short-term pacing, but disconnection of wires and dislocation of the catheter tip are common. The catheter may migrate to the pulmonary artery or back into the right atrium. Pacing is usually ineffective when this occurs. Occasionally a deposit of nonconducting material forms at the electrode tip preventing effective pacing and requiring catheter replacement.[46] Also the endocardium may become refractory to pacing because of endocardial ischemia, necrosis, fibrosis, or electrolyte changes.[47] A different location of the catheter tip may not exhibit such refractoriness. Steroids or sympathomimetic drugs may decrease refractoriness. Competitive pacing may be a problem in recent myocardial infarctions, where a strike in the vulnerable period may set up repetitive ventricular beats or ventricular fibrillation.[48] Ventricular premature contractions are ordinarily not elicited where the pacing voltage does not exceed twice the myocardial threshold.[39] Where extrasystoles are present suppression with lidocaine (intravenously), procainamide hydrochloride (Pronestyl), or quinidine may be accomplished without fear of suppressing artificial pacing. Turning up the pacing rate will often suppress a competing "natural" rhythm; however, in some patients the competing rhythm "chases" the pacing rhythm as the rate of the artificial pacemaker is increased. The reasons for this are obscure but may be due to chemical or electrical resonance. Demand pacing is helpful where competing rhythms might be hazardous.[25] Since firing only takes place after a preset interval following the last QRS, there is no danger of the artificial pacemaker striking in the vulnerable period.

Success in handling pacing emergencies is largely a function of adequate preparation and forethought. The following may be required: an isoproterenol drip, 1 mg. in 250 to 500 cc.; a portable battery-operated external pacemaker for transportation to and from the x-ray department; x-ray image intensifier; a sterile pacemaker tray including a sterile pacemaker generator; pacing catheters and wires; cut-down set; iris forceps or catheter introducer; 18- and 14-T needles; transthoracic wire; intracardiac needles and connecting wires; and wire suture material for use with unipolar systems. Extra personnel are needed to observe monitors which display a simultaneous pulse and electrocardiogram. Topical antibiotics (bacitracin, neomycin, and polymyxin) and emergency drugs as well as oxygen and anesthesia personnel should be readily available. A direct current defibrillator and a direct-writing electrocardiogram are also needed.

Permanent implantation of cardiac pacemakers

Totally implantable units for use in long-term pacing of the heart are indicated in Adams-Stokes disease with or without heart block. One bona fide and documented episode is usually sufficient indication for a "permanent" implant unless an acute reversible cause, such as acute myocardial infarction or digitalis intoxication, is suspected. Bradycardia with low output syndrome where temporary pacing has provided relief for renal or cerebral insufficiency[37] or congestive heart failure[38] is another indication. Also, in certain complex situations where cardiac pacing may permit the use of life-saving cardiac drugs or suppress uncontrollable ectopic or sinus activity a permanent implantation may be necessary. Finally, in some hands a heart rate below 40 per minute is considered sufficient indication for permanent pacing.[39]

A variety of permanently implantable units are currently available. They are distinguished chiefly by the site of application of electrodes, the power source, and the type of control of electrical impulse.

The rate control is perhaps the most controversial of these factors. Fixed-rate devices have been the most reliable electronically, but their response to exercise and other physiologic demands is limited by the ability of the heart to increase its stroke volume without a change of rate.[49] The rate setting for optimal cardiac output is approximately 70 per minute.[50] This may vary in individual patients[36] and with electrode location.[51] In older individuals the fixed rate offers no major disadvantage except that of competitive pacing. The hazards of competitive pacing have probably been overrated. Fixed-rate pacemakers have a high degree of reliability partly because of the relative simplicity of the circuitry and also because of the longer experience with this mode. The rate may be varied in some "fixed" rate units by an induction coil or bar magnet applied externally to the power pack.[52,53] Synchronous pacemakers have the advantage of operating under sinus control as long as normal atrial activity is present. When rates above 120 are encountered, the pacing response is halved. When slow rates are encountered, a more optimal fixed-rate pacing ensues.[11] Except for experimental models, synchronous pacing requires thoracotomy or at least mediastinotomy to place atrial sensing electrodes.[54] The normal physiologic responses of rate change and atrial transport are retained and competitive pacing is usually avoided.[55,56] Synchronous units are advantageous for children and young adults, since their cardiac demands vary greatly and they tolerate thoracotomy better.[57]

Demand pacing units interpolate pacing impulses at fixed intervals after the preceding R wave. If the intrinsic rate is adequate, the unit does not function at all. This has the advantage of avoiding competitive pacing, and it may be applied by the transvenous route. However, atrial transport function is not preserved, and present units do not always function correctly in the presence of electrical interference. Testing such an implanted unit requires slowing the intrinsic heart rate below that of the pacemaker setting.[24,25] Both synchronous and demand pacers have more component parts than fixed rate devices and are at least theoretically subject to more frequent breakdown.

Pacing electrodes may be unipolar or bipolar, endocardial or epicardial.[58] For long-term pacing platinum irridium or elgiloy in a helical coil covered with silastic has been used. Elgiloy is destroyed by electrolysis at the anode and is used only in unipolar systems. Threshold problems are common particularly with epicardial placement, plateauing over a variable period and sometimes improving thereafter. One unit permits external testing of myocardial thresholds (General Electric).[59] Maintenance of electrode position is better with epicardial leads which are sewn into place at thoracotomy. With transvenous endocardial electrodes, late dislocations may be as high as 10 per cent.[60]

The power source most commonly used consists of mercury dry cells which require replacement after about thirty months, but may fail earlier. Failure may be signaled by an increase or decrease in the rate of pacemaker impulses or decrease in amplitude of the pacemaker artifact recorded on the electrocardiogram. External power sources, such as induction coils,[52,53] radio-frequency systems,[61,62] and externally rechargeable implantable battery devices,[63,64] are under development, and preliminary studies on the use of internal mechanical,[65] chemical,[66] electrical,[67] and atomic power sources are underway.

Problems of wire breakage and generator malfunction remain, although progressive improvement in reliability and quality control has been evident.[68,69] The fixed-rate transvenous pacing unit is the device most commonly used at present. In addition to the problems enumerated relating to wire and generator malfunction, the battery pack which is usually implanted over the pectoral muscle or in the axilla may migrate, dragging a poorly fixated endocardial wire with it. In thin individuals a superficially placed pack may erode through the skin. In this situation excision of the pouch and placement of the battery pack in a deeper site with topical and systemic use of antibiotics may resolve the problem.[70] It is important to realize that after several months the pacing catheter, especially if it has a slightly bulbous tip, may become secured at the apex of the right ventricle by fibrous tissue. In this situation it is no longer possible to withdraw or reposition the catheter by the venous route when a malfunction occurs. Competitive pacing is suspected as a cause of death due to ventricular fibrillation in one of 25 fixed-rate implantations.[60] This incidence is much higher after acute myocardial infarction; therefore permanent implantation should be delayed six weeks to three months in these individuals, and temporary devices should be set at minimum voltage, in the demand mode if available, with chemical suppression of ectopic activity when indicated. Digitalization does not seem to add extra hazard in this regard, and judicious use of procaine amide or quinidine at the first sign of irritability may prevent difficulties. However, animal studies suggest digitalis toxicity may be uncovered by pacemaker stimuli.[71] Patients on long-term pacing are taught to count their pulse rate daily and report variations at once. Environmental hazards include diathermy directly over the pulse generator. Electrosurgery is not contraindicated in patients with implanted fixed-rate units, if it is more than 2 inches from the generator, but may be a problem in those with demand units.[72,73] Monthly cardiograms permit early diagnosis and treatment of complications. When malfunctions occur, a systematic approach to their management facilitates matters.[74,75] A calibrated oscilloscope is useful in localizing defects in the generator-wire-myocardial complex. An important point to remember in monitoring a patient with a suspected malfunction of a permanently implanted pacing unit is that monitoring alarm systems will react the same to a pacemaker artifact as they will to a QRS deflection, thus where the pacemaker artifact persists and there is no ventricular response, the patient may succumb without triggering the usual warning buzzer or the alternate stand-by or demand pacing systems. Monitoring an indirect peripheral pulse by one of the plethysmographic or photoelectric systems available may resolve this problem.

Conclusion

The large number of pacing devices in use indicates that cardiac pacing has come of age. The wide variety of practical and experimental devices in use or under investigation reflects the fertile interest of clinicians and researchers in response to gratifying early results in prolonging the useful life of patients.[76] One looks forward to the maturation of these now fermenting ideas.

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Characteristics in youth predisposing to stroke later

A study of the death certificates and records of former university students, 1916 to 1950, was undertaken to identify fatalities from stroke and to investigate possible predisposing familial, physical, psychologic, and behavioral characteristics. This was undertaken by R. S. Paffenbarger, M.D., and A. L. Wing and reported in a recent issue of the *Lancet*. The examination revealed the following precursors: cigaret smoking, blood pressure too high, low ponderal index, short body stature, early parental death, "heart consciousness," and nonparticipation in sports.

The 171 fatal cases were culled from alumni files and official death certificates from among 50,000 male students who attended Harvard University and the University of Pennsylvania. From among the surviving classmates of the same age, 4 controls were randomly chosen for each stroke victim. Excluded were all cases where the certificates mentioned tumor, blood dyscrasias, trauma, infection, or rheumatic heart disease. Data were pooled for 105 fatalities ascribed to cerebrovascular hemorrhage and 66 to occlusive or nonspecific mechanisms.

As students, 49 per cent of the stroke victims had smoked cigarets as against 31 per cent of the controls. At the time of student case taking, subsequent fatal stroke victims had a mean blood pressure of 126 mm. Hg as against 122 mm. Hg in controls. The data for body weight and height indicated an increased risk of death from stroke of 50 per cent for those with an excess of body weight. Students who later died of stroke averaged 68 inches in height; the controls 69 inches. Of the stroke decedents, 26 per cent had reported the death of a parent at college age as against 17 per cent of the controls. Only 7 per cent of the stroke victims had participated in varsity sports as against 16 per cent of the controls. Heart consciousness was recorded for 42 per cent of the stroke decedents, but only 22 per cent of their controls. No student had all of the characteristics, but 44 per cent of the stroke decedents had combinations of 3 or more of the precursors, as against 29 per cent of the controls

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Lenox Hill Hospital
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November 25, 1966

Conducted by MICHAEL S. BRUNO, M.D.
and WALTER W. FISCHER, M.D.

Discussed by BURTON I. KORELITZ, M.D.
and LAWRENCE P. SHEA, M.D.

Long-Standing Anemia

Case history

STEPHEN CARTER, M.D.: A seventy-seven-year-old white Jewish housewife was admitted to Lenox Hill Hospital for the first time for evaluation and treatment of anemia of unknown cause, of five years duration, and with recent exacerbation. Her anemia when first discovered five years ago was evaluated extensively at a large Eastern medical center, and the origin of this problem was not clarified. Complete diagnostic gastrointestinal radiography plus gastric analysis and sigmoidoscopy were unrevealing at that time. The only positive finding of significance was the occasional presence of occult blood in her stool, varying from a trace to moderate amounts. She was discharged without transfusion and given iron tablets. The patient was then followed by her local physician who treated her with an injectable iron preparation and maintained her hemoglobin in the range of 10 Gm. per 100 ml. for a period of five years. During this five-year period, eight complete gastrointestinal x-ray studies were performed, and each test result was reported as being within normal limits. One month prior to her present admission the patient began experiencing weakness and exertional dyspnea. A physician found her hemoglobin to be 7 Gm. per 100 ml., and she was hospitalized in an institution located in a New York State vacation area. The patient gave no history of easy bleeding, bruisability, hematemesis, rectal bleeding, or melena. She denied weight loss, change in bowel habits, abdominal pain, or nausea. There were no genitourinary symptoms. She denied the possibility of drug or chemical toxin exposure or family history of anemia. She received her first transfusion at this institution, returned to New York City, and was immediately admitted to Lenox Hill Hospital.

The patient's past history revealed an operation for a benign goiter twenty years before and surgery for cataract of the left eye in 1966. She did not give any history of tuberculosis, diabetes, hypertension, rheumatic fever, or asthma. She was aware of the presence of a heart murmur for many years; she did not smoke or drink and had no known allergies.

Physical examination revealed the patient to be a pale, obese, well-developed, well-nourished, elderly white female, who appeared her stated age and was not in acute distress. The blood pressure was 120 systolic and 70 diastolic, the pulse rate 84 per minute and regular, the temperature 99.6 F., and respirations 20 per minute. The conjunctivae were pale, and the left eye was aphakic. The neck was supple without adenopathy and revealed the presence of a thyroidectomy scar. The chest was clear to percussion and auscultation. The heart had a regular rhythm. A grade IV harsh blowing systolic murmur was heard over the entire precordium, was loudest at the aortic area, and radiated to the apex. The second aortic sound was markedly diminished. No thrills were felt nor was obvious cardiomegaly present. The abdomen was soft, obese, and not distended; and the liver, kidneys, and spleen were not palpated. Rectal examination revealed a normal ampulla with no stool or masses. The extremities had minimal dependent pretibial edema without any clubbing or cyanosis. The dorsalis pedis pulsations were present bilaterally. The skin and mucous membranes were free of an exanthem or enanthem, petechiae, abnormal pigmentation, or ecchymoses, and the neurologic examination showed normal findings. No pertinent lymphadenopathy was present.

On admission the hemoglobin was 5.6 Gm. per 100 ml., the hematocrit was 18, and a red blood cell count was 1,990,000 cells per cubic millimeter. The white blood cell count was 6,542 with 68 per cent neutrophils of which 4 were nonsegmented, 25 per cent lymphocytes, 3 per cent monocytes, and 4 per cent eosinophils. The smear revealed hypochromia and anisocytosis without schizocytes being present. The platelet count was 262,000, and the reticulocyte count was 11.6 per cent. The red blood cell indices revealed a mean corpuscular hemoglobin of 28.5 micromicrograms, a mean corpuscular volume of 92 cubic microns, and mean corpuscular hemoglobin concentration of 31.5 per 100 per ml. The corrected Westergren sedimentation rate was 27 mm. per hour. The capillary bleeding time was one minute, and coagulation time was four minutes. A urinalysis showed normal results. The fasting blood sugar was 114 mg. per 100 ml., blood urea nitrogen 28 mg. per 100 ml., sodium 137 mEq, potassium 2.9 mEq., chlorides 95.5 mEq., and bicarbonate 32.5 mEq. per 100 ml. Serial stool reagent tablets (Hematest) determinations gave strongly positive to negative results. The liver profile revealed a serum glutamic oxaloacetic transaminase of 13 units, serum glutamic pyruvic transaminase of 11 units, lactic dehydrogenase of 280 units, alkaline phosphatase of 5.2 King-Armstrong units, total protein of 5.6 Gm. with 2.4 Gm. albumin and 3.2 Gm. globulin per 100 ml., a prothrombin time of fourteen seconds with a control of eleven seconds, a total bilirubin of 0.2 mg. per 100 ml., and a total cholesterol of 134 mg. per 100 ml. The protein electrophoresis was normal. The calcium was 7.8 mg., phosphorus 2.9 mg., and uric acid 4.7 mg. per 100 ml. The serum iron was 12 micrograms and total iron-binding capacity was 239 micrograms. A serologic test for syphilis showed negative results. The protein-bound iodine was 4.1 micrograms and carotene 127 micrograms. The saline osmotic fragility test had initial hemolysis beginning in 0.46 per cent saline and completed hemolysis in 0.2 per cent saline. The urine sediment contained no hemosiderin crystals. A sternal bone marrow test revealed only erythroid hyperplasia. A betazole hydrochloride (Histalog) gastric analysis contained no free acid and a low total acidity of 32 units. The glucose 6 phosphate dehydrogenase screening test showed normal results. A serum haptoglobulin level was 123 mg. indicating no hemolysis. The SIA water test, cryoglobulins, lupus erythematosus preparations, cold agglutinins, and Coombs' test gave negative results. The stool contained no ova or parasites, starch granules, fat, or undigested meat fibers. An electrocardiogram showed normal findings.

Diagnostic radiography revealed generalized demineralization of the thoracic osseous structures, a heart slightly enlarged in its transverse diameter, and prominence of the left ventricular segment; bilateral calcified lymph nodes were seen in the hilar regions. X-ray films of the cervical spine revealed narrowing of the intervertebral disk spaces throughout with hypertrophic spurs and foraminal encroachment. Flat x-ray films of the abdomen revealed only osteoarthritis of the lumbar spine and moderate calcifications. A barium enema showed negative results except for the presence of one or two small sigmoid diverticula. An upper gastrointestinal and small-bowel x-ray film series showed entirely normal findings. Intravenous pyelography revealed considerable tortuosity and mild dilatation of the right ureter but no obstruction. An oral cholecystogram gave normal results.

Soon after admission, the patient was given a sigmoidoscopic examination up to 25 cm. which revealed normal findings. Her stools were brown in color throughout her twenty-day hospital stay but contained moderate to trace amounts of blood. She was given transfusions of 6 units of whole blood. She was discharged, after refusing an exploratory laparotomy, with a hemoglobin of 13 Gm. per 100 ml. and a hematocrit of 42. Her reticulocyte count had fallen successively during her hospitalization to 0.8 per cent. Over the next fourteen days, while at home, the patient experienced a relapse of her initial presenting symptoms, and a blood count confirmed a recurrent anemia. She was readmitted with essentially unchanged physical findings and a hemoglobin of 5.3 Gm. per 100 ml., hematocrit 16, and a reticulocyte count of 10.9 per cent. The stool reagent tablet test revealed only traces of occult blood. A fluorescein string test gave technically unsatisfactory results, and an abdominal four-quadrant iodine-131-labelled serum albumin selective scan failed to demonstrate any differential radioactivity in any of these areas.

The patient was retransfused with 3 units of whole blood. On her fifth hospital day an operation was performed, approximately five years after her anemia had first been diagnosed.

Discussion

Burton I. Korelitz, M.D.*: The protocol depicts the frustrating problem of an elderly woman with significant anemia recognized and treated for five years without its nature being clarified. Although an occasional stool specimen yielded a significantly positive test result for occult blood, many others gave negative results, even during periods of rapid fall in hemoglobin, and at no time was red blood or tarry stool observed by the patient or the managing physicians. After this lengthy period, her condition had worsened, and she was admitted to Lenox Hill Hospital with a hemoglobin of 5.6 Gm. per 100 ml., soon after receiving her first blood transfusion. A complete gastrointestinal x-ray film series revealed no bleeding source as had been the case 8 times before. The initial reticulocyte count was 11.6 per cent. This obviously could have been explained by the blood loss itself, but with disappointingly little supportive evidence of bleeding available on admission, the possibility of hemolysis had to be considered. The red cell indices were those of a hypochromic normocytic anemia, the serum iron was markedly low, and many laboratory tests of coagulations and hemolysis gave results which were within normal limits. The results of gastric analysis were such as to rule out pernicious anemia and also to exclude a peptic ulcer as a source of bleeding. A few of the blood chemistries showed somewhat abnormal results, suggesting an absorption defect, but allowance must be made for the age of the patient and, I expect, her poor dietary habits.

Re-examinations of stools for occult blood again revealed some significantly positive findings. The entire gastrointestinal tract was studied again to find the source of bleeding, but the results were unrevealing. What then would be the possible sites of gastrointestinal bleeding in a seventy-seven-year-old woman who has had this problem for five years and in whom hematologic causes have been excluded? Many studies show that upper gastrointestinal bleeding, peptic ulcer disease, carcinoma, and esophageal varices account for 85 per cent of the cases and these, for all practical purposes, can be excluded here. Without hematemesis or melena, the number of esophageal sources is minimized. A traction diverticulum could be responsible for occult bleeding, but none was demonstrated. Esophagitis even without heartburn could be responsible—more often in association with a hiatus hernia, sometimes even a very small one. Congestion of the mucosa or erosions in the herniated portion of the stomach could be another reasonable source. Actually no hiatus hernia was found even after special studies were performed to demonstrate it. Otherwise, the most likely process in the stomach that might account for occult bleeding would be a gastritis of the erosive variety. Erosive gastritis, if not of completely unknown cause, is usually due to drugs. This patient was not taking any drugs. Aspirin is probably the drug most commonly responsible for erosive gastritis, and the significance of its ingestion is often missed by the historian because it is considered so benign. Additionally, the ingestion of aspirin is considered so normal in our society that its consumption is rarely reported to the historian unless specifically asked for. Prolapse of the pyloric mucosa has to be mentioned only because we do not know whether or not it can be responsible for bleeding. Otherwise, if peptic ulcers are excluded because of the lack of free hydrochloric acid and a carcinoma of the stomach is unlikely because of the duration of her disease and the many negative results from x-ray examinations, there are few other sources of bleeding originating in the stomach. Was a gastroscopy considered as part of her work-up?

Michael S. Bruno, M.D.: Gastroscopy was considered soon after the patient's admission to the hospital. In spite of repeated requests, she refused to have this procedure done.

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Dr. Korelitz: That is quite unfortunate but understandable.

A benign or a malignant lesion of the colon, expecially of the right hemicolon, could account for occult bleeding, as could a diverticulum, but I doubt a colonic source in this case without there being any noticeable red blood in the stool to accompany the marked fall in hemoglobin. The gallbladder and biliary tract could conceivably be sources of bleeding, but normal gallbladder x-ray films make this unlikely.

Although a site of bleeding is found in the small intestine in only 1.4 per cent, when the nature of the bleeding for the most part is a slow oozing as suspected here, and the x-ray film studies consistently give negative results, greater attention should be directed to this segment of the gastrointestinal tract.[1] The small bowel is notoriously difficult to examine radiographically, and the yield is small even when the patient is fluoroscoped frequently as the head of barium advances. The lesions more likely to be missed that could be responsible for slow bleeding are diverticula, including Meckel's; benign tumors, including those of the Peutz-Jeghers syndrome; nonspecific ulcerations and blood vessel malformations, including the lesion of hereditary hemorrhagic telangiectasia; as well as simple angiomata or nevi. In the series where 1.4 per cent (16 cases) proved to have the bleeding source in the small bowel, 9 required laparotomy to find that source.[1] In another study of 100 cases of gastrointestinal bleeding manifested by melena or hypochromic anemia, a bleeding source was ultimately found in 30, and in 12 of these the bleeding site proved to be in the small bowel.[2]

One physical finding in this patient which merits special attention is the harsh blowing systolic murmur in the aortic area with an associated decrease in intensity of the second aortic sound. Although this could be coincident to the main problem, a high incidence of aortic stenosis has been noted in patients with upper gastrointestinal bleeding of undetermined etiology.[3] In a 1961 report, Williams[4] described 1,348 patients from the Massachusetts General Hospital, who had gastrointestinal bleeding of known cause; 68 of these had aortic stenosis, an incidence of 5 per cent. Matched controls without bleeding showed an incidence of 4.4 per cent. Of 95 patients in whom the source of bleeding could not be determined after careful study, the incidence of aortic stenosis was 25.2 per cent. The valvular lesion was mainly of the calcific variety, and the most common age group concerned was that from seventy to seventy-nine. The association suggests a degenerative disease, possibly arteriosclerosis, in which the major involvement is that of the arteries of the gastrointestinal tract. Perhaps these vessels are brittle and vulnerable to trauma. In any case, although the association of gastrointestinal bleeding from undetermined site and calcific aortic stenosis is significant, the true nature of the bleeding mechanism is unknown.

Since some stool specimens showed markedly positive results for occult blood, I must presume that gastrointestinal bleeding did account for the patient's anemia, at least to some extent. It would be unusual, however, for a loss of approximately 5 Gm. per 100 ml. of hemoglobin over a two-week period to be unassociated with some visible source of bleeding such as melena or bloody stools. Furthermore I think reticulocyte counts of 11.6 per cent and 10.9 per cent would be associated with a brisk hemorrhage, if at all related to bleeding. The possibility of a hemolytic factor must be considered as it obviously was in this case. In reference to this, the aortic valvular lesion might again be implicated. A mechanical hemolytic anemia has been recognized following the insertion of prosthetic appliances such as the Hufnagel and, later, the Starr-Edwards valves in the treatment of aortic valvular disease.[5] Further investigation disclosed that the majority of preoperative patients with aortic valvular disease had a shortening of the erythrocyte survival time and were in a state of compensated hemolytic anemia. Therefore mechanical damage to erythrocytes must be considered as a complication of significant aortic stenosis, and the rate of destruction should theoretically increase when any factor results in an increase of blood flow turbulence. The initiation of blood loss due to gastrointestinal bleeding might be just such a factor, leading to decreased circulation time, increased stroke volume, increased turbulence about the aortic valve, and resulting hemolysis. If hemosiderin had been found in the urine, or fragmented red cells (schizocytes) had been seen in a blood smear, there would have been stronger support for this theory. No red cell survival studies had been performed. A serum haptoglobulin showing normal results practically excludes hemolysis as a significant factor in this case.

After initially refusing an exploratory laparotomy which had been recommended as a final effort to discover a bleeding source, the patient was discharged—only to be readmitted two weeks later with a hemoglobin of 5.3 Gm. per 100 ml. Even then a stool reagent tablet test showed only a trace of blood. Unfortunately a fluorescein string test showed technically unsatisfactory results, and, presumably, the passage of a small-bowel tube for the purpose of aspirating at successively distal levels was not feasible. The patient was transfused, and she then consented to surgical exploration.

The following is what I think the surgeon found. He palpated the anterior wall of the stomach and duodenum and felt nothing. He entered the lesser sac and palpated the posterior wall of the stomach and the duodenum and again felt nothing. He then explored the second portion of the duodenum and the esophageal hiatus, both with negative results. He then carefully made his way distally along the jejunum and ileum, palpating and either transilluminating or aspirating. If he discovered nothing, he went back and opened the stomach, but I think he found some blood in the small bowel and incised it at that level. He probably found no obvious bleeding site but chose to resect 1 foot of intestine from above and below his incision. The pathologist either reported normal findings in 2 feet of small intestine or a very small blood vessel anomaly without confirmation that this was the source of blood loss.

I feel, therefore, that this is a case of slow gastrointestinal bleeding with the source of bleeding probably located in the small bowel, but with the exact site still undetermined. I feel also that the patient's aortic stenosis is significant, both in the sense that an exact bleeding site was less likely to be found and that it was a source of mechanical hemolysis following the increased turbulence initiated by the blood loss.

Joseph Kessler, M.D.: I followed this patient closely while she was in the hospital, and many of the problems mentioned were considered. We must recall that reticulocyte counts of from 10.9 to 11.6 per cent are not uncommon in patients with gastrointestinal oozing who have been on iron therapy as she was and that then brisk hemorrhage need not be present to account for elevated reticulocyte counts. A chromium-51 red cell survival time was considered, but in a patient who is bleeding and being transfused there is no validity to the test, and the test itself requires thirty days for completion.

Dr. Bruno: I wonder if the radiologist has anything to add concerning the x-ray films in this case.

Erich Eidenschenk, M.D.: The results of the many x-ray films we took were exactly as described in the protocol and except for the radiologic changes consistent with her age were noncontributory in demonstrating a cause for her anemia. The use of selective celiac plexus arteriography was considered but was deferred because of the presence of moderate atherosclerosis with plaques in her vessels and the likelihood that it would not be helpful or significant.

Dr. Bruno: In the laboratory it has been shown that with the use of selective arteriography, one may demonstrate a bleeding site if the rate of bleeding is 0.5 ml. per minute; in patients, however, the blood loss has to be occurring at a rate of 3 to 6 ml. per minute. This amounts to 180 to 360 ml. of blood per hour, a rather large hemorrhage.

Arthur Dishman, M.D.: Two other sources of occult bleeding come to mind—hematobilia, but the gallbladder test series showed normal results, and a cirsoid aneurysm of the splenic artery or stomach, but this is very rare.

Dr. Bruno: On admission to the hospital this woman was in good health and had no gastrointestinal complaints. She had taken no drugs, specifically aspirin, and had no positive complaints except those elicited before.

Harry D. Fein, M.D.: Was the use of long-tube aspirations for heme or diagnostotube examinations considered?

Dr. Bruno: The patient was most uncooperative, and we even had difficulty performing sigmoidoscopy. She would not permit us to pass a long tube. We seriously considered this procedure as well as selective celiac arteriography, but in view of her age and the demonstrable plaques in her vessels with the 1 to 5 per cent morbidity associated with it, we thought that the risk would be too great. As stated before, the iodine-131 four-quadrant abdominal scan gave negative results, and we searched for other diagnostic procedures, such as endoscopy, but the patient refused to have them done. In patients in this age group, how often do Meckels' diverticula bleed?

Dr. Korelitz: I have not seen it myself, but in patients in this age group it can occur, and in retrospect Meckels' diverticulum can usually be shown by barium enema x-ray examination.

Clinical diagnoses

1. *Gastrointestinal bleeding, recurrent, secondary to mucosal ulceration of small bowel*
2. *Aortic stenosis*

Dr. Korelitz's diagnoses

1. *Bleeding small bowel vessel anomaly*
   Angioma?
   Telangiectasia?
2. *Anemia secondary to gastrointestinal bleeding plus hemolysis associated with aortic stenosis*

Dr. Bruno: Dr. Kesseler did the exploratory laparotomy, and at this point, I would like to have him tell us what he did and found.

Howard J. Kesseler, M.D.: When I first saw the patient and went over her rather voluminous chart as to what she might have or might not have causing her anemia, I became quite anxious about the prospects of having to do surgery on her, particularly during a time when she was not bleeding. In this type of case, at best, one can expect to find the source of bleeding only in approximately 30 to 40 per cent of the cases as noted in the Mayo Clinic series. This percentage can be considerably increased if one is fortunate enough to make a preoperative diagnosis or operate at a time when the patient is actually bleeding. Although the induction of anesthesia in itself may produce cessation of bleeding, one still has a better chance in this situation than if one operates without active bleeding.

It was for this reason that I felt it important to try a string test to ascertain whether the hiatus or the stomach itself might be a source of bleeding. The house staff tried for two hours to pass the string, but the patient was not able to swallow it. I decided to try myself, and after having spent part of a morning trying to pass this string, I gave it up. Unfortunately this patient was one in which endoscopy, intubation, or any other form of diagnostic tube was not feasible. Therefore, after suitable preparation and transfusions, a laparotomy was performed.

The patient's abdomen was explored through the right upper quadrant, and the stomach and duodenum were examined first. Palpation of these revealed normal findings, as was anticipated preoperatively. There was a slight suggestion of a dilated hiatus without true hernia formation. This is sometimes difficult to evaluate, even at surgery. Attention was then directed to the small bowel which was examined completely from the ligament of Treitz to the ileocecal valve. No lesion was noted. A Camron light was then used to transilluminate the bowel, and the vessels, both of the mesentery and of the bowel, were carefully studied with this light. No evidence of angiomas was noted. Using this technic the vasculature of the entire bowel was examined and appeared to be normal, and there was no evidence of polyps. The colon was palpably normal. Attention was directed to the duodenum which was then mobilized. Particular attention was given to the fourth portion of the duodenum where one sometimes finds benign tumors or diverticuli.

It was then decided to open the stomach and visualize the stomach from the inside. A small antrostomy was performed and a sterile proctoscope inserted into the stomach. This was passed down to the papilla of Vater which was visualized. No evidence of tumor was noted. No blood was seen coming from the biliary tract. The proctoscope was then directed into the cardia. High in the cardia on the posterior aspect of the stomach there was a blood clot lodged on an area of mucosa approximately $^1/_2$ cm. in diameter. There was a similar lesion just below this point on the greater curve posteriorly. The proctoscope was then passed into the esophageal opening. This was observed carefully because of the possibility of esophagitis in this area. However, no evidence of a lesion was noted. Endoscopy of the esophagus was not performed because the obesity of the abdomen did not permit the proctoscope to be passed into the esophagus. It was felt that this patient was bleeding from superficial erosive-type ulcers of the gastric mucosa. The stomach was mobilized along the greater curvature so that the area described here could be better visualized. A long gastrostomy was performed, and both of the lesions in the cardia were resected from inside the stomach. A large pyloroplasty was then done to achieve good emptying of the stomach. A Foley gastrostomy was performed, and the anterior wall of the stomach was sutured to the anterior wall of the abdomen to produce a gastropexy. The abdomen was then closed in layers. The postoperative course was satisfactory.

It was my feeling that the patient had a form of acute ulceration of the stomach which would come under the heading of erosive gastritis. It is hoped that the pyloroplasty will help prevent this condition and that the anemia will be controlled.

DR. BRUNO: Postoperatively this patient did well. The hemoglobin remained stabilized, she remained asymptomatic, and her stools were negative for occult blood. Will Dr. Shea now discuss the pathology report?

Pathologic report

LAWRENCE P. SHEA, M.D.*: The surgical specimen consisted of two portions of gastric wall and biopsies of the peritoneum, retroperitoneal tissue, and tissue from the region of the pancreas.

The gastric fragments measured 2.5 and 1 cm. in length, respectively. The larger fragment had an apparently eroded area measuring 0.3 cm. in diameter. The surface of the smaller fragment was partly covered by a blood clot.

Microscopic sections of the gastric tissue show cystic dilatation and prolongation of some of the crypts, which were lined by slightly atypical epithelium and focal atrophy of the glands (Fig. 1). In the lamina propria, neutrophils, eosinophils, and plasma cells were focally increased in number.

Sections of the specimen from the pancreatic region showed a cyst measuring less than 0.5 cm. in diameter. The cyst had a fibrous wall lined by uniform cuboidal epithelial cells. There was no pancreatic tissue.

Sections of the peritoneal and retroperitoneal tissues contained several groups of Vater-Pacini sensory corpuscles. In one focus the lining mesothelial cells were slightly atypical.

DR. BRUNO: Pathologists are not happy unless they have the whole body for examination, but this patient represented a challenge to us to discuss all the possible modalities and problems that such a patient typifies. She may still have problems at a later date, and I wonder in my own mind how many elderly patients with aortic stenosis have an anemia of unknown origin. Dr. Korelitz, do you have any final remarks?

DR. KORELITZ: I feel that, in this case, the patient was fortunate that Dr. Kesseler discovered a bleeding source and resected it. The disease, however, was not specific. We must still consider the gastrointestinal bleeding to be part of a systemic disease of which calcific aortic stenosis is another manifestation.

Final anatomic diagnoses

1. *Gastritis, acute and chronic, with focal glandular atrophy*
2. *Portions of peritoneal tissue containing corpuscles of Vater-Pacini*
3. *Benign cyst of pancreatic region*

Addendum

DR. BRUNO: As had been anticipated, our patient was readmitted on two occasions subsequent to the initial hospitalization that has already been mentioned. The first occasion was two months after her original hospital work-up, and the second admission was four months later. Both admissions were precipitated by the development of significant anemia requiring the transfusion of 7 units and then 3 units of packed red blood cells, respectively. The

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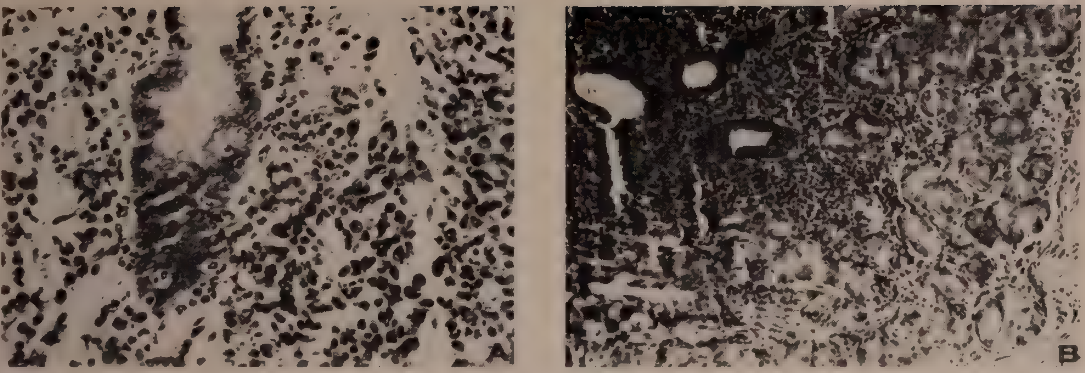

FIGURE 1. (A) Low-power microscopic view of gastric mucosa showing cystic dilatation of crypts and focal atrophy of glands. (B) High-power view of gastric mucosa showing hyperplastic crypt epithelium, foci of neutrophils, and plasma cells in lamina propria.

patient denied all gastrointestinal complaints prior to, and during, each subsequent hospital stay. Although frankly bloody or tarry stools were not present, significantly large amounts of blood were found in her feces as measured by serial stool guaiac determinations.

The need for readmission to our hospital at short intervals and the administration of the quantities of blood required obviously had an impact on our patient making her much more cooperative. Accordingly, the patient accepted the need for gastric fibroscopy, and this was performed at each subsequent admission with very significant findings being noted.

The patient was examined by gastroscopy on the sixth day of her second admission without difficulty. The landmarks were easily identified. Multiple areas of superficial erosion and ulceration varying in size from pinpoint to 0.5 cm. in diameter were seen throughout the entire gastric mucosa. The stomach and pylorus were normal, and no infiltration was present. The gastrointestinal roentgenograms also showed normal findings.

The patient was re-examined by gastroscopy on the second day of her third, and last, admission. At this time two areas of superficial ulceration or erosion were noted. One area in the antrum on the lesser curvature measuring 2.5 cm. in diameter was seen and was actively oozing blood; the second ulceration, also looking very superficial, was 1.5 cm. in diameter and had a similar appearance but appeared older, was not bleeding, and was in a healing phase.

This patient was repeatedly questioned about the ingestion of salicylates during each of her three hospital admissions, and she denied their ingestion emphatically each time. After the second gastroscopy, the question of salicylates was reopened with even more forcefulness. The patient grudgingly finally admitted ingesting buffered aspirin on a regular basis for an arthritic condition in addition to antihistamine chlorpheniramine maleate (Coricidin), also on a daily basis, "for sinus trouble." Why she had denied this previously, we will never know! The significance of salicylate ingestion as a cause of recurrent erosive gastritis was clearly described to our patient, and I am sure she understood. The patient has remained well to date, and her blood count is still in the normal range three months after her last hospital discharge. Our diagnosis, then, is erosive gastritis with intermittent bleeding, presumably and most probably, secondary to salicylate ingestion.

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Correlation Conferences in Radiology and Pathology

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Thick-Wall Sign in Nephrotomography

Case history

William Colaiace, M.D.: This seventy-two-year-old white man was seen for the first time in the emergency room complaining of pain in the left flank which had been present for one week. During the preceding two years he had noted gradually increasing difficulty in voiding, with straining, frequency, nocturia, and dribbling. He had never noticed bloody urine and had no history of urinary tract infection or stones. His general health had been good.

Physical examination showed him to be a well-developed elderly man without acute distress. He had a fever of 101F. A large, smooth, tender, mass was palpable in the left upper quadrant of his abdomen. Rectal examination disclosed a symmetrical enlargement of the prostate.

Urinalysis showed an acid reaction, specific gravity 1.024, 2 plus protein content, no sugar, an occasional white blood cell, and no red blood cells. Hematocrit was 35 per cent with a white blood cell count of 15,150 and a differential indicating a shift to the left. Blood urea nitrogen was 27.3 mg. per 100 ml. Serum alkaline and acid phosphatase were within normal limits.

Radiographic discussion

Dr. Colaiace: Radiographic evaluation was begun on the day of admission with an intravenous pyelogram followed by an infusion pyelogram (Figure 1). The preliminary roentgenogram of the abdomen demonstrated two large, poorly defined masses, one in the region of the bladder and the other in the region of the left kidney. Multiple phleboliths within the bony pelvis appeared to be displaced laterally. Film studies were continued until two hours

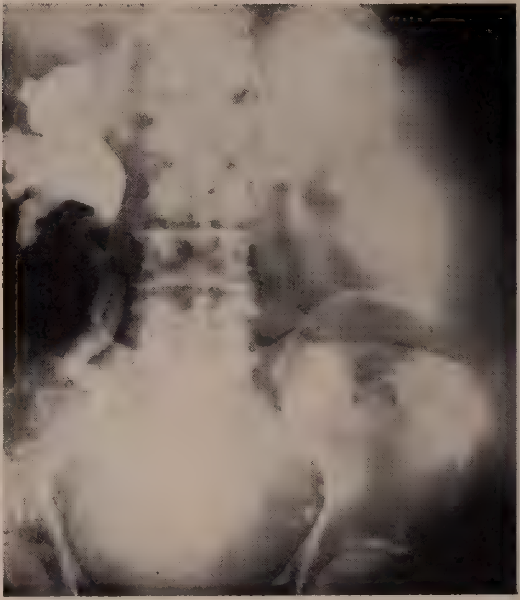

FIGURE 1. Infusion pyelogram showing hydronephrosis and hydroureter on right and grossly distended bladder. On left there is large mass in region of left kidney with portion of visualized left renal collecting system deformed and displaced upward.

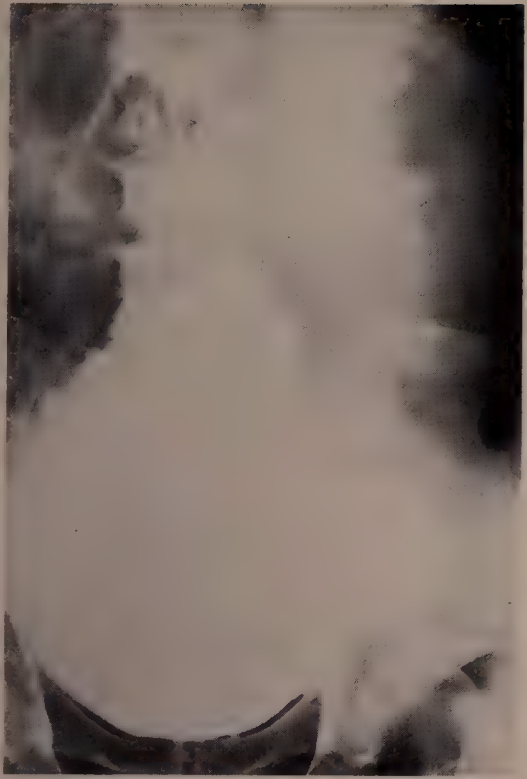

FIGURE 2. Cystogram shows enormous bladder with multiple diverticula. Soft-tissue mass is well seen with its lower border below iliac crest and with loss of normal iliopsoas line.

after the injection of the contrast medium when hydronephrosis and hydroureter were clearly demonstrable on the right. The left renal collecting system was poorly and incompletely visualized but appeared to be displaced upward above a large soft tissue mass.

A cystogram demonstrated a markedly enlarged bladder with multiple large and small diverticula (Figure 2). A study of the urethra during voiding confirmed the clinical impression of an enlarged prostate.

A left retrograde pyelogram again showed a somewhat deformed and dilated left renal collecting system and dilatation of the ureter (Figure 3). The visualized left collecting system again appeared to be displaced superiorly by a large mass involving the lower pole of the kidney.

A retrograde aortogram was then performed by means of a percutaneous insertion of a catheter into the femoral artery. Injection of contrast material showed a very large avascular mass in the lower pole of the left kidney with stretching and attenuation of the arteries in this area. No neoplastic vasculature was seen. There was a similar but smaller lesion in the upper pole of the right kidney (Figure 4).

Subsequent nephrotomography clearly defined a cystic lesion in the upper pole of the right kidney and a large poorly marginated cystic structure involving the major

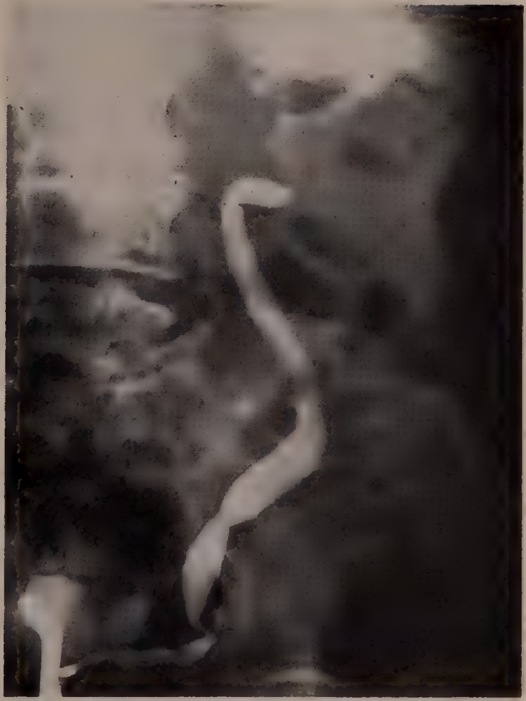

FIGURE 3. Left retrograde pyelogram confirms displacement superiorly of left renal collecting system and demonstrates hydroureter.

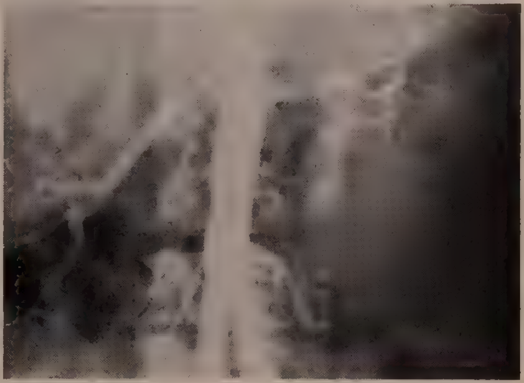

FIGURE 4. Retrograde catheter aortography shows elevation of left renal artery with spreading and attenuation of renal vasculature over large mass involving lower pole of left kidney.

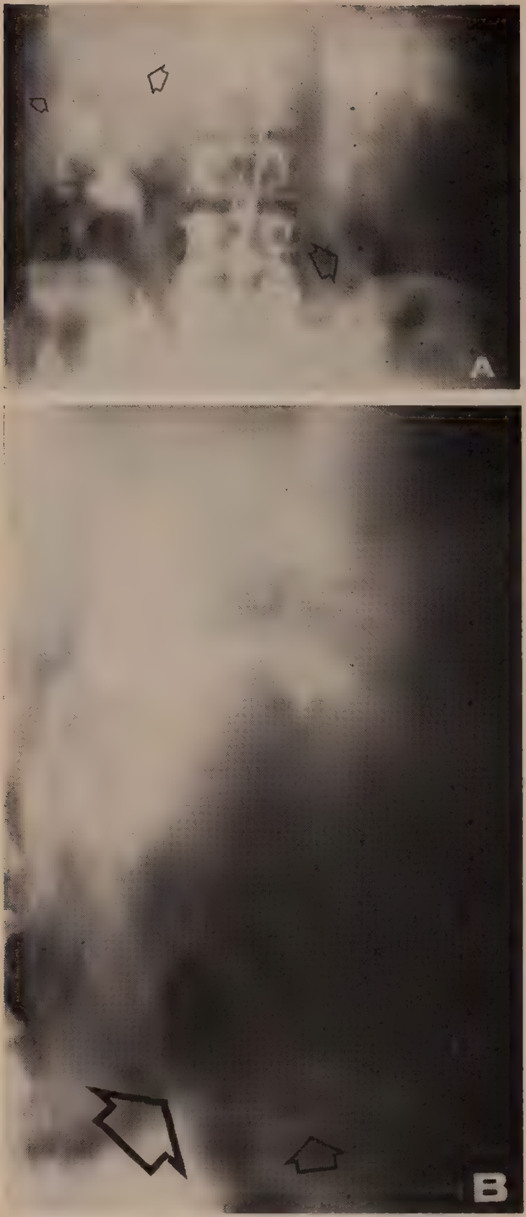

FIGURE 5. Nephrotomograms. (A) Cystic lesion at upper pole of right kidney (arrows) and large radiolucent cystic area with irregular borders and thick wall (arrow) extending from and involving lower half of left kidney. (B) Thick wall (arrows) surrounding radiolucent cyst-like mass extending from lower pole of left kidney.

portion of the lower pole of the left kidney. In contrast to the cystic lesion at the upper pole of the right kidney, a thickened wall could be seen around portions of the cystic lesion in the lower pole of the left kidney (Figure 5).

The radiologic impression was obstructive prostatic hypertrophy, benign cyst at the upper pole of the right kidney, and a cystic lesion of the lower pole of the left kidney which was not a simple benign cyst but represented either a neoplastic or an inflammatory cystic lesion because of the thickened wall demonstrated on nephrotomography

Surgical discussion

Russell W. Lavengood, Jr. M.D.: Under general anesthesia the patient was placed in the supine position, properly prepared, and a transverse incision was made across the upper portion of the abdomen.

Exploration of the abdominal cavity disclosed a very large left kidney with increased blood supply and many adhesions. It was immediately noted that the left kidney suggested the appearance of a hydronephrotic sac with a large fluctuating cavity in its lower pole. This cavity was opened and a large amount of cloudy fluid was drained. Since only minimal function had been demonstrated on the infusion pyelogram, a left nephrectomy was performed. The pathologic report on frozen sections revealed no neoplasm. Therefore, the perirenal fat was left in place.

The right kidney was then explored, and a large simple renal cyst with clear fluid was found at the upper pole. The roof of the cyst was completely removed.

After proper closure and drainage of the upper portion of the abdomen, the bladder was exposed through a midline incision. A severely trabeculated bladder and mildly enlarged prostate were found. A retention catheter was inserted into the bladder through the abdominal wound which was then closed, and a conventional bilateral vasectomy was performed without any complications.

Transurethral resection of the enlarged prostate was performed three weeks later. This proved to be benign prostatic hyperplasia.

Pathologic discussion

Charles F. Begg, M.D.: We received a portion of cyst wall from the right kidney, 6 by 6 cm. on the flat. This had a lining of flattened epithelial cells and is a typical

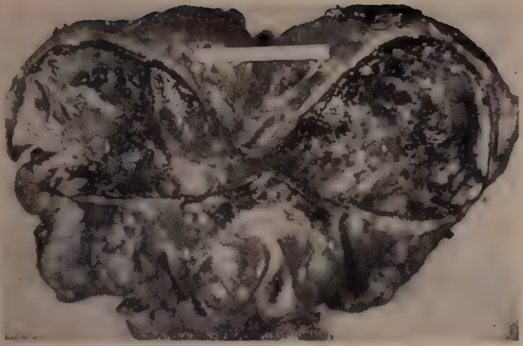

FIGURE 6. Bivalved left kidney. At equator of kidney there is large cyst containing gelatinous, hemorrhagic material. Wall of cyst is thickened.

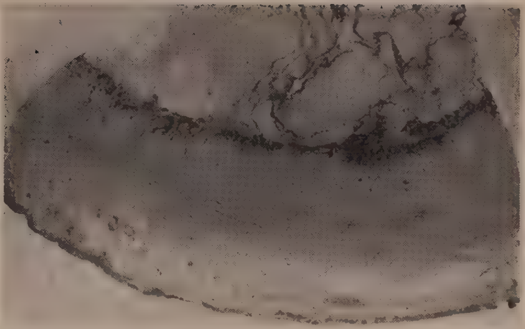

FIGURE 7. At top of photograph is mass of fibrin and red cells which is adherent to lining of cyst.

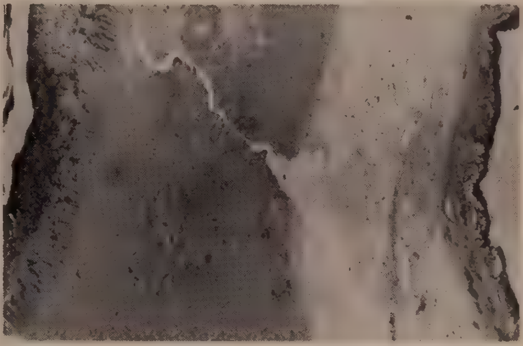

FIGURE 8. Lining of cyst is at reader's left. Compressed renal parenchyma with a few recognizable glomeruli traverses midportion of photograph. On right is adherent true and false capsule.

solitary or retention cyst. The left kidney weighed 460 Gm. Within it, at approximately its equator, was a cyst 7 cm. in diameter. This had been opened and must have been considerably larger, since the surgeon described the kidney as being tense and fluctuant.

Figure 6 shows the bivalved left kidney with the cyst at its equator. There was preserved renal parenchyma at the upper and lower poles. The cyst wall was 1 to 3 mm. thick, and attached to its inner lining was gelatinous material which almost entirely filled the cavity.

Figure 7 is a low-power photomicrograph of the outer portion of the cyst wall. A mass of fibrin with entrapped fluid and red cells was attached to the inner surface. There was no epithelial lining. The wall was composed of edematous, moderately cellular fibrous tissue.

Figure 8 shows another portion of the cyst wall with adjacent compressed renal parenchyma and adherent true and false capsule.

Comment

Nathaniel Finby, M.D.: A major breakthrough in the differential diagnosis of renal cysts and tumors resulted from the development of the technic of nephrotomography by Evans, Dubilier, and Monteith.[1] The technic, as originally conceived, included a vascular phase (intravenous aortogram) and tomographic studies during the nephrogram phase.

Prior to this new roentgen technic, it was extremely difficult to differentiate roentgenographically benign from malignant mass lesions in the kidney. Chynn and Evans[2] showed, in a review of 500 consecutive cases, a diagnostic accuracy of 95 per cent for renal cyst and 94 per cent for renal cancer.

The ability to improve this diagnostic accuracy became possible with more precise vascular visualization by retrograde catheter aortography and selective renal arteriography. The diagnostic spectrum could now be widened to include masses other than simple cyst or carcinoma of the kidney. The vascular patterns of the other mass lesions such as inflammatory or benign tumors could now be correlated with nephrotomographic findings.

Indeed, the vascular, nephrogram, and nephrotomogram phases have become even more diagnostic because of improvements in contrast media and intravenous aortography.[3] Because in rare instances a benign cyst may harbor or mask a small cancer, selective renal arteriography and direct puncture for opacification of the cyst are often used for more certain diagnosis.

Although we have made great strides since the time, less than two decades ago, when renal mass lesions could be diagnosed but rarely differentiated into benign or malignant tumor masses, there are still problem cases which require all diagnostic aids and even surgical exploration for definitive diagnosis. This is true of all diagnostic modalities and should not negate the tremendous advantage afforded by nephrotomography to differentiate benign cysts from malignant tumors in most cases.

Caplan, Siegelman, and Bosniak[4] have shown that the angiographic features of inflammatory space-occupying lesions of the kidney include increased vascularity about the lesion and "an angiographic blush in the late capillary and early venous phases without demonstration of the characteristic vascular pattern" of malignant neoplasm.

The "thick-wall sign" of Bosniak and Faegenburg[5] has been a tremendous aid in alerting us to the possibility of an excavated malignant condition, inflammatory mass, or avascular neoplasm which can otherwise simulate a large simple cyst of the kidney.

At the present time our criteria for a simple benign cyst include a sharply demarcated thin-walled avascular area in or on the surface of the kidney, usually showing a pointed crest of opacified parenchyma where it abuts the kidney. Without these strict criteria, we hesitate to diagnose "simple cyst" and rely on the vascular pattern and the "thick-wall sign" for more precise diagnosis. The "thick-wall sign" is not specific, but it rules out the diagnosis of a simple cyst.

This patient also had obstructive uropathy due to an enlarged prostate. An intravenous pyelogram should be mandatory in all patients considered for prostatectomy since it is remarkable how frequently unsuspected renal mass lesions are discovered.

Dr. Begg: The fibrosis and edema of the cyst wall, plus the presence of blood clot adherent to its inner surface, explains the appearance of thickening of the cyst wall seen by the radiologists. In this case, as with all masses found within the kidney, the problem is to determine whether the mass represents neoplasm. It is possible for some cysts to be neoplastic. We have seen occasional examples of cystic lesions which contain papillary adenocarcinoma.

The thickness of the cyst wall raises the suspicion of a neoplastic process. In this case the thickness is the result of hemorrhage within the cyst and associated inflammatory reaction within the cyst wall. We consider this to be an example of solitary or retention cyst of the kidney with the complication of intraluminal hemorrhage. A complicating feature of this case is the presence of hyperplasia of the prostate with bilateral hydroureter and hydronephrosis.

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Drug Overdose in Axillary Block of Brachial Plexus

TOXIC EFFECTS OF local anesthetics are a frequent complication of infiltration, nerve block, and extradural anesthesia. A seven-year survey from the obstetric service of the Yale-New Haven Hospital showed more convulsive seizures were due to local anesthetic drugs than to eclampsia and epilepsy combined. In most of the cases, the seizures were attributable to doses in excess of those recommended by the manufacturer.[1] Overdosage of local anesthetic during attempted axillary block of the brachial plexus is illustrated in the following case report.

Case report

A twenty-seven-year-old man, 5 feet 7 inches tall and weighing 133 pounds, was admitted to the hospital for the third time with known chronic glomerular nephritis and congestive heart failure. Because of a blood urea nitrogen exceeding 90 mg. per 100 ml., a consistently elevated blood pressure in the range of 190 mm. Hg systolic and 120 mm. Hg diastolic, and the presence of peripheral edema and the repeated need for thoracentesis, he was placed in the "chronic hemodialysis program." To facilitate the insertion of an arteriovenous shunt in his left arm, the brachial plexus was blocked by the axillary approach using 45 ml. of 1 per cent lidocaine (Xylocaine)* (450 mg.). Paresthesias were elicited, and adequate anesthesia developed six minutes later. A functioning shunt resulted but required revision two days later because of inadequate flow. At this time, the patient was brought to the operating room as an emergency. With a nurse anesthetist in attendance, the surgeon made two injections of 15 ml. each of $1^1/_2$ per cent lidocaine,* one anterior and one posterior to the axillary artery. Although slight paresthesias were noted, a satisfactory block was not obtained, and additional doses of drug were injected into the axillary space to increase the initial dosage of 450 mg. to a total of 1,400 mg. administered within a period of one hour. However, sufficient anesthesia did not result, and it was decided to perform the procedure under local infiltration. As preparations were being made to continue in this manner, the patient began to have twitching of his face and extremities. Oxygen was immediately administered by mask using positive pressure with prompt cessation of the convulsion. The patient soon became responsive, although he remained drowsy. No appreciable changes in vital signs had occurred during this episode. Minimal amounts of procaine were used locally during the placement of a new shunt in the same arm. Recovery was uneventful, but the shunt became obstructed again, and five days later, the patient was brought back for insertion of a shunt in the other arm. The anesthesiologist who had performed the first and successful axillary block

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Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, May 22, 1967. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

* Both the 1 and $1^1/_2$ per cent lidocaine contained epinephrine 1 : 200,000.

undertook the same technic on the right side using 40 ml. of 1 per cent lidocaine* (400 mg.). Anesthesia developed within fifteen minutes and lasted approximately two hours. This right-sided shunt has been functioning well for over one year.

Comment

Axillary block of the brachial plexus has been recommended as the technic of choice for the insertion of arteriovenous shunts in patients with chronic renal failure. A properly administered brachial plexus block provides adequate analgesia with minimal physiologic disturbances and, in addition, provides maximal vasodilation at the site of surgery thus permitting the use of larger cannulas. The axillary approach is preferred to the supraclavicular approach because of infrequency of complications.[2]

Lidocaine is a potent local anesthetic which produces prompter, more intense, longer-lasting, and more extensive anesthesia than an equal concentration of procaine. However, its toxicity is approximately twice that of procaine. The maximum amount of lidocaine recommended for use at any one time is 500 mg. A good rule of thumb is not to administer more than 7 mg. per kilogram of body weight.[3] In a 60-Kg. patient, 450 mg. of the drug should have been the upper limit.

The use of an excessive amount of local anesthetic drug negates one of the advantages of regional anesthesia, namely the minimum of associated functional changes. Since unmetabolized portions of local anesthetics are eliminated unchanged by the kidney, an overdose may be particularly hazardous in the presence of renal failure.[4] Thus, the occurrence of systemic toxicity in this patient should occasion no surprise.

Physicians who use local anesthetic drugs should be thoroughly familiar with their recommended doses. If adequate analgesia does not result after the maximum safe dose has been administered, a different method of anesthesia should be undertaken.

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Number one hundred seventy-four in a series of Clinical Anesthesia Conferences

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Promethium-147 in watches

The Atomic Energy Commission has recently decided to review the question of exempting promethium-147 in watches and clocks. Since these timepieces constitute no danger to public health, the Commission has reconsidered its earlier decision. With this action and the adoption of international standards, problems in international trade in luminous timepieces should be kept to a minimum.

The amendment to part 30 limits the quantities of Pm^{147} to 0.1 millicurie per wrist watch or pocket watch and 0.2 millicurie per clock. The amendment has recently been effective on publication in the Federal Register.

Case Reports

Bowen's Disease in Anoperineal Region

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SQUAMOUS CARCINOMA in situ has rarely been noted in the anal and perineal regions. Most authors who have chosen to report this entity have classified this lesion with Bowen's disease.[1,2] The term Bowen's disease is commonly used to describe a carcinoma in situ of glabrous skin. Carcinoma in situ denotes an intra-epithelial cancer of squamous mucous membrane. However, it is not entirely settled whether Bowen's disease is a separate entity or the same as carcinoma in situ.

This report describes such a lesion located in a hemorrhoid. This entity may now be more commonly encountered, since all tissues now taken during hemorrhoidectomy are subjected to microscopic examination.

The rarity of such a lesion becomes even more apparent when the natural history of the disease is realized. Perianal Bowen's disease (squamous carcinoma in situ) has a long chronic course, all too often masquerading as one of the several forms of innocuous chronic dermatoses. Clinically, the lesion takes no characteristic gross appearance. In the perineum, it is easily mistaken for a condyloma, papilloma, psoriasis, senile keratosis, anal skin tag, or, as in this case, an external hemorrhoid. Varied as the gross lesion may be, the microscopic picture is quite characteristic. In general, there is epidermal hyperplasia with superficial proliferation, hyperkeratosis, acanthosis, and malignant dyskeratosis of variable extent. The basement membrane is intact. A chronic inflammatory exudate of plasma cells and round cells is invariably present in the subjacent dermal layer. The subsequent therapy and prognosis are based on the findings in the specimen. Herein lies the importance of this microscopic examination.

Case report

A thirty-five-year-old Puerto Rican female patient was admitted for the first time to the Greenpoint Hospital for pruritus ani and external hemorrhoids. Ten years prior to admission, the patient had noticed a small anal protrusion which was asymptomatic. This gradually grew larger. She continued in good health. Six weeks prior to admission, she developed pruritus ani. In the clinic she was examined and found to have an external and internal hemorrhoid. Sigmoidoscopic examination gave negative results. She was treated with anesthetic suppositories and sitz baths. Only slight relief was obtained with this regimen, and after several clinic visits hemorrhoidectomy was advised. Diagnostic work-up prior to surgery included stools for ova and parasites and barium enema; all tests gave negative findings. The large hemorrhoid was removed. Examination of the microscopic sections showed anorectal junction. There were submucosal thin-walled dilated varices and round cell infiltrate throughout. The surface epithelium showed loss of cellular polarity with cellular pleomorphism and mitotic figures (Fig. 1). On serial sections, the margins were free of the lesion, and the basement membrane was intact. The final diagnosis was hemorrhoid with carcinoma in situ.

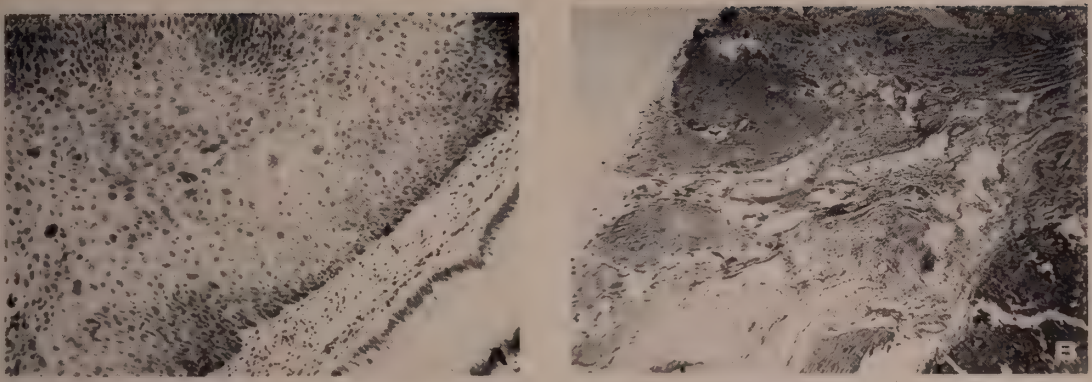

FIGURE 1. (A) Carcinoma in situ, surface epithelium showing loss of cellular polarity, pleomorphism, and mitotic figures. (B) Hemorrhoids. Thin-walled dilated varices in subepithelial tissue.

The patient was discharged to be closely followed in the clinic. It was noted that the area of excision was slow in healing. Three months after her initial discharge, she was readmitted since the operative area was still incompletely healed. A wider and deeper excision was performed. This specimen was reported to be free of any lesion. When seen two months later, the operative area had healed.

Comment

Bowen's disease is most often found in patients above forty years of age and rarely in the younger-age group. It is equally distributed between the sexes. This early intra-epidermal squamous cell carcinoma grows slowly. It eventually becomes invasive, producing lymphatic metastases.[3] The lesion, when correctly recognized, is treated by wide local excision. It is important to determine that the margins are free of disease and that the dermis is not invaded. Evidence of invasiveness demands more radical excision. For this rare occasion, abdominoperineal resection is necessary. X-ray therapy or fulguration is not advised.

Bowen's disease may reflect the coexistence of neoplastic disease of the viscera.[4,5] When this lesion involves the vulva or perineum, a second primary of the genital tract, particularly of the uterine cervix, is frequent.[6] It has been pointed out that Bowen's disease may therefore represent a cutaneous manifestation of a systemic carcinogenic process. Therapy must therefore include careful follow-up for both local recurrence and systemic manifestations of a visceral malignant condition.

Summary

Carcinoma in situ of the anal region is a rare, slow-growing, preinvasive lesion difficult to differentiate clinically but easily diagnosed by microscopic pathologic examination.

Early diagnosis is desirable since cure can be achieved by wide local excision. Careful follow-up for both local recurrence and development of a systemic malignant condition is necessary.

A case of a thirty-five-year-old female, having hemorrhoids for ten years, is presented. Squamous carcinoma in situ was found on microscopic examination of the tissue.

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Triple Symptom Complex of Behçet as Auto-Immune Disease

Remission Induced by Ethinyl Estradiol

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RECURRENT IRIDOCYCLITIS associated with buccal and genital ulcerations (Behçet's syndrome) has been recognized as a rare chronic disorder of unknown etiology for several decades. Primary involvement of the uveal tract, genitalia, and buccal mucosa constitutes the classic triad of the "triple symptom complex," although profound involvement of the integument, central nervous system, and joints is not infrequent.

Some authors have considered monosymptomatic and disymptomatic forms of the disease as consistent with the diagnosis, and most disagreement has centered about incomplete manifestations of the disorder. Curth[1] considers only one third of the triad with recurrences to be insufficient to make the diagnosis.

Following is a report of a case which evolved explosively from a monosymptomatic form to triple symptom complex.

Case reports

CASE 1. A sixteen-year-old white female was admitted to the St. Vincent's Hospital with four-day-old complaints of pyrexia, generalized arthralgias, and ulcerations of the tongue, lips, buccal mucosa, external canthi, external nares, and vaginal introitus. Ten days prior to admission, the patient had experienced an upper respiratory infection with pharyngitis and cough.

The patient gave a history of premenstrually recurring aphthae of the mucosa oris beginning approximately one and a half years previously, with regular and predictable recurrence in the immediately preceding six months. In that same period of time, the patient had been receiving oral cyclic therapy for irregular menses. Past medical history was otherwise unremarkable, save for usual childhood diseases. Family history was noncontributory.

Physical examination revealed an acutely ill young female with inability to swallow and to open her mouth because of pain. Photophobia, profound prostration, and arthralgia were present. There were discrete ulcerations of the tongue, buccal mucosa, lips, and external canthi together with oral fetor, bulbar and palpebral conjunctivitis, corneal erosion in the left eye demonstrated by fluorescein staining, and whitish, cheesy leukorrhea accompanied by mucosal erosions of the inner labia minora. Evanescent erythema was noted on the anterior thorax and forehead. There was no thrombophlebitis.

Extensive laboratory study revealed an admission white blood count of 9,600 with 17 per cent monocytosis which later rose as high as 18,000, corrected erythrocyte sedimentation rate was 43 mm. per hour, urinalysis showed a consistent trace of albuminuria but no erythrocytes, and blood urea nitrogen was 22 mg. per 100 ml. (normal range 9 to 18 mg. per 100 ml.) Antistreptolysin O titer was 50 Todd units. Cold agglutinins were positive in dilution of 1:224 two days after admission. Two chest films showed normal results. Serum protein electrophoresis revealed a significant elevation of alpha-2 globulin. Examination of the blood for lupus cells and rheumatoid factors and of the stools for parasites gave negative results, as did other routine laboratory examinations.

Hospital management entailed nasogastric and intravenous feeding and corticosteroid therapy which was initiated at a 24-tablet equivalent level. Ophthalmologic consultation could not be obtained until the patient was markedly improved; slit-lamp examination was unavailable, but at no time did the resident staff observe hypopyon. Prompt therapeutic response was induced by this regimen, the fever and arthralgia disappearing within two days, and the patient was discharged on the thirteenth hospital day on oral prednisone therapy 5 mg. twice a day and ethinyl estradiol 0.05 mg. twice a day during the latter half of each menstrual cycle according to the work of Shelley, Preucel, and Spoont.[2]

During the twelve months since discharge, the patient has remained asymptomatic save for a bilateral bulbar conjunctivitis on discontinuation of the estradiol during the fifth asymptomatic month.

Case 2. A patient from the private practice of the senior author had been previously troubled for almost two years with the Hebra form of erythema exudativum multiforme, flaring regularly with the onset of each menstruation, and controlled only with high dosages of corticosteroids.

Comment

The original report of Behçet[3] postulated a viral etiology with the finding of inclusion bodies and described no iritis but rather corneal erosions with episcleritis. Robinson and McCrumb,[4] in a survey of the literature thirteen years following the original report, were unable to find any other cases wherein such causes had been verified.

The syndrome has a predilection for males and is commonest in the age range of fifteen to forty-five years. Although other organ systems may be involved not infrequently and thrombophlebitis is present in 25 per cent of reported cases,[5,6] ophthalmic involvement is noted to be the gravest complication with progressive loss of vision following iritic relapse[6]; the blindness is attributed to posterior synechiae with pupillary occlusion and optic nerve atrophy due to secondary glaucoma or to loss of vitreous transparency.[1] The full range of the various manifestations of the triad is fully delineated by Robinson and McCrumb,[4] and central nervous system changes are described by Curth[5] and Allen.[7]

Differentially, most authors state that diagnosis often centers about Johnson-Stevens disease and polyarteritis; indeed, the commonest cutaneous manifestation is noted to be erythema exudativum multiforme (Hebra).[7] Biopsy in almost all cases of buccal aphthae, scrotal ulcer, or ulcus vulvae acutum (Lipschütz) is neither specific nor suggestively diagnostic; however, a common denominator of vasculitic expression seems to suggest itself in various organs; perivasculitis of cerebral and retinal vessels has been noted,[7] and France *et al.*[6] postulate a microphlebitis as the primary alteration in all lesions.

The recurrent aphthae of Case 1, which had previously exacerbated regularly with the menses, presented nothing unique to dermatologic experience, as for example the premenstrual worsening of atopic dermatitis, psoriasis, lupus erythematosus, and acne. However, when triple symptom complex was seen as a culminative climax to a long series of attacks, it was decided to proceed on the work of Shelley, Preucel, and Spoont,[2] presupposing that, at least in this instance, the reaction pattern represented an auto-immune vasculitis wherein this young female had become sensitized to her own progesterone or one of its congeners. Exogenous suppression of progesterone production in this instance has proved unusually successful.

Summary

A case report of Behçet's syndrome is presented in a patient with a striking history of premenstrual exacerbation. Exogenous suppression of progesterone production with ethinyl estradiol has maintained an indefinite remission.

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Brief Preliminary Reports

Cystic Fibrosis of Pancreas

Sialographic Studies

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ALFRED ERIV, D.D.S., M.S.
EDWARD V. ZEGARELLI, D.D.S., M.S.
CAROLYN R. DENNING, M.D.
MEETA GOSWAMI, D.D.S.
JOAN PHELAN, M.S., R.D.H.
New York City

From the Divisions of Oral Surgery and Stomatology, School of Dental and Oral Surgery, Columbia University; Babies Hospital, Columbia-Presbyterian Medical Center; and School of Dental Hygiene, Columbia University

Studies concerning the function of the salivary glands in patients with cystic fibrosis of the pancreas are undoubtedly pertinent to the full understanding of this exocrine disturbance. Since a review of the literature had revealed no sialographic studies in cystic fibrosis patients, an investigation of 11 ambulatory patients with cystic fibrosis was undertaken and the results reported.* However, it was noted in the published report that the findings obtained from such ambulatory patients were not necessarily indicative or suggestive of data which might be obtained from severely ill patients. Hence, a follow-up study of a small number of severely ill cystic fibrosis patients, individuals just short of a state in which these procedures could not be performed for purely academic purposes, was undertaken to determine the presence or absence of consistently observable aberrations in the state and the function of their salivary glands.

Materials and methods

The 5 subject patients thus far studied, all females, were, as in the previous study, investigated employing a routine sialographic technic which included a dilatation of Stenson's duct, instillation of 0.5 cc. of a radiopaque solution (Ethiodol), followed by radiographic studies of the glands. As before, the patients were subjected to lateral, oblique, and posteroanterior radiographic examinations immediately after the radiopaque solution had been instilled and, to determine emptying patterns, when possible, one hour after instillation.

The findings observed in the radiographs of these severely ill cystic fibrosis patients were similar and comparable to those obtained and previously described in our report on ambulatory patients.* It is concluded, therefore, that the parotid glands of cystic fibrosis patients are not affected to a degree which is detectable by this sialographic technic.

Comment

It has, of course, been conjectured and reported that cystic fibrosis of the pancreas affects members of the salivary gland system other than the parotid gland, and hence similar studies are now in progress to determine the state and function of the submaxillary glands by means of appropriate sialographic technics.

This study was supported in part by an institutional grant to the School of Dental and Oral Surgery, Columbia University, from the National Institutes of Health, Bethesda, Maryland.

* Mandel, L., *et al.*: Sialographic studies in patients with cystic fibrosis of the pancreas, New York State J. Med. 64: 2704 (1964).

Industrial Health

Medical Certificate in Industry

ROBERT KATZ, M.D
New York City
JAMES J. BRANDL, M.D.
Buffalo, New York

Director, Bureau of Industrial Health and Workmen's Compensation, New York City (Dr. Katz), Director, Medical Department, Chevrolet-Tonawanda Division of General Motors Corporation, Buffalo, New York (Dr. Brandl)

Absenteeism in industry places a drain on our natural resources in the magnitude of approximately 10 billion dollars a year.[1] Therefore prevention of absenteeism is of considerable concern to industry. It was found that acute diseases account for one half of the absenteeism of short duration (two to four days) while chronic debilitative diseases, requiring an absence from work of four to six weeks, may strike one in four workers.[2,3]

Forms used

Of the ever-increasing number of forms and certificates physicians are requested to fill out in the rapidly changing climate of medical practice, few have a greater effect on industry than the certification of illness by the treating physician, given to the patient and handed in to the industrial medical department on his return from sick leave or, less frequently, to request absence from work because of medical illness.

Many employe benefit programs provide for payments in case of illness in excess of statutory requirements of the Disability Benefits Law and set as a requirement the submission of a medical certificate. Little difficulty is encountered when a prescribed form is available and completed in detail by the physician. However, where no standard forms are made available, the notes submitted on the physician's letterhead stationery are often unclear, incomplete, and at times even misleading.[4]

Medical certification should contain only factual information actually known to the certifying physician and cover only the disability observed from direct care and treatment. It should not cover any period prior to the first treatment. To be of maximum assistance to the patient and to the industrial medical department, it should contain precise information about the period of disability, diagnosis or complaint, and any medication which will be taken on a continuing basis after the patient's return to work. It is advisable to include any unusual or additional information which may affect the patient's future health and suggestions as to work limitations. Before recommending such limitations, physicians should give serious thought to the fact that many times the work someone is used to doing may actually be easier to perform than a lighter but unfamiliar job. Suggestions should include specific weight restrictions, avoidance of specific motions such as twisting, pulling, or pushing, or similar recommendations to faciliate proper placement of the employe returning from sick leave.

Abuses

Physicians should guard against certain abuses which have developed regarding medical certification of illness which are of doubtful ethics, morality, or legality. Frequently the financial gain to the patient in no way approaches the damage to the physician's integrity, reputation, self-esteem, and professional standing which may result from carelessly executed medical certificates.

Personnel managers cannot help but

wonder why it is that a person may become ill on any day of the week, but most employes after prolonged illness return to work on Mondays.[5]

Conclusion

Any report bearing the physician's signature must be able to stand up under the closest scrutiny. While strict adherence to ethical principles may at times subject the practitioner to many outside pressures such as from friends, relatives, organizations, and agencies, our profession has always been able to maintain thereby the respect and esteem of the community at large.

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3. Hinkle, L. E., Jr., and Plummer, N.: Life stress and industrial absenteeism; the concentration of illness and absenteeism in one segment of a working population, Indust. Med. 21: 363 (1952).
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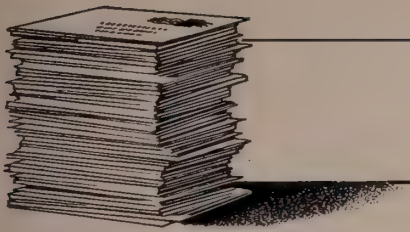
5. Wade, L.: A human relations approach to sickness absenteeism and other employee problems, A.M.A. Arch. Indust. H. 12: 592 (1955).

Share Your Medical Journals With Colleagues Overseas

The doctors of the U.S.A. are being asked to send their medical journals—after they have read them—to colleagues overseas (Asia, Latin America, and Africa) who wish to have access to current medical literature but, either because of currency regulations or actual cost involved, cannot themselves subscribe to medical periodicals. We can supply you with the name, address, and medical specialty of doctors in these areas who would be happy to receive these much wanted journals, (*particularly specialty journals*), which you will mail direct to your overseas colleague.

This is a direct "Doctor-to-Doctor" program which is being sponsored by the American Medical Association with the collaboration of The World Medical Association to help alleviate the lack of current medical publications and to further international good will. Your cooperation in this program will be greatly appreciated and your contact with these colleagues in other countries, we can assure you, will prove very gratifying. If you wish to participate in this program, send your name, address, and titles of journals you will contribute to DOCTOR-TO-DOCTOR PROGRAM, The World Medical Association, 10 Columbus Circle, New York, New York 10019.



Letters to the Editor

Air pollution and small cars

To the Editor: At this moment, when air pollution seems to be on everyone's breath, isn't it time that the New York State Journal of Medicine pointed out that the large automobile manufacturers already have available in their small, relatively unpublicized automobiles a most significant temporary stopgap against burgeoning air contamination?

These vehicles, which have motors of as little as 50 cubic inches of displacement do all the things highly advertised horsepower-race cars of almost 500 cubic inches capacity do, except that they spew only one tenth of the pollutants into our atmosphere.

Aside from costing far less, the small cars are easier to park because they are so much shorter; use far less gasoline, delivering up to 50 miles per gallon; do less damage to our roads since they can weigh less than half of their monstrous, prestige-symbol counterparts; are easier to drive, not requiring power-steering and power-brakes, and are available with automatic transmissions; are comfortable and extremely reliable; would, at least temporarily, ameliorate the traffic problem by making it possible to place more cars on the same length of road; and would contribute eventually to a lower traffic fatality record because the traumatizing agent weighs approximately only half as much as the larger automobile.

It is true these small cars are designed to carry only four people and their luggage, but even a casual survey will show that the vast majority of American cars carry only one or two persons and no baggage.

Ford's Anglia, Chrysler's Simca, General Motors' Vauxhall Viva, and British Motors Corporation's Mini cars are examples of thoroughly proved small automobiles, which are certainly not merchandised as aggressively in our country as are the larger models.

Electric cars are being boomed as the car of the future, but these operate from batteries which must be charged from electric sources, most of which are energized from gas-, oil-, or coal-actuated generators, thus continuing the air contamination. For that matter, even nuclear generators have their own serious waste disposal problems.

Frank M. Stead, chief of the division of environmental sanitation of the California Public Health Department, is so outraged by the ever-increasing air pollution created by automobiles (in the City of Los Angeles alone 3.5 million cars burn 7 million gallons of gasoline each day, creating more than 10,000 tons of exhaust gases) that he is calling for a ban against all gasoline-powered vehicles in California after 1980.

This information should be brought to the attention of the public now by the New York State Journal of Medicine so that doctors will not be castigated at a later date for their complete lack of public responsibility at a time when excellent counsel could have mitigated leaving such a foul heritage to our children.

ANTHONY C. REIGER, M.D.

R.F.D. 1,
Jensen Beach, Florida 33457

Necrology

John Bernard Ahouse, M.D., of Yonkers, died on November 24, 1967, at the age of seventy-three. Dr. Ahouse graduated in 1925 from the Medical College of Virginia. He was director of pediatrics (inactive) at Yonkers General Hospital, a consulting pediatrician at St. Joseph's and Dobbs Ferry Hospitals, an assistant attending pediatrician (inactive) at Presbyterian Hospital, and an honorary staff pediatrician at St. John's (Riverside) Hospital. Dr. Ahouse was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Yonkers Academy of Medicine, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Martin Brandeis, M.D., of Mount Vernon, died on November 28, 1967, at the age of seventy-three. Dr. Brandeis received his medical degree from the University of Munich in 1920. He was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herta Ekstein, M.D., of Endicott, died on November 18, 1967, at her home at the age of fifty-four. Dr. Ekstein received her medical degree from the University of Prague in 1938. She was an attending member of the medical staff at Ideal Hospital of Endicott. Dr. Ekstein was a member of the American Academy of General Practice, the Binghamton Academy of Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur Nathan Freuder, M.D., of Brooklyn, died on November 5, 1967, at the age of sixty-five. Dr. Freuder graduated in 1926 from the University of Maryland School of Medicine and College of Physicians and Surgeons. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Edward Livingston Hunt, M.D., of Lawrence, died on December 1, 1967, at his home at the age of ninety-six. Dr. Hunt graduated in 1896 from Columbia University College of Physicians and Surgeons. He was a consulting neurologist at Lincoln and St. Luke's Hospitals. Dr. Hunt was a Diplomate of the American Board of Psychiatry and Neurology and a member of the American Neurological Association, the Association for Research in Nervous and Mental Disease, the New York Academy of Medicine, the New York Neurological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Kirsch, M.D., of New York City, died on November 23, 1967, at the age of seventy-five. Dr. Kirsch received his medical degree from the University of Prague in 1918. He was a clinical assistant physician at Jewish Memorial Hospital. Dr. Kirsch was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Meyer Matusow, M.D., of White Plains and The Bronx, died on November 29, 1967, at the age of sixty-two. Dr. Matusow graduated in 1932 from Long Island College of Medicine. He was an attending ophthalmologic surgeon at Manhattan Eye, Ear and Throat Hospital. Dr. Matusow was a Diplomate of the American Board of Ophthalmology, a Fellow of the International College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology, the American Ophthalmological Society, the Pan-American Medical Association, the New York Society for Clinical Ophthalmology, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Milton Robinson, M.D., of Hartsdale, died on December 9, 1967, at White Plains Hospital Association at the age of fifty-nine. Dr. Robinson graduated in 1934 from Columbia University College of Physicians and Surgeons. He was an attending obstetrician at White Plains Hospital Association and a consulting gynecologist at St. Barnabas Hospital for Chronic Diseases. Dr. Robinson was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Surgeons, a Fellow of the American College of Obstetricians and Gynecologists, and a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Bela Schick, M.D., of New York City, died on December 6, 1967, at The Mount Sinai Hospital at the age of ninety. Dr. Schick received his medical degree from the University of Graz in 1900. In 1913 while doing pediatric research in Vienna he developed the Schick Test for determining the vulnerability of humans to diphtheria. He also made contributions in the field of allergy (a word he and Dr. Clemens von Pirquet coined) as well as in studies of complications following scarlet fever, infantile tuberculosis, the metabolism of infectious diseases, and the nutrition of the newborn. In 1923 he came to New York City to deliver the Harvey Lecture at the New York Academy of Medicine and was invited to accept an appointment as chief pediatrician at The Mount Sinai Hospital. He served in this capacity from 1923 until his mandatory retirement in 1942 when he became a consulting pediatrician and director emeritus, serving in these posts until his death. Dr. Schick was also a consulting pediatrician at the New York Infirmary and Sea View Hospital and Home. Among the many honors he received was the Addingham Gold Medal, a British award for "the most valuable discovery for relieving pain and suffering in humanity." Dr. Schick was a Diplomate of the American Board of Pediatrics, a Fellow of the American College of Allergists, and a member of the American Pediatric Society, the American Academy of Pediatrics, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Isaac Sossnitz, M.D., of The Bronx, retired, died on November 28, 1967, at the age of ninety-four. Dr. Sossnitz graduated in 1898 from Baltimore Medical College. For thirty years he served as medical director of the Eastern Life Insurance Company of New York.

Medical Society of the State of New York

Annual Convention

February 11 through 15, 1968

The Americana, New York City

A Symposium on

Medical Aspects Of Sports

Sponsored by the

Medical Society of the State of New York,
Committee on Medical Aspects of Sports

Saturday, February 10, 1968
9:00 a.m. to 5:00 p.m.

Imperial Ballroom
Americana Hotel
New York City

* * *

Medical and associated health professions, coaches, trainers, and athletic directors are invited.

(no registration fee)

* *

Co-sponsors

New York State Public High School Athletic Association
Health, Physical Education and Recreation Association

Additional Annual Reports

Nominating Committee

To the House of Delegates, Gentlemen:

In accordance with Chapter XI, Section 4, of the Bylaws of the Medical Society of the State of New York, the Nominating Committee met at the Cornell Club, 155 East 50th Street, New York City, on Wednesday, November 22, 1967, at 5:15 p.m.

Present were the following:

First District—George Himler, M.D., New York
Second District—Ralph S. Emerson, M.D., Nassau
Third District—James A. Moore, M.D., Albany
Fourth District—James M. Blake, M.D., Schenectady, *Chairman*
Fifth District—Irving L. Ershler, M.D., Onondaga
Sixth District—Swen L. Larson, M.D., Chemung
Seventh District—Charles D. Sherman, Jr., M.D., Monroe
Eighth District—George L. Collins, Jr., M.D., Erie
Ninth District—George T. C. Way, M.D., Dutchess
Member-at-large—Bernard J. Pisani, M.D., New York
Member-at-large—Vincent J. Tesoriero, M.D., Kings

After careful consideration of the recommendations submitted by the district branches, county societies, and sections in response to a memorandum of September 29, 1967, your committee respectfully nominates the following candidates for election on February 15, 1968:

President—Edward C. Hughes, M.D., Onondaga
President-Elect—Walter T. Heldmann, M.D., Richmond
Vice-President—Felix Ottaviano, M.D., Madison
Secretary—Carl Goldmark, Jr., M.D., New York
Assistant Secretary—Joseph G. Zimring, M.D., Nassau
Treasurer—Thomas F. McCarthy, M.D., Bronx
Assistant Treasurer—Albert M. Schwartz, M.D., New York
Speaker—George Himler, M.D., New York
Vice-Speaker—John H. Carter, M.D., Albany
Trustees (*two for five years*)—George A. Burgin, M.D., Herkimer
Frederick A. Wurzbach, Jr., M.D., Bronx
Councillors (*four for three years*)—Arthur H. Diedrick, M.D., Westchester
John E. Lowry, M.D., Queens
Edward Siegel, M.D., Clinton
C. Stewart Wallace, M.D., Tompkins

Delegates to the American Medical Association (*thirteen delegates*) *and thirteen alternates for two years commencing January 1, 1969:*

Lynn R. Callin, M.D., Monroe
Max Cheplove, M.D., Erie
John Lee Clowe, M.D., Schenectady
George L. Collins, Jr., M.D., Erie
C. Joseph Delaney, M.D., New York
Paul M. DeLuca, M.D., Broome
Irving L. Ershler, M.D., Onondaga
Irwin Felsen, M.D., Allegany
Henry I. Fineberg, M.D., Queens
John M. Galbraith, M.D., Nassau
Carl Goldmark, Jr., M.D., New York
Frederic W. Holcomb, Jr., M.D., Ulster
Joseph J. Kaufman, M.D., Wayne
John F. Kelley, M.D., Oneida
Herbert A. Laughlin, M.D., Chautauqua
John C. McClintock, M.D., Albany
James A. Moore, M.D., Albany
Jason K. Moyer, M.D., Broome
Solomon Schussheim, M.D., Kings
Lester R. Tuchman, M.D., Queens
Walter Scott Walls, M.D., Erie
George T. C. Way, M.D., Dutchess
Carlton E. Wertz, M.D., Erie
William L. Wheeler, Jr., M.D., New York
Waring Willis, M.D., Westchester
Frederick A. Wurzbach, Jr., M.D., Bronx

The thirteen nominees receiving the largest number of votes will be delegates; the second thirteen will be alternates.

Respectfully submitted,

James M. Blake, M.D., *Chairman*

Economics

To the House of Delegates, Gentlemen:

The Economics Committee is composed of the following:

Robert E. Westlake, M.D., *Chairman*	Onondaga
Carl Ackerman, M.D.	Bronx
Jeff J. Coletti, M.D.	Nassau
Gerald L. Glaser, M.D.	Monroe
Robert George Hicks, M.D.	New York
Adelaide Romaine, M.D.	New York
Wallace M. Sheridan, M.D.	Westchester

The committee held four meetings during the year, March 30, April 26, June 21, and September 27, 1967.

At the March meeting plans for the coming year were developed. The committee recommended that county society economics committee chairmen organize in order to send a liaison representative from each district branch to all meetings of the State Society's Economics Committee.

Relative Value Scale. In accordance with a recommendation of the committee at its meeting in March, notices of the April 26 meeting of the Economics Committee were sent to the medical economics chairmen and presidents of the county medical societies and of all specialty groups. At this meeting, the chairman welcomed 35 representatives and explained that the committee was embarking on a program for the revision of the Relative Value Scale through consultation with all county medical societies and specialty groups.

A letter was presented from Henry I. Fineberg, M.D., stating that the Reference Committee on Medical Services had recommended at the 1967 House of Delegates "that the Council establish a bureau for the maintenance of a continuing study of the Relative Value Scale and that this bureau be staffed and financed by the State Medical Society." The Council referred this to the Committee on Economics with the request that the committee report to the Council regarding the cost and other details of such a bureau.

Dr. Westlake pointed out that the "name of the game" is "freedom" and that each specialty group and county medical society will have an opportunity to present to the committee recommendations for the revision of their section of the Relative Value Scale. He said that at this point the most important step is to have groups present a clear description of each service performed.

The chairman requested that the specialty groups report back to the committee by August 31, 1967, with definite descriptions of procedures so that there is no misunderstanding when surveys are made.

The question was raised, "Where would the general practitioner fit into the picture?". The chairman explained that the Relative Value Scale is composed of definitions of services performed, not of physician characteristics.

The committee authorized its chairman to work with the Social Service Division of the Syracuse University Research Corporation on a proposal for statistical study of the Relative Value Scale.

At the June meeting, the revision of the Relative Value Scale was discussed at considerable length. The chairman mentioned that Blue Shield has a huge stake in this and if the State Medical Society cannot carry the financial end of it Blue Shield might fund the project, particularly since an outside organization is developing the prospectus. Heretofore, organized medicine has not had the necessary documentary evidence that this survey can produce.

The chairman presented to the committee a proposal of the cost of a Relative Value Scale study by the Syracuse University Research Corporation, and it was recommended that this be brought to the attention of the president and the Budget Committee.

The chairman presented a prospectus by the Syracuse University Research Corporation to Dr. Fineberg on September 20, 1967, outlining, in detail, the development of a Relative Value Scale for the practicing physicians in New York State. Dr. Fineberg presented the prospectus to the officers, councillors, and trustees of the State Medical Society on September 22, 1967.

At the September meeting, 25 representatives from county medical societies and specialty groups attended. The chairman spoke of the responsibility given to the Economics Committee of developing a "usual and customary" fee schedule. He requested the county medical societies and specialty groups to give the committee an up-to-date set of descriptive terms. A representative of the Syracuse University Research Corporation explained that it planned to make a "pilot" study first and then to follow with a regular survey in about six months.

Several county medical societies reported that they have completed a relative value study and three of the specialty groups also reported completion of such a study.

Retirement Plans. A Keogh Retirement Plan was discussed at the March meeting, and it was felt that county medical societies would want no State activity at this time.

Dependents' Medical Care. The matter of the review of the Dependents' Medical Care claims was discussed at the March meeting, and a subcommittee was appointed to review these claims as often as necessary.

At the September meeting a letter, dated July 27, 1967, from Brigadier General Norman E. Peatfield, MC, U.S. Army, Executive Director, Office of the Surgeon General, Denver, Colorado, addressed to Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, was presented, stating that medical societies acting as fiscal agents for the payment of physicians' bills is to be discontinued on the termination of the present contracts. The Society's present contract terminates January 31, 1968.

During the year, the subcommittee reviewed approximately 400 claims which required special consideration and recommendations to the Office for Dependents' Medical Care for authorization. The recommendations of this committee were approved by the Office for Dependents' Medical Care, without exception. The committee and George P. Farrell, administrative officer, have experienced fine cooperation from Colonel William H. Hayes, contracting officer, and his staff.

Acknowledgments. Your chairman wishes to express appreciation to the members of the committee for attendance at meetings and the splendid cooperation achieved in dealing with rather complicated and detailed matters. The chairman also wishes to thank George P. Farrell, administrative officer, and his secretary, Mrs. Clementine Thompson, for their fine cooperation in preparing and sending notices of meetings to county medical societies and specialty groups. Mr. Farrell's advice and guidance was of great help to the committee.

Respectfully submitted,
ROBERT E. WESTLAKE, M.D., *Chairman*

Liaison with Veterans Administration

To the House of Delegates, Gentlemen:

The Subcommittee on Liaison with the Veterans Administration, of the Economics Committee, consists of the following:

Herbert H. Bauckus, M.D., *Chairman*	Erie
James L. Palmer, M.D.	Broome

On July 28, 1967, S. A. Frankenthaler, M.D., clinic director of the Veterans Administration Regional Office, 252 Seventh Avenue, New York, New York, addressed a letter to the Medical Society of the State of New York regarding amendments to the fee schedule for medical services under the agreement with the Veterans Administration, as follows:

Delete item numbers 9051 and 9052; substitute the following:

9050	Psychotherapy, full session, 50 minutes, office, hospital, or home	5.0
9051	Psychotherapy, half session, 20 to 25 minutes, office, hospital, or home	3.0
9052	Psychotherapy, limited session, 5 to 15 minutes, office, hospital, or home	1.5

In June, 1967, a letter was directed to the members of the medical profession by the Chief of Outpatient Services, Veterans Administration, calling their attention to the implementation of a simplified procedure beginning July 1, 1967, for authorizing each eligible veteran to obtain outpatient medical services from a physician of his choice. An outpatient medical treatment identification card issued to the veteran will serve as his authority to obtain this care.

A letter dated September 25, 1967, addressed to Henry I. Fineberg, M.D., executive vice-president, from Edward C. Rozek, M.D., president, Medical Society of the County of Erie, called his attention to the fact that the fee schedule negotiated by the Medical Society of the State of New York with the Veterans Administration for the latter's program for medical care for veterans in the home or office by their personal physician was rejected as "substandard" by the comitia minora on September 19, 1967, on recommendation of its economics committee.

We are indebted to Walter Scott Walls, M.D., chairman of the Commission on Medical Services, and Robert E. Westlake, M.D., chairman of the Economics Committee, for their support.

The subcommittee expresses its appreciation to George P. Farrell for his assistance.

Respectfully submitted,
HERBERT H. BAUCKUS, M.D., *Chairman*

Medical Care Insurance

To the House of Delegates, Gentlemen:

The Committee on Medical Care Insurance is composed of the following:

Robert W. Hurd, M.D., *Chairman*	Oneida
Lucius H. Bugbee, Jr., M.D.	Chautauqua
Robert D. Fairchild, M.D.	Onondaga
Francis J. Loperfido, M.D.	Bronx
John D. Naples, M.D.	Erie
Harry John Mellen, M.D.	Albany
Philip M. Standish, M.D.	Ontario
Kurt Rosenberg, M.D.	Queens

The committee held two meetings during the year, May 11 and November 9.

Chautauqua Region Medical Service, Inc. At the May meeting an ad hoc committee was appointed to implement the recommendation of the Reference Committee on Medical Services regarding the resolution submitted by the Medical Society of the County of Chautauqua withdrawing as the sponsoring and approving medical society for Chautauqua Region Medical Service, Inc., Jamestown, which was approved by the county society at its meeting on March 9, 1966.

Your chairman appointed Robert W. Hurd, M.D., Utica, and John D. Naples, M.D., Buffalo, to represent the State Medical Society. The Chautauqua County Medical Society appointed Myron B. Franks, M.D., and Lewis F. Kibler, M.D., as its representatives, and by mutual agreement, Carlton E. Wertz, M.D., was appointed chairman.

The ad hoc committee met in June to consider this matter in accordance with the standards outlined in paragraph 2 of the Standards for Approval by the Medical Society of the State of New York of New York State Medical Care Plans. At this meeting, Myron B. Franks, M.D., an ophthalmologist, and Lewis F. Kibler, M.D., an anesthesiologist, both nonparticipating physicians in the plan, spoke on the Chautauqua County Medical Society's resolution of March 9.

Dr. Hurd presented a résumé of what had transpired from the time of the March meeting, which included a report from Robert Johnson, managing director of Chautauqua Region Medical Service, Inc. The committee concluded that inasmuch as 83 per cent of the physicians of the Chautauqua Region Medical Service, Inc. are still participating in the plan, after more than three years of dispute, there must be a small group of dissident physicians who voted disapproval of the plan, but who do not represent the feelings of the majority of the physicians.

The ad hoc committee recommended provisional approval for one year, subject to review at that time, and called to Dr. Franks's attention that there is existing machinery for working out such problems and urged him and his society to use this means of solving their differences. The committee commended Dr. Franks for keeping this disagreement private and out of the news media.

Genesee Valley Medical Care, Inc. At the November meeting the committee considered the following resolution submitted by the Medical Society of the County of Monroe:

> Whereas, Standards for Approval of New York State Medical Care Plans have been promulgated and supported by the Medical Society of the State of New York and its component county societies; and
>
> Whereas, It is the opinion of the Medical Society of the County of Monroe that Genesee Valley Medical Care, Inc., has failed to maintain these standards; and
>
> Whereas, Genesee Valley Medical Care, Inc., has failed to provide the greatest possible scope of benefits to its subscribers by refusing to consider inclusion of outpatient radiology services and other suggested extensions of coverage in its basic contract; and
>
> Whereas, Genesee Valley Medical Care, Inc., has restricted free choice of physician by virtue of their unwillingness to pay subscribers 100 per cent of parity unless the services of a participating physician are obtained, thus holding an economic club over the heads of both physician and patient, and leaving no available alternative to arbitrary Blue Shield contractual arrangements; and
>
> Whereas, There are other inequities which have not been resolved by negotiations during the last several months, including, but not limited to, the right to bill Medicare beneficiaries directly, and a reasonable resignation period for participating physicians; now therefore be it hereby
>
> *Resolved*, That the Medical Society of the County of Monroe, Inc., withdraw its approval of Genesee Valley Medical Care, Inc., until such time as these matters have been satisfactorily resolved; and be it further
>
> *Resolved*, That the Medical Society of the County of Monroe, Inc., request the Medical Society of the State of New York to initiate appropriate procedures directed at possible withdrawal of its approval of Genesee Valley Medical Care, Inc.

Your chairman pointed out that after the resolution was received in June, several meetings were held by the ad hoc committee of the county medical society with representatives of Genesee Valley Medical Care, Inc. Also correspondence received from the county society and Genesee Valley Medical Care, Inc., in response to a letter from the chairman, showed that 9 out of the original 11 changes requested by the county medical society have been mutually agreed on and that there will be further negotiation on the two remaining questions.

Recommendations. Your committee discussed the report of the ad hoc committee and approved its recommendation that one-year provisional approval be given by the Medical Society of the State of New York to the Chautauqua Region Medical Service, Inc.

The committee also recommended that a letter be sent by your chairman to all members of the State Medical Society calling their attention to the action taken by the ad hoc committee and to the fact that the machinery necessary to resolve such differences is available within their county medical societies.

Medical Credit Cards. The committee considered a letter referred to it by Henry I. Fineberg, M.D., executive vice-president, regarding medical credit cards.

Joseph G. Zimring, M.D., chairman of the Committee on Ethics, was invited to speak on "Medi-Card Inc." Dr. Zimring pointed out that this is a credit card organization that has been trying to get the approval of the State Medical Society for the past two years. The committee voted to request the Committee on Ethics to study, in depth, the ethics involved in the payment of medical fees with credit cards and to recommend a policy to the Council.

Acknowledgments. Your chairman wishes to express appreciation to the members of the committee for their cooperation, to George P. Farrell for his assistance and guidance, and to Mrs. Clementine Thompson for her secretarial assistance.

Respectfully submitted,

ROBERT W. HURD, M.D., *Chairman*

Workmen's Compensation

To the House of Delegates, Gentlemen:

The following is the report of the Council Committee on Workmen's Compensation and of the Division of Workmen's Compensation.

The committee consists of the following members:

Frederic W. Holcomb, Jr., M.D., *Chairman*	Ulster
Robert B. Bryant, M.D.	Onondaga
Peter A. Casagrande, M.D.	Erie
Wyllys A. Dunham, M.D.	Schenectady
Thomas M. Flanagan, M.D.	Chenango
Warren W. Leeds, M.D.	Westchester
Albert M. Schwartz, M.D.	New York
Raymond F. Smith, M.D.	Nassau
Robert E. Wolf, M.D.	Monroe

Since its last report to the House of Delegates' the committee has met on two occasions to consider problems relating to workmen's compensation matters and to advise the Medical Society's representatives on the Workmen's Compensation Board's Advisory Committee for the Medical Fee Schedule and Allied Problems. The committee gave serious consideration to all complaints and suggestions referred by members as individuals or as representing various specialty groups.

Inconsistencies between workmen's compensation and other third party medical care programs became evident and were the subject of actions taken or pending as indicated below.

Upward revision of many items in the fee schedule was recommended to the Chairman of the Workmen's Compensation Board on approval by the Council of the Medical Society of the State of New York. These recommendations are at the time of this report under consideration by all interested parties. A revision of the MR55 procedure dealing with request for information regarding unpaid medical bills for which no objection has been filed is under review by the administrative staff of the Workmen's Compensation Board. Problems dealing with bills submitted by hospital-based physicians are under close scrutiny and may well be the subject of clarification in the near future. Difficulties encountered by attending physicians, based on the selection of medical inspectors by certain insurance carriers, were brought to the attention of the New York Compensation Insurance Rating Board through the Advisory Committee.

Medical society representatives attended 11 meetings of the Advisory Committee during the past year and participated in recommendations to the Chairman of the Workmen's Compensation Board dealing with the issues of direct supervision of the Department of Physical Medicine and Rehabilitation by authorized physiatrists; certain medical manipulative procedures; the enforcement of Medical Rule 7 covering information from the preceding physician by a superseding attending physician and Medical Rule 9 covering care of patients with compensable disorders by registered physical therapists on direction of the treating physician. Consideration was also given to the rendering of follow-up care in hospital emergency rooms.

The Advisory Committee recommended to hold further consideration of resolution 67–79 of the House of Delegates in abeyance and to defer action thereon, while the administrative staff of the Board attempts to correct the gap in communications which was the subject matter of the resolution. On request, the Workmen's Compensation Board will notify the attending physician or consultant of the status of any case under his care.

Fee Schedule. The applicability of the current fee schedule after July 1, 1967, to all cases regardless of the date of accident was brought to the attention of all physicians through publicity in *News of New York.* Pending completion of a study of usual and customary fees, action to bring the workmen's compensation fee schedule into line with the Relative Value Scale adopted by the Medical Society of the State of New York has been held in abeyance. The revision of certain items found by the committee to be grossly inadequate has been recommended as previously indicated. In view of changes recently initiated in the practice of medicine related to emergency care, certain items in the schedule will require special clarification, particularly those pertaining to the first visit in the hospital and follow-up care if the physician's practice is limited to the hospital emergency room.

Legislation. Strong opposition by the Medical Society of the State of New York to the inclusion of chiropractors under the Workmen's Compensation Law was expressed on several occasions. The committee has recommended to the Committee on State Legislation that it introduce in the Legislature and support various amendments designed to improve patient care and to eliminate some objectionable features currently contained in the Workmen's Compensation Law. Items covered include the extension of the definition of "compensation" to cover medical care, the elimination of the requirement for authorization under the Workmen's Compensation Law to certify claimants for benefits under the Disability Benefits Law, the reimbursement of payments to physicians by compensation claimants, and the addition of interest at the legal rate for payments withheld for an unnecessarily long time interval.

The director attended the public hearing of the Joint Legislative Committee on Industrial and Labor Conditions and a full day's session devoted to consideration of the labor and workmen's compensation laws sponsored by the New York Chamber of Commerce.

Education. As in previous years the *News of New York* was utilized to highlight activities in workmen's compensation of general interest. In addition to the item relating to the fee schedule, physicians were urged to comply with the provision of transmitting information to succeeding physicians as required by law and Medical Rule 7. They were also advised of the increase in the statutory minimum fee for the arbitration of medical bills from $2.00 to $5.00 which became effective April 21, 1967. The awarding of a plaque and citation to the Chairman of the Workmen's Compensation Board was also reported in the March, 1967, issue of *News of New York* together with a photograph of General Solomon E. Senior, Chairman of the Workmen's Compensation Board for the State of New York. The award was made for his "vision, initiative, and leadership" which has "ensured the availability of the finest medical care to the workers of the Empire State."

The director participated as guest speaker in three symposia sponsored by the American Management Association for medical directors, industrial nurses, and personnel and safety managers. His presentation stressed medical as well as administrative problems in workmen's compensation. The director chaired the Section on Medical-Legal and Workmen's Compensation Matters at the 1967 Annual Meeting of the State Medical Society. A panel discussion on problems in workmen's compensation involving third-party actions held the interest of over 200 persons attending the meeting.

The director was invited to address a meeting of the Nassau and Suffolk County Medical Assistants Association on a topic of medical forms under workmen's compensation and disability benefits laws. This subject matter was also covered by the director during his annual guest lecture to the Rockland County Community College in the Course for Medical Assistants.

Meetings and Liaison. The director attended several meetings of the American Academy of Compensation Medicine and was invited to participate in meetings of their board of governors.

The Workmen's Compensation Board's Medical Society invited the director to their annual meeting and to a retirement dinner for three of their members. The director was also present at a full day's session of the Self-Insurers Association devoted to problems in workmen's compensation.

At the opening of a new district office of the Workmen's Compensation Board in Nassau County, the director represented the Medical Society of the State of New York. The opening ceremonies included an address by the Chairman of the Workmen's Compensation Board and by the Governor of the State of New York. The director also participated in the planning committee for an all-day symposium on Rehabilitation in Workmen's Compensation, sponsored by the Central Labor Council of the AFL-CIO, and reported on the symposium, which was held in New York City during the month of June, to the committee members and to the chairmen of workmen's compensation committees throughout the State. He also attended the annual meeting of the American Medical Association and held numerous informal meetings with officials of the Workmen's Compensation Board, the New York Compensation Insurance Rating Board, and representatives of labor health facilities.

Arbitration. During the preceding twelve months, 97 arbitration sessions were held throughout the State; 65 were in the New York City area. The relative increase in the number of calendars in the Upstate region may be due to the unfamiliarity of certain carriers with alternatives to the settlement of disputes involving medical bills or to progressive unwillingness of claims examiners to settle cases following an upward revision of the fee schedule. A total of 2,757 cases were submitted for arbitration.

Disputed medical bills amounted to $426,965.51. Postponements deferred the settlement of 406 cases; 1,581 cases were settled by arbitration; 770 cases were settled without hearing, and 45 cases were brought to amicable conclusion by direct negotiation with the assistance of our Bureau of Workmen's Compensation.

The committee is pleased to commend Robert Katz, M.D., director of the Division of Industrial Health and Workmen's Compensation, and his administrative assistant, Miss Alice E. Wheeler, for their exemplary devotion to a difficult task and the dedicated service which they rendered.

Respectfully submitted,

FREDERIC W. HOLCOMB, JR., M.D., *Chairman*

Proposed Health Insurance Law

To the House of Delegates, Gentlemen:

This committee is made up of the following members:

Ralph S. Emerson, M.D., *Chairman*	Nassau
John Lee Clowe, M.D.	Schenectady
George Himler, M.D.	New York
Herbert E. Joyce, M.D.	Erie
Eli A. Leven, M.D.	Monroe
Edward Siegel, M.D.	Clinton
Wallace M. Sheridan, M.D.	Westchester
Robert W. Smith, M.D.	Broome
Robert E. Westlake, M.D.	Onondaga

The committee, appointed by Frederick A. Wurzbach, Jr., M.D., president, and confirmed by the Council at its May meeting, swung into action shortly after its formation. Four committee meetings were held; critiques of proposed laws were drawn up and widely distributed; numerous communications were sent to county medical societies, including a poll; and a detailed report of the committee's activities, including its conclusions and recommendations, was submitted to the Council.

Since a complete review of the committee's work and findings was made to the Council and is a matter of record easily accessible to members of this House, this report will be restricted to a brief synopsis of the committee's activities.

Committee Charge. The committee was charged with the responsibility to: (*a*) conduct a poll of the physicians of New York State to determine if they favor the philosophy of a compulsory or universal health insurance bill, and if they do, under what conditions, and (*b*) make recommendations to the Council regarding the basic principles which are essential elements of such legislation, and if the Council does not approve of the philosophy of comprehensive or universal health insurance, make recommendations concerning the State Society's position on this proposed program.

General Critique of 1967 Bill. Your committee appreciated the opportunity to conduct a study of one of the broadest health insurance coverage programs ever presented in this State, namely, S. 4268 (1967), An Act to amend the Workmen's Compensation Law, the insurance law, and the social welfare law, in relation to health insurance benefits for covered employes. While Medicaid has a potential of a few million citizens, this compulsory or universal health insurance bill was much more comprehensive and would have affected 90 to 95 per cent of the working population, if Medicaid and Medicare were included. Since the delivery of quality medical care to the people of this State is the concern and responsibility of the medical profession, your committee conducted an in-depth study of this proposal.

While the intent of the bill was laudable, its many defects made it unacceptable to the medical profession in New York State.

To amend the Workmen's Compensation Act and include this bill under a new article to be called 9A would be a serious mistake. The Workmen's Compensation Act as currently administered is obsolete, burdened with red tape, saddled with an antiquated fee schedule, a system of inefficient processing of claims, and entangled with a maze of bureaucratic legal interpretations. The Workmen's Compensation Board is not geared to the scientific, technologic, or commercial era of 1967.

The proposed law did not provide a safe guarantee of the right of the patient to select his own physician or facility as is provided under Title 18, of the Medicare Law (PL 89–97).

The minimum standards required by the new legislation were substandard compared with current accepted levels of adequate coverage. It did not provide for outpatient diagnostic work. To allow for only one hospital visit a day is incredible and completely disregards current quality medical care of the acutely ill patient.

Although the "usual, customary, and necessary charges" were mentioned for physician services, it contradicted this by stating payments would depend on the contract with the carrier.

Surgical charges for operative procedures were to include ninety days preoperative care and ninety days postoperative care which indicates the authors have little, if any, concept of surgical specialty care. Contrary to the provisions in Title 18, it lumped hospital-based physician services under hospital services. Benefits from the plan would be exempt from all claims or creditors and made no provision for payment of medical services.

The procedure for recovery from actionable injuries, where litigation is involved, made no provision for extensive medical services or responsibility on the recipient and may be limited to the payment of the health insurance benefits.

The proposed law gave the authority to the "Chairman of the Workmen's Compensation Board to make all rules and regulations as may be appropriate to carry out the provisions of this article." This absolute authority by administrative fiat could wipe the slate clean of all the previous safeguards for which our State Society has so tenaciously fought and create a new ballgame, thereby compounding the administrative fiasco.

The confusion, indecision, red tape, and inefficiency of our Medicaid program should at least have taught us a lesson that this is not the right approach. The program on an actuarial basis will be excessively costly for the benefits it proposed to provide and may have a serious detrimental effect on marginal small businesses. There was no provision for a medical review committee of the Medical Society.

In summary, the inconsistencies, vagueness, unrealistic approach to scientific medicine as practiced in 1967, and the bureaucratic controls inherent therein could only result in the conclusion that this bill is unacceptable in its present form and requires drastic surgery and revision.

Committee Meetings. Four committee meetings were held. At the first meeting on June 12 it was agreed: (1) the committee members were to be responsible for obtaining the consensus of the members in their respective districts, and (2) a memorandum was to be sent to each county medical society. This memorandum was mailed and included a questionnaire, or poll, similar to the charge of the committee, a suggested list of basic principles to stimulate discussion, and a digest of the 1967 bill prepared by our legislative counsel.

At the second meeting, July 19, reports from 29 counties were reviewed. These reports were in response to your committee's memorandum. Since it was clear from these preliminary reports that there was an appalling lack of information throughout the State regarding the realities of the problem, the committee decided to conduct an education campaign. Accordingly, a mailing was made to all county societies which included definition of terms concerning compulsory or universal health insurance, comments on basic principles involved, as well as a specific critique of the 1967 bill prepared by the Nassau Physicians Guild. In response to requests for further clarification, an article entitled, "The Promised Land or Mirage" was published in the *Nassau Medical News* and in Suffolk County and distributed to members of the committee.

At the third meeting, September 20, additional reports from county medical societies were discussed, and the over-all picture to date was reviewed. Proposed amendments to the 1967 bill, S. 4268, drawn up by the State Legislature's Joint Legislative Committee on Compulsory Health and Hospital Insurance, as well as a letter from Joseph Jaspan, Esq., legal counsel to the Joint Legislative Committee, were also discussed by the committee. The proposed contents of your committee's report to the Council were outlined and members made recommendations for inclusion therein. At its fourth meeting, on November 1, your committee's report to the Council was revised and approved. A proposed bill on a New York State Health Insurance Commission Act, prepared only for study purposes by the New York State Health Department, also was analyzed and a critique prepared and sent to the Council. Opposition to the proposal, in the form studied by the committee, was recommended to the Council.

County Medical Societies Poll. The following is a summary of the replies from the county medical societies concerning the committee's poll regarding compulsory or universal health insurance.

As of November 1, 41 county medical societies had replied to the memorandum, dated June 26, 1967, sent out by the committee's chairman. Many of these replies were official communications; others were unofficial. The following county medical societies sent in one or more replies: Albany, Allegany, Broome, Chautauqua, Chemung, Chenango, Clinton, Columbia, Delaware, Erie, Essex, Genesee, Herkimer, Jefferson, Kings, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Orange, Oswego, Otsego, Queens, Rensselaer, Richmond, St. Lawrence, Schoharie, Schuyler, Seneca, Steuben, Suffolk, Tompkins, Ulster, Washington, Wayne, and Wyoming.

In response to the basic question listed as number 1 in the memorandum, "Is the majority of the membership of your county medical society for or against the philosophy of compulsory or universal health insurance?," the following is a breakdown of the general position taken by the county medical societies:

A. *For the philosophy of compulsory or universal health insurance*—12

Clinton, Essex, Kings, Madison, Monroe, Nassau, Oneida (president as individual), Orange, Rensselaer (delegate), Suffolk, Wayne, and Seneca.

B. *Against the philosophy of compulsory or universal health insurance*—26

Allegany, Broome, Chautauqua, Chemung, Chenango, Columbia, Delaware, Erie, Genesee, Herkimer, Jefferson, Livingston, Montgomery, Niagara, Onondaga, Oswego, Otsego, Queens, Richmond, Schoharie, St. Lawrence, Steuben, Tompkins, Ulster, Washington, and Wyoming.

C. *Equally divided, 50 per cent for and 50 per cent against, the philosophy of compulsory or universal health insurance*—Schuyler.

D. *No specific position for or against the philosophy of compulsory or universal health insurance*—2.

Albany County replied, "Since no specific proposal, cannot endorse or criticize."

New York County replied, "Universal health insurance practically in effect—question largely academic." (New York, however, spelled out several specific comments in regard to priority of principles.)

Since a great number of counties were opposed to the principle of compulsory or universal health insurance, most of the respondents did not answer the other two questions concerning specific conditions and priority of principles set forth in the memorandum. While many of the replies contained answers to the other two questions, there was no uniformity in the manner in which they were answered. Some of these responses were in generalities; others merely said, "yes" or "no" and did not indicate the numerical order of priority requested; and only a very few answered in the manner that was requested. Because of these factors, this brief general review has been confined to data concerning the basic question and does not contain statistics in regard to the other two questions.

Area Reports. A summary by areas throughout the State was submitted by committee members in the Council's report. Nassau County Medical Society presented a report including the details of Part B, Title 18, PL 89-97, which its membership believed were essential in the public interest. Great emphasis was placed on a medical review committee as outlined in the conclusions and recommendations of this report.

General Comments. The State-wide poll of physicians clearly indicated that they were opposed to compulsory or universal health insurance legislation, as proposed in S. 4268 (1967). It is difficult to predict whether or not the doctors throughout the State would support its implementation. Since the sentiment was so overwhelming that this legislation was not in the public interest, we cannot see how the State Medical Society could urge our members to support it.

This is not to say we are against constructive health insurance legislation utilizing the private insurance sector and preserving the individual rights and dignity of all citizens, because we have encouraged this for many years. Just as organized labor and industry favor the principle of collective bargaining, neither would be foolish enough to give approval to any legislation until they had examined and given approval to the crossing of every "t" and the dotting of every "i." To expect the medical profession to do otherwise would be naive, especially after the experience of Medicaid.

Any future legislation of this nature should be similar to Part B of Title 18 of the Medicare Law which preserves the rights of the public and the medical profession.

This approach has functioned reasonably well despite the excessive red tape and regulations and would probably enlist some support of the profession if it were structured with proper safeguards. This is contrasted with the Medicaid approach which has been unsatisfactory in many ways in New York State.

Other pertinent suggestions which have been emphasized are: (1) medical review committees of the local county medical societies to be included to assure (*a*) quality medical care, (*b*) grievance mechanism, and (*c*) utilization control; (2) the plan not be a service type benefit program; and (3) the program be under the control and supervision of the State Health Department and not under the jurisdiction of the Workmen's Compensation Board.

The cost of this program could be disastrous to marginal industries and burdensome to all of our citizens, especially if we were wedded to hospitalization in one package. The physician might be tagged as the scapegoat for the rapidly escalating hospital costs which are 70 per cent labor costs with a 13 to 15 per cent annual increment. It might be prudent to consider separate packages.

It would appear important to emphasize that government cannot be all things to all people at the same time. The cost would be prohibitive. With the small percentage of the population under Medicaid producing financial strain, the financial burden of covering 90 per cent of the population would be incredible. To avoid this potential disaster and gain some actuarial experience, it would seem wise to develop a broad base established on basic principles consistent and compatible with deliverance of good quality medical care and build on this foundation in successive steps in future years.

To accomplish the long-range goal would require constant surveillance and counseling by organized medicine on a partnership basis and not in the capacity of a technical adviser but in the capacity of a policy adviser. With the health industry the third largest in the nation, the medical profession should be cooperating with government serving in the capacity of the "fifth estate."

Conclusions and Recommendations. Your committee submitted a detailed report of its conclusions and recommendations to the Council at its November 16 meeting. The following are the conclusions and recommendations approved by the Council at that meeting.

1. The vast majority of physicians throughout New York State are opposed to the principle of compulsory or universal health insurance.

2. Health insurance legislation containing the following safeguards, which are similar to Part B of Title 18, PL 89-97, the Social Security Amendments of 1965 (Medicare), for physicians services might enlist a broad base of support if:

(*a*) The following specific safeguards are provided:

(1) Option of direct billing by physicians for services rendered.
(2) Free choice of physician and facility (office and hospital).
(3) Fee for service.
(4) Usual and customary fees of physicians in their respective areas.
(5) Use of insurance carriers.
(6) Coinsurance principle.
(7) Direct billing by hospital-based physicians (pathologists, radiologists, anesthesiologists, physiatrists, and others) for professional services rendered.

(*b*) Red tape and regulations were minimized.

(*c*) The New York State Health Department controls and supervises the program.

(*d*) The program were not a paid-in-full service benefit type plan.

(*e*) New York State pay insurance premiums for the indigent or low income category and this insurance be utilized before the patient is eligible to receive Medicaid assistance for medical services.

(*f*) Physicians review committees of the county medical societies are established:

(1) To provide quality medical control for the program. This committee should approve the formation of all group plans in their respective areas and make spot checks of the quality of services to maintain high standards of medical care.

(2) To serve as a grievance committee with the insurance carriers to prevent abuses in utilization and physician fees within the framework of the usual and customary charges in their respective areas.

(*g*) The costs were not prohibitive to the employer and employe.

(*h*) The support of the Medical Society of the State of New York were enlisted at a policy decision level to ensure the long-range goal of quality medical care for all of the residents of New York State.

3. The physicians throughout the State have been given the opportunity to express their opinions concerning compulsory or universal health insurance legislation and are more knowledgeable and united as a result of the in-depth study of this subject.

Acknowledgments. Your chairman wishes to express his deep appreciation to the members of this committee for their splendid cooperation and dedication in formulating this report.

Your committee also would like to thank particularly Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; Martin J. Tracey, Esq., coordinator, legislation activities, and the staff for their invaluable assistance, as well as George W. Foy, Esq., and John C. Rice, Esq., legislative counsel. We also thank the component county medical societies, their legislation committees, Nassau Physicians Guild, and the physicians throughout the State for their prompt response and enthusiastic spirit in fulfilling this mission during the summer vacation period.

Respectfully submitted,

RALPH S. EMERSON, M.D., *Chairman*

Aging and Nursing Homes

To the House of Delegates, Gentlemen:

The members of the Committee on Aging and Nursing Homes are as follows:

Peter S. Battaglia, M.D., *Chairman*	Niagara
Michael D. Buscemi, M.D.	Suffolk
Anthony LaRusso, M.D.	Broome
Margaret M. Loder, M.D.	Westchester

The committee had three meetings in 1967. At the first meeting, the following eight-point program was evolved and approved by the Council.

1. *Annual meeting of the State Medical Society.* The committee proposes to present a program on the problems of nursing homes and extended care facilities at the annual meeting of the State Medical Society. The purpose of this program is to give information to the county medical societies throughout the State and to initiate action at a local level with the committee acting as a focal point. The program will include panel discussions, speakers from the Department of Health, distribution of brochures and literature, and special meetings will be held with county medical society delegates.

2. *Increasing and upgrading quality of medical care in nursing homes.* The responsibility and primary function of this committee is to elevate the standards of medical care in nursing homes.

3. *Utilization review.* No formal activity will be carried on in this area since it is under the jurisdiction of the Utilization Review Committee, but the committee is requested to send progress reports to us concerning their work on nursing homes.

4. *Intraprofessional relationships.* The committee is to contact and work with the various professional groups, such as dentists, podiatrists, and optometrists, to establish mutual understanding and a more harmonious relationship regarding services rendered in nursing homes.

5. *Physicians visits to nursing homes.* Develop a method to correct the problems arising from physicians not making enough or making too many visits to patients in nursing homes.

6. *Death pronouncements.* Hold discussions on a State-wide level to help alleviate the delay in pronouncements of death to expedite the removal of the deceased from the nursing home.

7. *Aiding nursing homes in recruiting personnel.* Help nursing homes to recruit personnel by (*a*) improving the working conditions, and (*b*) preparing brochures and arranging for lectures to interest high school students in careers as nurses, therapists, dieticians, and others.

8. *State-wide shortage of nursing home beds.* The dissemination of data on the lack of space

and the delay in admitting patients to nursing homes to various State government agencies and county medical society committees, and the investigation of certification standards of nursing homes. The committee desires to help in all possible ways and to do everything within its power to relieve the present situation.

Another meeting was held in October at which time implementation of our program was discussed. An exhibit in conjunction with the State Health Department was also discussed. It was determined, however, that since all scientific exhibit space was committed for the 1968 annual meeting, plans be made for an exhibit at the 1969 annual meeting.

On November 9 the committee met with representatives of podiatry, optometry, and dental professions to discuss the respective roles of each discipline in the care of patients in nursing homes throughout the State. Inasmuch as the quality of care of nursing home patients is the concern of the State Health Department, under Article 28 of the Public Health Law, the first meeting was held under the auspices of the New York State Department of Health in conjunction with this committee.

The next meeting also will be sponsored by this committee and will include, in addition to representatives of these groups, spokesmen for the nursing home industry.

Respectfully submitted,

Peter S. Battaglia, M.D., *Chairman*

Audio-Visual Aids

To the House of Delegates, Gentlemen:

The members of the Committee on Audio-Visual Aids are as follows:

Kenneth B. Olson, M.D., *Chairman*	Albany
Wilbur M. Dixon, M.D.	Broome
James J. Quinlivan, M.D.	Albany

The committee did not meet during the year formally, but several films were reviewed. A demonstration of a cartridge-type film projector was made at the meeting of the Commission on Public Health and Education of the State Medical Society, and it was urged that more hospitals use this type of audio-visual aid.

The committee wishes to express its appreciation to James Quinlivan, M.D., and Joseph Avonovich of the New York State Health Department for their work in prompting the activities of the committee.

The growth of the combined libraries is indicated in the following totals for the past four years:

Year	*Films Shipped*	*Number of Times Films Shown*	*Attendance*
1964	25,983	48,603	2,836,001
1965	23,506	47,159	2,793,872
1966	26,229	47,665	2,046,239
1967	25,724	46,917	2,783,592

The largest number of film shipments for any one month was in April, 1967, when 2,680 films were shipped. During the year 120 new films were reviewed. Of this total, 41 were approved and added to the libraries. There are now 1,015 titles and 3,293 prints in the film library.

Table I shows a two-year comparison of the film activities of the medical and nursing films listed in the Professional Film Catalog and Supplement.

Respectfully submitted,

Kenneth B. Olson, M.D., *Chairman*

TABLE I. Comparison of film activities of medical and nursing films

	1967*		1966	
Category	Individual Shipments	Films Used	Individual Shipments	Films Used
Private physicians	106	197	78	130
Medical staffs of hospitals	626	1,106	351	490
Medical schools	128	269	50	70
Pharmacy schools	0	0	1	2
Nursing schools	4,601	7,649	2,499	4,433
Public health staffs	477	895	383	584
Voluntary health agencies	111	244	46	75
Colleges—biosciences	971	1,756	821	1,224
Totals	7,020	12,116	4,229	7,007

* The above table is from the period November, 1966, through October, 1967.

Publication

To the House of Delegates, Gentlemen:

The Publication Committee consists of the following members:

George Himler, M.D., *Chairman*	New York
Philip J. Cantor, M.D.	Kings
Reuben M. Cares, M.D.	Suffolk
Robert E. Healy, M.D.	Westchester
John W. Hirshfeld, M.D.	Tompkins
Granville W. Larimore, M.D.	Albany
William Hammond, M.D., *Editor*	Westchester
Henry I. Fineberg, M.D., *Adviser*	Queens

During 1967, your Publication Committee held two meetings and also received reports by mail. The 1966–1967 committee met on January 25 and the 1967–1968 committee on September 27. At each meeting reports were received from the editor, the business manager, the comptroller, and the managing editor.

The New York State Journal of Medicine continued to occupy a dominant position among state medical journals during 1967 and maintained a gratifying level of scientific excellence. Your editor, William Hammond, M.D., has mastered the technic of attracting outstanding material to the Journal. The assurance of prompt publication and the provision of skilled and tactful editorial assistance by the staff are further inducements to contributors.

Dr. Hammond, who, incidentally, completed a distinguished term as president of the American Medical Writers' Association, is to be complimented on his sound editorial policies and the contacts he has established for sources of material.

While on the subject of the American Medical Writers' Association, it seems fitting to announce that the managing editor of the Journal, Alvina Rich Lewis, is now a consultant to that organization after having served for ten years as board member, secretary, and treasurer. Miss Lewis is justifiably proud of the presidential citation she received for her contributions to the association. Your chairman is happy to report that these triumphs have not noticeably diminished her customary devotion to the Journal or her competence in its management.

The members of the editorial staff, consisting of Elizabeth C. Smith, manuscript editor, Frances E. Casey, Mary T. Politano, Mrs. Jana Lipinski, and Mrs. Olga Mielke, form a closely knit, congenial group who perform their duties with great competence and deceptive ease.

Since the Business Division, which is under the direction of J. Richard Burns, Esq., assistant executive vice-president, will report on the financial condition of the Journal in some detail, your chairman will content himself with stating that this is much improved. At the moment it appears that we are safe from the cliff-hanging episodes of former years, God and Goddard willing! The improved financial status the Journal now enjoys is due in large measure to the sound administrative policies of the Business Division. Your chairman's thanks are due to Henry I. Fineberg, M.D., executive vice-president, and to Mr. Burns for their advice and their keen understanding of the problems attendant on publication.

Much credit is also due to Joseph A. Mullaney, our advertising representative, who has assiduously and successfully pursued new accounts with a resulting increase of heartening proportions in advertising income. He is assisted in this task by Melvin B. Tyler, our West Coast representative.

Finally, Robert W. Miller of advertising production, Mrs. Camille M. Cunningham, advertising secretary, and Melvin Fine, circulation, have all contributed substantially to the smooth operation of the Journal.

Your chairman would also like to express his appreciation of the good relationship existing between the editorial staff and our printer. The fine cooperative spirit and helpfulness shown by the Mack Printing Company have done much to eliminate the minor crises which are almost a daily feature of any publication.

The following reports of the editor and the business manager will set forth the operations of the Journal in greater detail.

Editor's Report (William Hammond, M.D.). During 1967 the New York State Journal of Medicine was published regularly twice a month, on the 1st and 15th, for a total of 24 issues. Included in these were the following: January 1, Convention Issue; June 1, Minutes of the 1967 House of Delegates; June 15 and December 15, Semiannual Indexes.

For 1967, the total number of pages in the 24 issues, including covers and inserts, was 3,390, of which 988 were advertising pages, including covers, and 2,402 were text pages, including covers. Of these text pages, 449 were devoted to official MSSNY matters. Excluding these, the ratio of editorial pages to advertising pages was 69 per cent editorial to 31 per cent advertising.

As of the date of this report, 573 manuscripts have been submitted during 1967, of which 273 were accepted, 197 rejected, 231 referred to consultants, 31 returned for revision, and the remainder are still under consideration.

A total of 262 manuscripts were published, representing the work of 495 authors. These included submitted manuscripts, annual meeting papers, and solicited departmental material, as follows: scientific articles 104, case reports 59, clinicopathologic conferences 22, special articles 10, Recent Advances in Medicine and Surgery 14, Correlation Conferences in Radiology and Pathology 11, Nutrition Excerpts 4, Clinical Anesthesia Conferences 10, Billsbord 7, History of Medicine 3, Medical Arts and Letters 7, Proceedings of New York Allergy Society 2, Brief Preliminary Reports 3, Electrocardiograms of the Month 5, and Abstracts of Proceedings of New York Society for Thoracic Surgery 1.

This year we have continued our endeavors to make the JOURNAL an outstanding scientific publication, as directed by the House of Delegates. The papers presented at the annual meeting are becoming of increasing importance, and increased interest of those planning the scientific sessions is of great benefit. We have published some outstanding papers this year; for example, the Rochester area audit reports, the symposium on "The Adolescent's Crisis Today," and Wiener's articles on "External Chemical Messengers" have had wide comment from the press, university faculties, and the profession generally.

We now have three sources for the clinicopathologic conferences, Knickerbocker, Lenox Hill, and Beekman-Downtown Hospitals, all in New York City. A new series, "Electrocardiograms of the Month," from Montefiore Hospital has been started.

In cooperation with the MSSNY Communications Division and C. Stewart Wallace, M.D., chairman of the Public Relations Committee, a press release system for articles appearing in the JOURNAL has been developed. These are selected by the editor, the copy is developed by the Communications Division, and then reviewed by the editor and the author or authors of the article before release to the press. These releases have been featured prominently in the *New York Times* and *Time* and *Newsweek* magazines on several occasions. Other media are beginning to pick them up and as a result some of the authors have been on radio and television discussing their subject as presented in the JOURNAL.

We receive unsolicited manuscripts from all over the country and some from abroad. The veterans hospitals and the armed services contribute quite regularly. This is a comparatively new development and we hope indicates increasing stature of the JOURNAL.

This year we have been officially designated the publisher for the Wadsworth Lecture, given annually in honor of Augustus B. Wadsworth, M.D., former director of laboratories of the New York State Department of Health. These lectures are often of considerable scientific importance.

Redway Medal. The sixth annual Laurance D. Redway Award for Medical Writing, established in memory of the late editor of the JOURNAL, was presented at the 1967 House of Delegates to Milton Helpern, M.D., New York City, for his article, "Deaths from Narcotism in New York City," which appeared in the September 15, 1966, issue of the JOURNAL. The seventh annual award will be presented at the 1968 House of Delegates.

Distinguished Service Awards. Continuing a feature inaugurated at the 1965 House of Delegates, awards for "distinguished service to the NEW YORK STATE JOURNAL OF MEDICINE" were presented by President James Blake at the 1967 House of Delegates. Certificates were given to Paul Bunn, M.D., Syracuse, for ten years of valuable service on the associate editorial board and the editorial council; to Granville W. Larimore, M.D., Albany, for his long and continuous service as a member of the associate editorial board, the editorial council, the Publication Committee, and the Ad Hoc Committee to Study the Journal; and to Lester C. Mark, M.D., New York City, for his contribution as editor of the Clinical Anesthesia Conferences, provided to the JOURNAL by the Study Committee of the New York State Society of Anesthesiologists.

American Medical Writers' Association. Members of the JOURNAL staff participate in both national and chapter activities of the American Medical Writers' Association. The editor, as chairman of the AMWA board of trustees, the managing editor, as treasurer, and the manuscript editor attended the annual meeting in Chicago in September, at which Miss Lewis received the AMWA President's Award for "contributions to medical journalism." All have been active also in activities of the Metropolitan New York Chapter; Mary T. Politano, of the editorial staff, serves as chapter secretary, and Robert W. Miller, JOURNAL advertising production manager, serves this year as chapter treasurer. At the AMWA Chapter 1967 awards dinner, Mr. Miller received an award for "meritorious service to AMWA–NY."

The JOURNAL, again in cooperation with the local AMWA chapter, sponsored the seventh annual Medical Communications Day program, on Friday, February 17, following the close of the MSSNY annual convention, at The Americana, New York City. This is a fruitful contact for the JOURNAL and appears to be gaining in strength.

Editors Dinner. In appreciation for their contributions to the JOURNAL, the associate editorial board, department editors, members of the Publication Committee, and officers of the MSSNY were feted at the annual editors dinner, held December 13 at the Canadian Club of the Waldorf-Astoria, New York City. William F. Martin, Esq., MSSNY legal counsel, was guest speaker.

MSSNY Convention. The January 1 issue of the JOURNAL is the Convention Issue, with programs for the scientific sessions, exhibits, motion pictures, and other activities, and annual reports from officers, commissions, and committees for action of the House of Delegates. A tremendous amount of staff work goes into the preparation of this issue. In addition, the editorial staff, using the material from the Convention Issue with additional information received too late to be included in that issue, publishes the convention program book and the delegates handbook, thereby effecting a considerable saving by using standing type.

At the House of Delegates, Miss Lewis served as coordinator, Miss Politano as assistant coordinator, and Mrs. Mielke as workroom secretary. The MSSNY booth, combining the

JOURNAL and the *Medical Directory of New York State*, was staffed by Miss Smith and Mrs. Lipinski of the editorial office, while Miss Casey kept up the production schedule at headquarters.

Staff. Beginning the first of the year, Miss Mary T. Politano, formerly publications manager for the Medical Society of the County of Kings, joined the editorial staff as a copy editor, with the additional assignment of working as a coordinator for the House of Delegates. Miss Jana Moor became Mrs. Howard Lipinski on April 22; otherwise there have been no staff changes.

The editor joins the chairman of the Publication Committee in expressing his sincere appreciation for the efficient work of the editorial department and the staff's continuing interest shown in the JOURNAL's progress.

Advertising Sales (J. Richard Burns, Esq., Assistant Executive Vice-President and Business Manager). For the second consecutive year the total gross advertising billings of the JOURNAL have increased substantially. In 1967 the gross advertising billings were approximately $357,891.59 as contrasted with 1966 when they totalled $293,900.90 or an increase of $63,990.60 in gross billings.

On the negative side we must call to your attention that in our present inflationary economy we face a continued upward spiral in the costs of printing, paper, and mailing. In anticipation of this rise in production and distribution costs we have substantially revised our advertising rate schedule upwards, effective January 1, 1968. Notice of increase in rates was sent to all advertising agencies, pharmaceutical houses, and others, in April, 1967, and to date have been generally well received and accepted. Of course, you must all be aware of the fact that the JOURNAL would be hopelessly "in the red" if it had to depend on advertising income alone to operate. The application of a portion of the membership dues to underwrite its costs is an essential element in its continued operation.

Competition for advertising continues unabated with the national and regional medical journals, the specialty journals, and the so-called "throw-away" publications. It is heartening to know that the JOURNAL has continued to more than hold its own due, in large part to its superior scientific and editorial qualities, as well as the energetic efforts of Joseph A. Mullaney, our East and Midwest advertising representative; Melvin B. Tyler, our Pacific Coast advertising representative; Robert W. Miller, our skilled production manager, and Mrs. Camille M. Cunningham, our advertising administrative secretary, who ably doubles as manager of technical exhibits.

Announcement. As announced in the report of the executive vice-president, Alvina Rich Lewis, who has been managing editor of the NEW YORK STATE JOURNAL OF MEDICINE for the past twenty years, will leave that post to become a research assistant in your Society's new Division of Research and Planning. This assignment to an equally important but somewhat less hectic and demanding position was made at Miss Lewis' request. In spite of the fact that the JOURNAL has a very competent replacement, her services will be badly missed. The entire staff regrets her leaving the JOURNAL but your chairman is gratified that her unique talents will not be lost to the Society.

Conclusion. In concluding this report, your chairman wishes to comment on the future role of the Publication Committee. The functions of the committee diminished considerably when the Business Division assumed responsibility for the noneditorial portion of the JOURNAL'S operation. Editorial decisions, on the other hand, have been left almost completely in the hands of the editor, assisted by the associate editorial board. It has been neither desirable nor practical for the Publication Committee to exercise control in this area.

As a result, there is little business for the committee to transact except to receive reports and to make occasional suggestions. It is an imposition on the committee members, busy as they are with their own affairs, to call them in from all over the State for these limited purposes.

Your editor and your chairman therefore suggested to Dr. Fineberg that the need for a Publication Committee be re-evaluated. Since it is necessary that there be a direct liaison between the publication and the Council, it was suggested that that function might better be served by an adviser to the JOURNAL, responsible to the Council and the House of Delegates, rather than by a full committee.

Accordingly, at the meeting of the Council on November 16, the Council approved the recommendation that the Publication Committee as a regular committee of the Council be abolished as of February, 1968, the end of its present appointment, and that in the future a member of the Council be appointed as liaison with the NEW YORK STATE JOURNAL OF MEDICINE.

Respectfully submitted,
GEORGE HIMLER, M.D., *Chairman*

To Explore All Aspects of the District Branches

To the House of Delegates, Gentlemen:

The committee consists of the following members:

George T. C. Way, M.D., *Chairman* .... Dutchess
Carl Goldmark, Jr., M.D., *First* .... New York

Reginald Steen, M.D.,	*Second*	Nassau
James A. Moore M.D.,	*Third*	Albany
Arthur Howard, M.D.,	*Fourth*	Fulton
Felix Ottaviano, M.D.,	*Fifth*	Madison
George G. McCauley, M.D.,	*Sixth*	Tompkins
Joseph J. Kaufman, M.D.,	*Seventh*	Wayne
John D. Naples, M.D.,	*Eighth*	Erie
Arthur H. Diedrick, M.D.,	*Ninth*	Westchester

The Ad Hoc Committee to Explore All Aspects of the District Branches met on November 10 in the conference room of the Medical Society of the State of New York. Joining the committee in its deliberations were Henry I. Fineberg, M.D., and Norman S. Moore, M.D., together with various staff members of the State Medical Society.

The report of this committee for last year, as accepted by the House of Delegates, was reviewed, and it was pointed out that the initial three recommendations were never executed: (1) constitution and bylaws for the district branches are to be standardized; (2) State Society regional meetings are to be mediated under the aegis of the district branches; and (3) annual workshops for the district branch officers are to be held at the time of the annual convention of the State Society.

This committee feels that these recommendations are still valid and should be put into practice.

The committee then devoted the major portion of the meeting to a review of the pilot project, namely, a concentrated effort utilizing the field representative and a subcommittee in the area, to revitalize the Third and Fourth District Branches. As a basis for the discussion, two reports were reviewed: (1) a very detailed blow-by-blow chronologic report from Guy Beaumont; and (2) a report from the chairman of the subcommittee, Arthur Howard, M.D.

On the basis of these reports, it was obvious that the project was a total flop. Various factors contributed to this: (*a*) apathy of certain members of the subcommittee; (*b*) inadequate long-range planning; and (*c*) administrative and top-level apathy in the county societies. Of great interest was a brief report given by James Moore, M.D., president, Third District Branch, which listed certain basic truths and principles for running a successful medical get-together. It was obvious that practically all of these were violated in the planning. Moreover, a debt of $1,400 was incurred by this project, and it is to be recommended by this committee that the State Medical Society assume the responsibility for this amount.

Dr. Howard, chairman of the subcommittee, made the following observations:

1. Neither of the District Branches has as yet held a meeting in 1967.

2. The delegate from the Third District Branch has resigned from this subcommittee.

3. Both District Branches, as separate entities, have accomplished very little over the past several years with the exception of holding an annual meeting.

4. Other than its report of the June 3 meeting, the pilot study project has produced little in the way of meaningful accomplishments. It is now only in the stage of submitting this report to the Ad Hoc Committee.

Because of these observations, the following recommendations were approved by the Ad Hoc Committee: (*a*) that a three-man executive committee be appointed to carry out the tasks outlined in the pilot project, and (*b*) that this committee should consist of physicians vitally interested in district branch affairs. Moreover, before this new group gets started, the Ad Hoc Committee feels that their activities should be worked out by the State Medical Society staff under the direction of Norman S. Moore, M.D.

The chairman of the Ad Hoc Committee briefly outlined the organization of Comprehensive Regional Health Planning as mandated under the Federal Public Health Services Amendments of 1966. Since these regional organizations will be the omnipotent agency that will deal with all phases of health and health services, it is with these regional agencies that organized medicine must deal. Also since their distribution is regional, it must be at the district branch level that organized medicine must assert its role in the practice of medicine. On this basis, alone, it is felt that the district branch concept cannot be abandoned.

A letter was read from Edward C. Hughes, M.D., president-elect of the State Medical Society, in which he introduced the concept of a three-level organization consisting of all standing and some ad hoc committees. For example, in legislation, there would be a State Medical Society Committee on Legislation, consisting of 9 members, each one being the chairman of the committee on legislation of his own district branch. The committee on legislation of each district branch would be composed of the chairmen of the legislation committees of the respective county medical societies. This would tie in completely all activities on legislation that were being carried out at the three levels of organized medicine.

The problem of district branches having meetings outside their districts was discussed. It was noted that the meeting of the Second District Branch held on Long Island was a failure with practically no attendance, while the meeting held in Puerto Rico was very successful. Other district branches have reported similar experiences. On this basis, the Ad Hoc Committee feels that the Council should not condemn this practice but rather should look with favor on it.

In conclusion, the Ad Hoc Committee feels that there is a tremendously important role for the district branches in the future of medicine. If inertia and apathy continue to plague the district branches, then the regional planning agencies will control and organize all health services without the voice of organized medicine. And when the individual physician finds himself without a voice in his profession, he will have no one to blame but himself.

Respectfully submitted,
George T. C. Way, M.D., *Chairman*

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Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl HCl under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

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Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

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If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

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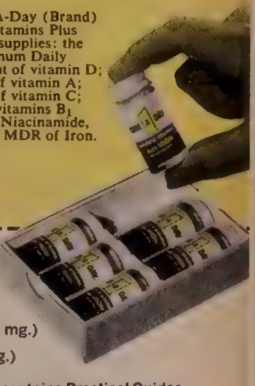

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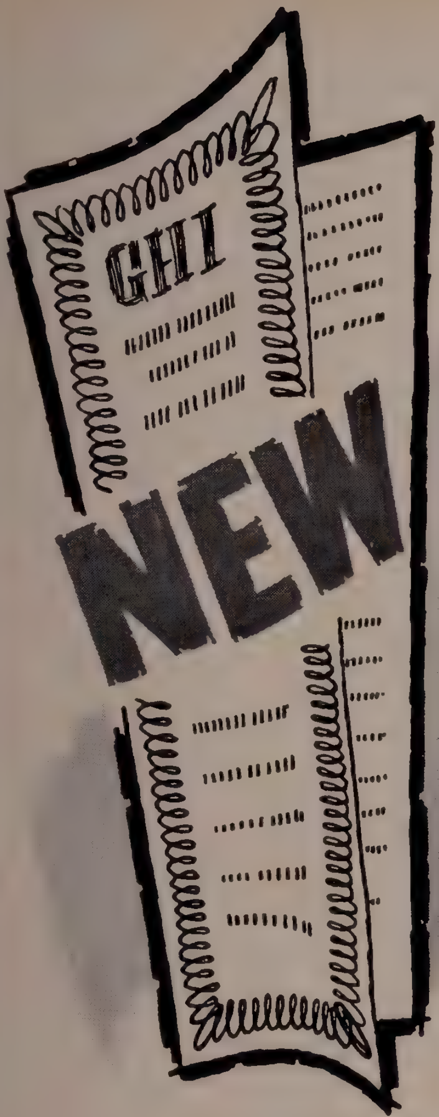

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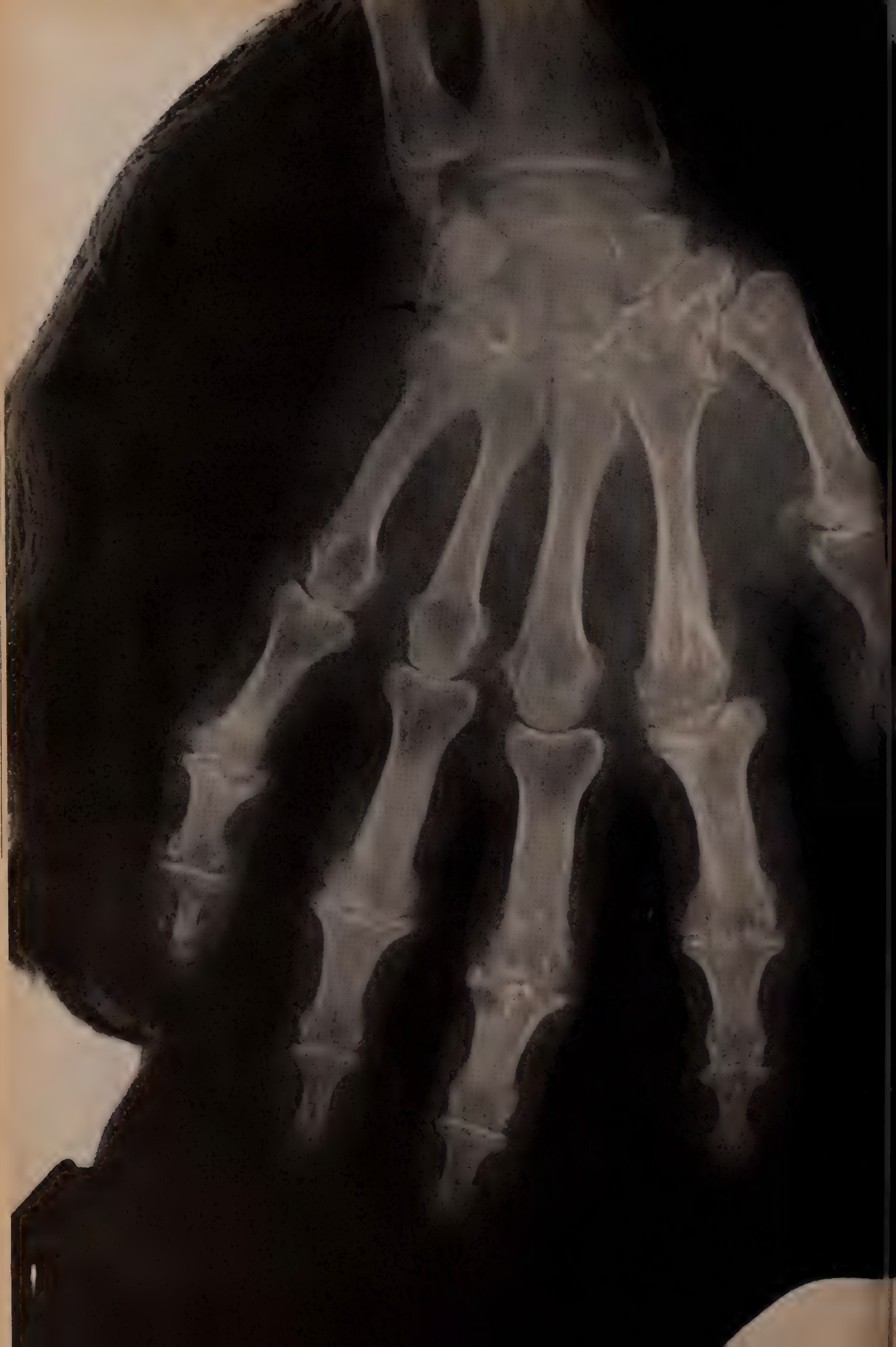
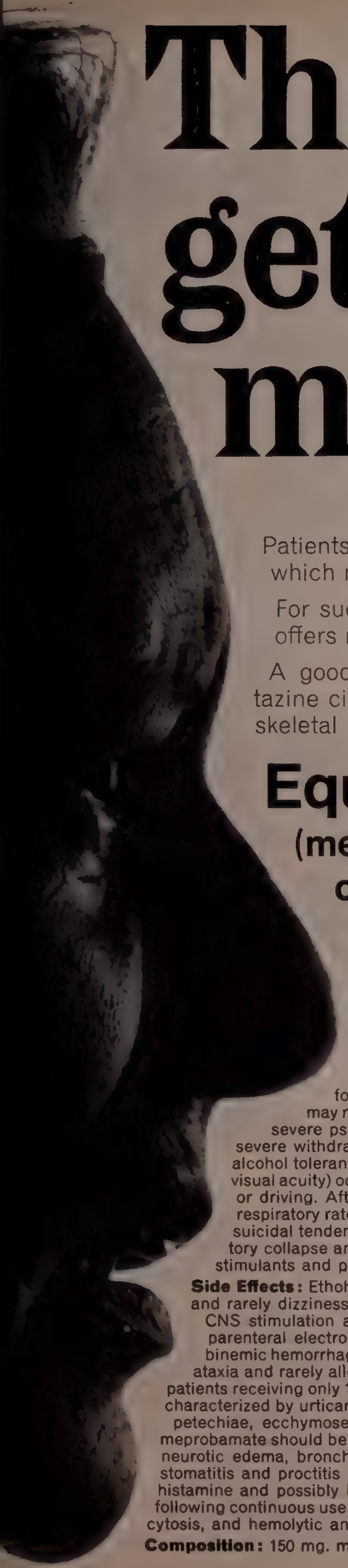




This pain is getting on my nerves.

Patients in pain often experience concomitant anxiety and tension, which may add to the burden of pain.

For such patients, you may want to prescribe a preparation that offers more than simple analgesia.

A good choice is often EQUAGESIC® (meprobamate and ethoheptazine citrate with aspirin). It helps relieve pain. And anxiety. And skeletal muscle spasm as related to pain or anxiety and tension.

Equagesic® TABLETS

(meprobamate and ethoheptazine citrate with aspirin)

Contraindications: History of sensitivity or severe intolerance to aspirin or meprobamate.

Warnings: USE IN PREGNANCY: Safety for use during pregnancy or lactation has not been established; therefore it should be used in pregnant patients or women of child-bearing age only when the physician judges its use essential to the patient's welfare.

Precautions: Keep out of reach of children. Not recommended for patients 12 years old or less. Carefully supervise dose and amounts prescribed, especially for patients prone to overdose themselves. Excessive prolonged use of meprobamate may result in dependence or habituation in susceptible persons—as alcoholics, ex-addicts, severe psychoneurotics. Withdraw gradually after prolonged high dosage to avoid possibly severe withdrawal reactions including epileptiform seizures. Warn patients of possible reduced alcohol tolerance. If drowsiness, ataxia or visual disturbances (impairment of accommodation and visual acuity) occur, reduce dose. If symptoms persist, caution patients against operating machinery or driving. After meprobamate overdose, prompt sleep, reduction of blood pressure, pulse and respiratory rates to basal levels, and hyperventilation are reported. Give cautiously to patients with suicidal tendencies. Treat attempted suicide (has resulted in coma, shock, vasomotor and respiratory collapse and anuria) with immediate gastric lavage and appropriate supportive therapy (CNS stimulants and pressor amines as indicated).

Side Effects: Ethoheptazine and aspirin may occasionally cause nausea, vomiting, epigastric distress, and rarely dizziness. Overdosage may result in CNS depression (drowsiness and lightheadedness) or CNS stimulation and salicylate intoxication (requires induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration, and observation for hypoprothrombinemic hemorrhage [usually requires whole blood transfusions]). Meprobamate may cause drowsiness, ataxia and rarely allergic or idiosyncratic reactions. These reactions, sometimes severe, can develop in patients receiving only 1 to 4 doses who have had no previous contact with meprobamate. Mild reactions are characterized by urticarial or erythematous maculopapular rash. Acute nonthrombocytopenic purpura with petechiae, ecchymoses, peripheral edema and fever have been reported. If allergic reaction occurs, meprobamate should be stopped and not reinstituted. Severe reactions, observed very rarely, include angioneurotic edema, bronchial spasms, fever, fainting spells, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia. Treat symptomatically such as with epinephrine, antihistamine and possibly hydrocortisone. A few cases of leucopenia, usually transient, have been reported following continuous use. Rarely, cases of aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis, and hemolytic anemia have been reported; almost always, in the presence of known toxic agents.

Composition: 150 mg. meprobamate, 75 mg. ethoheptazine citrate and 250 mg. aspirin per tablet.

Wyeth Laboratories Philadelphia, Pa.

Medical News

Courses in cardiac resuscitation offered

The Medical Society of the State of New York and the New York State Department of Health, in cooperation with the New York State Heart Assembly, the Hospital Association of New York State, and the Dental Society of the State of New York, are continuing to sponsor training sessions for physicians and dentists in closed-chest cardiopulmonary resuscitation. These courses, which were established in September, 1962, have been successful in training more than 4,600 physicians and dentists in the principles of closed-chest cardiopulmonary resuscitation.

The sponsoring agencies gave the following reasons for their desire to re-emphasize the need for continuing these sessions:

1. Many physicians have not had the opportunity to take one of these courses.
2. Although a physician or dentist may have participated in a course several years ago, unless he has been affiliated with an on-going program, he may wish to participate in a current program.
3. Reports have been received that the procedure has been ineffectively, inappropriately, and harmfully applied.

The sessions will be arranged at centers which may be conveniently reached by interested groups of physicians and dentists. The two-hour sessions will consist of lectures, demonstrations, and individually supervised practice on the training mannequin.

Medical and dental hospital staff members and other groups of physicians and dentists who are interested in participating in this program should contact either the Bureau of Heart Disease, New York State Department of Health, 855 Central Avenue, Albany, New York, 12206, or the Division of Scientific Activities, Medical Society of the State of New York, 750 Third Avenue, New York, New York 10017.

New York Roentgen Society to meet

The annual spring conference of the New York Roentgen Society is to be held at the Waldorf-Astoria Hotel, in New York City, on April 25 through 28.

All scientific papers to be presented at this meeting must be submitted by February 1 to: William B. Seaman, M.D., chairman, Columbia-Presbyterian Medical Center, 622 West 168th Street, New York, New York 10032.

Material for inclusion in the Medical news section must be received six weeks prior to publication date.

Doctor and his hospital topic of workshop

Two New York physicians will serve as panelists for "The Doctor and His Hospital" workshop to be held March 7 and 8, at the Pick-Congress Hotel, in Chicago. The workshop, sponsored by The Institute of Medicine of Chicago, is designed to examine the ever-increasing problems facing physicians, hospitals, and their staffs today.

Lawrence E. Young, M.D., Charles A. Dewey professor and chairman, Department of Medicine, The University of Rochester School of Medicine and Dentistry and Strong Memorial Hospital, Rochester, will discuss "The Hospital as a Teaching and Research Institution"; and Harold Laufman, M.D., Ph.D., director, Institute for Surgical Studies and professor of clinical surgery, Albert Einstein College of Medicine, Montefiore Hospital and Medical Center, The Bronx, will discuss "Logistics in the Hospital—Special Care Units."

Registration fee is $50 and $40 for fellows of the Institute of Medicine of Chicago. For registration and information contact: executive director, The Institute of Medicine of Chicago, 332 South Michigan Avenue, Chicago, Illinois 60604.

Columbia offers course for industrial physicians

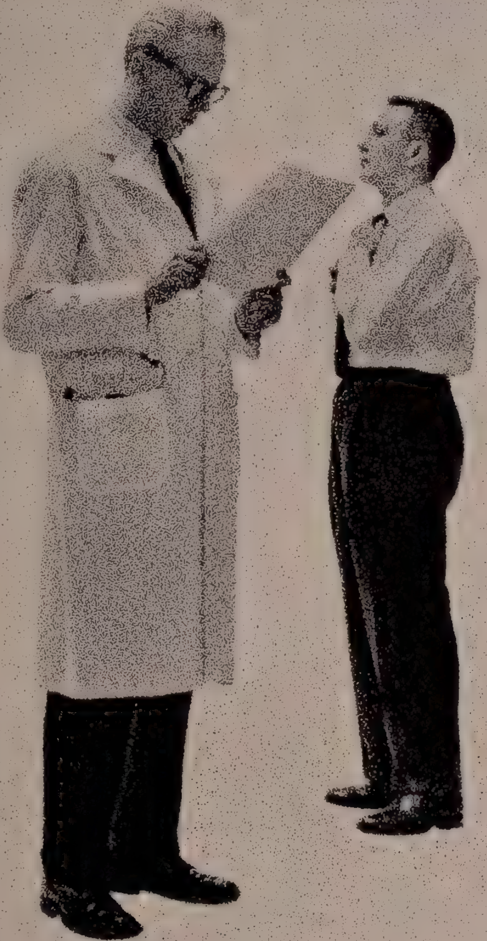
The eleventh annual Institute for Physicians in Industry is to be held at the Columbia-Presbyterian Medical Center in New York City on March 4 through 8.

The institute is designed as an intensive refresher course relating to those subject areas of specific interest to physicians practicing in the field of occupational medicine. In addition several sessions will be devoted to basic public health subjects.

For information and applications contact: Eric R. Osterberg, M.D., program director, Public Health, Suite 305, 21 Audubon Avenue, New York, New York 10032.

Personalities

Appointed. As chief of the Gynecology Service at Memorial Hospital for Cancer and Allied Diseases, John Leeman Lewis, M.D., New York City. . .As first full-time chief of the psychiatry section of New York University's Health Service, J. Lawrence Manuell, M.D., New York City. . .As editor-in-chief of the *American Journal of Gastroenterology*, Milton J. Matzner, M.D., Brooklyn.

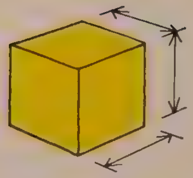


who goes for checkups?

A vital question. For if early diagnosis and treatment can cure cancer, obviously regular health checkups are essential. In a survey conducted for the Society, we discovered that only 26% of those questioned had such regular checkups. But 90% said, *if their physicians told them to do so,* they would have annual checkups.

This confirmed what we have long known—your key role, doctor, in *activating* your patients in good health practices. We alert the public with facts about cancer. You follow through by urging regular checkups. A life-saving combination.

AMERICAN CANCER SOCIETY.



100,000 reasons for Thiosulfil® Forte
(sulfamethizole 0.5 Gm.)

specific for urinary tract infections

A widely accepted rule of thumb for diagnosing urinary tract infection is the presence of more than 100,000 organisms in 1 cubic centimeter of urine.[1,2] The importance of promptly treating urinary infections, even when asymptomatic, is generally recognized.[3]

But in any patient, whether infection is asymptomatic, or appears to be chronic or acute cystitis, prostatitis, urethritis, pyelitis, or, more seriously, pyelonephritis, one effective therapeutic answer has long been THIOSULFIL Forte (sulfamethizole). Here are the reasons: ■ **rapid absorption:** peak serum concentrations in one to two hours ■ **effective:** negligible penetration into red blood cells; high concentration in plasma to fight infection; lowest degree of inactivation of all sulfonamides ■ **no "loading":** nor "priming" doses necessary ■ **rapidly excreted; noncumulative:** a safeguard against toxic buildup, even in long term therapy ■ **high solubility:** the most soluble sulfonamide in general use; hazards of crystalluria and hematuria virtually eliminated ■ **prolonged use:** permits virtually unlimited duration of therapy, thus helping to prevent relapse and progressive kidney damage ■ **well tolerated:** rarely produces side effects; when noted, they are usually transient, seldom requiring discontinuation of therapy; no hematuria, anuria or agranulocytosis reported

Record of safety proved in clinical practice

specific for urinary tract infections
THIOSULFIL® FORTE
(sulfamethizole 0.5 Gm.)

Advantages: 1) high concentration of free sulfa rapidly achieved at site of infection; 2) rapid excretion (noncumulative); 3) outstandingly free from side reactions; 4) high degree of clinical effectiveness.

In a composite group of 3,600 patients receiving THIOSULFIL (sulfamethizole), only 1.4 per cent showed side reactions—none serious (gastric distress, pruritus, nausea, fatigue, anorexia, eye discomfort, and 2 cases of transient crystalluria). No hematuria, anuria, agranulocytosis reported.

Indications: Treatment of cystitis, urethritis, pyelitis, pyelonephritis, and prostatitis due to bacterial infection amenable to sulfonamide therapy; prior to and following genitourinary surgery and instrumentation; prophylactically, in patients with indwelling catheters, ureterostomies, urinary stasis, and cord bladders.

THIOSULFIL (sulfamethizole) has been found effective against the following urinary tract pathogens: *Proteus vulgaris, Pseudomonas aeruginosa, Escherichia coli, Streptococcus fecalis, Escherichia intermedium,* and *Aerobacter aerogenes.* In individual cases, sensitivity of the organisms may vary. Sensitivity tests, preferably by the tube dilution method, should be done first, for guidance as to alternate therapy in case THIOSULFIL Forte (sulfamethizole) does not control the infection.

Contraindication: A history of sulfonamide sensitivity.

Warning: Because of the high solubility in body fluids of sulfamethizole in its free and acetyl forms, the hazards of renal tubule obstruction are minimized. The usual precautions generally exercised with sulfonamides should, however, be observed. In those rare instances where exanthemata, urticaria, nausea, emesis, fever, hemolytic anemia, or significant hematuria are encountered, administration should be discontinued.

Suggested Dosages: Suggested range of dosage—Adults: 1 or 2 tablets (0.5 Gm.—1.0 Gm.) three or four times daily.

An initial dosage of 3 Gm./day for two weeks will usually bring the infection under control. Where longer therapy is necessary, 2 Gm./day has been successfully employed. Patients with incurable chronic infections may require only 0.5 Gm./day to remain indefinitely symptom-free.

Supplied: No. 786—Each tablet contains sulfamethizole 0.5 Gm. (scored), in bottles of 100 and 1,000.

Where pain is
part of the problem

Thiosulfil®-A Forte

Each tablet contains:

Sulfamethizole	0.5 Gm.
Phenazopyridine HCl	50.0 mg.

Contraindications: (1) A history of sulfonamide sensitivity and (2) due to the phenazopyridine HCl component, renal and hepatic failure, glomerulonephritis, and pyelonephritis of pregnancy with gastrointestinal disturbances.

Warning: See THIOSULFIL Forte (sulfamethizole).

Suggested Dosages: Usual dosage: Adults: 2 tablets, four times daily. *Children* (9 to 12 years): 1 tablet, four times daily.

Supplied: No. 783—THIOSULFIL-A Forte Tablets—Each tablet contains sulfamethizole 0.5 Gm. and phenazopyridine HCl 50.0 mg., in bottles of 100 and 1,000.

References: 1. Kincaid-Smith, P., and Bullen, M.: Lancet.*i*:395 (Feb. 20) 1965. 2. Sacks, T. G., and Abramson, J. H.: J.A.M.A. *201*:79 (July 3) 1967. 3. Kass, E. H.: Practitioner *188*:22 (Jan.) 1962.

Thiosulfil® Forte
Brand of
sulfamethizole 0.5 Gm.

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Medical Meetings

Albany Medical College offers postgraduate courses

The Department of Postgraduate Medicine of Albany Medical College is offering the following teaching day programs to be held in Huyck Auditorium:

February 1, 9:00 A.M. to 3:30 P.M., "Hematology, White Cell Diseases, and Leukemia."

February 8, 10:30 A.M. to 3:30 P.M., "Cardiovascular Diseases," featuring professors from McGill University Faculty of Medicine.

February 15, 10:15 A.M. to 3:30 P.M., "Problems in the Management of the Severely Injured Vehicular Accident Case."

February 29, 10:30 A.M. to 3:30 P.M., "Arthritic Deformities: Reconstruction and Restoration."

Tuition is $15 per session. For information write: Department of Postgraduate Medicine, Albany Medical College, Albany, New York 12208.

Lectures on office psychiatry

The Postgraduate Center for Mental Health, in association with The Hoffmann-La Roche Foundation, is sponsoring a series of lecture-discussions on office psychiatry designed to assist the psychiatrist in the community to round out his practical mastery of clinical problems not covered by the usual postgraduate training courses. The sessions will be held on alternate Thursdays at 8:00 P.M. in the auditorium of the Postgraduate Center for Mental Health, 128 East 28th Street, New York City.

Scheduled speakers and topics are the following:

February 1—F. A. Frehan, M.D., director of research, Department of Psychiatry, St. Vincent's Hospital and Medical Center, "Psychopharmacology."

February 15—G. F. Osler, M.D., professor of neurology, New York School of Psychiatry, "Neurological Correction in the Practice of Psychiatry."

February 29—S. Bogoch, M.D., Ph.D., associate research professor of biochemistry and psychiatry, Boston University School of Medicine, "Implications of Biochemical Research for Psychiatric Practice."

March 14—B. Pfeffer, M.D., director, Clinic for Children and Adolescents, Postgraduate Center for Mental Health, "Special Problem Groups in Practice: Children and Adolescents."

March 28—L. R. Wolberg, M.D., medical director and dean, Postgraduate Center for Mental Health, "New Brief Directive Therapies."

April 11—L. B. Bellak, M.D., Ph.D., visiting clinical professor of psychiatry, Postdoctoral Training Program, New York University, "Emergency Psychiatric Situations."

April 25—H. B. Esecover, M.D., director of residency training, Hillside Hospital, "Psychedelics."

May 9—D. W. Hastings, M.D., professor and head, Department of Psychiatry and Neurology, University of Minnesota Medical School, "Brief Technics in the Treatment of Sexual Problems."

May 23—G. Balliett, director, Medical Practice Management Consultants, and F. U. Tate, M.D., chief psychiatrist, American Foundation of Religion and Psychiatry, "Management and Economics of a Psychiatric Practice."

Conference on aging

A panel discussion on the "Implications of Aging," sponsored by the Medical Society of the State of New York and the Middle Atlantic Region of the American Geriatrics Society, is to be held on February 15, at 2:00 P.M., at The Americana, New York City.

This multidisciplinary approach to the epoch of aging brings into focus the thinking of the biologist, the internist, the sociologist, the theologist, and a spokesman for government on the present problems and future prospects for this important segment of society.

The program will feature the following speakers: Moderator—James E. McCormack, M.D., New York City, executive director, New York Academy of Medicine; and panelists—Charles Barrows, Sc.D., Baltimore, Maryland, associate of gerontology section, Baltimore City Hospitals; William Dock, M.D., Brooklyn, chief of medicine, Veterans Administration Hospital; Gordon Streib, Ph.D., Ithaca, professor of sociology, Cornell University; Rabbi Edward E. Klein, New York City, Stephen Wise Free Synagogue; and Hollis S. Ingraham, M.D., Albany, Commissioner of Health, State of New York.

Hormones topic of lecture

The annual Sigma Xi lecture is to be held on February 19 at 4:00 P.M., in the first floor lecture hall, Basic Sciences Building, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn. The topic will be "Hormonal Antigens and Radioimmunoassay of Peptide Hormones in Plasma" by Solomon A. Berson, M.D., chief, radioisotope service, Veterans Administration Hospital, The Bronx.

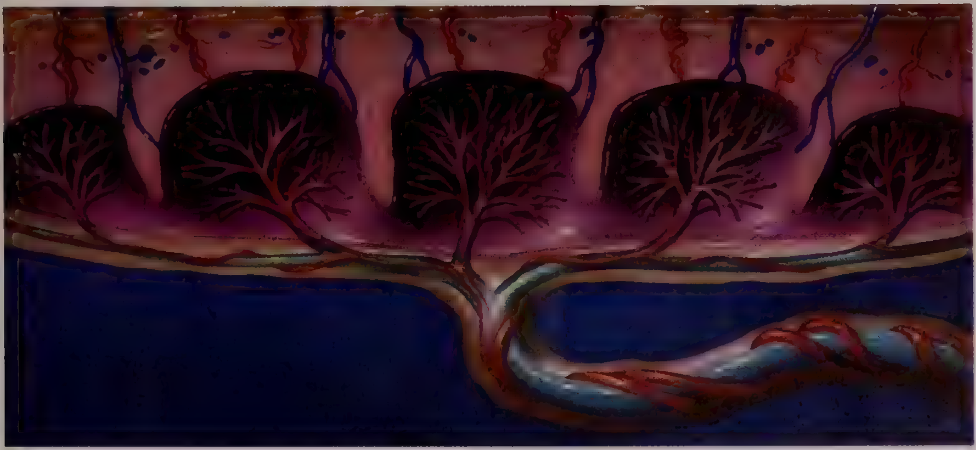
continued on page 365

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

winter 1968

DORSEY Season

A journal within a journal published quarterly in the interests of better medicine by Dorsey Laboratories, a division of The Wander Company, Lincoln, Nebraska 68501. Address communications to Keith W. Sehnert, M.D., Medical Director.



this issue: the cold in pregnancy...

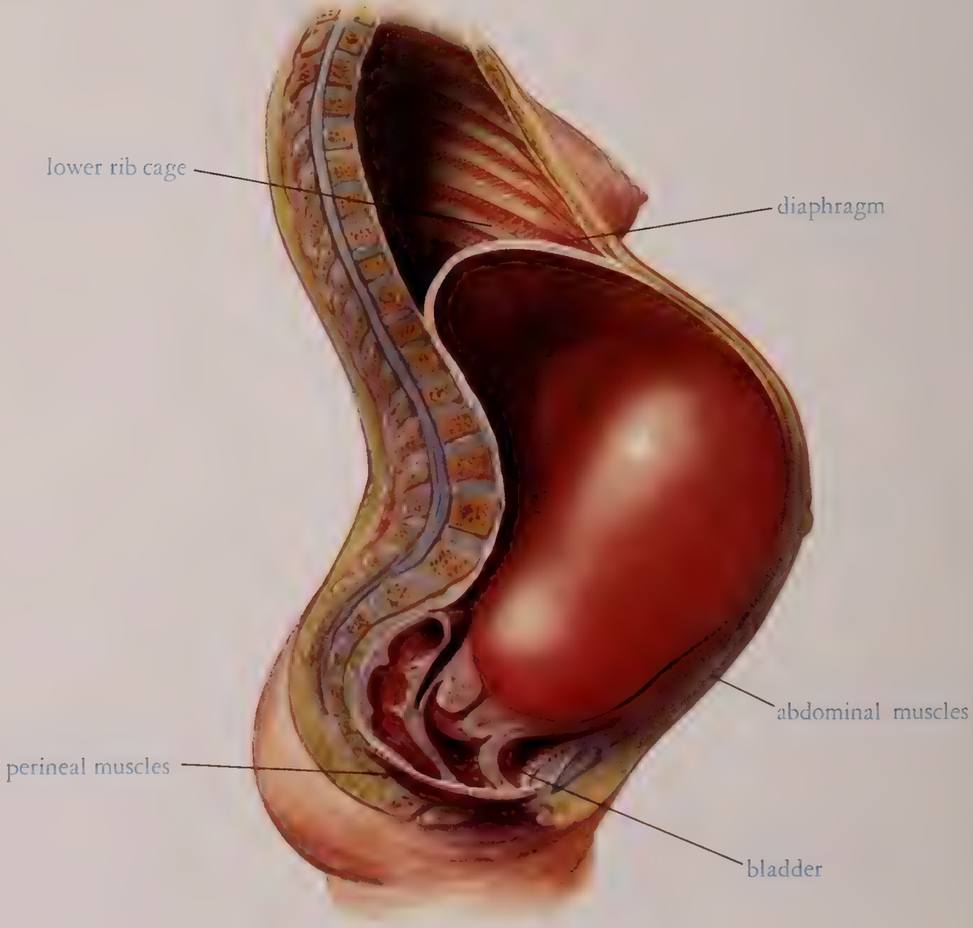
the cold in pregnancy

Frederick W. Goodrich, Jr., M.D.
Senior Obstetrician and Gynecologist, Lawrence and Memorial Hospital, New London, Connecticut

Since pregnancy and the common cold are both ubiquitous, it is not surprising that they often occur at the same time in the same patient. Incidence figures are hard to come by, but the chances are very good that any given pregnant woman will have a cold at some time during the nine months of her gestation. When she does, she will tell you that it is the worst cold she ever had. It seems to last longer and the symptoms are more distressing than they are in the non-pregnant.

For purposes of this discussion, the common cold is considered to be the well-known symptom complex which includes sore throat, stuffy nose, and a cough. Febrile states or extension of the disease process into the lower respiratory tree are not part of the common cold and will not be included in this discussion.

The clinical picture of a cold in pregnancy can be confused by a long-known physiological phenome-



non. Kiesselbach's area in the nose (on the anterior part of the nasal septum above the intermaxillary bone) becomes engorged, apparently due to hyperemia induced by the increased estrogen level which accompanies pregnancy. The amount of congestion can vary in degree from woman to woman. Some have very little congestion, others will have occasional nosebleeds from this area, still others will have symptomatic congestion to the degree that they will complain of having a "chronic" or constant cold.

Less well recognized is the occurrence of this type of hyperemia in any part of the nasopharyngeal mucosa, again in varying degree. Such swelling often produces a postnasal drip which, the patient will state, is present only when she is pregnant. Patients who do not have symptomatic congestion ordinarily, will find that when they do get a cold, the symptoms last much longer than those of a cold usually do. Occasionally, this hyperemia is responsible for closure of the medial end of the Eustachian tube; such patients will complain of "plugging" of the ears. Inspection of the ear drum will show a depression which confirms the presence of Eustachian closure rather than wax in the canal which is the patient's diagnosis. Symptoms related to this physiological congestion are more apt to occur in heavier smokers or those who have a history of allergic rhinitis, just as are the symptoms of the common cold. And when the cold does occur in pregnancy, the symptoms are worse because of the underlying congestion.

The pregnant woman with a cold is miserable for other reasons, dependent somewhat on her parity and the length of her gestation. As parity increases, so also does the relaxation of the abdominal and perineal musculature. The uterus, lying against a slack abdominal wall, and bearing down on relaxed perineal muscles, acts like a piston when the patient coughs, sneezes, or even blows her nose, pushing down on the bladder. Stress incontinence during colds is almost the rule.

As the length of gestation increases, so does the size of the uterus. As it grows, it pushes the abdominal contents above it and elevates the diaphragm. This results eventually in a lateral displacement of the lower rib cage, often to a point at which the patient will complain of soreness in this area. If such a

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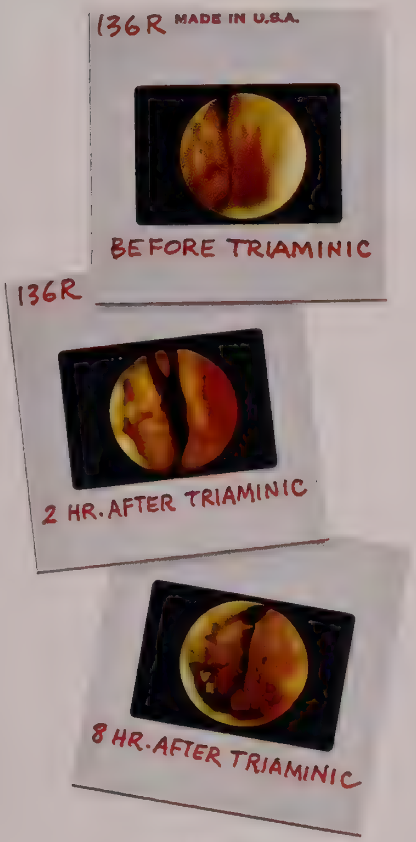
From a continuing study on nasal congestion...



timed to work while your patient does

A study begun in 1966 by the Department of Otolaryngology, Greater Baltimore Medical Center, has accumulated evidence that documents the effectiveness of Triaminic's timed-release action in the treatment of nasal congestion.

With its balanced formulation of an oral nasal decongestant and two antihistamines, Triaminic effected partial or complete relief in more than 82% of the 85 subjects treated. Clearing nasal obstruction. Reducing turbinate swelling. Making breathing easier.

It's a comforting thing to know that Triaminic really works.

Triaminic® *timed-release tablets*

Each timed-release tablet contains:

Phenylpropanolamine hydrochloride	50mg.
Pyrilamine maleate	25mg.
Pheniramine maleate	25mg.

Side effects: Occasional drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness or gastrointestinal upsets. Precautions: The patient should be advised not to drive a car or operate dangerous machinery if drowsiness occurs. Use with caution in patients with hypertension, heart disease, diabetes or thyrotoxicosis.

(Advertisement)

patient has a cold, the coughing and sneezing will exaggerate this soreness. The diaphragmatic restriction caused by the enlarging uterus also makes breathing more difficult, particularly when the patient lies down. A cold compounds this difficulty.

Treating a cold in pregnancy requires two additional considerations. The patient should be told that the symptoms may last longer lest she become discouraged, and she should be reassured that the treatment will not damage the fetus. Although there are still some women who seem blissfully ignorant regarding matters of health (and these need to be cautioned not to take medication recommended by friends), most of our maternity patients are aware of the thalidomide tragedy. These women need constant reassurance that the symptoms of a cold can be treated, and that the medication is safe. Fortunately, many of the drugs which are of benefit have been in use long enough and widely enough so that such a statement can be offered. Occasionally one encounters a patient who is so anxious to avoid medication that she is extremely reluctant to take anything at all. Since cold is self-limited, it seems reasonable enough to give such a patient the choice and not to force drugs on her if she is obviously afraid of taking them.

The most distressing symptom of the common cold is the nasal congestion. This can be mitigated by the use of a decongestant which will help reduce the postnasal drip and the coughing caused by it. The kind of a cough which is described as a "tickling" in the throat and which is apt to occur when the patient goes to bed is usually due to nasopharyngeal congestion rather than inflammation in the lower respiratory tract.

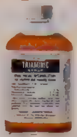
There are many cough mixtures available. Most contain an antihistamine, a decongestant, and a cough "suppressant." Should cough suppression be desirable, it is important to remember not to use both a decongestant tablet and such a cough mixture as the patient would be getting a double dose of the decongestant. With some patients, the placebo effect of a cough syrup may be important and a liquid preparation might be substituted for an oral tablet.

For a sore throat, candy drops or lozenges at frequent intervals are soothing. It is not only unnecessary but unwise to use antibiotic lozenges or drops. The use of antibiotics in an uncomplicated cold is contraindicated and should be scrupulously avoided.

In summary, a cold in pregnancy is more severe and longer lasting. The treatment of the symptoms with local and systemic decongestants will make the patient more comfortable.

Apparently the cold is so common in pregnancy that it has received very little attention in the literature. References are almost non-existent and the few which are available add little to the common knowledge, are out-dated, or are not helpful. Thus the usual bibliography is not appended.

Relieve his sniffles,
her concern, and about
half your phone calls.
Tell her to get
"The Orange Medicine"



Triaminic® syrup

Each teaspoonful (5 ml.) contains:

Phenylpropanolamine hydrochloride	12.5 mg.
Pheniramine maleate	6.25 mg.
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For nasal congestion you can bring quick, lasting comfort to your little patients with Triaminic Syrup. You may occasionally encounter these side effects: drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness or gastrointestinal upsets. Precautions: the possibility of drowsiness should be considered by patients engaged in mechanical operations requiring alertness. Use with caution in patients with hypertension, heart disease, diabetes, or thyrotoxicosis.

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When they need fast relief from pain, you can reassure them that aspirin is still the strongest analgesic they can buy without your prescription. And Bayer is 100% aspirin.
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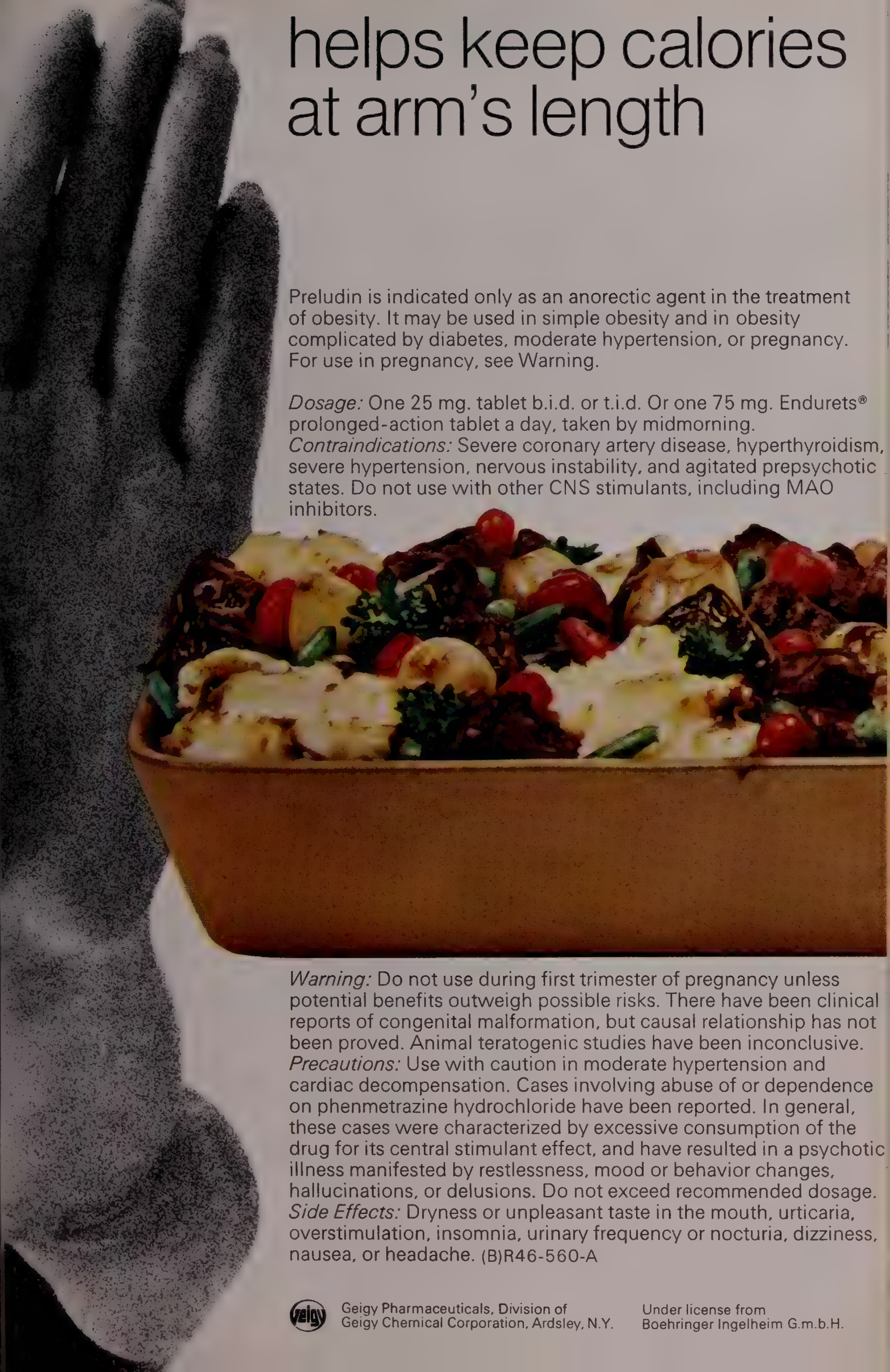

helps keep calories at arm's length

Preludin is indicated only as an anorectic agent in the treatment of obesity. It may be used in simple obesity and in obesity complicated by diabetes, moderate hypertension, or pregnancy. For use in pregnancy, see Warning.

Dosage: One 25 mg. tablet b.i.d. or t.i.d. Or one 75 mg. Endurets® prolonged-action tablet a day, taken by midmorning. *Contraindications:* Severe coronary artery disease, hyperthyroidism, severe hypertension, nervous instability, and agitated prepsychotic states. Do not use with other CNS stimulants, including MAO inhibitors.

Warning: Do not use during first trimester of pregnancy unless potential benefits outweigh possible risks. There have been clinical reports of congenital malformation, but causal relationship has not been proved. Animal teratogenic studies have been inconclusive. *Precautions:* Use with caution in moderate hypertension and cardiac decompensation. Cases involving abuse of or dependence on phenmetrazine hydrochloride have been reported. In general, these cases were characterized by excessive consumption of the drug for its central stimulant effect, and have resulted in a psychotic illness manifested by restlessness, mood or behavior changes, hallucinations, or delusions. Do not exceed recommended dosage. *Side Effects:* Dryness or unpleasant taste in the mouth, urticaria, overstimulation, insomnia, urinary frequency or nocturia, dizziness, nausea, or headache. (B)R46-560-A

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'EMPIRIN'® COMPOUND with CODEINE PHOSPHATE gr. 1/2 No. 3

Each tablet contains: Codeine Phosphate gr. ½ (Warning—May be habit forming),
Phenacetin gr. 2½, Aspirin gr. 3½, Caffeine gr. ½.

■ Despite introduction of synthetic substitutes, efficacy of 'Empirin' Compound with Codeine remains unchallenged.

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continued from page 356

Chronic lung diseases topic of teaching conference

A teaching conference for practicing physicians on "Recent Knowledge of Chronic Lung Diseases—Chronic Bronchitis and Emphysema" is to be held on February 27, from 9:30 A.M. to 4:30 P.M., at the Downstate Medical Center, 450 Clarkson Avenue, Brooklyn.

The program for the morning session is as follows: "Mechanical Properties of the Bronchitic and Emphysematous Lung," Jere Mead, M.D., professor, Department of Physiology, Harvard University, School of Public Health; "The Physical Properties of the Bronchitic and Emphysematous Lung," John T. Sharp, M.D., professor of medicine, University of Illinois; "The Blood-Gas Relationships in Emphysema and Bronchitis, "Claude J. M. Lenfant, M.D., associate professor, division of pulmonary disease, Department of Medicine and Department of Physiology, University of Washington Medical School, Seattle; and "The Clinical Pulmonary Function Tests for Obstructive Emphysema: Their Use and Interpretation," Ross C. Kory, M.D., professor of clinical research, Marquette University School of Medicine.

The afternoon session will feature the following topics and speakers: "Preventive Measures for Chronic Bronchitis," Robert L. Mayock, M.D., chief, pulmonary disease section, Department of Medicine, Hospital of the University of Pennsylvania; "The Role of Inhalation Therapy," Theodore H. Nohren, M.D., associate professor of medicine, State University of New York at Buffalo School of Medicine; "The General Management of the Emphysematous Patient," Thomas L. Petty, M.D., assistant professor of medicine, University of Colorado Medical Center; and "Management of Severe Decompensated Respiratory Insufficiency," John M. Tyler, M.D., associate professor of medicine, Tufts University, School of Medicine.

No registration fee is required. This conference will be accredited for physicians wishing to meet postgraduate education requirements under the Medicaid law.

For further information and registration contact: Brooklyn Tuberculosis and Health Association, 293 Schermerhorn Street, Brooklyn, New York 11217.

Abstracts

Romanoff, N. E.: Factors controlling release of insulin from beta cell; in relation to diabetes mellitus, NEW YORK STATE J. MED. **68:** 385 (Feb. 1) 1968.

Stimuli to insulin secretion include glucose, hexoses, tolbutamide, gastrointestinal factors, secretin, glucagon, proteins and amino acids, and cations. Insulin release is blocked by catecholamines and diazoxide. The exact physiologic role which these stimuli effect in normal carbohydrate metabolism and in diabetes mellitus still remains to be clarified.

Schwartz, R. W.: Clinical considerations of rubella in pregnancy, NEW YORK STATE J. MED. **68:** 392 (Feb. 1) 1968.

From pregnancies in which rubella occurred in the first sixteen weeks, 227 children were examined at two to eleven years, and a 31 per cent incidence of anomalies was demonstrated. Accurate diagnosis of rubella in the mother or her contact is difficult as is treatment. Widespread immunization is recommended. Determination is done by antibody tests, and the results of these indicate management.

Brock, H. J.: Diagnosis and complications of pneumoconiosis, NEW YORK STATE J. MED. **68:** 402 (Feb. 1) 1968.

The diagnosis of pneumoconiosis depends on a correlation of history, industrial reports, physical examinations, laboratory studies, pulmonary function tests, and x-ray films of the patient. The hazards of tuberculosis complicating pneumoconiosis are sufficiently great that a very early diagnosis should be made. Cor pulmonale is a frequent complication of advanced pneumoconiosis and is present in the majority of cases of advanced silicosis.

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B. Heat Exhaustion
C. The Wrestler's Ear
D. The Cleatless Heel
E. When Is an Accident not an Accident?

Luncheon—12:30 p.m.—Guest Speaker: Mr. Tom Cahill,
Coach, *United States Military Academy, West Point*

Program—Afternoon Session—2:00 p.m. Moderator, M. Laurens Rowe, M.D.,
University of Rochester

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Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

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Abstracts in Interlingua

Romanoff, N. E.: Factores in le regulation del liberation de insulina ab le cellula beta, relationate con diabete mellite (*anglese*), NEW YORK STATE J. MED. **68:** 385 (1 de februario) 1968.

Le stimulos del secretion de insulina include glucosa, hexosas, tolbutamida, factores gastrointestinal, secretina, glucagon, proteinas e amino-acidos, e cationes. Le liberation de insulina es bloccate per catecholaminas e diazoxydo. Le exacte rolo physiologic de iste stimulos in le metabolismo de hydrato de carbon sub conditiones normal e in diabete mellite remane a clarificar.

Schwartz, R. W.: Considerationes clinic de rubella in pregnantia (*anglese*), NEW YORK STATE J. MED. **68:** 392 (1 de februario) 1968.

Esseva examinate 227 juveniles nascite ab pregnantias in que rubella habeva occurrite. Le etates del juveniles al tempore del examine variava inter duo e dece-un annos. Esseva trovate un incidentia de anormalitates de 31 pro cento. Le accurate diagnose de rubella es difficile tanto in gravidas como etiam in lor contactos. Etiam le tractamento es difficile. Extense immunisation es a recommendar. Le determination se face per tests a anticorpore. Le resultatos de tal tests determina le programma de tractamento.

Brock, H. J.: Diagnose e complicationes de pneumoconiosis (*anglese*), NEW YORK STATE J. MED. **68:** 402 (1 de februario) 1968.

Le diagnose de pneumoconiosis require le correlation de datos anamnestic, reportos industrial, examines physic, studios laboratorial, tests de function pulmonar, e radiographias. Le risco del supervenientia de tuberculosis como complication de pneumoconiosis es sufficientemente grave pro render desirabile un precocissime diagnose. Cor pulmonale es un complication frequente de avantiate pneumoconiosis. Illo es presente in le majoritate del casos de avantiate silicosis.

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*It should be pointed out that results obtained in an experimental study of this nature may not necessarily be directly extrapolated to the clinical situation as it pertains to man.

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References: 1. Isenberg, H. D.: Clinical Evaluation of Laboratory Guidance to Antibiotic Therapy; Health Laboratory Science (July) 1967. 2. Saslaw, S., Carlisle, H. N.: Studies on Therapy of Staphylococcal Infections in Monkeys. 1. Comparison of Cloxacillin, Triacetyloleandomycin and Erythromycin. Proc. Soc. Exp. Biol. & Med.: Vol. 125, No. 4 (Aug.-Sept.) 1967.

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Medical Schools

College of Physicians and Surgeons

Visiting professorship lecture. Jacob A. Arlow, M.D., will deliver the John B. Turner Visiting Professorship Lecture on Friday, March 1. His topic will be "Reflections on Memory and Reality Testing." The lecture will be held at 8:30 P.M. in Hosack Hall, The New York Academy of Medicine Building. Dr. Turner, in addition to his professorship, is president, The New York Psychoanalytic Institute and chairman of the Board on Professional Standards of the American Psychoanalytic Association.

Cornell University Medical College

New chairman. John T. Ellis, M.D., formerly of Emory University School of Medicine, became the new professor and chairman, Pathology, on January 1. Dr. Ellis plans to develop a comprehensive departmental program which will train pathologists for both research and practice.

Downstate Medical Center

Murray B. Gordon Memorial lecture. Leonard Mayo, professor of human development, Colby College, will present the Murray B. Gordon Memorial Lecture on January 29 at 4:00 P.M. The lecture will be on "The Medical School, the Physician, and the Community," and will be held in the First Floor Lecture Hall, Basic Sciences Building.

Visiting scholar program. Sidney Hook, philosopher and educator, will deliver the Visiting Scholar Lecture on Monday, January 22, at 4:00 P.M. in the First Floor Lecture Hall, Basic Sciences Building. He will discuss "Intelligence and Human Rights." On November 27 and 28 communications theorist Edmund Carpenter was the first Visiting Scholar of the current academic year. Dr. Carpenter is currently serving as Visiting Research Professor in the Albert Schweitzer program at Fordham University.

Regional medical program coordinator appointed. Charles R. Greene, M.D., clinical instructor in medicine, has been named local Regional Medical Program Coordinator. Formerly the medical coordinator for the Home Care Program at Kings County Hospital, Dr. Greene will act as liaison between the College of Medicine and the medical community of Brooklyn and Staten Island.

New appointments. New appointments recently announced are: Anatomy: Edward W. Gresik, M.D., and Mimi Halpern, M.D., instructors; Anesthesiology: Professor Sir Robert R. Macintosh and Etsutaro Ikenzono, visiting professors; Ohanes Der Ohanesian, M.D., Cataldo Fiorenza, M.D., Shun-Hua Lin, M.D., David J. Hammer, M.D., Ognyan Petroff, M.D., Reno Tempesta, M.D., and Edmund L. Webb, M.D., clinical instructors; Tadeusz Wandycz, M.D., instructor. Dermatology: Charles S. Baraf, M.D., clinical instructor. Environmental Medicine and Community Health: Lowell E. Bellin, M.D., clinical assistant professor; Miss Ida F. O'Grady, Sylvia F. Meyer, M.D., Anna Mascolo, M.D., clinical instructors; and Mr. Martin Langer as instructor. Medicine: Earl H. Freimer, M.D., visiting associate professor; Martin S. Roginsky, M.D., clinical assistant professor; Thomas G. McGinn, M.D., and Stephen A. Weseley, M.D., clinical instructors. Neurology: Stuart B. Brown, M.D., clinical instructor, and James S. Lieberman, M.D., instructor. Neurosurgery: Edmundo A. Kauffman, M.D., clinical instructor; Obstetrics and Gynecology: Ernest W. Page, M.D., visiting professor; Therese Lu, M.D., instructor; Ophthalmology: Richard G. Steinfeld, M.D., instructor; Otorhinolaryngology: Reza Sodagar, M.D., instructor; Pediatrics: Nathan Rudolph, M.D., clinical assistant professor; Lawrence T. Chiaramonte, M.D., Frederick B. Traub, M.D., Dolores A. Aguilar-Beltram, M.D., Annie B. Cinco, M.D., Victoriano T. Col, M.D., Fipipinas S. Decena, M.D., Kadidal S. Devendra, M.D., Nora G. Doctor, M.D. Sushila G. Gawande, M.D., Young-In Han, M.D., Teresita A. Laude, M.D., Trinidad M. Laudencia, M.D., Anner R. Duque, M.D., Cesar A. Malantic, M.D., Iqbal A. Malik, M.D., Carmen M. Mercado, M.D., N. S. Nirmala, M.D., Dimpna D. Paguio, M.D., Mohamad Pourfar, M.D., Solomon V. Rajkumar, M.D., D. L. Madhava Rao, M.D., Sudheer R. Shirali, M.D., Erlinda I. Sison, M.D., Paz L. Tan, M.D., Nanjapura M. Thimmarayappa, M.D., Constancia V. Tiangco, M.D., Susan A. Ventre, M.D., Bee Lian L. Wee, M.D., Erlinda M. Yutangco, M.D., Parvin A. Zisman, M.D., clinical instructors; and Yunosuke Ogawa, M.D., instructor. Psychiatry: Paul Kay, M.D., Norman Frankel, M.D., Julian L. Stamm, M.D., clinical assistant professors; Sanvel E. Klein, M.D., clinical instructor; Luc Bernard, M.D., Rita W. Clark, M.D., Romana Ganea, M.D., Jack Radkin, M.D., Kurt C. Rawitt, M.D., Mrs. Charlotte S. Weinum, instructors; Radiology: Noel F. Bartone, M.D., and R. Vincent Grieco, M.D., clinical associate professors; Paul K. Berg, M.D., and Nevin H. Okay, M.D., clinical in-

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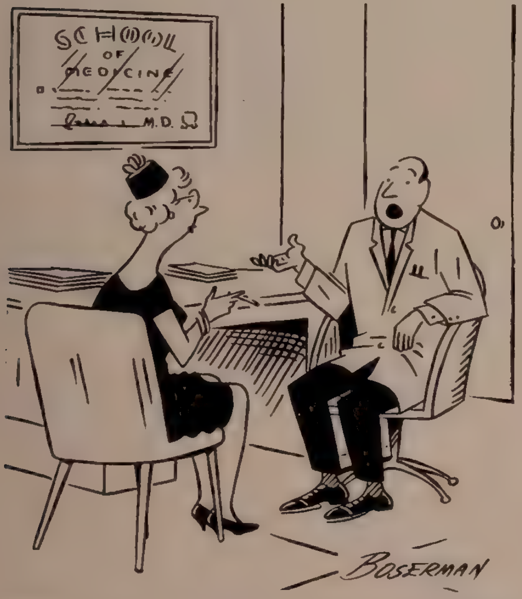
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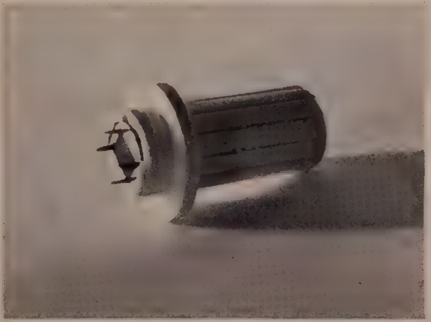

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continued from page 374

structors; Milton Birnkrant, M.D., and Wolf Rosenkranz, M.D., lecturers; and Surgery: George Stergiopoulos, M.D., clinical instructor; Rolf Mueller, M.D., instructor.

Promotions. The following promotions have been announced. To clinical professor: Andor A. Weiss, M.D., Rehabilitation Medicine; to clinical associate professor: Larry Schneck, M.D., and Hossein Ghadimi, M.D., pediatrics; to assistant professor: Henry Rosner, M.D., Rehabilitation Medicine; Horacio M. Ferreyra, M.D., Physiology; and to clinical assistant professor: Joseph Bongiorno, M.D., Pediatrics; Gabriel Cucolo, M.D., Surgery; and Eugene J. Rogers, M.D., Rehabilitation Medicine.

October grants. A total of $501,080 were received during October, 1967, for 18 research and training grants. The awards provide for renewal of ten studies already in progress, five supplements, and three new projects.

Mount Sinai School of Medicine

New Appointment. Allan E. Kark, M.D., formerly of South Africa, was appointed the Franz W. Sichel Chairman and Professor, Department of Surgery, at the first investiture ceremony on December 8, 1967. To enable the Chair to be established promptly, without waiting for the completion of a real estate transaction, Mrs. Franz Sichel, widow of Franz W. Sichel, presented an additional $50,000 to George James, M.D., Dean.

New York Polyclinic Medical School and Hospital

Basic sciences curriculum. Programs in Basic Sciences Curriculum and Comprehensive Clinical Medicine Curriculum for foreign medical graduates will be offered by the School and Hospital in preparation for State Board and other examinations from February 19 to June 14 if a sufficient number of students register for them. These are full-time courses, 9:00 A.M. to 4:00 P.M., Monday through Friday. Further information concerning registration and tuition fees, entrance requirements, a copy of the brochure listing curriculums, and such may be obtained from the Office of the Dean, New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York, New York 10019.

Application for admission to the courses must be made prior to February 1, 1968.

Did you know . . .

The phrase, "drink a toast" originally referred to a real piece of toast that was placed in the bottom of the drinking glass as a delicacy.

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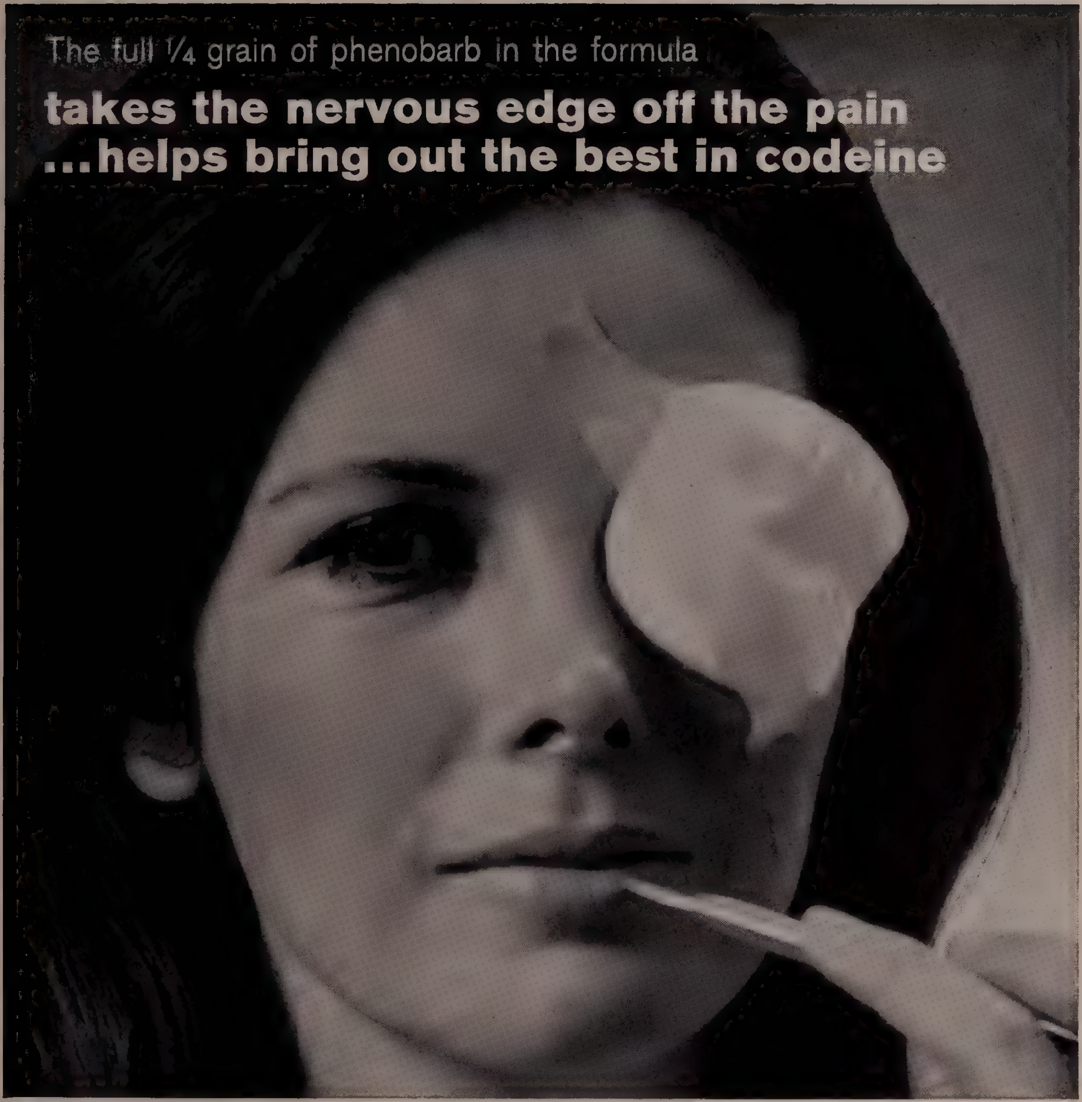
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February 1, 1968 Volume 68 Number 3

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Editorials

Look to your aides

Instances keep coming to light of inadequacies in the training and indoctrination of hospital aides.

A house officer comes on the ward to find a patient lying on the floor, having fallen out of bed. The aide on the ward said he had lain there for half an hour. When asked why she had not done anything about it the reply was, "It's not my job."

An orderly is apprehended leaving the hospital with his pockets stuffed with hundreds of dollars worth of antibiotics.

Aides are overheard using abusive language to patients.

These are but a few examples. Delinquencies occur in many varieties.

Wherein lies the blame? Many excuses are put forward such as poverty, ignorance, language difficulty, rapid turnover. The list is long and formidable but invalid.

Perhaps the fault lies elsewhere. Are we careful and thorough enough in our training and indoctrination of this essential hospital employe? The approach must not be casual or haphazard.

These employes must know their position in the total hospital situation—that they are not part of a hotel operation but part of a life-saving operation. At the time that they take up their duties they should be addressed by a hospital trustee on the importance of the hospital to the community, by the administrator on the simple arithmetic of costs and waste, by the chief of staff on the need of the patient for comfort and quiet efficiency, by the nursing and maintenance staff on the importance of routine and the necessity for good manners and good grooming.

A broad and multifaceted indoctrination drawing from all phases of the hospital management should lead to a class of well-informed aides who will take pride in their responsibility.

Promising dividend of regional medical program

As part of the Regional Medical Program of Central New York a central medical library is being established at the State University Upstate Medical Center in Syracuse.

This will be one of the largest computerized library systems in existence. It will be furnished with a total volume of 83,000 books and 2,150 periodicals.

This vast resource will be available to the medical and nursing professions and ancillaries in 15 upstate counties—Broome, Cayuga, Chenango, Cortland, Franklin, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, St. Lawrence, Tioga, and Tompkins.

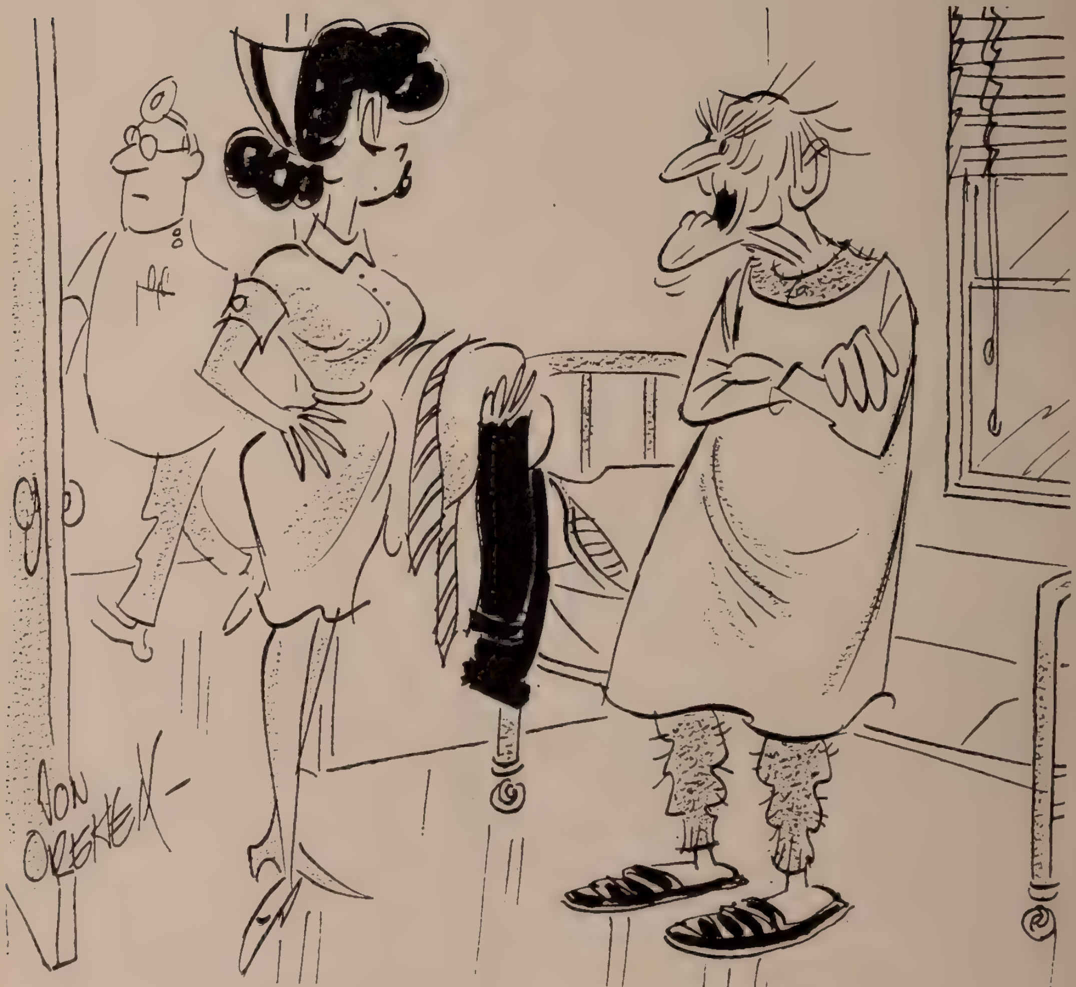
Photocopies of materials on the shelves will be available on order. Material not at hand will be obtained through the Inter Library Loan Network. Late in 1968 an expansion of this service will be obtainable through a computerized information retrieval service linking the central upstate library with those of the State University at Buffalo, the Downstate Medical Center, Brooklyn, the State University of New York at Stony Brook, and the University of Rochester School of Medicine and Dentistry.

This service is one of the by-products of the federal funding of Regional Medical Centers. It seems a more intelligent use of tax money than the unwarranted dredging of unnavigable rivers and harbors.

This type of dredging goes to the heart of the continuing education of the physician wherever he may be.

As stated by Richard H. Lyons, M.D., Regional Director, "It is hoped that this service will be extensively used and will become a source of intellectual enrichment for physicians, nurses and the allied professions."

Abraham Lincoln walked miles to borrow a book, but now the book can come to the reader. It is the use of the book that counts and we hope that the Regional Director's hopes will be fulfilled.



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STRESSCAPS

Factors Controlling Release of Insulin From Beta Cell

In Relation to Diabetes Mellitus

NEIL E. ROMANOFF, M.D.
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STIMULI TO INSULIN *secretion include glucose, hexoses, tolbutamide, gastrointestinal factors, secretin, glucagon, proteins and amino acids, and cations. Insulin release is blocked by catecholamines and diazoxide. The exact physiologic role which these stimuli effect in normal carbohydrate metabolism and in diabetes mellitus still remains to be clarified.*

PROGRESS IN THE FIELD of carbohydrate metabolism, diabetes mellitus, and the mechanisms of insulin action over the past decade has been greater than during any other period of medical research. Among the most valuable aids to research during this era have been the introduction of the insulin immunoassay which allows the measurement of circulating insulin, the isolated pancreas perfusion, and the direct application of the electron microscope to beta cell morphology. We are beginning to comprehend some of the basic mechanisms of insulin formation, storage, release, transport, and peripheral action. It is only through the knowledge of these fundamentals that we can ultimately hope to understand exactly what diabetes is, how we can better treat those with the disease, and perhaps even prevent what are presently termed "complications" of the disease.

I shall review some of the factors which influence the release of insulin from the beta cell as well as those which block this release. For the sake of clarity, I will define several of the terms which will be used. The term synthesis is used to define the formation of the insulin molecule and its storage as the beta cell granule. Insulin release or secretion will refer to the expulsion of the beta granule from the beta cell via the process of emiocytosis. Thus, in speaking of factors which effect insulin release, I will be referring to those stimuli which cause release of the previously formed insulin from its storage state in the beta cell. The importance of defining these two terms lies in the realization that diabetes, as we know the clinical disease, may result from either abnormal synthesis with normal release or normal synthesis with abnormal release.

Stimuli to insulin secretion

GLUCOSE. Glucose has been classically considered the major physiologic stimulus to insulin release. Early work has shown that the slow intravenous injection of 10 per cent glucose effected a rapid removal of the sugar from the blood and, as the injection continued, the blood sugar actually decreased instead of increasing. This was the first suggestion that hyperglycemia was a stimulus to insulin release.[1]

In vivo studies by Seltzer[2] demonstrated that glucose caused the prompt release of insulin from the pancreatic beta cells. The quantitative relationship was demonstrated by Metz[3] who demonstrated that the rate of insulin secretion in vivo is a constant function of the blood glucose concentration.

Perfusion of the pancreas demonstrated that the perfusate containing a high concentration of glucose directly stimulates the islets to release insulin.[4] It is interesting to note that it has been shown that glucose must penetrate the beta cell and be metabolized beyond the stage of G-6-phosphate for insulin to be secreted.[5]

The electron microscope has made possible the study of the morphologic events which occur in the release of the beta granule from the beta cell. The beta granules are enclosed in a smooth membranous sac, and on stimulation this sac moves toward the surface of the cell. These sacs then fuse with the plasma membrane of the cell. On fusion the sac ruptures, and the beta granule is liberated into the extracellular space, whereupon it dissolves rapidly. This process has been called emiocytosis. After liberation, the insulin is apparently in solution in the extracellular fluid, and it then traverses the basement membranes and endothelium to enter the capillary lumen.[6]

HEXOSES. Early in vivo studies in dogs indicated that hexoses other than glucose were capable of producing insulin release. These studies showed that d-galactose and d-ribose were capable of stimulating insulin release but that d-mannose, d-xylose, and l-arabinose were not. From this work it was hypothesized that only those sugars which are both utilizable and insulin-sensitive are able to effect insulin release.[7] Work in 1964 by Coore and Randle[8] concluded that d-mannose was also effective in stimulating insulin release but, in contradiction to earlier work, that d-galactose was not. We must note that d-galactose does not fit both criteria in that it is insulin-sensitive but not utilizable.

TOLBUTAMIDE. The earliest work with certain sulfonamide derivatives was done by Loubatieres[9] in the mid 1940's, and he concluded that this group of drugs caused hypoglycemia by excitation of the beta cell to release insulin. This was further confirmed by the fact that hypoglycemia has not been seen following administration of sulfonylureas to depancreatized animals.[10]

In vivo experiments in both dogs and man have demonstrated that following treatment with tolbutamide, there is an increase in serum insulin-like activity.[2,11,12]

Perfusion experiments with the injection of tolbutamide intrapancreatically have demonstrated subsequent hypoglycemia and support the concept of a pancreatic site for the action of the sulfonylureas with a direct effect on the beta cell.[12]

Study of the beta cell under the electron microscope has demonstrated that the chain of events leading up to the release of the beta granule from the beta cell on stimulation with tolbutamide is the same as that which occurs after glucose stimulation.[6] It is interesting to note that although electron microscopically both glucose and tolbutamide appear to function in a similar manner in effecting insulin secretion, physiologic studies suggest different mechanisms for their function.

GASTROINTESTINAL FACTORS. In 1965 Dupre and Beck[13] noted that after oral or intraduodenal glucose administration, the serum levels of insulin were greater than when a similar amount of glucose was given by intravenous infusion, even though the intravenous infusion produced higher levels of blood glucose.

In 1964 McIntyre, Holdsworth, and Turner[14] observed that the superiority of the oral glucose tolerance test over the intravenous glucose tolerance test was partially because of the increased release of insulin from the pancreas. They believed that this was caused by the release of a humoral substance from the wall of the intestine during the absorption of glucose and that this factor worked together with increased blood glucose levels to cause insulin release from the beta cell.

Alternatively it has been suggested that there might be a direct vascular communication between the blood supply of the duodenum and the pancreas which shunted blood with high glucose concentration to stimulate insulin secretion from the beta cell.[15] This theory was discounted by McIntyre, Holdsworth, and Turner[16] who infused glucose into the jejunum at a point where there was no direct vascular communication with the pancreas and obtained results which were the same as with intraduodenal administration.

Other investigators have shown that when glucose was administered directly into the portal vein, the degree of hyperglycemia produced was greater than with intravenous or intraduodenal administration but that the arterial insulin levels were the same as those produced with intraduodenal infusion. This was interpreted to mean that an important factor in insulin release could not be located in the intestinal wall and that it was probably located in the hepatoportal area where an increase in glucose concentration stimulated insulin release.[17] This theory is at variance with the findings of McIntyre and his coworkers[16,18] who demonstrated that the increased insulin response was present in patients with portacaval shunts, and therefore passage through the liver was not necessary for the stimulus to insulin response.

In view of all of these findings, the theory which seems most plausible at the present time is that which calls for a humoral substance from the gut wall which stimulates insulin secretion.[18]

SECRETIN. In 1906 it was theorized that the islet cells of the pancreas might be ordinary pancreatic cells in a state of exhaustion, inferring that there is only one type of secreting cell in the pancreas. Secretin would therefore stimulate both the external and the internal secretions of the pancreas, and glycosuria could be caused by a lack of this duodenal stimulation.[19]

In 1932 Laughton and Macallum[20] obtained a duodenal extract which modified experimentally induced hyperglycemia. They felt that this substance differed from secretin in that it did not have any effect on the external secretion of the pancreas. The substance did not produce hypoglycemia in normal animals, and it did not alter the hyperglycemia in a totally depancreatized animal.

In 1929 Zunz and Labarre[21] demonstrated that a crude duodenal extract, which they called "secretin," caused hypoglycemia following its intravenous injection in dogs. In 1962 Lechin[22] suggested that secretin or an impurity in it caused a stimulation of insulin release. Unger *et al.*[23] have demonstrated that both crude secretin extract and purified secretin, when injected via the endoportal route, in what are presumed to be physiologic doses, produce within one minute a striking rise in serum insulin without a parallel rise in blood glucose levels, and therefore the insulin increase could not be secondary to increased glucose stimulation. Similar observations have been seen by Dupre *et al.*[24] who have demonstrated that peripheral intravenous injection of secretin caused a rapid release of insulin into the splanchnic blood but no increase in portal glucagon levels, thus suggesting that the secretin effect is not being mediated by glucagon, even though glucagon is known to be capable of causing hyperglycemia and increased insulin levels.

Studies by Pfeiffer *et al.*[25] demonstrate that purified secretin causes a release of insulin in both the rabbit and dog pancreas in vitro.

To summarize, it appears that secretin from the intestinal wall has a direct stimulatory effect on the beta cell to release insulin.

Dupre and Beck[26] have demonstrated that when an active extract from the small intestine is added to an intravenous infusion of glucose, the serum insulin levels which are obtained are similar but slightly less than those obtained with oral glucose. Although this extract was found to be contaminated with insulin, the amount of insulin present was not physiologically capable of producing the effect.

These studies suggest that there is an active factor in the gut extract which may play a role in the physiologic release of insulin from the beta cell.[26] It still remains to be demonstrated whether or not this extract is secretin, and, if so, whether or not it is active in physiologic levels in normal subjects.

The role of other intestinal hormones in insulin release remains to be evaluated. However, preliminary information has suggested that pancreozymin is similarly capable of provoking insulin release. Again, the physiologic importance of this is still unknown.[27]

GLUCAGON. In 1965 Samols, Marri, and Marks[28] demonstrated that glucagon was capable of increasing the level of serum insulin prior to, and independently of, its hyperglycemic action. In 1962 Kenny and Say[29] were able to demonstrate glucagon-like activity in the extracts from many areas of the human gut, including pylorus, duodenum, jejunum, and ileum. In 1964 Markman and Sutherland[30] were able to extract glucagon from the muscular layer of the gastrointestinal tract.

It is of interest that greater immunologic identity exists between glucagon extracts derived from the large intestine and pancreatic glucagon than that seen between extracts from the upper small intestine and pancreatic glucagon.[31]

Samols, Marri, and Marks[28] did not know if the effect of glucagon was directly on the beta cells but suggested that ingested glucose may stimulate glucagon release from the gut and that this glucagon in turn stimulated insulin release from the beta cell. Samols, Marri, and Marks'[32] work in 1966 with intravenous glucagon infusions is suggestive of a direct effect of glucagon on the beta cell. They felt that this was probably of physiologic importance and was secondary to acceleration of intrabeta cell glycogenolysis.

Grodsky and Bennett[33] have recently shown that glucagon is a direct stimulator of insulin release regardless of the availability of glucose. This is reaffirmed by Benedetti and Kolb's[34] work in studying patients with glycogen storage disease who were unable to respond to glucagon stimulation with hyperglycemia. In these patients glucagon was still able to produce an increased serum insulin level even though there was no hyperglycemia produced. This finding offers additional support to the theory for direct stimulation of the beta cell by glucagon.

PROTEINS AND AMINO ACIDS. It has been demonstrated, and is accepted, that leucine is responsible for the hypoglycemia of many children with the so-called "familial hypoglycemia."[35] In 1960 it was shown that leucine could provoke hypoglycemia in normal individuals after pretreatment with chlorpropamide, and it was thought that increased insulin release was the primary mechanism by which leucine caused this hypoglycemia.[36] Subsequently it was demonstrated that leucine could incite hypoglycemia in human beings who were not pretreated with sulfonylurea compounds and that this was also because of increased insulin release from the pancreas.[37,38]

It now appears that this hypoglycemic phenomenon is not peculiar to leucine alone. In fact, other amino acids are capable of stimulating insulin release. Essential L-amino acids, when given intravenously, either individually or as mixtures with leucine, cause an increase in insulin release which is not dependent on the presence of leucine.[39]

The increase in blood insulin levels after protein ingestion was greater than that which followed the ingestion of leucine alone, although the increased glucose levels were not great enough to suggest that they were responsible for the increased insulin levels. These findings are consistent with the theory that protein ingestion in association with increased levels of amino acids in the serum appears to be related to a physiologic stimulus for insulin release.[39]

At this point it is worth noting that classically we have always related carbohydrate tolerance and insulin response as being responsible for the defects in diabetes and have used them as guideposts for evaluating the clinical status of the diabetic patient. It now appears possible that evaluation of protein tolerance in diabetes mellitus should be considered.

CATIONS. Grodsky and Bennett[40] have demonstrated that potassium can directly stimulate insulin release from the pancreas. They have also observed a calcium dependence, noting that calcium is necessary for insulin to be released from the pancreas in response to a hyperglycemic stimulus. It has been noted that potassium depletion is accompanied by a considerable reduction in the fractional rate of glucose disappearance from the blood following intravenous glucose loading, thus suggesting a decrease in endogenous insulin secretion or release.[41]

From these facts it has been theorized that potassium depletion may be involved in severe diabetic patients with impaired insulin release or in temporary diabetic states induced by thiazide diuretics which cause hypokalemia.[40]

Blockers of insulin release

CATECHOLAMINES. Porte *et al.*[42,43] have reported that the infusion of epinephrine in the presence of significant hyperglycemia was not associated with a rise in serum immunoreactive insulin levels. They further demonstrated that the insulin response to glucose, glucagon, and tolbutamide was abolished by the infusion of epinephrine. Since epinephrine inhibits the response of most common stimuli to insulin release, it is suggested that there is a direct effect of epinephrine on the beta cell.

Norepinephrine is more continuously secreted in vivo as the common effector of the sympathetic nervous system, as opposed to epinephrine which may be restricted only to infrequent discharge from the adrenal medulla. Porte and Williams[44] have done studies with norepinephrine which demonstrate that it has an effect similar to that of epinephrine in blocking insulin release. It is therefore felt that the sympathetic nervous system may play a tonic role in regulating insulin release from the pancreas.

Epinephrine and norepinephrine stimulate the alpha and beta adrenergic receptors, and both of these catecholamines have the effect of blocking insulin release in man.[43,44]

Work done with phentolamine, which is an alpha receptor blocker, demonstrates that the epinephrine blockade of insulin release is probably caused by stimulation of the alpha adrenergic receptors.[45]

Since alpha adrenergic stimuli are capable of blocking insulin release, the question has been posed as to whether or not beta adrenergic stimuli will enhance insulin release. With this in mind studies have been done with isoproterenol (Isuprel) hydrochloride, a specific beta receptor stimulus. When infused in low concentrations in normal subjects, isoproterenol hydrochloride causes increased free fatty acids and glycerol but no increase in blood glucose. However, in spite of this, the serum immunoreactive insulin levels increased to twice the level at the start of the infusion. To rule out the effects of the increased fatty acids on the experiment, it was repeated after pretreatment with nicotinic acid which blocks the effects of isoproterenol hydrochloride on fatty acids release. The insulin increase was still observed.[46]

Other studies show that propanolol, a beta receptor blocker, blocks all of the cardiovascular and metabolic effects of isoproterenol hydrochloride, including the increase in serum insulin.[46] It is thus concluded that isoproterenol hydrochloride, a beta adrenergic stimulator, has a specific effect on increasing serum insulin which is not secondary to increased free fatty acids.

In summary, we may conclude that stimulation of an alpha adrenergic receptor blocks insulin release, and stimulation of a beta adrenergic receptor stimulates insulin release. The question still remains as to the location of these receptors.

Recent investigation has suggested the possible role of 3, 5-cyclic adenosine monophosphate production on insulin synthesis and release. It has been reported that the addition of 3,5-cyclic adenosine monophosphate to the in vitro perfusate of the pancreas stimulates insulin release. Other studies show that a glucagon stimulates the production of 3,5-cyclic adenosine monophosphate and that the alpha and beta receptors are involved in the inhibition or stimulation of the adenyl cyclase system.[6,30]

These few findings suggest an involvement of the adenyl cyclase system with the alpha and beta receptors in insulin release. Additional investigation will be necessary to determine its importance.

Diazoxide. Diazoxide is a drug which was originally introduced as an antihypertensive agent; however, early studies showed that it appeared to have the direct effect of blocking the release of insulin from the beta cell.[47] It was subsequently demonstrated that diazoxide hyperglycemia in man was associated with decreased serum immunoreactive insulin levels.[46] Others have demonstrated that the pancreas is not needed for the induction of diazoxide hyperglycemia,[48,49] and therefore other factors must be involved in this drug's mode of action.

The hyperglycemic effect of diazoxide may be secondary to an adrenergic stimulatory effect of the compound, since it was noted that the increased blood glucose, widened pulse pressure, increased free fatty acids, and tachycardia which are produced by diazoxide are similar to the effect produced by epinephrine release, and therefore the effect of diazoxide might be secondary to epinephrine release.[48,49] However, Fajans *et al.*[50] have noted that diazoxide does not cause an increase in serum or urinary catecholamines. The question is raised as to whether or not the laboratory methods used are sophisticated enough to pick up changes in catecholamine levels which are still within the physiologic range.

Diazoxide has been shown to suppress

insulin release in response to glucose, glucagon, and leucine, but not to tolbutamide.[50] This diazoxide inhibition of insulin release can be partially overcome by alpha adrenergic blockage with phentolamine, and norepinephrine will enhance the effect of diazoxide.[51] It thus appears that the hyperglycemic effect of diazoxide is at least partially a result of epinephrine or adrenergic release and that a dual mechanism exists for diazoxide's mode of action. Successful clinical use of diazoxide has been made where the desired effect is to raise the level of the blood glucose. Graber, Porte, and Williams[52] have described the successful treatment of a patient with an islet cell carcinoma where diazoxide increased the level of serum glucose without increasing plasma insulin or free fatty acid levels. Also reported is the use of diazoxide in the treatment of leucine-sensitive hypoglycemia in a four-year-old child in the treatment of a metastatic insulinoma.[53,54]

Coore and Randle[8] noted that the insulin-stimulatory effect of glucose in vitro can be inhibited by the addition of d-mannoheptulose to the medium. However, d-mannoheptulose does not block the stimulatory effect of tolbutamide on the beta cell. It has therefore been suggested that this blockage may be secondary to the inhibition of phosphorylation of glucose within the islets.

In 1957 both glycosuria and hyperglycemia were demonstrated in previously normal rats after treatment with mannoheptulose. This effect could be overcome by the injection of insulin, thus suggesting a decrease in available insulin.[55] Further work has shown that the hyperglycemic effect of mannoheptulose is caused by an increase in gluconeogenesis as well as a decrease in available insulin.[56,57]

Conclusion

A number of stimuli and antagonists to insulin release have been discussed; however, in most cases, the exact physiologic role which these stimuli effect in normal carbohydrate metabolism and in diabetes mellitus still remains to be clarified.

This focuses on the fact that normal carbohydrate metabolism and insulin release is the result of a multitude of stimulatory and antagonistic physiologic processes which are acting in synergism to promote a homeostatic environment.

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Clinical Considerations of Rubella in Pregnancy

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RECENT REPORTS HAVE MODIFIED some of the previous concepts concerning the effects of rubella contracted during pregnancy. Variable statistics concerning the relationship between the incidence of malformation and the time of gestation in which rubella was contracted have been presented. Many of these studies were retrospective. They frequently neglected the long-term follow-up of children born of infected mothers; extension of the follow-up period of affected infants has resulted in the uncovering of additional pathologic findings. Recent attention has been directed toward the occurrence and effects of subclinical infection. Finally, the status of passive immunity has been re-evaluated. The information gained from all these investigations prompts reassessment of the problem of rubella in pregnancy.

Rubella infection

Discovery of methods for isolation and propagation of virus and serologic diagnosis have made extensive study of the viral agent in natural history and epidemiology of disease possible. The incubation period is from fourteen to twenty-one days, with a mean of sixteen days from exposure to development of rash.[1] Generally, the virus is shed from the nasopharynx for a week before and after the rash. However, virus has been recovered thirteen days before[2] and twenty-one days after the rash.[1,3] Viremia is usually present several days before the rash and decreases precipitously on the day the rash becomes manifest. The disappearance of viremia coincides with the appearance of antibodies.[1]

Clinical manifestations of rubella include: (1) mild prodromal symptoms with mild fever without coryza; (2) maculopapular rash appearing in the face and spreading downward; (3) lymphadenopathy, often involving cervical and suboccipital nodes; (4) suffusion of eyes and photophobia; (5) arthralgia, which is more common in adults than in children; (6) initial leukopenia; and (7) occasional palatal petechiae without enanthema. The rash of rubella may not be characteristic, and the disease may occur without rash.[4,5]

Effects on fetus

THE RUBELLA SYNDROME. Characteristic defects associated with rubella involvement of the fetus include nuclear cataract, heart disease, perception deafness, microcephalia, and mental deficiency. Less frequently encountered defects include microphthalmus, glaucoma with buphthalmos, cleft lip and/or palate, and dental anomalies. In a 1964 epidemic, hepatosplenomegaly, thrombocytopenic purpura, anemia, and intrauterine growth retardation were noted in approximately one third of the infants. Some infants showed evidence of central nervous system disease with fullness of the fontanel, pleocytosis and increased protein in the cerebrospinal fluid, and abnormal electroencephalographic findings. Zones of defective calcification were also frequently noted in the long bones. This constellation of findings, when coupled with the originally described defects, has been referred to as the "expanded rubella syndrome." In the expanded rubella syndrome, fetal mortality rates ranged from 14 to 32 per cent.[6–8]

MECHANISM OF FETAL INVOLVEMENT. The precise mechanism by which viral infection in the mother affects the fetus is not known. Placental infection occurs very frequently following first trimester rubella, and the virus can be recovered twice as often from placental tissue as from embryonic fragments.[9] Late in gestation rubella carries little risk to the fetus, but it is not known if this represents failure of the virus to cross the placenta or some age-related difference in the nature of fetal infection. The teratogenic effect of the virus might be explained by its action on genetic material at a critical stage of development. When rubella virus is added to tissue cultures of human embryonic origin, chromosome breaks frequently occur.[10] An increased frequency of chromosomal breakage was found in one-year-old children with congenital rubella[11] and in subjects acquiring rubella.[12] Tissue cultures derived from infected infants were characterized by decreased cellular multiplication which may account for decreased intrauterine growth.[13]

There is no clear correlation between the detection of virus in the infant and the degree of clinical involvement. The rubella virus has been isolated from apparently normal infants whose mothers were infected during pregnancy, including one that occurred shortly before delivery.[3] In a study of 300 babies born of women exposed during their first trimester, 43 babies, 14 per cent, had virus recovered.[14] Thirty-three of these babies had no detectable abnormalities at birth. The infected infant represents a contagious reservoir for spread of disease since he continues to shed the virus from the pharynx for from five to six months and may continue to excrete virus into the second year of life.[3,6,15]

Subclinical or inapparent infection may also damage the infant.[16,17] In one study including 36 babies with congenital rubella syndrome, 6 of the mothers were seen with no clinical evidence of the disease.[3] In another study considering 22 affected infants, only 10 mothers had clinical rubella in the first trimester.[18] Congenital anomalies were apparent in 4 and suspected in 8 of 568 infants born of mothers who were exposed to rubella but did not develop the clinical manifestations of the disease.[16] In the series of 43 babies in whom virus was recovered at birth, there were only 3 instances of a positive maternal history of rubella.[14]

FROM PREGNANCIES IN *which rubella occurred in the first sixteen weeks, 227 children were examined at two to eleven years, and a 31 per cent incidence of anomalies was demonstrated. Accurate diagnosis of rubella in the mother or her contact is difficult as is treatment. Widespread immunization is recommended. Determination is done by antibody tests, and the results of these indicate management.*

ANOMALIES: INCIDENCE AND RELATION TO DURATION OF GESTATION. In 710 cases of fetal malformation which were associated with rubella contracted during the first four months of pregnancy, 175 cases of maternal rubella had occurred in the first month, 295 in the second month, 190 in the third month, and 40 in the fourth month.[19] In only 27 was the maternal rubella diagnosed beyond the fourth month. Hill *et al.*[20] reported a 50 per cent incidence of major defects when rubella occurred in the first four weeks of gestation, 25 per cent between the fifth and eighth weeks, and 17 per cent between the ninth and twelfth weeks. Warkany and Kalter[21] summarized the results of 15 prospective studies and reported similar findings. Sheridan[22] reported a controlled prospective series of 578 pregnancies complicated by clinical rubella. From pregnancies in which rubella occurred in the first sixteen weeks, 227 children were examined at two to eleven years. A 31 per cent incidence of anomalies was demonstrated (Table I).

Many of the defects may not be obvious in the young infant. Variation in the reported incidence of anomalies can therefore be related to the age at which the infants are examined. Giles, Cooper, and Krugman[23] reported that in a group of infants examined at birth, 17 anomalies were found; at age five, 69 anomalies were apparent. Lamy and Seror[24] reported on children followed for longer periods of time and demonstrated that 57 per cent of infants born after maternal infection in the first sixteen weeks had major defects. Sheridan[22] reported that significant hearing loss was detected for the first time on examination between eight and eleven, and in 10 of these patients deafness was bilateral. Jackson and Fisch[25] also emphasized that the significant hearing loss

TABLE I. Fetal anomalies in infants surviving until age two; pregnancy complicated by clinical rubella in the first sixteen weeks[22]

Week of Gestation in Which Rubella Occurred	Number of Children	Damaged Infants		
		Major (Per Cent)	Minor (Per Cent)	Totals (Per Cent)
1 to 2	17	1 (6)	2 (12)	3 (18)
3 to 4	24	3 (13)	6 (25)	9 (38)
5 to 6	19	5 (26)	4 (21)	9 (47)
7 to 8	33	8 (24)	5 (15)	13 (39)
9 to 10	30	8 (27)	2 (6)	10 (33)
11 to 12	37	6 (16)	7 (19)	13 (35)
13 to 14	31	0 (0)	4 (13)	4 (13)
15 to 16	36	2 (5)	7 (19)	9 (24)
TOTALS	227	33 (15)	37 (16)	70 (31)

is underestimated at the original examination. Sixty per cent of congenital deafness was undetected at the age of four.

The fetal death rate with rubella is high. In Warkany and Kalter's[21] review, 16 per cent of the pregnancies ended in fetal death. Another long-term prospective study showed that fetal wastage in the first twelve weeks was 20.4 per cent.[26] The perinatal death rate of infants over twenty-eight weeks of gestation infected during the first eleven weeks was 9.3 per cent. When infection occurred between the twelfth and nineteenth weeks, the perinatal death rate was 1.1 per cent. These figures compared with the control rate of 2.7 per cent. In Sheridan's[22] study, the perinatal mortality rate from rubella in the first sixteen weeks was 9.4 per cent.

Problems confronting physician

Diagnosis. Accurate diagnosis of rubella in the mother or her contact is difficult, even during epidemics. The disease may be confused with ECHO (enteric cytopathogenic human orphan) virus infection, infectious mononucleosis, drug reactions, rubeola, and scarlet fever. In 434 patients with rubella or suspected rubella admitted to the hospital, 179 had an erroneous diagnosis.[27] In a series of patients with "clinical rubella" studied serologically, only 74 per cent had confirmatory serologic conversion.[16]

It is difficult to establish whether or not a patient exposed to rubella is "at risk" for development of the disease. In the United States, only 85 per cent of adults with a history of rubella demonstrate specific antibodies; 81 per cent of adults with no history of rubella had specific antibodies, leaving a total of 17.5 per cent of women "at risk."[28] In other areas the incidence of "at risk" females may be higher, as in Hawaii, where 60 per cent of women did not demonstrate antibody titer.[29] The high incidence of positive antibody in the absence of history is related to subclinical cases, and the ratio of subclinical cases without rash to clinically apparent cases varies from 1:1 to as high as 6:1.[5,16,30,31]

The incidence of antibody increases with age with 35 per cent seropositive in the age group one to ten and 85 per cent in sixteen- to twenty-five-year-olds, substantiating the view that rubella occurs primarily in grade school and high school, but the increasing incidence of teen-age pregnancies has augmented the problem.[32]

Treatment. The attempts to prevent rubella during pregnancy in a patient exposed to the disease have led to equivocal results. The mother may have been exposed to the virus thirteen days prior to development of the rash and recognition of the disease in the contact. In patients with clinical rubella, only 37 per cent reported a previous exposure.[16] Passive immunization with gamma globulin has represented the sole method directed at preventing rubella in the exposed mother with marked variability in possible effectiveness reported. Brody, Sever, and Schiff[4] administered 0.25 ml. gamma globulin per pound and noted a decrease in the rate of clinical infection but an increased incidence of subclinical infection. In the control group, 85 per cent developed clinical rubella, while in the treated group

18 per cent developed clinical rubella and 26 per cent subclinical infection, a total of 44 per cent with seroconversions. The high rate of protection in this series may be related to the fact that most of the subjects received gamma globulin prior to exposure. In contrast, Green *et al.*[1] could not demonstrate any prophylactic effect with large doses of gamma globulin although there was a decrease in the degree and duration of viremia. Sever, Nelson, and Gikeson[16] also noted that although treatment reduced the clinical rubella, there was an equal number of seroconversions, and congenital rubella syndrome occurred in several infants of treated mothers. Doege and Kim[4] also found insignificant differences in the rate of infection between test and control groups. Conflicting reports may be related to the fact that pooled gamma globulin differs markedly in antibody content.[33] Moloshok's[7] summation of the use of gamma globulin is that it should be limited to the situation in which there is no prospect of therapeutic abortion, should the mother become infected.

Resolution of problem

IMMUNIZATION. The ideal solution would be effective widespread immunization of females prior to the childbearing years. Deliberate exposure of young girls to the disease for later protection endangers pregnant women who may be in their environment. Immunization has been accomplished with live attenuated virus, but transmission of disease to susceptible contacts by this method has been reported.[34] An initial report has indicated that vaccination may be achieved with attenuated virus and that the imposed infection is asymptomatic and noncommunicable.[35] It was also found that the attenuated virus can boost the antibody levels of persons with declining immunity. The effect of attenuated virus on a fetus is not known.

DETERMINATION OF "AT RISK" GROUP BY MEANS OF ANTIBODY TESTS. In general, infection with rubella results in a measurable antibody titer, and this persists for many years.[32,36] Rare exceptions in which patients with significant neutralizing antibodies developed rubella have been reported.[5,34]

ANTIBODY TESTS. Four major antibody tests are presently available.

1. The virus neutralization test affords reliable information, and positive antibodies persist for years.[33,36-38] However, the test is complex, expensive, and time-consuming, requiring from seven to eleven days. Neutralizing antibody titers tend to be low (1:4 dilution) in rubella, leading to difficulties in interpretation. This test has been used extensively in the study of the virus and the natural history and epidemiology of the disease.

2. The indirect fluorescent-antibody technic is negative during the acute stage and becomes positive with titers of 1:16 or more one month after symptoms.[39] The detection of antibody decreases after fifteen months. The test requires at least four days and considerable proficiency and effort for reliable results.

3. The complement-fixation technic is relatively simple and provides results in twenty-four hours. The antibody develops after the rash, slightly later than neutralizing antibody. The presence of antibodies is relatively transient, from eight to fifteen months.[40] It has been reported to be comparable to the neutralization test in its capacity to detect antibody rises.[41] These facts would make the test useful in differentiating recent from old infection. Stewart *et al.*,[42] however, reported that antibody is rarely evoked following live vaccine immunization and that patients with rubella may not develop detectable complement-fixing antibodies.

4. The hemagglutination-inhibition test is simple and less costly than the others.[42] It is extremely sensitive and provides results within hours. Antibodies are detected from naturally occurring infection, frequently from the first day after the rash, and also from immunization with attenuated rubella virus. The detectable antibodies persist for many years and therefore define the status of immunity in the patient.

SUGGESTIONS FOR MANAGEMENT. The hemagglutination-inhibition antibody test serves as a focal point from which logical management of the four potential situations may evolve.

The patient who is seen in the first sixteen weeks of pregnancy with a history of exposure to rubella should have an hemagglutination-inhibition antibody titer determined, regardless of previous history of disease. If a significant titer is present, she has established immunity and can be reassured.

With the same situation, if there is no antibody titer present initially, the patient is considered "at risk." Gamma globulin, 0.2 ml. per pound, may be administered in the hope of decreasing the risk of infection. A second antibody titer should be determined either following the development of apparent clinical disease or from twenty-two to twenty-eight days after exposure to determine the presence of subclinical disease. If the titer converts from negative to positive, the patient and her husband should be presented with the facts concerning the risk to the fetus relative to the week of gestation and allowed to decide if the pregnancy should continue or a therapeutic abortion should be performed.

The patient who is seen with symptoms and/or a rash compatible with the diagnosis of rubella should have an hemagglutination inhibition-antibody test performed immediately and again in ten to fourteen days. If a significant rise in titer occurs, the diagnosis of rubella is established. If there is no titer or no significant change in titer, the patient can be assured that the rash is not that of rubella.

If the patient is seen with a history of having had symptoms compatible with rubella during this pregnancy, a negative antibody test result indicates that her disease was not rubella.

A positive test result will indicate that the disease occurred at some previous time, recent or prior to the pregnancy. A negative complement-fixation test result would suggest that the disease had occurred at least eight months previously. If a positive complement-fixation test result is found, a repeat test might be done after several weeks to look for a rising titer, but because of the intricacies in interpretation of this data, consultation with an immunologist should be obtained.

If the antibody titer is determined on all women in early pregnancy as in the case of the Rh factor, the "at risk" patient is identified, simplifying the proper management. Prepregnancy testing would be of even more value. These findings may also be applied in the prospective study of etiologic factors in congenital anomalies.

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Israeli Autopsy Debate

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THE RIGHT OF a hospital to perform autopsies has, in the past few months, caused a great deal of dissension in the State of Israel. This subject has split families, pitted respected medical leaders against each other, evoked violent street demonstrations, and led to debate on the floor of the Knesset, the Israeli parliament. Backwash has spilled over to many countries with articles appearing regularly even in the American press. Although this problem involves only one country, its repercussions and the lessons learned therefrom can be of value to the public health community in the United States. We have been provided with a situation in which an apparently progressive, far-reaching law, by its application or misapplication, has created a wave of protest and discord, which ultimately may harm the public health system and medical education of that country. A case in point in the United States was Prohibition, a well-intentioned law, which brought in its wake breakdown of our social structure and public morality and the introduction of organized crime, one of our current major internal problems. At present, many segments of society are pressing our legislators for varied legislation, ostensibly to benefit society, prevent disease, and eliminate the needless maiming or crippling of our citizens. The recently enacted laws on cigaret labeling and automobile safety on the national level and the various newly enacted state laws on abortion or the compulsory treatment of narcotics addicts are examples. They indicate the desires of society through its legislators to enact public health legislation. These laws, and others yet to be passed, may have very unanticipated repercussions. The Israeli experience is one recent example in the long history of good laws misapplied. From its unfortunate results, we may gain insight on what happens in such a situation, its consequences, and perhaps clues to the prevention of similar unanticipated debacles.

Background

The background of the Israeli autopsy problem can be briefly summarized. The bulk of the population of the State of Israel, at its founding by the United Nations in 1948, were European Jews with professional or business backgrounds. This gave Israel one of the highest literacy rates in the world and the country with the highest ratio of physicians to the general population. This social climate resulted in the creation of a superior hospital system and excellent health services. Among the products of this milieu was the passage in 1953 of an autopsy law. In essence this law provided that in cases where the cause of death of a hospital patient was not determined despite the diagnostic technics employed, then application could be made to a hospital committee for permission to perform an autopsy. Following presentation of the clinical situation and the reasons for the need to verify the cause of death, the committee was empowered to permit the performance of an autopsy. On its face, this appeared to be a law which should have served as a guide to other countries in providing documentation of those puzzling clinical cases where all diagnostic modalities have been employed and no satisfactory diagnosis was reached during the patient's life. It would permit the furthering of medical diagnostic acumen where it is most needed. Cases whose clinical courses and laboratory data confirmed well-established disease entity would not have come under this law. This law did not infringe on the rights of medical examiners to perform examinations on cases of a medical-legal nature or those which presented possible dangers to the population at large or in other situations commonly accepted as coming under the purview of a medical examiner. This law did not restrict the right of a family voluntarily to permit a hospital to perform an autopsy on a deceased patient. Those who have had experience with therapeutic abortion committees in this country can recognize many similarities between the two committees in structure and function. An abortion committee decision permitting the performance of an abortion, in effect, is a certification of agreement by the medical community to the validity of the indications for this procedure. These decisions have not opened the floodgates for the unrestricted and unlimited aborting of every woman unwilling to bear her child, nor have they unduly restricted those women whose health would be jeopardized by continued pregnancy. This is a distinct success of our medical and legal system in permitting a physician to perform an otherwise restricted action with the informed concurrence of a properly constituted group of his colleagues. Similar committees in situations of responsibility have been organized as medical audit committees, hospital utilization committees, tissue committees, and the like. A law in Israel creating a similar type of committee for the authorization of autopsies caused chaos. It produced demonstrations, street fights, writing on walls and fences, newspaper advertisements, parliamentary debates,[1] and even, in one incident, the forcible removal by friends and relatives of the body of a murdered man from a hospital mortuary for secret burial!

Before considering these questions, some more background must be introduced. From Biblical times, Jews have paid great respect to the dignity and sanctity of the human body both in life as well as in death. For the preservation of a human life, virtually every Jewish religious law could be suspended with the exception of the law against murder. Therapeutic abortion and destruction of a fetus are permitted when the unborn fetus by its presence is a threat to the mother. In death the dignity of the body was maintained. Even condemned criminals were spared cruel means of execution by Biblical and Talmudic law, and criminals received sedation before execution which was rapid and did not involve excessive pain. Following execution, burial was done by nightfall. Following a natural death, the deceased was usually buried within twenty-four hours unless a Saturday or religious holiday intervened.

Opposition

There are indications that in Talmudic times autopsies may have been performed to determine the cause of death, especially in cases of murder. The earlier liberal attitudes toward autopsies of Talmudic and post-Talmudic times, until about the tenth century, gradually hardened until, during the eighteenth and nineteenth centuries, the only basis considered, in some rabbinic responsa prudentium, was the actual physical presence of another patient with an identical disease whose life could be saved by information obtained from the autopsy.[1,2] Rabbinic authorities have debated these problems for the past two centuries. Opposition has been based on the feeling that autopsy represented desecration of the body particularly when the organs are not interred with the patient. Historically, much of the difficulty has been the confusion of anatomic dissection, an entirely different study both in its methods and its ends, with autopsy. The only similarity between the two disciplines is the fact that they are procedures conducted, not during life, but after death. The distaste which early anatomists created by body snatching, midnight exhumations, and the seizure of Jewish bodies for anatomic dissection in some European communities was transferred to the autopsy because of this confusion. Proponents based their arguments on the belief that the possibility of life-saving information being derived from an autopsy supersedes all other considerations. In general, both groups insist that the organs be buried with the body.

With the passage of the autopsy law, medical autopsies became almost a standard procedure in hospitals in Israel. The law came to be misapplied in many hospitals, and virtually every patient who died came to autopsy, in many cases over the vehement objections of the family. Armed with the protection of law, once the certificate of autopsy was signed, the autopsy was often performed before the family was notified of the death. In some cases, it appeared that the certificates were signed in advance with the date of the death and the patient's name added later. These situations occurred often enough to create widespread resentment.

From the time that the autopsy law was enacted, its administration appears to have been extremely highhanded, with little appreciation by the parties involved of the sensitivities of the bereaved families. There was never any determined effort at public relations and education to publicize the life-saving knowledge obtained from autopsy examination. In addition, the issue was seized on by groups who attempted to use it for their own political aggrandizement. Interviews with pathologists in Israeli hospitals indicated that even the nonreligious were tending to refuse permission for autopsy and to demand the bodies of their family members before an autopsy could be performed.[3] This was related to the widespread, frequently distorted publicity in the press and on the streets. The general effect of this state of ill feeling may seriously decrease the number of autopsies performed. This will be aggravated should a detente occur with which a consent system by the family similar to that current in most western countries is instituted. This possible limiting of the autopsy percentage may result in decreased opportunities for training of surgeons and pathologists in Israel; the possible withdrawal of recognition by foreign hospitals for the training of Israeli physicians, thus preventing them from going abroad for advanced training; and the general decay of medical standards in the absence of active pathology departments. It is noteworthy that recent articles in the popular press and in scientific journals have suggested similar laws here.[4,5]

Possible changes

There are numerous obvious and less obvious lessons to be learned. A public health law with widespread effect in the community must be adequately rationalized and its importance explained. Its administration must be fair and free of highhanded action. The law must take into account the religious and social sensitivities of the population. Adequate publicity must be given to gains achieved under the law. Every effort must be exerted to prevent any proposed or enacted law from being used for political purposes. Those concerned with public health should follow the progress of this conflict in Israel, its ultimate solution, and the consequences thereof. It will serve as a laboratory for study of this type of problem. These lessons must be applied to our own problems.

In New York State, for example, a situation not unlike the Israeli problem arose recently. About five years ago physicians in two hospitals in New York City began a collaborative project to study the fate of neoplastic cells in the human being. Live cancer cells were injected into patients. Most of the patients were not told the nature of the material being injected, nor was an informed consent generally obtained. The ultimate disclosure of this study resulted in fairly uniform condemnation of the investigators involved by members of the medical profession and by the lay press which widely publicized this. Other instances have subsequently been reported over the past few years of various modalities of diagnosis and therapy administered to patients who were virtually unaware of what they were receiving. As a consequence, bills were presented in the State Legislature during the past year to control experimentation on patients. These would severely restrict newer approaches to treatment and prohibit all "experimentation" on children. Their implementation would mean the termination of any attempts of therapy for childhood tumors, lymphomas, or corrective cardiac surgery since so many newer modalities of therapy can only be evaluated by treating patients. They would be major retrogressive steps. The hysteria produced by the publicity received is exemplified by the anecdote of the patient who tore the electrocardiograph leads off his hands and feet during a routine electrocardiogram, shouting, "I won't let you experiment on me!"

This situation represents more a failure of the exercise of responsibility, leadership, education, and discipline on the part of the medical community than a criticism of the overreaction by legislators. Had discussion, regulation, and guidance come from within the profession, there would have been no need for attempts by legislators to remedy what they considered improper use of authority by physicians.

An example of the proper handling of a situation so that it never became an issue recently occurred in the same State. New York State law requires students to be inoculated against poliomyelitis. A recent "revolt" occurred on Long Island. State law exempted those whose health would be endangered by the inoculum or who are members of religious orders with contrary beliefs. By recognizing religious sensitivities and proceeding cautiously, the objectors never became an issue. Objecting parents were given adequate time to comply or seek judicial relief. As a consequence, at its peak only some 50 of 12,000 students were involved in one representative district, yielding a 99.6 per cent compliance and termination of the "revolt."[6]

Comment

We are facing many problems including fluoridation, automobile safety, pollution of waters and natural resources, automobile exhaust emission, cigaret smoking, narcotics addiction and treatment, food additives, antivivisection, and medical experimentation and research. These involve the public and can, if not handled properly, create hostility. The interaction of the public health group and the community at large must be one of mutual trust and respect to succeed in these endeavors.

Leadership and responsibility must come from the medical and public health community. Leadership entails proper education of legislators to areas where legislation is needed and the type of laws that would best serve the community. Proper leadership would also require that legislators be taught that there are circumstances where giving physicians legal rights to exercise unworkable authority may result in public reaction that will restrict rather than broaden these rights. Responsibility and discipline must be maintained so that short-term goals or the desires of individual physicians do not result in the loss of long-term achievements and group needs. It is only by re-examining our own successes and failures and by observing the mistakes made in other countries, as in the Israeli case, that we will learn the lessons needed to exercise proper leadership and responsibility.

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Diagnosis and Complications of Pneumoconiosis

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In this presentation, an attempt will be made to outline a few of the salient features of the diagnosis and complications of pneumoconiosis and also to discuss briefly some of the challenging and controversial aspects of this problem. Inasmuch as one quarter of the earth's crust contains silica, the disease will continue to be a major problem of the space age even though the control of the incidence of the condition has had considerable success.

No one factor is more important in the diagnosis of pneumoconiosis than the precise recording of a detailed and complete chronologic history. It is well known that recently produced silicious dust is more dangerous to the lungs than an aged dust, presumably because the former, that is, the recently fractured quartz crystals, offers free unsatisfied valencies at both the oxygen and silicon positions with the formation of weak silicic acid as a result of adsorption of hydroxide groups under biologically wet conditions.[1] The employment of high-powered tools such as electric drills, pulverizers, and pneumatic hammers in the production of dust is far more harmful than the manipulation of hand tools, because the former break up quartz and other particles into innumerable fine crystals, some of which are less than 10 microns in size. Mining underground also greatly enhances the hazard of silicious exposure because of the limited ventilation. To produce silicosis, the atmosphere must contain millions of these particles per cubic foot, even if the dust has a 70 per cent free silica content. Particles under 5 microns are the ones most injurious to the lung parenchyma. Acute silicosis, occurring after three months to two years exposure to a specific dust, is an uncommon entity, and it is far more likely that the pneumoconiosis will ensue after five years exposure or more, usually fifteen years or more. These figures do not take into account the fact that microscopic changes without gross roentgenographic abnormality can occur in shorter periods of time. There are three crystalline forms of silica, quartz being stable at temperatures below 870 F., tridymite between 870 and 1,470 F., and cristobalite from 1,470 to 1,710 F., its melting point. Tridymite is intensely fibrogenic, whereas cristobalite and quartz are somewhat less fibrogenic, and amorphous silica is only slightly fibrogenic.

In simple silicosis or pneumoconiosis there are frequently no symptoms, but with moderately advanced disease, dyspnea frequently develops followed by a cough which is indicative of a complication such as chronic bronchitis or active pulmonary tuberculosis. Chest pain may be the first sign of an accompanying disease entity such as pleurisy, tuberculosis, or neoplasm, although frequently sternal pain and laterally localized pain will accompany chronic bronchitis. The physical examination results simulate those of other conditions with the characteristic findings of pulmonary fibrosis, pulmonary emphysema, chronic bronchitis, bronchiectasis, pulmonary tuberculosis, cor pulmonale, and sometimes carcinoma. Clubbing of the fingers frequently occurs in chronic cases which exhibit cyanosis or infection, either tuberculous or pyogenic. It should be emphasized that the pneumoconioses are not uncommonly complicated by other

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pulmonary diseases not related to industry such as chronic diffuse pulmonary emphysema, bullous emphysema, bronchiectasis, fungus infections including histoplasmosis, collagen disease, sarcoidosis, other systemic disease, pleurisy, and primary and secondary carcinoma. There are many concomitant cardiac complications unrelated to industry such as hypertensive heart disease, coronary arteriosclerosis, rheumatic heart disease, congenital heart disease, and thyrotoxic and myxedematous heart disease. The picture is further altered by the almost constant presence of extrathoracic disease. In advanced pneumoconiosis with cyanosis, secondary polycythemia may supervene. The blood count and blood tests are otherwise not significant, although increased eosinophils, increased monocytes, lymphocytosis, leukopenia, and changes in the blood proteins and lipids have been reported.[2] The significance of pulmonary function tests and x-ray findings will not be discussed in this article. The electrocardiogram may show signs of pulmonary emphysema or cor pulmonale although in at least half of the cases of the latter condition, the characteristic electrocardiographic findings are not present.[3]

Types of pneumoconioses

Many of the nonsilicious dusts, such as in baritosis and stannosis, produce little, if any, fibrosis or pulmonary disability. It would appear desirable at this time to delineate in more detail a few specific types of pneumoconiosis caused by nonsilicious dust concerning some of which there is even today considerable controversy. Although aluminum dust was used over twenty-five years ago for the prevention of silicosis, it has now been established both clinically and experimentally that dust composed of aluminum and aluminum oxide may, under certain conditions, cause a highly disabling pulmonary fibrosis. Clinical studies in Germany, Canada, and Great Britain have revealed that the inhalation of aluminum oxide particles can produce a highly disabling pulmonary fibrosis with a high mortality rate in some instances.[4-11] The form of aluminum particles which are produced from molten metal is granular, whereas thin flakes result from the stamping of the cold metal. The granules are rendered biologically inert by a protective film of oxide, but the stamped flakes are an active dust 5 microns in size and under. Animal experiments are reported to have revealed that both stearin- and oil-covered flakes can produce a pulmonary fibrosis of considerable severity, whereas the granular aluminum powder has a relatively small effect. The original experiment on rabbits was said to have demonstrated protection against silicosis in the eight animals after inhalation of grease-free metallic aluminum powder less than 5 microns in size which produced a minimum concentration of dust in the lungs of 1 per cent.[12] Although silicosis appeared to be prevented, a mild aluminum pneumoconiosis was reported to have ensued. On repeating these experiments in rats, there was a marked foreign-body reaction to aluminum. According to Browne,[12] after the war, a carefully controlled trial on pneumoconiotic coal miners and silicotic pottery workers showed no differences between the aluminum-treated and the control group, but there appeared to be an increased incidence of massive spontaneous pneumothoraces in the chests of workmen who had breathed aluminum powder. For these reasons, the aluminum therapy of silicosis should be abandoned at this time.

> THE DIAGNOSIS OF *pneumoconiosis depends on a correlation of history, industrial reports, physical examinations, laboratory studies, pulmonary function tests, and x-ray films of the patient. The hazards of tuberculosis complicating pneumoconiosis are sufficiently great that a very early diagnosis should be made. Cor pulmonale is a frequent complication of advanced pneumoconiosis and is present in the majority of cases of advanced silicosis.*

Berylliosis appears to be on the decline as a result of precautions and the cessation of the manufacture of beryllium fluorescent lamps. The afflicted individual may suffer from dyspnea, cyanosis, tachycardia, clubbing of the fingers, chest pain, and weight loss. The lesions are granulomata resembling sarcoidosis which may be followed later by fibrosis. The disease may involve the lymph glands, skin, subcutaneous tissues, and liver, any of which may be biopsied to study the underlying abnormal condition. Chemical confirmation is obtained by analysis of the urine or tissues.

Although siderosis is described as a benign pneumoconiosis, inhalation of welding fumes such as nitrogen dioxide (NO_2), nitrogen tetroxide (N_2O_4), and in electric arc welding, ozone (O_3) in enclosed areas is sometimes accompanied by pulmonary emphysema.[12,13] Several cases of pulmonary emphysema in men who have welded many years have been observed by us in the past eight years. The amount of fibrous tissue which usually develops in relation to the lesions of siderosis is insignificant. Some fumes from coated electrodes are reported to contain from 5 to 45 per cent mostly combined silica. However, silicosis probably does not ensue too frequently as a result of the inhalation of such fumes. Moreover, the iron pigment which has been diffusely disseminated throughout the lungs of oxyacetylene, carbon arc, and electric arc welders has been noted to disappear in workers who discontinue this form of employment for a number of years. In addition to zinc, copper, asbestos, calcium fluoride, beryllium, aluminum, cadmium, vinyl, and polyethylene tetrafluoride fumes, phosgene can be produced from trichlorethylene in the surrounding atmosphere.[12] All of these inhalants are capable of producing acute and chronic pulmonary effects and consequently may lead to chronic bronchitis and emphysema. Certain clinical studies have revealed symptoms of chronic respiratory disease in a majority and chronic pulmonary disease in many of the welders studied.[14–16]

At this point in our discussion, I shall describe several of the mixed dust pneumoconioses. Limestone has been employed as a dusting agent to diminish the fire hazard in coal mines. However, Doig[17] has reported that a disabling pulmonary fibrosis may ensue from the inhalation of excessive amounts of limestone dust. Eight cases of severe disabling pneumoconiosis developed in limestone workers exposed to dust containing large amounts of calcium carbonate with 1.8 to 11 per cent free silica. Moreover, excessive quantities of limestone dust with even a low percentage of free silica may be harmful and, contrary to the popular teaching, it does not inhibit the development of silicosis or pneumoconiosis.

Coal workers' pneumoconiosis is the result of the inhalation of excessive quantites of coal dust containing relatively small amounts of free silica. Some workers believe silica is not essential to the production of this disease entity. We are not discussing anthracosis, a blackish pigment which is caused by the deposition of carbon particles in the tissues and produces no disability during life. On the other hand, the term anthracosilicosis refers to a mixed-dust pneumoconiosis as a result of the inhalation of coal dust and rock dust containing significant amounts of free silica which produces an extensive diffuse and nodular fibrosis of the lungs. According to Gough[18,19] and Heppleston[20,21] the simple pneumoconiosis of coal workers is characterized by a large amount of dust, a small amount of irregularly disposed fibrous tissue, and frequently, the presence of enlarged air spaces in and around dust foci, that is focal emphysema. These lesions have a stellate appearance, whereas those of simple silicosis are characterized by a fibroblastic reaction in the areas of dust cell aggregation in the development of islets of whorled acellular fibrous tissue of hyaline composition. Moreover, this lesion does not resemble the silicotic nodule, regardless of whether the silica content is 2 per cent or more; and the inhalation of large quantities of coal dust, whether anthracitic, carbonaceous, bituminous, British, or American, does not in any way alter the intrinsic appearance of the specific lesion. Likewise, there is some evidence that one may see disabling pneumoconiosis in individuals exposed to carbon black, graphite, and similar materials containing little or no quartz. This form of pneumoconiosis represents, for the most part, the effect of simple mechanical accumulation of a sufficient amount of dust irrespective of its nature, and consequently similar lesions are reported to be seen in hematite miners, coke workers, graphite workers,[22] and boiler scalers,[23] as well as in some foundry workers.[24]

Two good examples of silicatosis are asbestosis and talcosis. Chrysotile or white asbestos, a member of the serpentine group, is a hydrated magnesium silicate containing a small amount of iron. Crocidolite or blue asbestos and amosite, both of which contain iron silicates, and tremolite, a magnesium calcium silicate, belong to the amphibole group and are mined in Canada, Italy, and South Africa. Asbestosis is characterized pathologically by the presence of asbestos bodies, a severe macrophage reaction, and pulmonary fibrosis involving the lower lung and the pleura. Asbestos bodies develop only in living tissues and are seen fairly rapidly after exposure when studied in sputum samples. They are composed of central fibers surrounded by a protein envelope which was preceded by globule deposition and display a brown color which is derived from iron constituents. On observation it is frequently noted that the asbestos body has a beaded or segmented appearance with bulbous extremities which may show cleavages apparently because of the process of disintegration. One or more asbestos bodies may be noted in the respiratory portion of the bronchial tree. The proof that the formation of asbestos bodies renders the asbestos fiber innocuous has been obtained in the guinea pig lung in which the asbestos body fails to induce fibrosis, whereas asbestos fibers themselves consistently possess this power.[12] The numerous macrophages which appear in response to the presence of asbestos fibers in the lung attempt to destroy the asbestos fibers in an unsuccessful process. Even foreign-body giant cells are frequently too small to ingest the longest fibers completely. As a result of the inflammatory reaction to the asbestos fibers in the respiratory bronchioles, the alveolar ducts, and sacs, a fine fibrosis is produced characteristically in the lower lung fields. Gardner and Lanza in 1938[25] failed to produce massive fibrosis in guinea pigs by exposure to asbestos alone, but fibrous foci were formed after tuberculous and nontuberculous infection in animals. It appears likely that the extensive fibrosis of asbestosis is the result of secondary infection. In view of the fibrous character of asbestos and the development of the asbestos body which renders the asbestos fiber innocuous, the theory of mechanical irritation appears to be the most plausible explanation of the pathogenesis of asbestosis. There is evidence that an asbestos fiber should be long, flexible, and at least 20 to 50 microns in length to produce pulmonary fibrosis. The clinical course of asbestosis is manifested by an insidious, slowly progressive process with the gradual development of productive cough, anorexia, and weight loss. In our experience clubbing of the fingers is common, and emphysema practically always occurs in patients who die of the condition.

Pure talc is a hydrated magnesium silicate which, when inhaled in excessive quantities, causes a diffuse and nodular fibrosis displaying numerous birefringent particles resembling short needles and scattered asbestos bodies. It should be emphasized that the talc itself contains only small quantities of free silica if any is present at all. The disease resembles asbestosis clinically and pathologically and is characterized by the presence of calcified pleural plaques. In New York State in talc workers and miners who are exposed to tremolite talc dust, talc plaques were observed in 6 per cent of all workers.[26, 27]

Similar pleural calcifications are seen in asbestos workers, notably anthophyllite asbestos workers.[28] It might be reiterated at this time that the incidence of pneumoconiosis is extremely high in the mining, milling, and manufacture of talc products and that this type of pneumoconiosis, namely talcosis, is capable of producing an extremely disabling pulmonary fibrosis. Death is usually caused by a complicating cor pulmonale, although superimposed tuberculous infection is not uncommon. However, the consensus is that there is no predisposition to pulmonary tuberculosis in asbestosis such as one finds in silicosis, but some workers feel that the question of whether asbestos or talc predisposes to increased tuberculous complications will require further study for the final answer.

Complications

The following complications of pneumoconiosis will be briefly discussed: (1) pulmonary carcinogens (Table I), (2) pulmonary emphysema, (3) tuberculosis, and (4) cardiac disease.

CARCINOMAS. There is overwhelming evidence that ionizing radiation is carcino-

TABLE I. Industrial pulmonary carcinogens

Carcinogenic Agents	Type
Proved	Ionizing radiation
Probable	Asbestos; chromium; nickel; arsenic
Suspected	Coal tar (3,4 benzopyrine); isopropyl oil; soot; engine exhausts (3,4 benzopyrine); mineral oils (aromatic hydrocarbons); diepoxides; beryllium
Suspected but unproved	Iron dust; silica dust; coal dust; other inorganic and organic materials

genic, and consequently it is classified as a proved carcinogenic agent.[29] In the Schneeberg and Jáchymov (Joachimstal) mining region for over five hundred years, silver, nickel, cobalt, bismuth, arsenic, radium, and uranium were mined, but it was not until 1897 that the cause of disability and death was recognized to be pulmonary carcinoma.[30,31] Cancer of the lung accounts for 50 per cent of the deaths of the miners of Schneeberg and Jáchymov.[29] In 1931 Arnstein[32] showed that from 1875 until 1912, 276 or 41.5 per cent had died of carcinoma of the lung, 64 of tuberculosis, 119 of other lung diseases, and 206 from other causes. He felt that other cases had carcinoma of the lung which had not been diagnosed and was the first to diagnose squamous cell carcinoma. In 1935 Lange[33] found that 60 or 70 per cent of all deaths of miners or pensioners in this area were caused by cancer of the lung and attributed the high incidence of carcinoma of the lung to radioactivity in the rock and air. In the last ten years, numerous investigators have demonstrated the carcinogenicity of various radioactive agents in the experimental animal.[34-36]

Statistical studies of asbestos workers are compatible with marked carcinogenesis of this agent, but experimental data are almost completely lacking. Asbestos fibers are reported to induce hyperplasia of the bronchial epithelium followed by squamous metaplasia associated with the fibrotic and fibrocystic changes of asbestosis, subsequently developing into a frank malignant condition of the epithelium of the bronchioles, usually identified as the squamous type and arising in the lower lobes which are known to be the sites of maximum involvement in asbestosis.[37,38] Doll in 1955[39] stated that lung cancer was a specific industrial hazard of certain asbestos workers and that among individuals exposed for twenty or more years, the risk was approximately ten times that experienced by the general population. It is now known that mesothelioma may develop in the greatly thickened pleura of asbestosis.[37,38] In Great Britain a report of the Chief Inspector of Factories in 1947 revealed 235 cases of asbestosis by autopsy between the years 1924 and 1946 with 31 cases or 13.2 per cent of carcinoma of the lungs or pleura, and in silicotic cases 6,884 autopsies revealed 91 cases of bronchogenic carcinoma or 1.32 per cent.[40] In Great Britain autopsies are compulsory among all industrially exposed individuals. In a twenty-year study of 632 asbestos insulation workers by Selikoff, Churg, and Hammond,[41,42] there were 255 deaths. Of these, 45 or 17.6 per cent were caused by malignant tumors of the lungs or pleura, considered to be seven times the expected incidence with 3 mesotheliomas of the pleura and 1 of the peritoneum, an exceptionally high incidence for an otherwise rare tumor. Interestingly enough, the incidence of cancer of the stomach, colon, and rectum in this group was approximately three times the usual estimated occurrence.

Clinical studies and experimental work have revealed that chromium likewise is a potent carcinogen. Machle and Gregorius[43] observed that in 193 deaths of chromate workers representing eleven thousand man years of work, 22 per cent died of respiratory tract cancer. It was noted that monovalent ores caused this condition and that neoplastic changes were found in areas close to crystals of chromium. In Germany up until 1939, a total of 39 cases of pulmonary carcinoma were reported to have occurred among 1,000 chromate workers in various plants.[44] Hueper[45,46] produced carcinoma of the lung in guinea pigs by injecting chromate ore subcutaneously into the lung. These implants gave rise to squamous cell, round cell, anaplastic, and adenocarcinomatous varieties of lung cancer.

There is selected clinical material revealing that both arsenic and nickel are pulmonary carcinogens, a process which has been confirmed by animal experimentation in the case of nickel, but with arsenic experimental studies have been largely negative. Lull and Wallach, cited by Hueper,[47] and Osburn[48] of Gwanda, Rhodesia, showed that the mining populations who inhale arsenic dust and smelter fumes have a high incidence of lung cancer. Roth[49] of Germany found lung cancer in 12 of 27 or 44 per cent of necropsies performed on vineyard workers who had been exposed to arsenic insecticides and who had urine with high arsenic content. The Chief Inspector of Factories of Great Britain in 1952 reported 52 cases of cancer of the nose and 93 cases of cancer of the lung among nickel refiners between 1923 and 1950.[50] Further study demonstrated that among nickel workers between 1938 and 1947, there were 36 deaths from cancer of the lung whereas the expected rate was 2.61, and from 1948 to 1956 there were 39 deaths from cancer of the lung whereas the expected rate was 5.9.[51,52] Hueper[46] has produced lung carcinoma in guinea pigs by exposing them to nickel dust.

Schepers *et al.*[53] have observed neoplasia in rats exposed to aerosols of beryllium sulfate for periods up to six months. There is, however, no clinical evidence of an association between beryllium and bronchogenic carcinoma.

Coal tar can produce cancer of the skin. There was an increased incidence of cancer of the lung among gas workers in Japan,[54] Great Britain, and Canada.[55,56] Carcinomas have been produced in mice painted or injected subcutaneously with extracts of exhaust of gasoline and diesel motors.[57-61] Mineral oils and diepoxides have been suspected carcinogenic agents.[62,63] In the United States 6 of 75 men who were employed for more than five years in the manufacture of isopropyl oil died of respiratory cancer; 4 from cancers of the nose, 1 in the larynx, and 1 in the lung.[64]

There are a number of materials which have been suspected of being carcinogenic but which must be classified as unproved carcinogenic agents at this time. In 1955 James[65] found the autopsy incidence of lung cancer among coal miners to be less than that among nonminers in the same area. All the evidence at hand would tend to classify coal dust as being devoid of the power of carcinogenesis. McLaughlin and Harding[66] found an incidence of 10.8 per cent bronchogenic carcinoma among 149 iron and steel workers. Faulds[67] reported an incidence of 8.85 per cent bronchogenic carcinoma in 192 necropsies in Cumberland hematite miners as compared with an incidence of 1.85 per cent in 2,578 necropsies in men over twenty years of age. Soot and pyrolytic factors could not be excluded as possible causes. Three hundred welders reviewed by McLaughlin and Doig[68] revealed no carcinoma of the bronchus. Experimental studies on iron carcinogenesis have not been generally accepted because of discrepancies. In conclusion, the part which iron and iron oxide play in the high incidence of bronchogenic carcinoma in selected groups of foundry workers and miners in the iron industry has not been clearly elucidated. It has been suggested that some synthetic plastics are neoplastic when embedded in tissue.[63] Derivatives of aniline have not been proved to be pulmonary carcinogens, although they are reportedly carcinogenic for the bladder.[69]

PULMONARY EMPHYSEMA. There are many types of pulmonary emphysema which are associated with industrial pulmonary disease. The incidence of focal emphysema among coal miners has already been discussed. Moverover, the association of emphysema with welding due to the inhalation of nitrogen dioxide, nitrogen tetroxide, and ozone has likewise been reviewed. Emphysema is a frequent complication of advanced silicosis and coal workers' pneumoconiosis and is caused in part by the contraction of large fibrotic masses. Inhalation of cadmium fumes produces emphysema resembling the obstructive type.[70] Although talcosis is frequently complicated by both diffuse pulmonary emphysema and bullous emphysema,[71] Shaver's disease, that is, bauxite fume fibrosis, is sometimes accompanied by bullous emphysema which gives rise to recurrent spontaneous pneumothoraces.[72]

TUBERCULOSIS. The inhalation of silica decreases natural resistance to the tubercle bacillus by increasing tissue susceptibility.[73-75] The silica paralyzes and destroys the phagocytes with which it comes in contact and also interferes with the globulin mechanism by demanding large quantities of globulin for the hyaline connective tissues of the silicotic nodule.[76] A small number of quartz particles will immobilize all the macrophages in the vicinity. It has been noted that the fibrosis of silicosis is followed by hyalinization, a process which suggests an immunologic mechanism. According to Pernis, Ceppellini, and Ghezzi,[77] silicotic hyaline tissue differs in chemical constitution from other hyaline connective tissue of physiologic or pathologic origin, the latter being composed of approximately 80 per cent collagen and 20 per cent globulin, whereas silicotic hyaline tissue contains only 40 per cent collagen and the remaining protein being of globulin situated between the serum beta and gamma globulins. These workers and others observed that silicotic hyaline tissue contains a greater amount of carbohydrate and lipid than ordinary hyaline connective tissue resembling amyloid which develops as a result of an immunologic mechanism.[77,78] As yet, there is not adequate evidence to state that silica destroys lytic and other enzyme systems. Moreover, the theory of adsorption of protein by quartz producing an antigen resulting in local fibrosis and an auto-immune mechanism has not been substantiated.

Tuberculosis is an important and serious complication of silicosis and coal workers' pneumoconiosis. Theodos and Gordon[79] found an incidence of 13 per cent active pulmonary tuberculosis among 750 Pennsylvania coal miners with a diagnosis of anthracosilicosis. With the advent of antituberculous chemotherapy, the treatment of this complication has been considerably more satisfactory. However, the hazards are sufficiently great to emphasize the necessity of making an early diagnosis in all tuberculous cases. Therefore, it is advocated that all silicosis and coal workers' pneumoconiosis cases with roentgenographic evidence of tuberculosis of doubtful stability who also have a positive tuberculin test result should have the benefit of antituberculous chemotherapy immediately, whether or not their sputum is positive on culture, and this treatment should be carried out for a prolonged period of time, probably for the rest of the worker's life.

CARDIAC DISEASE. Cor pulmonale is an extremely frequent complication of advanced pneumoconiosis. Among coal miners this disease entity is extremely common and manifests itself as soon as the pulmonary lesion has become extensive; terminally it occurs in all cases of coal workers' pneumoconiosis with electrocardiographic changes of pulmonary heart disease.[80] Although less common in silicosis than in coal workers' pneumoconiosis, chronic cor pulmonale is present in the majority of cases of advanced silicosis.[81]

Summary

The diagnosis of pneumoconiosis is dependent on a correlation of the history, industrial reports, physical examinations, laboratory studies, pulmonary function tests, and x-ray films of the patient. Acute silicosis occurs in three months to two years, whereas chronic silicosis usually occurs after five to fifteen or more years of exposure to millions of dust particles per cubic foot 10 microns or less in size, although microscopic pulmonary changes without gross abnormality may occur in shorter periods of time. The symptoms and physical findings of pneumoconiosis, when they occur, are those of chronic pulmonary disease due to chronic bronchitis, bronchiectasis, pulmonary fibrosis, pulmonary emphysema, pulmonary tuberculosis, bronchogenic carcinoma, and chronic cor pulmonale.

Aluminum and aluminum oxide dust may, under certain conditions, produce a highly disabling pulmonary fibrosis and should not be employed in the treatment and prophylaxis of silicosis.

Although siderosis does not produce significant pulmonary fibrosis, it is sometimes accompanied by chronic bronchitis and pulmonary emphysema as a result of the fumes generated in oxyacetylene, carbon arc, and electric arc welding.

Certain mixed dusts such as limestone or coal dust may cause a disabling pulmonary fibrosis. In coal workers' pneumoconiosis, there is good evidence that the specific lesions are dependent on the presence of large amounts of coal dust, although varying amounts of free silica may be demonstrated. Silica apparently plays little or no part in the development of the abnormal lesions.

The development of asbestos bodies is

a refined body mechanism which destroys the specific irritant action of asbestos fibers. Asbestosis is characterized by asbestos bodies, pulmonary fibrosis predominantly in the lower lobes, pleurisy, and pleural plaques.

The mining, milling, and manufacture of tremolite talc in New York State is accompanied by a high incidence of complicated disabling pneumoconiosis.

Ionizing radiation has been proved to be a potent pulmonary carcinogen both clinically and experimentally. There is excellent evidence that asbestos is also a powerful pulmonary carcinogen. There is good evidence that chromate, nickel, and arsenic likewise belong to this category. Coal tar, soot, organic oils, and isopropyl oil are suspected of playing a part in pulmonary carcinogenesis. The evidence at this time does not support classifying silica, coal dust, or iron in this group.

Certain types of pneumoconiosis are accompanied by focal emphysema and secondary bullous and diffuse pulmonary emphysema. Cadmium fumes may also produce an emphysema resembling the diffuse obstructive type. There are a number of other chemical agents which are capable of contributing to the production of emphysema.

Inhalation of silica increases tissue susceptibility to tuberculosis and interferes with the immune mechanism in the defense against the acid-fast bacillus. The hazards of tuberculosis complicating pneumoconiosis are sufficiently great that a very early diagnosis should be made. The treatment of all silicosis and coal workers' pneumoconiosis cases, with roentgenographic evidence of tuberculosis of doubtful stability, who also have a positive tuberculin test result, is strongly advocated even before the sputum is positive by culture, and antituberculous chemotherapy should be instituted at an early stage.

Chronic cor pulmonale is an almost constant accompaniment of terminal coal workers' pneumoconiosis and supervenes in the majority of cases of advanced silicosis and silicatosis.

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PROCEEDINGS

NEW YORK ALLERGY SOCIETY

S. SENIOR SACK, M.D., Editor

Structure and Function of Immunoglobulins

Relation to Allergy

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VERY LITTLE IS KNOWN about reaginic and skin-sensitizing antibodies. Therefore, I thought I would discuss with you the structure of the immunoglobulins and then, if time permits, spend a few minutes talking about the current status of reaginic antibodies since these are of great interest to you. I think that this approach is justified since it is likely that almost anything I shall tell you about the structure and the function of the other immunoglobulins will, in the long run, be applicable also to whatever class of antibodies reaginic antibodies will finally be found to belong to.

It is likely that most of you are familiar with the fact that in man and in most higher vertebrates, antibodies belong to several classes of structurally and functionally distinguishable proteins which are collectively referred to as the immunoglobulins. In man there happen to be five while in some other species additional classes have been found. These five classes of immunoglobulins in man are known as gamma G, gamma A, gamma M, gamma D, and the last class which is presumed to exist on the basis of some indirect evidence and is known as gamma E.

Physiologic differences

As shown in Table I, these immunoglobulins differ sufficiently from each other so that we can classify them into distinct categories of proteins. If you look at the top row, the molecular weights differ. Most of them are in the range of about 150,000 to 180,000, but the gamma M molecule is much larger, with a molecular weight of

TABLE I. Some properties of immunoglobulin

Property	Immunoglobulin Class—Gamma G	A	M	D	E
Molecular weight	145,000	±160,000	900,000	±160,000	±160,000
Sedimentation coefficient (Svedberg)	7	7 (9, 11, 13, 15)	19	±7	±7
Electrophoretic mobility	gamma	gamma-beta	gamma-beta	gamma-beta	gamma-beta
Approximate concentration (mg. per 100 ml.)	1,200	200	100	3	(?) Trace
Carbohydrate (per cent)	2.5	10	10	?	?
Valence	2	(?) 2	5	?	?
Subgroups	4	2	2	...	...
Placental passage	Yes	No	No	?	No
"Paraprotein"	G myeloma	A myeloma	Macroglobulin	D myeloma	?

about a million. They differ, and this is a reflection of their size, in their sedimentation coefficients. The gamma G globulin has a sedimentation coefficient of about 7S, and so does the gamma D. The gamma E globulin has an S rate of 8 or 9 but this has not been fully determined. The macroglobulins, by definition, are larger and have a sedimentation coefficient of 19 Svedberg units, and the gamma A globulins generally have a major component with a sedimentation coefficient of 7S, but very often more rapidly sedimenting polymers with sedimentation coefficients of 9, 11, 13, 15, and up to 19S exist.

The immunoglobulin classes also differ somewhat in their electrophoretic mobility. In addition, the amounts of these proteins in normal individuals differ very strikingly. The major component is the gamma G globulin which makes up about 75 to 80 per cent of the total. The gamma A and the gamma M globulins together make up about 20 per cent of the total, and the gamma D is present in very small amounts. The gamma E globulin too appears to be present only in trace amounts. They differ also in their carbohydrate content; the gamma G globulin is the poorest in carbohydrate while gamma A and M globulins are rich in carbohydrate. Nothing is known about the carbohydrate content of the other two classes of immunoglobulins.

Things have gotten a little more complicated in recent years, and we now recognize subgroups for these immunoglobulins in man. In the case of the gamma G globulin, there are now four recognized subgroups which are under separate genetic control. In the case of the gamma A globulins, there are two subgroups; and similarly for the gamma M globulins there are at least two subgroups. The other two categories of immunoglobulins, gamma D and gamma E globulins, have not been sufficiently well studied to determine if subgroups exist.

Finally, as shown in the bottom line, and this is of very great importance to people working in this area and may some day elucidate the nature of the gamma E globulins, there are paraproteins or abnormal proteins synthesized in a variety of disorders of plasma cells and lymphocytes which very closely resemble each of these normal immunoglobulins and which can be used as models of normal gamma globulins and antibodies. In the case of the gamma G globulins, the paraprotein is the G myeloma; A myeloma corresponds to gamma A globulin; macroglobulins to gamma M globulins; and the gamma D globulins were described by Rowe and Fahey when they found a myeloma protein that could not be classified in any of the other three recognized groups of immunoglobulins. Then, working back from this observation of a D myeloma protein, they discovered that a similar protein was present in normal sera as well. It seems quite likely that gamma E globulin will not really be well characterized until somebody is fortunate enough to find a myeloma protein that corresponds to the gamma E globulin.

Thus in man we have five immunoglobulins which differ in their structure and function but all of which are synthesized by the same group of cells: plasma cells and lymphocytes. The major fact to remember is that all classes of immunoglobulins are presumed to possess antibody activity. There has been no antibody activity as yet shown in the gamma D globulins, but they have all the structural features that one would expect an antibody molecule to have, and in the case of gamma E, reaginic antibodies have been postulated as belonging to this particular fraction.

One could certainly ask, "why do we have five or maybe even more classes of immunoglobulins?" No definite answer to this question is available, but one can provide some teleologic explanations for the observed facts since they appear to serve different functions. However, as we study more and more antibodies in more and more species, we see that distinctions are not nearly as sharp as was thought to be the case a few years ago. For example, when interest in the sequence of antibody formation started, there were many statements in the literature that the early antibody response was a gamma M response, that immunologic memory was entirely in the gamma G fraction, and that there was no immunologic memory in the gamma M fraction. In recent years, however, this problem has been reinvestigated in greater detail, using a variety of different assay systems, and it would appear that the distinction is not nearly as sharp as was thought in the beginning. There is still a tendency for the early response to be mainly macroglobulin, but one does find macroglobulins late in the immune response as well.

Similarly, immunologic memory is largely in the gamma G fraction, but there is also a significant booster response in the macroglobulin fraction. One of the reasons for the earlier findings is that the assay systems that were used selectively detected gamma M antibodies. Therefore, it is important to study these antibodies by a variety of technics, because otherwise one may selectively detect one class and miss some others.

One finding that has stood the test of time over the last ten or fifteen years is the kind of antibody produced during the development of the human fetus or newborn. With the realization that antibodies can be formed either in the fetus late during pregnancy or shortly after birth, people became interested in the kind of antibody produced early in life. The evidence is very good that the only antibodies that are produced in utero in significant amounts are the gamma M antibodies. This has become very important in a variety of congenital infections. The intrauterine infection with rubella and other viruses has resulted in great interest in the production of antibodies by the fetus in utero, and has thrown open to investigation once again not only the question of the fetal immune response, but also has thrown doubt on many of the concepts of immunologic tolerance of the fetus to antigens to which it is exposed in utero. The other two immunoglobulins start to be produced somewhat later in the life of the newborn, and it is not until the age of three to six months that gamma G and gamma A globulins begin to be produced in large amounts.

There is a direct corollary of this behavior in the placental passage of immunoglobulins from the maternal to the fetal circulation. This is also biologically important because, as you know, there are a number of diseases in which the mother is sensitized to fetal antigens and produces antibodies to them. The Rh antigens and the ABO antigens are very good examples of this. If the antibody can then pass from the mother to the fetus, there is potential danger to the fetus of developing ABO or Rh incompatibilities. There is abundant evidence that the only immunoglobulin that can cross from the maternal to the fetal circulation, and thus be of potential damage to the fetus, is the gamma G globulin. Neither the gamma A nor the gamma M globulins can do so, and if you can determine before birth what kind of antibody is produced, then you can predict whether you may have to take steps to remedy this kind of condition or whether you can just watch the mother and tell her she has nothing to worry about. There are a number of screening tests with which I'm sure you are all familiar and by which you can readily distinguish whether an antibody falls into the gamma G or gamma M globulins or possibly even into the gamma A fraction.

The last point relating to antibody function, and one which we will discuss in detail later, deals with the localization and distribution of the different immunoglobulins in the body. The most important observation in this area was made by Tomasi a few years ago when he showed that the gamma A globulins are the main antibody in all of the external secretions of the body. Lacrimal fluid, salivary fluid, intestinal juices, urine, and almost all of the external secretions of the body are very rich in gamma A globulins, and it appears to be the only antibody present in significant amounts in these areas. The importance of this is due to the fact that the epithelial membranes lining the organs of secretion are obviously very frequently in contact with a variety of antigens. For example, the respiratory and intestinal tracts are frequently infected with viruses and bacteria. Consequently, it is of great interest that antibodies to these agents are produced in the plasma cells lining the respiratory membranes or are located in the salivary glands or in the intestinal mucosa. Once formed, the antibody, which is usually a gamma A globulin, is attached to another piece and secreted into the external secretions. This is not simply the passive transfer of serum antibody to these locations but rather the local synthesis of antibodies followed by the active transport of these antibodies into the external secretions.

Structure and function

So much for the physiologic differences between these proteins; let us now try to see what they are made of, how they re-

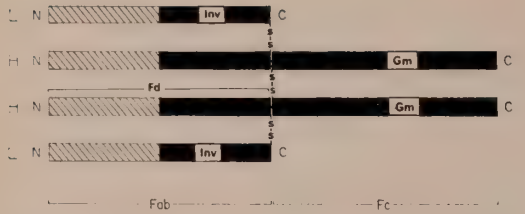

FIGURE 1. Schematic diagram of gamma G globulin. Heavy chains, possessing Gm factors, consist of Fc fragment which is same in all molecules of given subclass, and Fd fragment, part of which is constant and part of which varies in composition in different myeloma proteins. Similarly, light chain has constant and variable half. Solid black = constant; lined = variable. C = carboxy terminal end; N = amino terminal end; S—S = disulfide bond. (By permission, **American Journal of Medicine**; Franklin, E. C.: Genetic polymorphism of gamma globulins in man, Am. J. Med. 43: 3 (July) 1967.)

semble each other, and how we can distinguish them one from the other. A great deal has been learned in recent years about the structure of immunoglobulins. The most important observation, made initially by Edelman and Porter, was that the immunoglobulins, like hemoglobin, are complex proteins which are made up of not one but of multiple polypeptide chains. After breaking the disulfide bonds holding these chains together, it was possible to separate them by fairly simple procedures and to study these structural units. The most important principle is that these polypeptide chains are separate and distinct proteins, each of which has a unique structure and each of which is under separate genetic control. Although they are very different in their structure and function, they probably have evolved from a common origin.

Let us take the gamma G globulin as a model of all immunoglobulins since most of what I'm going to say for the gamma G globulins holds true also for the gamma A and gamma M globulins and presumably also for the gamma D and the gamma E globulins.

As shown in Figure 1 there are two kinds of polypeptide chains. One of these is the heavy chain; it is called heavy because it is large and has a molecular weight of about 55,000. There are two heavy chains in each gamma G molecule. The second type of polypeptide chain is small and, therefore, is called the light polypeptide chain. Again, there are two light chains in each gamma G molecule. They have a molecular weight of about 20,000 and there are two of them per molecule. If you put four of these chains together, by means of disulfide bonds, you are left with a molecule having a molecular weight of about 150,000 or 160,000.

There are a number of other points that I think are worth mentioning about the structure of this molecule, and we'll come back to them in a little while. First of all, there are genetic factors associated with the heavy gamma chains and the light kappa chains. These are known as the Gm and Inv factors respectively. The former are found only in the gamma G globulins; the latter are associated with all the immunoglobulins.

Second, there are other ways of splitting these molecules into smaller functionally active units, with a variety of proteolytic enzymes; papain and pepsin are the ones that have been used most widely. Papain splits the molecule to yield one piece, the Fc fragment which is the carboxy terminal end of the heavy chain, and two pieces, which are called the Fab fractions. Pepsin destroys most of the Fc fragment and keeps the two Fab fragments together as the $F(ab^1)$ 2 fragment. The amino terminal half of the heavy chain is known as the Fd fragment, and it, together with a light chain, makes the Fab fragment (Fig. 1).

These proteolytic digestion products are of great importance for several reasons. First of all, they are biologically active subunits which have allowed us to localize a number of biologic functions on the gamma G molecule. There is also a possibility, which has not been proved yet and which actually appears to be less and less likely as time goes on, that these may actually be separately synthesized and that they are separate and distinct structural subunits.

The last aspect that I want to mention before we go on to something else, and we'll come back to this in much greater detail later, is the variability among different myeloma proteins. As you can see in Figure 1, about three quarters of the molecule is black, and about one quarter, including the amino terminal ends of the heavy chain and of the light chain, is marked by lines. This means that if you take a number of myeloma proteins, and presumably the same will hold true for antibodies, the black part will be exactly the same for each antibody and each myeloma protein within a class. In other words, all the gamma G myeloma proteins and presumably all gamma G antibodies will be the same in this part of the molecule which includes the Fc fragment and half of the Fab fragment. All the differences which are presumably related to antibody specificity reside in the piece marked by lines which includes the amino terminal ends of both the light and the heavy polypeptide chain and presumably the small region of the molecule involved in the combining site.

So much for the gamma G globulins; let's now see how the other immunoglobulins can be related to the structure of the gamma G globulin molecule. It is now well known that the light chains, of which there are two subclasses, kappa and lambda, which differ in structure and are under separate genetic control, are identical for all classes of immunoglobulins. Some molecules having kappa and other molecules having lambda light chains belong in each of the four immunoglobulins that have been recognized and presumably in every succeeding immunoglobulin class that may still be discovered. On the other hand, the heavy chains are unique and different for each of the immunoglobulins. Consequently, they have been denoted simply by the Greek letter corresponding to the class. Gamma chains are the heavy chains of gamma G, alpha is the heavy chain gamma A, mu the heavy chain of gamma M, and delta is the heavy chain derived from gamma D; if you have additional classes, you simply introduce additional Greek letters to denote their heavy chains. The fact that the heavy chains have different names reflects the structural and presumably also the biologic differences between them.

Using the same model of the gamma G it is possible to localize many of the biologic properties associated with this class of immunoglobulin. These studies have best been done with the products obtained by papain digestion. The ability of the molecule to combine with antigen, the antigen-binding site, is found in the Fab fragment and appears to be the only biologic property located there. There is some discussion as to whether the heavy chain, the light chain, or both are involved; the consensus now is that both the heavy and the light polypeptide chains are involved in modulating or possibly even forming the antigen-binding site. All the other properties that have been localized to the gamma G globulin such as complement fixation, placental passage, the ability to fix to the skin of the guinea pig or to attach to microsomes, and a number of other minor properties have all been located in the Fc fragment which has a constant composition in every antibody molecule belonging to an immunoglobulin class. This is not surprising because these are properties that must be the same for every molecule belonging to a certain immunoglobulin class.

There is one additional biologic property which I have alluded to before, which is of great interest. It deals with the ability of the gamma A globulin to get into the external secretions. The bulk of currently available evidence suggests that this is an active process specifically designed to transport antibody to these sites. It would appear that secretory gamma A globulins are locally synthesized in plasma cells in the salivary glands or in the lacrimal glands. They would not get out into the secretions except for the addition of another piece, the so-called transport piece, with a molecular weight of about 50,000, which then gets incorporated into this molecule. It appears to combine 2 or 3 gamma A molecules and then carries them out into these external secretions. This transport piece seems to be structurally completely different from the immunoglobulin and under separate genetic control. It is interesting that several children with agammaglobulinemia, who can make virtually no gamma globulin, produce large amounts of this transport piece and secrete it freely into their saliva, gastrointestinal juices, and urine.

Levels of heterogeneity

The next subject that I would like to go into is the various levels of heterogeneity that we now recognize for immunoglobulins. The first level of heterogeneity which we have just discussed in detail deals with the major classes of immunoglobulins. The next level of heterogeneity I would like to touch on deals with the subclasses and the genetic factors associated with the immunoglobulins. The last level of heterogeneity, which probably is the most important one, deals with the heterogeneity related to the specificity of an antibody and reflects differences between antibodies with different specificities.

As far as the subclasses and the genetic factors are concerned, let us limit ourselves entirely to the gamma G globulins, their heavy chains and the light chains, and not concern ourselves with the gamma M or gamma A globulins since very little is known about their subclasses and no genetic polymorphism has as yet been described. The only genetic polymorphisms that have been discovered have been related to the heavy chains of gamma G globulins and the light kappa chains.

A quick introduction to this complex subject is necessary. Genetic polymorphism of human and rabbit gamma globulin was discovered simultaneously about ten or eleven years ago. In the rabbit it was discovered by Oudin by the very simple mechanism of taking gamma globulin from one rabbit and injecting it into another rabbit. This resulted in the production of antibodies which distinguished different rabbits from each other. In man this was not as easy since one couldn't inject human beings with other human beings' gamma globulins in a highly antigenic form. Consequently the genetic polymorphism in man, the Gm factors as they are now known, were discovered by Grubb as a by-product of work on rheumatoid factor; and even now most of the assays that detect this polymorphism involve the agglutination of red cells coated with gamma globulin by antigamma globulins from patients with rheumatoid arthritis or from normal subjects. By a very complex set of reagents, which match the antigamma globulins with gamma globulins of the right genetic specificity, a very complicated genetic system of gamma globulin polymorphism has been worked out. At the present time there are at least 22 or 23 known genetic factors at the Gm locus, the locus controlling gamma chains, and at least 3 or 4 at the Inv locus, the locus controlling kappa light chains. I think in time this will prove to be much more complicated than the Rh system.

The important thing to remember is that the genetic control of the light chains and the heavy chains is separate and distinct. There are two separate loci which may or may not be on the same chromosome. There is no evidence of linkage between them. The locus that expresses itself on one kind of light chain, the type 1 or kappa light chain, is called the Inv locus, and there are at least two and probably three or more alleles at this locus. These have been called 1, 2, and 3.

Similarly, the Gm locus may very well represent a whole series of closely related and closely linked loci. More than 20 Gm factors have been identified, and it is of great interest that they seem to be very closely related to some of the subclasses of gamma chains. Four major subclasses of gamma chains (gamma 1, 2, 3, and 4) are now known, and it seems likely that each subclass has its own set of genetic factors that can be detected by the serologic assay system.

Before going on to the question of antibody specificity, let us now take a quick look at the structural basis for some of the Gm and Inv factors. Concomitant with the precise structural studies of light chains, the chemical basis of the Inv specificity has now been clearly elucidated. It would appear that at residue 191, Inv (a+) light chains have leucine while Inv (b+) molecules have valine. This substitution, which is reminiscent of the difference between hemoglobins A and S, can be explained by a single base substitution, suggesting that both types of light chains have evolved from the same original molecule.

In the case of the Gm factors, the situation is somewhat more complex, and it looks as though more than a single amino acid substitution is involved. For example, the difference between Gm (a) and Gm (b or f) appears to involve two amino acid substitutions which cannot be explained as easily. It seems possible that the apparent complexity is caused by the fact that we have not reached the level of sophistication in studying the heavy chains that we have with the light chains. It is possible that we may really not be looking at the precise part of the molecule that's involved in Gm specificity but at something which is related to it, but not directly responsible for it.

Antibody specificity

The last area that I want to touch on in some detail deals with some of the structural aspects which are related to the specificity of an antibody for a given antigen. I think you are all acquainted with the fact that the pendulum has now swung very far in the direction of saying that antibodies with different specificities have different primary structures. For awhile it was thought that antibody specificity might be nothing more than a difference in folding of a primitive antibody molecule: that there is one kind of gamma globulin and antibody specificity simply reflects the folding of this molecule once it has come in contact with antigen. Recent chemical data suggest that this is not the case and that antibody specificity reflects a difference in the primary structure of different antibody molecules.

Much work has been done in the last few years to attempt to localize not only the antibody combining site, but also to determine the nature of antibody specificity. This work has been done not with antibodies but largely with myeloma proteins and Bence Jones proteins, on the assumption that these can be used as models of antibodies and that all the information that has been gained from studies of myeloma proteins which are readily available, homogeneous, and can be isolated in the pure form, will eventually be applicable also to antibodies which are hard to produce, hard to isolate, and, therefore, difficult to characterize. The evidence obtained from such sequence studies suggests that the primary structure of antibodies with different specificities is indeed different and that antibody specificity is more than a matter of folding.

The most precise studies of the primary structure of these proteins has been done on light chains, largely on Bence Jones proteins, both of the kappa and the lambda types. Several very interesting features have come out of these studies which I'd like to present to you in their broad concept without really becoming overly detailed.

These studies have clearly shown that one can divide the light chain exactly in half. There are approximately 212 to 216 amino acid residues in a light chain, and somewhere around residue 106 to 108, exactly in the middle, something happens. Comparison of more than a dozen kappa light chains and a smaller number of lambda Bence Jones proteins has clearly shown that the carboxy terminal half (residues 108 to 216) is exactly the same in all the light chains of the kappa type and, similarly, that this region of all lambda proteins is identical. The only difference in this region in different molecules of the kappa type is related to the Inv genetic factor. At residue 191 there is a leucine if the molecule is Inv (a+) and a valine if it is Inv (b+). In contrast, if you look at the amino terminal end of the light chain, residues 1 to 108, it turns out that in this half of the light chain there are significant differences between different Bence Jones proteins. Not every amino acid is involved, but approximately 35 to 45 per cent of the residues differ, and, in general, the substitutions are limited. Very often single base substitutions can account for the differences, and in most instances an amino acid is substituted by another one, which can serve a somewhat similar function. They are very conservative substitutions, but there are many of them, and they are all localized in this part of the molecule.

In the case of the heavy chains the information is not quite as complete at the present time, but by more gross technics it would appear that the Fc fragments within any one subclass of gamma chain are exactly the same, again with the exception of the genetic factors.

In contrast in the Fd fragment, approximately one half of the peptides are the same and approximately one half of the peptides are different. Nobody knows yet what the arrangement of these peptides is, but if we take the light chains as the model and assume that since they have all evolved from a common origin, the over-all structure of the light chains is probably similar to that of heavy chains, we can presume that the region of constant composition extends from the Fc fragment roughly halfway through the Fd fragment and that there is a region of variability in the amino terminal half of the Fd fragment. Obviously this is in the right place because this is the part of the molecule that is involved in combining with antigen.

Thus the currently accepted model of the antibody molecule is a very sensible and a relatively simple one. It suggests that the part of the molecule which is necessary to bring the molecule where it is supposed to go and which gives it its secondary properties has a constant composition, that it has not changed significantly with time, and that it does not change with the antigenic specificity that induced the synthesis of that molecule. In contrast roughly one fourth of the molecule is much more flexible, hypermutable, and can change to give you antibody specificity of many different types.

The last basic concept I want to present to you is taken from a report by Hill which puts all of this in the perspective of evolution. What Hill has done is to elucidate almost a complete sequence of the Fc fragment of the rabbit and to correlate this with all the sequence studies that others have done on light chains of the kappa and lambda type in man and light chains in the rabbit. He has compared all these data, looked at all the substitutions, put them all into a computer, and has come out with what I think is a very reasonable theory as to what happened during evolution and why antibodies are the way they are at the present time.

Hill believes that if you take the light chain and divide it in half, and compare the constant part of the light chain of 108 residue with the variable part, there is a great deal of homology; about 30 or 40 per cent of the residues are identical or similar. If you then take the same segment of light chain and compare it to the Fc fragment you see a lot of homology again, about 30 to 40 per cent. If one could then extend this into the Fd fragment once its sequence is known, one probably would again find a great deal of homology. Thus it seems that far back in evolution there existed one half of a light chain. This half a light chain then duplicated to give us what we now call the primitive light chain. Sometime later this may have evolved to give us two distinct types of light chains, which we now call kappa and lambda. It looks as though kappa and lambda light chains occur not only in man but also in the mouse, the guinea pig, and probably also in the rabbit and that these two types of light chain have existed for quite awhile. Then somewhere quite far back in history, the light chain again duplicated to give us a primitive heavy chain with a molecular weight twice as large as that of a light chain and containing about 400 residues. If one had to make a guess as to which heavy chain was formed first, I think one could be fairly certain that the first heavy chain that was formed was the mu chain because there are now a number of studies in relatively primitive species of fish and other marine vertebrates which clearly indicate that the only immunoglobulin present in these more primitive species are molecules that resemble the macroglobulins in having a heavy chain correspond to the mu chain of macroglobulin. Therefore, presumably the mu chain was formed first, and then from the mu chain evolved the gamma chain and the alpha chain. Somewhat later further diversification again took place, to give the four subclasses of gamma chain, two subclasses of the alpha chain, and two subclasses of the mu chain. Now that we have accounted for all the building blocks, we do not yet know where in evolution they were put together into the current scheme of the gamma globulin molecule: two light chains and two heavy chains held together by disulfide bonds. Interestingly enough, the bond that holds the light chain onto the heavy chain involves the very last amino acid in the kappa chain and the next to the last amino acid in the lambda chain; thus, the bond is really very far away from the really active part of the molecule.

Reaginic antibodies

I have given you an enormous introduction so far to the main subject of the evening which should be a discussion of the nature of reaginic antibodies. Unfortunately, I think one can really say very little about reaginic antibodies at the present time. You have all lived through the last ten or fifteen years and have watched, with as much interest I am sure as I have, the studies done on reaginic antibodies. It would appear that everything I have said tonight is applicable to the reaginic antibodies because for awhile they were called gamma G's. Then the next immunoglobulin class which was thought to contain the reagins was the gamma M globulin. Then the pendulum swung, and everybody agreed that reagins were gamma A globulins. More recently it was decided that they really don't fit into any of these categories and that one should postulate the existence of yet another category of immunoglobulin, namely gamma E. I think the only innocent bystander in this confusion about reagins is gamma D globulin since, from the outset, everyone agreed that the reagins are not in the gamma D fraction.

What do we know about the reaginic antibodies that can be of some help in giving us information about what they are? First of all, it has been known for a long time that they do not cross the placenta, a fact which pretty much excludes the gamma G globulins. They've been known for a long time to be heat labile. This doesn't help very much because really none of the classical antibodies are very heat labile, but this really does not exclude them from being in one or another of the categories. By a variety of physical and chemical studies they have been localized in the gamma globulins, usually in the fast-moving gamma globulins. The sedimentation coefficients appear to be somewhat faster than 7S and slower than 19S, and the best estimate is between 8 and 10S at the present time.

More recently Ishizaka has postulated that his gamma E fraction contains reaginic antibodies, and the evidence that he cites, while still largely indirect, seems to be rather convincing. The four main pieces of evidence that he has are:

1. Reaginic antibody does not seem to be neutralized by any of the antisera specific for any of the immunoglobulins that I have mentioned, suggesting that reagins do not belong to the gamma G, A, M, or D fractions.

2. Reagins seem to travel together in all fractionation procedures with those molecules which are detected by his antiserum to a protein which he has called gamma E.

3. This particular antiserum, which does not react with any of the other immunoglobulins, can neutralize reaginic antibody activity, suggesting that in some way it can combine with reaginic antibodies.

4. Finally, by means of radio-immunoelectrophoresis, he has shown that this fraction is indeed capable of combining with at least some of the antigenic molecules that are responsible or thought to be responsible for the formation of reaginic antibodies. Unfortunately this material according to Ishizaka's best estimate is present in concentrations of less than 20 micrograms per milligram, a quantity which will make precise characterization of these proteins exceedingly difficult. As I mentioned before, I think the main hope in characterizing this particular class of antibodies further will rest on the lucky accident that somebody may some day find a myeloma protein that he can study in great detail and use as a model of this gamma E class of antibodies. So far nobody has been lucky enough to find such a molecule. I think it would be very difficult to predict what would be the problem with the patient. I suspect that the patient would be hypoallergic rather than hyperallergic because in most instances people with myeloma, even if they have a large amount of a myeloma protein, tend to have a very poor immune response, since myeloma proteins usually have few of the physiologic properties that are normally associated with that particular class of antibodies. For example patients with a gamma G myeloma can't make antibody and are very susceptible to infections. Similarly I suspect that somebody with a gamma E myeloma protein would probably not come to the attention of the allergist. I feel he would probably be found by somebody who is not at all interested in allergy but who sees many patients with myeloma proteins.

Conclusion

I probably have failed in my mission of telling you about reaginic antibodies. However, I think, or at least I'm fairly convinced, that everything I've told you will eventually be applicable to the understanding of reaginic antibodies and all the structural and functional features which have now been very well elucidated for the classical type of antibody and will probably also hold true for this very intriguing, new, or presumably new, immunoglobulin class.

Discussion

William B. Sherman, M.D.,* *New York City.* I should say first that I'm not familiar with all the details of immunology. I practice medicine as do most of you. I have been a sort of a back seat driver, you might say, for twenty years or so in investigations of these reaginic antibodies. I got a little out of my element in Madrid a couple of years ago and talked for half an hour about reaginic antibodies. Looking back on it, I spent the half hour telling what we didn't know about them rather than any specific thing we did know. I have a feeling that now we know a little more, and I am very happy to see this progress made.

From the standpoint of practicing medicine, one thing that has struck me since the time when we used to treat lobar pneumonia with antiserum is that there is a real, practical difference between atopy which we think of as the hay fever-asthma type of sensitivity and anaphylaxis. This is not just a difference between species. We usually see one type in man and another in the guinea pig. In the days when you gave a pneumonia patient 200 or 500 cc. of horse serum, you couldn't help but be impressed by the fact that two people who were, as far as you could tell, equally sensitive to horse serum reacted differently. If one of them had serum previously and had become artificially sensitized, and if you were careful and followed all directions, you could practically always desensitize him and get in the 200 or the 500 cc. of serum intravenously.

If you had someone who had never had horse serum before but had asthma when he was around horses, no matter how you tried you would not get 200 to 500 cc. of horse serum injected intravenously. There was a very practical difference if you had to inject a large amount of horse serum. Nowadays we don't give serum very often, although it is still needed for persons who have tetanus or snake bites.

I have always been convinced, although many of my friends are skeptical about it, that there is a genetic or hereditary factor in atopy and that in anaphylaxis this is not an important one. If you do the anaphylactic procedures on a guinea pig, you produce sensitivity and shock.

Leaving out all immunologic considerations, anaphylaxis is a situation in which you take a normal animal with a normal immune response and artificially impose artificial circumstances to produce a drastic reaction, such as fatal shock.

To produce fatal shock, one almost has to inject the antigen intravenously which, of course, is a very unnatural procedure. In atopy, such as hay fever or asthma, there is a definite abnormality in which perfectly normal contacts that everybody else has and does not suffer from at all produce a sensitivity which results in symptoms on further exposure. One of the milestones in understanding this difference was done by Kuhns and Pappenheimer[a] at New York University when they showed that people hereditarily disposed to atopy, when immunized with diphtheria toxoid, developed a reaginic or skin-sensitizing antibody to the diphtheria toxin. This was the first time that any reaginic antibody had been shown to have a useful function. It was perfectly good diphtheria antitoxin, but in other respects it resembled the reaginic antibody in ragweed hay fever. This brought out the fact that in atopy there is an abnormal antibody which, barring this exceptional case, never did any good and caused a lot of trouble.

As you all know and as Dr. Franklin pointed out, the nature of the reaginic antibody has been a very active subject of discussion in recent years. Investigators have about gone through the list of immunoglobulins. They had to invent a new one to explain the findings.

Rose Augustin, M.D., in England thought that since the gamma G and the gamma M were not involved, the gamma A was probably involved.

Philip Fireman, M.D., at the National Institutes of Health made a careful study which looked as if the gamma A or beta 2 A was the reaginic antibody. At the same time some negative evidence was published.

Mary Loveless, M.D., had a patient who had reagin but not gamma A in the serum.

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* Director, Robert A. Cooke Institute of Allergy, Roosevelt Hospital.

At the same time Arthur Menzel, M.D., at Roosevelt Hospital, by fractionating the serum in various ways, has separated the reaginic activity from the gamma A. The best reagent for this is rivanol, a type of protein precipitant. By varying the pH and ionic strength, various fractions were obtained separating the reaginic activity from the gamma A. Both were recovered in unaltered form. This was very striking evidence that the reagin was not a gamma A.

What was the nature of these fractions of serum that had a large amount of reaginic activity and none of the known immunoglobulins in them? It was at this point that Ishizaka[b] made an antiserum which precipitated with gamma E. Dr. Menzel's purified reaginic fraction gave a beautiful precipitate with the anti gamma E serum. In my mind, this was probably the solution of the problem.

With gamma E the atopic individual, through genetic influence, is producing an entirely different kind of immunoglobulin and a different kind of sensitization. Kuhns and Pappenheimer[a] have reported it is not a difference in the antigen or the route of exposure, but an hereditary difference in the person's reaction.

Question and answer period

Bernard B. Siegel, M.D.: There are some questions from the floor.

Voice: Since Fudenberg published a series of so-called normal values for gamma G, gamma A, and gamma M globulins at various ages, we have done immunoelectrophoresis in a number of asthmatic children with frequent infections. I sent a specimen about a month ago to Fred Rosen, M.D., in Children's Hospital in Boston. Today I received a communication that an eighteen-month-old child with 4 attacks of pneumonitis and asthma almost every month for the last year showed no gamma A and no gamma M globulins and had 1,100 mg. per 100 ml. of gamma G. Obviously some of these children who appear in our offices with frequent infections have no gamma M. We've had a number of others with low gamma M. I am wondering about the significance of this in children who do have infections particularly early in life?

Dr. Franklin: I think this is a rather difficult question to answer because the heterogeneity of agammaglobulinemias or hypogammaglobulinemias is just beginning to be understood. It used to be felt that in agammaglobulinemia all classes of gamma globulin were decreased. In recent years it has become quite apparent that there are selective deficiencies in one or another of these classes, and it now looks as though there may be selective deficiencies in the subclasses. What the clinical findings in these situations are I don't think anybody really knows at this time.

Voice: I understand the qualitative meaning of an S unit, but nowhere have I been able to find its quantitative meaning. I've looked and looked, but found no quantitative definition of a Svedberg unit. In actual quantitative terms, what is an S unit?

Dr. Franklin: It is a quantitative expression of the rate of sedimentation in a gravitational field. In general it parallels size. You can say with some degree of certainty when dealing with a protein that the one that sediments at 19S is bigger than one with an S rate of 7S. But it is not a linear relationship and much depends on the shape of the molecule.

Voice: You mentioned that there are subgroups and genetic differences between individuals. In using gamma globulins I wonder if there is any danger of producing antibodies against the gamma globulin that is present in the donor and lacking in the recipient.

Dr. Franklin: This has been looked at in some detail. In man a number of groups have now been studied. In a large number of patients with thalassemia and other diseases, some get 300 to 400 transfusions by the time they are fifteen or twenty, and almost all, with very few exceptions, will produce antibodies to a genetic factor that they themselves do not have. In other words, if the child is Gm (a) negative, and you give him Gm (a) positive blood, he will develop antibodies to the Gm (a) factors. So far there are, however, only two documented reactions that have been attributed to incompatibility of Gm factors, one by somebody in Germany and one that Fudenberg has studied in California and provided pretty good evidence that symptoms could be brought on with mismatched Gm factors but not with anything else. Therefore it is obvious that while the ability to produce antibodies to these factors is present in anybody and such antibodies are often produced, the danger of reactions is very small, and I don't think for practical purposes one has to worry. Most of the time when people get reactions to gamma globulins, they are probably due to the aggregates and other things and not to this.

In the rabbit, however, the situation is somewhat different. If you immunize a pregnant rabbit, and you get this kind of antibody to an allotype transferred to the fetus, it will delay the synthesis of that particular kind of gamma globulin, and in mice it will cause a lot of abortions and malformed fetuses. In man this appears to be of little practical significance.

VOICE: What are the details on the studies you mentioned?

DR. FRANKLIN: I don't know the details of the one in Germany. The one that Fudenberg studied is a patient who had anti Gm (a) antibody. He gave him, I think, 4 units of blood. He developed a febrile reaction and some mild hives. His Gm titer dropped. After it came back, he gave him another, smaller amount of plasma, and he got another reaction. Again his titer dropped and went up again after a few days. It was not a very serious reaction.

DR. MERKSAMER: On behalf of the New York Allergy Society, I want to thank you, Dr. Franklin, and you, Dr. Sherman, for a very interesting meeting.

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[a] Kuhns, W. J., and Pappenheimer, A. M., Jr.: Immunochemical studies of antitoxin produced in normal and allergic individuals hyperimmunized with diphtheria toxoid, J. Exper. Med. 95: 363, 375, (1952).

[b] Ishizaka, K., Ishizaka, T., and Hornbrook, M. M.: Physicochemical properties and antigenic structure of human reagenic antibody. II. Presence of a unique immunoglobulin as a carrier of reaginic activity, presented at 22nd annual meeting of the American Academy of Allergy, New York City, February, 1966.

Longevity in United States

Longevity in the United States has changed very little in recent years, according to the Metropolitan Life Insurance Company. The average length of life in 1965, the last year for which final figures were available, was 70.2 years, the same as in 1964. It had previously reached this figure in 1961, after which an unusually high prevalence of acute respiratory disease resulted in slight setbacks for two years.

Improvement since the turn of the century has been substantial. Based on today's mortality conditions, 75 per cent of newborn infants may expect to reach their sixty-third birthday, and 50 per cent may attain seventy-five years of age. Around 1900, according to mortality conditions prevailing at that time, less than half the newborn infants were expected to reach age sixty-three, and only a fourth had prospects of living to seventy-five. However, the bulk of this progress was achieved in the earlier part of the century, in sharp contrast to the relatively stationary situation in the past decade. Between 1900 and 1965 expectation of life at birth for all persons increased by over twenty years. Since then it improved by less than a year.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Lenox Hill Hospital
New York City
January 27, 1967

Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by ROBERT P. GEARHART, M.D.
and LAWRENCE P. SHEA, M.D.

Fever, Constitutional Symptoms, Hepatosplenomegaly, and Abnormal Chest X-ray Film

Case history

STEPHEN CARTER, M.D.: This was the second Lenox Hill Hospital admission for this thirty-eight-year-old white male executive who entered complaining of fever, malaise, and weakness of four weeks duration.

He was well until four weeks prior to admission when intermittent febrile episodes began. He consulted a local physician who treated him with antibiotics for one week without any results. A temperature record kept by the patient revealed a pattern which showed a rise starting in the late morning, climbing in the afternoon, with lysis occurring after midnight. This would continue approximately four days and then the fever would remit. The temperature would rise to 103 to 104 F. and was associated with chills and diffuse diaphoresis. The patient also complained of vague diffuse aches and pains as well as malaise. He admitted to a weight loss of 10 to 12 pounds over this period of time without anorexia, abdominal pain, or alteration of bowel movements. There was no melena, hematemesis, vomiting, diarrhea, rectal bleeding, dysuria, hematuria, or bone pain. He did admit to a mild, dry, hacking, nonproductive cough without any chest pain, hemoptysis, wheezing, or shoulder pain. His last chest x-ray film, which was taken by a mobile unit in June, 1964, was a 70 mm. film and reportedly gave negative findings.

The patient lived with his wife in the Brooklyn Heights section of New York near the international harbor and recalled being bitten by a mosquito some time in October. He also had a healthy dog at home and had traveled in eastern and western Europe in 1946, 1956, and 1965 and in the Caribbean in 1961.

The past history revealed that the patient was a pharmaceutical consultant. He had no allergies and used no drugs, mineral oil, or nose drops. He smoked two packs of cigarets a day for years and in September, 1966, had what was called an "ethanolic indiscretion" with an excessive alcoholic intake in that month. His usual drinking amounted to "several" highballs a day. He had a tonsillectomy as a child and an adenomatous rectal polyp removed in 1953 via sigmoidoscopy. He had a ptosis of the right eyelid since childhood secondary to forceps trauma. He had had mononucleosis as an adolescent, infectious hepatitis in 1956, and was treated for syphilis in the late 1950s. He specifically denied any history of diabetes mellitus, tuberculosis, rheumatic heart disease, hypertension, or asthma in himself or other family members. His father had died of prostatic carcinoma in his sixties. His grandmother may have had clubbed fingers.

The physical examination revealed a well-developed, well-nourished, thin-appearing white male, older than his stated age, chronically ill, alert and oriented, febrile, but comfortable with his fever, who showed evidence of recent weight loss. The blood pressure was 120 systolic and 60 diastolic. The pulse rate was 116 per minute and regular; the respirations were 20 per minute, and the rectal temperature was 104.4 F. Examination of the face revealed a partial ptosis of the right upper eyelid; the pupils were equal and reacted to light and accommodation. There was no facial fullness or scleral icterus, and the conjunctivas were normal. The neck was supple without adenopathy or distended veins. The breasts were free of masses, and the chest examination showed normal findings. The heart was not enlarged; there was a regular tachycardia with no murmurs present. The abdomen was soft, thin, and scaphoid. The lower border of the liver was palpated 2 fingerbreadths below the right costal margin; it was smooth and nontender. The spleen was palpated one fingerbreadth below the left costal margin; it was smooth, nontender, and soft. The kidneys were not felt. The genitalia appeared normal, and the rectal examination showed negative findings. The skin contained no rash, petechiae, spider angioma, or ecchymoses. The hair distribution appeared normal except for a diminution in the amount on the anterior chest wall. There was no peripheral lymphadenopathy. The extremities had no cyanosis or edema, but there was moderate bilateral symmetrical clubbing of the fingers and toes. The arterial pulsations were palpated equally in all extremities. The neurologic examination was intact and showed negative findings.

The hemoglobin was 13.2 Gm. per 100 ml. and the hematocrit 40. The white cell count was 26,800 with 81 per cent neutrophils, 1 nonsegmented, and 19 lymphocytes. The erythrocyte sedimentation rate was 99 mm. per hour, and the reticulocyte count was 1.4 per cent. The urinalysis gave negative results. The VDRL test was reactive and the Mazzini 3-plus reactive. The fasting blood sugar was 116 mg. and the blood urea nitrogen was 6 mg. per 100 ml. The sodium was 135 mEq., potassium 4.8 mEq. chlorides 97 mEq., and bicarbonate 25 mEq. per liter. The calcium was 9.7 mg. per 100 ml., phosphorus 4.1 mg. per 100 ml., and alkaline phosphatase 7.3 King-Armstrong units. The serum glutamic oxaloacetic transaminase was 26 units and serum glutamic pyruvic transaminase 15 units. The total cholesterol was 124 mg. with 56 mg. free cholesterol representing 45 per cent and 68 mg. of cholesterol esters. The total protein was 7.1 Gm. per 100 ml., with an albumin of 2.9 Gm. and globulin 4.2 Gm. The protein paper electrophoresis revealed an albumin of 49.6 per cent, alpha 1 globulin 7.4 per cent, alpha 2 globulin 20 per cent, beta globulin 8.2 per cent, and gamma globulin 14.8 per cent. The cephalin flocculation test gave negative results at forty-eight hours, and the thymol turbidity was 2 units. The total bilirubin was 0.9 mg. per 100 ml., and the zinc sulfate turbidity was 9.4 units. The electrocardiogram showed negative findings.

A work-up for an infectious disease was pursued. A number of stools examined for ova and parasites as well as occult blood showed negative results. The heterophil antibody titer was positive in a dilution of 1 to 7, and febrile agglutinins gave negative results. The cold agglutinins also showed negative results as did the histoplasmosis latex test. Purified protein tuberculin skin tests in all dilutions gave negative results. The histoplasmin, blastomycin, and coccidioidin skin tests also gave negative findings. Several sputum examinations including twenty-four-hour concentrates for acid fast bacilli also gave negative results. The cultures and guinea pig inoculations for tuberculosis showed negative findings. A routine sputum culture failed to grow any pathogen. The bone marrow examination showed normal findings, and the bone marrow cultures gave negative results. Many blood cultures also gave negative results.

A chest x-ray film was taken on admission and compared with a prior film taken at Lenox Hill Hospital on April 30, 1962. It revealed a decided change. A dense parenchymal infiltration was now noted throughout the upper lobe of the right lung with areas of increased radiolucency within this infiltrate. There was a homogeneity of the infiltrate medially along the superior mediastinum. Apical lordotic films and tomograms of the upper lobe of the right lung two days later revealed no interval change in the dense parenchymal infiltration. There appeared to be a homogeneous density medially within the dense infiltration and a moderate amount of superimposed parenchymal infiltration. There were areas of increased radiolucency in the periphery of the infiltration but no evidence of abscess formation or hilar adenopathy. The right hilar area was elevated.

The patient remained febrile with temperatures continuing between 101 and 104 F.; diaphoresis was continuous and striking. His weight dropped from 167 pounds to 162 pounds. On the sixth hospital day he was examined by bronchoscope. The bronchus to the upper lobe of the right lung was identified and was fully patent. The segmental divisions, however, appeared abnormal. No endobronchial mass or lesion was visualized. The vocal cords, trachea, and carina appeared normal. Multiple biopsies were taken revealing only chronic inflammation of the mucous membranes of the carina as well as chronic bronchitis. No tumor cells were seen, and the Papanicolaou stain was reported as class I. On the twelfth hospital day an exploratory thoracotomy was performed.

Discussion

Robert P. Gearhart, M.D.*: The patient under discussion is a thirty-eight year-old white male executive with fever, malaise, and weakness of four weeks duration. His fever was intermittent in character, rising in the late morning, reaching a peak of 103 to 104 F. in the evening, and undergoing lysis after midnight. It was also cyclic in that the fever would persist for about four days and then remit for approximately two days. With his fever, he experienced chills and profuse diaphoresis as well as vague diffuse aches and pains. He had lost 10 to 12 pounds in weight and had a mild nonproductive cough.

He specifically denied anorexia, nausea, vomiting, abdominal cramps, diarrhea, melena, hematemesis, rectal bleeding, dysuria, hematuria, bone pain, shoulder pain, wheezing, chest pain, and hemoptysis. He had been bitten by a mosquito in October and lived near the international harbor.

He is said to have had a chest x-ray film which showed normal findings in June, 1964. He had traveled in eastern and western Europe in 1946, 1956, and 1965 and in the Caribbean in 1961. He used no medications and had no allergies. He had had infectious mononucleosis as an adolescent, infectious hepatitis in 1956, and was treated for syphilis in the late 1950s. His family history was unremarkable except for the possibility of clubbed fingers in his grandmother.

Physical examination revealed the patient had a fever of 104.4 F. with a normal respiratory rate and blood pressure and a pulse rate of 116. He appeared chronically ill and older than his stated age with evidence of recent weight loss. Partial ptosis of the right upper eyelid, secondary to a birth injury was noted, but there were no other abnormal eye signs. A firm nontender, smooth, sharp-edged liver was palpable 2 fingerbreadths below the right costal margin, and a smooth, soft nontender spleen was palpated 1 fingerbreadth below the left costal margin. The examination, otherwise, showed completely negative findings except for moderate symmetrical clubbing of the fingers and toes.

Laboratory studies all showed normal results except for a white blood cell count of 26,800 with 81 per cent neutrophils, an erythrocyte sedimentation rate of 99 mm. per hour, a positive serologic test for syphilis, a low blood urea nitrogen, a reversal of the albumin-globulin ratio, and a protein electrophoresis showing a rise in the alpha 1 and especially the alpha 2 globulins; the gamma globulins were normal. An infectious disease work-up including studies for parasites, fungi, febrile and cold agglutinins, tuberculin tests in all strengths, and sputum smears and cultures revealed negative results. Several blood cultures showed negative results. Since the x-ray films play a major role in this case, I would like Dr. Eidenschenk to discuss them at this time.

Erich Eidenschenk, M.D.: The chest x-ray film taken in April, 1962, showed essentially negative results. A few calcified nodes were present in the right hilum,

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* Attending Physician and Chief of the Pulmonary Section, Lenox Hill Hospital.

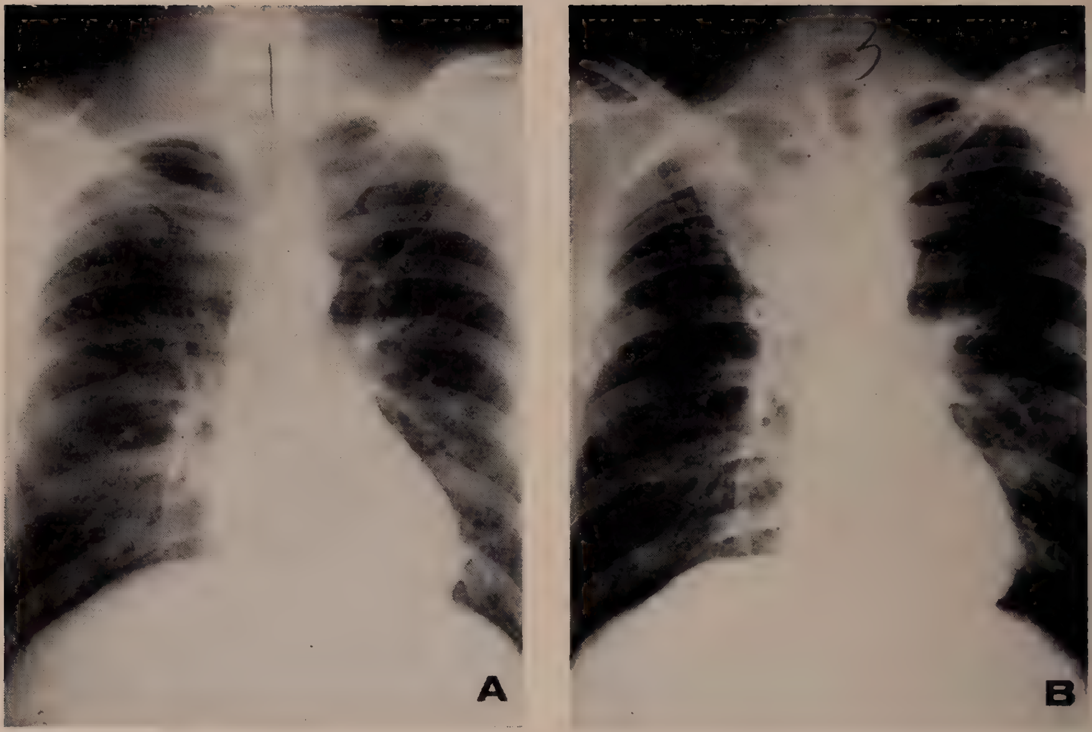

FIGURE 1. X-ray films showing (A) negative findings except for few calcified lymph nodes in right hilus; heart, aorta, and mediastinum are normal and the trachea is in midline (April 30, 1962). (B) Dense infiltration in upper lobe of right lung extending from superior pole of hilus into apex.

(Fig. 1A). A flat film of the abdomen taken at the same time revealed moderate hepatomegaly but no biliary calculi. The patient was referred to us from the outpatient department where he had been seen because of abdominal pain. The chest x-ray film on this admission revealed a dense infiltration in the upper lobe of the right lung extending from the superior pole of the hilus into the apex (Fig. 1B). The infiltration was homogenous in the immediate perihilar region and contained multiple small round areas of radiolucency in the periphery which were thought to be emphysematous blebs or cavities. The short fissure was not elevated, and there was no mediastinal shift.

A repeat chest x-ray film two days later showed no change in the infiltrate of the upper lobe of the right lung. There was a suggestion of a lobulated mass adjacent to the superior pole of the right hilus. The tomograms with cuts made at 8, 9, 11, and 12 cm. from the table top, with the patient supine, showed an ill-defined homogenous mass in the superior pole of the right hilus causing distortion and angulation of one segmental bronchus of the upper lobe of the right lung at its bifurcation (Fig. 2A). In addition there was some irregularity of the superior margin of a segment of this upper lobe of the right bronchus which may have been caused by the adjacent mass. Areas of consolidation intermingled with thin-walled emphysematous blebs were present in the apex (Fig. 2B). The superior pole of the hilum contained calcified nodes.

DR. GEARHART: The patient was examined by bronchoscope, revealing "abnormalities of the segmental divisions of the upper lobe of the right bronchus." Biopsy specimens showed only chronic inflammation of the mucous membranes of the carina and bronchi. Not even squamous metaplasia is mentioned.

The patient underwent an exploratory thoracotomy on his twelfth hospital day. As was noted radiologically, this procedure resulted in a resection of the previously visualized abnormality.

There are several facets presented in our protocol suggesting avenues of approach to a solution of the problem. I would

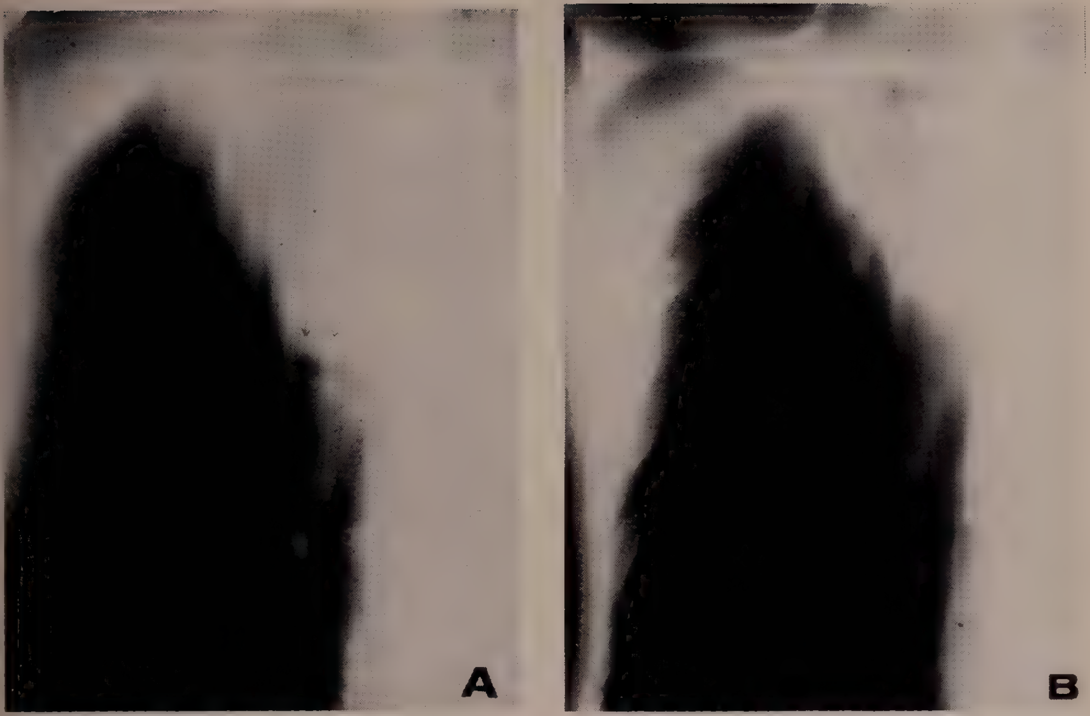

FIGURE 2. Tomograms showing (A) ill-defined homogenous mass in superior pole of right hilus causing distortion and angulation of one segmental bronchus of upper lobe of right lung at its bifurcation and some irregularity at upper margin of bronchus with adjacent mass; and (B) areas of consolidation intermingled with thin-wall emphysematous blebs.

like to proceed, focusing my primary attention on the pulmonary lesion. The hepatomegaly had been present at least since 1962, if we accept the report of our radiologists. We know that this man had been a heavy drinker by most standards, but there is no present evidence of active cirrhosis or acute fatty infiltration of the liver. It is possible that the hepatosplenomegaly may have been a sequel to his infectious hepatitis in 1956.

For the purposes of this discussion, we shall accept the fact that the chest x-ray film in 1964 showed normal findings, although this can be a dangerous assumption. We have all seen x-ray films that have been reported to show negative findings, but on review of the films proved to be otherwise.

We have all seen the films taken at the time of this admission and noted their characteristics. They are not truly diagnostic by any means but suggest certain possibilities.

Bacterial endocarditis. Subacute or acute bacterial endocarditis with massive infected pulmonary infarction must be at least mentioned. The fever, chills, aches, pains, and markedly elevated white blood cell count cannot be ignored. The absence of clinical and auscultatory evidence of heart disease and the blood cultures which gave negative results are points against the diagnosis. The radiologic characteristics of the chest lesion essentially rule out this possibility.

Infectious diseases. There are two infectious diseases that require some consideration; they are syphilis and tuberculosis. The patient had a positive serology and was treated for syphilis in the late 1950s. We do not know how adequate this treatment was, but certainly effective therapy was available at that time. The point is that he might have had a gummatous granuloma in a parabronchial lymph node or in the lung itself that perforated and aspirated to produce the dense lesion in the upper lobe of the right lung that has been demonstrated. However, this possibility is most unlikely. One would have expected the patient to have experienced a productive cough and probably hemoptysis had such an event occurred. Furthermore, the statistical rarity of this possibility excludes syphilis from serious consideration.

As for tuberculosis the skin tests in all dilutions as well as the cultures and smears showing negative results are quite impressive. The bronchoscopic aspirates and biopsies which gave negative findings also weigh heavily against this possibility. An acute caseous lobar pneumonia is always secondary to the discharge of large numbers of acid-fast bacilli into a bronchus because of the rupture of a caseating lymph node or a similar discharge of infected tuberculous material from a cavity. The rupture of a caseous node is rare in adult Caucasians; it is more common in children. When it does occur in adults, the node is usually at least partly calcific, and it is the calcium that causes ulceration and perforation of the bronchus. Here again, severe cough would have been expected, probably with some blood-streaked sputum and possibly with the expectoration of fragments of calcium. Viable tubercle bacilli may be present, but the number is usually not excessive. Such an event is statistically much more likely to involve the bronchi of the lower or middle lobe of the lung.

PNEUMONITIS. A chronic organizing pneumonitis is also a possibility. The mode of onset is completely consistent. A one-week course of antibiotic therapy of unknown type failed to alter the development of his disease. In addition, he never had a productive cough, and his febrile pattern was not that of the usual bacterial pulmonary infection without complicating factors. Furthermore one cannot dismiss the fact that all sputum cultures, including bronchoscopic aspiration specimens, revealed only normal flora. The x-ray findings and clinical course exclude the possibility of a viral cause, if this was an organizing pneumonitis. The prominent leukocytosis would also be quite inconsistent with a viral pulmonary infection. I do not believe that I have ever seen even a chronic organizing bacterial pneumonitis produce such a solid infiltration density as we have seen in this case.

SARCOIDOSIS. Sarcoidosis must be seriously considered. It is capable of producing a variety of pulmonary lesions and may be associated with severe systemic manifestations in the acute form. I have recently seen one case of proved sarcoid that could only be differentiated from a bronchogenic carcinoma by thoracotomy. It can, of course, produce splenomegaly and sometimes hepatomegaly. Typically, it is associated with hyperglobulinemia and reversal of the albumin-globulin ratio. It could, in short, explain many of this patient's findings. Acute sarcoidosis, however, is rare in Caucasians, and it is very unlikely to present symptoms of a localized pulmonary lesion of this nature. Fever, when present, is typically not intermittent, and the patient is very ill and not "comfortable with his fever." The protein electrophoretic pattern usually demonstrates a rise in the gamma globulin fraction.

NEOPLASM. The most plausible diagnosis in this instance would appear to be some form of neoplasm. In this category, bronchogenic carcinoma must be considered first, if only for statistical reasons. However, I do not believe the patient had a bronchogenic carcinoma. The radiologic picture presented would be most unusual without an obvious tumor at the orifice of the bronchus to the upper lobe of the right lung. The implication of obstruction with distal pneumonitis would not produce the type of temperature pattern that this individual exhibited, unless there were periods of relief of obstruction with increased cough productive of purulent sputum. Furthermore, bronchoscopy failed to visualize any endobronchial tumor and biopsies gave negative results. Bronchiolar carcinoma arises from smaller bronchi and is often associated with negative results obtained by bronchoscopic examination. However, I find it hard to believe that it could cause this clinical picture. A superior sulcus carcinoma in an advanced form might conceivably appear this way. The patient would almost certainly experience pain in the shoulder and arm and exhibit evidence of sympathetic nerve root compression as well.

Obviously by the process of elimination, I am left with very few additional considerations. I believe that this lesion was a lymphoma, specifically Hodgkin's disease. While lymphosarcoma more commonly causes a mediastinal mass, I believe the weight of evidence favors Hodgkin's disease. The description of this patient's temperature is so classic for the Pel-Epstein fever of Hodgkin's disease that it worried me. Furthermore, this type of intermittent fever occurs more frequently in association with the mediastinal-abdominal form of Hodgkin's disease. A dry cough is quite typical, and the systemic manifestations exhibited here are entirely compatible with the diagnosis of a lymphoma of the Hodgkin's type. Splenomegaly is not unusual, and hepatomegaly may be present. The serum protein electrophoresis does not exhibit any diagnostic changes, although hypogammaglobulinemia is fairly common. The white blood cell count may be variable, but a marked leukocytosis is not unusual. The erythrocyte sedimentation rate is usually increased and a false-positive serology may occur. Clubbing of the fingers may be a feature of any mediastinal tumor. Our patient had clubbing of the fingers and toes of unknown duration; it may even have been familial in type.

The x-ray films, in my opinion, show mediastinal and parabronchial lymphadenopathy and what appears to be nodular intra-bronchial protrusions. Pulmonary Hodgkin's disease frequently causes a solid roentgenographic density as is seen here and even parenchymal necrosis may occur. An elevated serum uric acid and leukocyte alkaline phosphatase would have lent additional support to the diagnosis of Hodgkin's disease, had they been determined. Finally, this type of lesion is often surgically resectable as it apparently was in this case.

In summary, we have a thirty-eight-year-old Caucasian male with symptoms, signs, laboratory studies, and x-ray film findings that I considered consonant with a diagnosis of Hodgkin's disease.

MICHAEL S. BRUNO, M.D.: Are there any comments or further suggestions as to the diagnosis in this case?

JOHN V. WALLER, M.D.: Aspiration of a foreign body in an alcoholic person can produce a similar lesion, but it is more common in the lower lobes of the lungs. The location in an upper lobe would be most unusual. The presence of a significant leukocytosis does not rule out viremia since studies at the Walter Reed Hospital have shown that either leukocytosis or leukopenia may occur with Coxsackie B infections.

DR. BRUNO: If indeed there was a foreign body aspiration with secondary atelectasis and surrounding pneumonitis, I would have expected bronchoscopy to be more helpful and the radiographic findings of atelectasis to have been dominant.

HARRY F. WECHSLER, M.D.: I question whether the fever pattern described was typical of the Pel-Epstein fever of Hodgkin's disease. Usually a step-like rise over four to five days occurs with a graded decline of ten days.

DR. BRUNO: Generally that is true. I wonder if Dr. Deane has any comments to add since this is his patient.

NORMAN DEANE, M.D.: I have nothing to add. The clinical course was as described in the protocol, and the patient presented a perplexing diagnostic problem. I wonder though about his "normal" chest x-ray film taken in 1964.

JOSEPH KESSLER, M.D.: As we all know, carcinoma of the lung may be present for many years before detection. By determining the doubling size of lung nodules as seen on x-ray film and extrapolating backward in time, it appears that the mean time of tumor presence for squamous cell carcinoma is about eight years and for adenocarcinoma sixteen years.

HERBERT A. DANN, M.D.: Was any thought given to a therapeutic trial of radiation therapy to see if the lesion would melt away?

DR. DEANE: We thought the patient had a resectable lesion, hence no further therapeutic tests were considered.

JOHN O. VIETA, M.D.: In 1941 Lloyd Freeman Craver, M.D.,* and I reviewed the chest manifestations of lymphomas and Hodgkin's disease and found they could mimic anything. In those days, a therapeutic trial with radiation was often given; if the lesion melted, the diagnosis was strongly inferred.

SIDNEY I. KREPS, M.D.: What about the principle that one does not give radiation therapy without a tissue diagnosis?

DR. BRUNO: This principle is one that should only rarely be violated. A scalene node and fat-pad biopsy should be done in a case such as this if radiation therapy is contemplated. The surgeon can often remove a paratracheal or superior mediastinal node at the same sitting which will frequently give a proper tissue diagnosis.

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* Vieta, J. O., and Craver, L. F.: Intrathoracic manifestations of lymphomatoid diseases, Radiology **37**: 138 (1941).

Austin P. Boleman, Jr., M.D.: How would radiation therapy affect a surgical procedure if contemplated at a later date?

Dr. Bruno: I wonder if Dr. Fischer would answer that question since he operated on the patient.

Walter W. Fischer, M.D.*: I thought the patient had tuberculosis. He was toxic with high temperatures, diaphoresis, and malaise—the clinical course was more compatible with an infection than a tumor. He did not have any wheeze or hemoptysis which are the telltale signs of carcinoma. As an endobronchial tumor first develops, it obstructs the bronchus often producing infection distal to it. The early roentgenographic findings may be due primarily to infection distal to the bronchial tumor rather than the tumor per se. When the patient is treated with antibiotics the density may clear completely, and the possibility of an underlying carcinoma is often even forgotten. With a second episode of pneumonia or with the development of atelectasis, the patient will more often be examined by bronchoscope. Unfortunately the result of bronchoscopy is often negative and only infrequently positive. Even with the use of improved right-angle bronchoscopes, particularly for upper-lobe lesions, it is difficult to see more than 1 or 2 mm. beyond the origin of the segmental bronchi. For that reason only 30 to 35 per cent of bronchoscopies are diagnostic for carcinoma. Generally, an over-all impression of the patient's clinical course, with the bronchoscopic findings, the cytologic washings, and the x-ray films considered together, must be gained before a correct diagnosis is made and appropriate therapy is initiated.

At operation this patient was found to have a bronchogenic carcinoma occluding the segmental bronchus of the upper lobe of the right lung with atelectasis and pneumonitis in close apposition. An intrapericardial lobectomy had to be done to prevent damage to the pulmonary artery. The surrounding nodes did not appear to be grossly involved with tumor. In answer to the previous question concerning radiation therapy, I believe it would have been contraindicated here. If the lesion had partially responded to radiotherapy, the diagnosis would still be very questionable. In my opinion the x-ray findings were less characteristic of lymphoma and much more suggestive of a parenchymal lesion with an underlying obstructive factor. A scalene node biopsy was not done because a thoracotomy was planned in this man who was young and thin and without any palpable nodes in the fossae. In our experience, in this type of patient, the procedure has not been too helpful as a diagnostic tool.

Clinical Diagnosis

Tumor of the lung, probably carcinoma

Dr. Gearhart's diagnosis

Hodgkin's disease, upper lobe of the right lung

Pathologic discussion

Dr. Bruno: Lymphoma was certainly a most likely diagnosis putting together the clinical course and laboratory tests. Will Dr. Shea now tell us about pathology?

Lawrence P. Shea, M.D.*: The sections of the bronchial biopsy specimens revealed mild nonspecific chronic bronchitis.

The right upper lobectomy specimen weighed 296 Gm. and measured 18 by 10 by 4 cm. A 5-by 4-cm. portion of parietal pleura was attached to the surface of the anterior apical region by fibrous adhesions. The cut surfaces of the specimen showed a firm tan mass 2.5 cm. in diameter which occluded and infiltrated the proximal portion of the apical segmental bronchus (Fig. 3). Extending peripherally from the site of occlusion was a large consolidated zone involving the apical segment and adjacent portions of the anterior and posterior segments. Some of the small bronchi were dilated and filled with inspissated mucinous material. The peribronchial tissue was fibrotic.

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* Director of Surgery, Lenox Hill Hospital.

* Associate Pathologist, Lenox Hill Hospital.

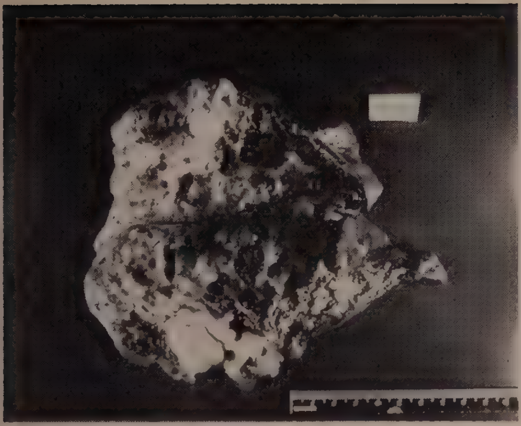

FIGURE 3. Incised upper lobe of right lung showing consolidation and fibrosis of parenchyma distal to site of occlusion of apical segmental bronchus.

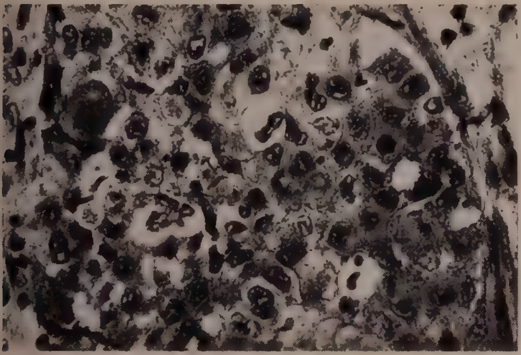

FIGURE 4. High-power view of lung adjacent to occluded bronchus showing invasion by neoplastic squamous epithelium.

The consolidated parenchyma was firm and predominantly grayish-tan with yellowish foci. Five hilar lymph nodes measured up to 2.5 cm. in diameter.

Microscopic sections of the firm mass showed neoplastic invasion of the apical segmental bronchus and adjacent lung by nests of moderately well-differentiated squamous epithelial cells, some of which had intercellular bridges (Fig. 4). Sections of the consolidated parenchyma showed recent and older organizing pneumonia, chronic microabscesses, and areas of dense fibrosis. The lymph nodes contained moderately increased numbers of plasma cells and macrophages.

Dr. Fischer: I would like to ask Dr. Eidenschenk if he would have irradiated this patient preoperatively.

Dr. Eidenschenk: I would not have irradiated this patient preoperatively.

Dr. Fischer: I am glad we agree. I would like to stress the need for an early thoracotomy in such a case. Again I am not opposed to scalene node biopsies, in principle, but favor a thoracotomy in a case such as this as it is a more direct approach without much added morbidity. This patient had an uneventful right upper lobectomy.

Dr. Bruno: I agree that the definitive procedure should have been a thoracotomy. Does Dr. Gearhart have any further comments?

Dr. Gearhart: I would still have to come up with the same diagnosis if presented with a similar situation and protocol.

Dr. Fischer: Even at the operating table with gross inspection, the diagnosis was questionable and not really clarified until frozen sections were taken. A superior vena cava obstruction would be the most likely condition to benefit from preoperative radiation therapy. The preoperative use of radiation therapy for lung carcinoma does not decrease the overall mortality rate, and it increases the technical and surgical problems immeasurably.

Dr. Bruno: The patient has done well postoperatively. It was felt the hepatomegaly represented a fatty metamorphosis of the liver secondary to his alcoholic intake, and we will leave it at that. Incidentally, the patient no longer has splenomegaly.

Final anatomic diagnoses

1. *Bronchogenic squamous cell carcinoma of upper lobe of the right lung*
2. *Organizing pneumonia and microabscesses*
3. *Chronic lymphadenitis of hilar lymph nodes*

Brief Preliminary Reports

Cystic Fibrosis of Pancreas

Mucous Retention?

AUSTIN H. KUTSCHER, D.D.S.
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Cystic fibrosis of the pancreas is a disease wherein the secretions of exocrine glands including the salivary glands are distinctively disturbed both qualitatively and quantitatively. Hence, it seemed of interest to determine whether such patients were subject to developing abnormalities of the mouth which are characterized by mucous retention, specifically retention cysts.

Findings

Thirty-five patients, two to twenty-two years of age, 18 males and 17 females, all with cystic fibrosis of the pancreas, were subjected to a thorough oral mucosal examination. No detectable evidence of mucous retention was noted in any of these patients.

In addition, the medical and dental case records of all of these patients were reviewed thoroughly for evidences of entries which might be interpreted as referring to mucous retention, such as, retention cysts, in any region of the body. Here, again, the review proved to show completely negative results. It is admitted, of course, that salivary gland enlargement is a frequent finding in patients with cystic fibrosis of the pancreas, but this latter abnormality may well be due to salivary gland hyperplasia rather than retention of secretory fluid.

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* U. S. Public Health Service Fellow, 1962 to 1963.

Car accidents in children

Parents and the automotive industry have recently been urged by the Public Health Service's National Center for Urban and Industrial Health to do more to protect infants and small children who ride in cars.

According to J. H. Svore, director of the Public Health Service facility, most parents unknowingly risk lives of their small children by letting them sit or stand in cars without restraint. Special seat belt protection is a definite necessity.

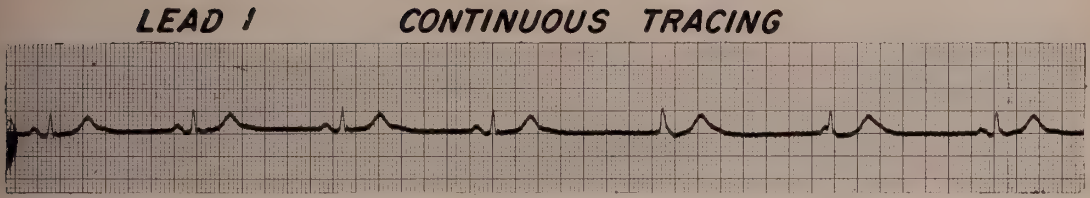
The automotive industry has produced some new seat restraints of this type, but improvements are in order. Public health agencies, industry, and others should increase their efforts to tell the public about their value.

The problem of children's restraints is one of many in the area of seat belt usage which are of concern to the Center's Injury Control Program, which, headed by R. E. Marland, M.D., is conducting a campaign to ask law enforcement officers and news media to include a report on seat belt usage in traffic accident stories. The purpose is to enable readers to learn by example the lifesaving benefits of seat belts.

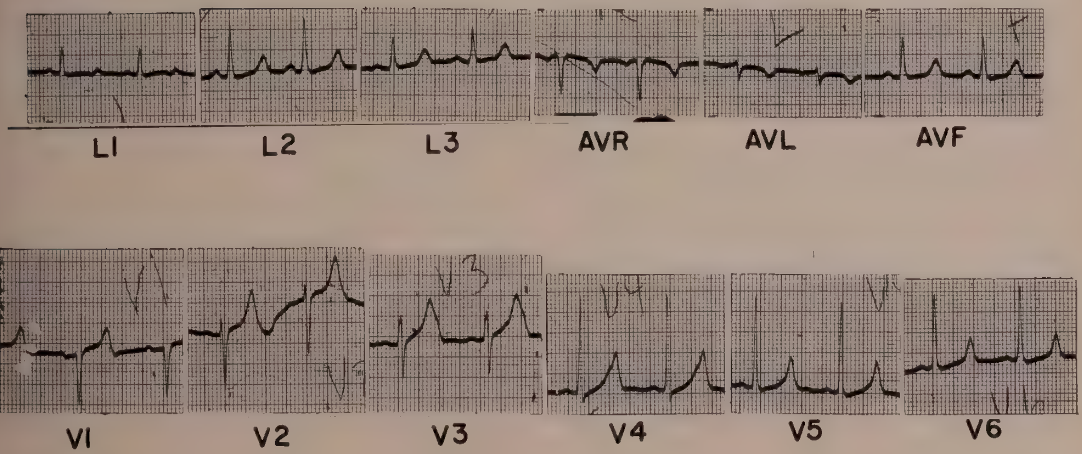
Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

Editors
IRA L. RUBIN, M.D.
Head, Department of Electrocardiography
JULIAN FRIEDEN, M.D.
Associate Head, Department of Electrocardiography


LEAD I
CONTINUOUS TRACING

QUESTION 13. What is the rhythm?


L1
L2
L3
AVR
AVL
AVF
V1
V2
V3
V4
V5
V6

QUESTION 14. This tracing was obtained from a fifty-year-old woman with uremia. What electrolyte abnormalities are suggested by the electrocardiogram?

Electrocardiograms of Month

ELUCIDATION

Question 13. The first four beats are regular sinus beats. The fifth beat is delayed and is not preceded by a P wave; the QRS appears widened. This beat is a "nodal" escape beat. The QRS deformity is caused by a retrograde P wave. The next beat is also a nodal escape beat with a sinus P wave superimposed on the initial portion of the QRS. The P-R interval is too short for this P wave to be conducted. No retrograde P wave is present because the atrium has been depolarized by the sinus beat. The last complex is again regular sinus rhythm.

Escape beats occur when there is suppression of the dominant pacemaker of the heart and a lower center takes over the pacemaking function. In this instance, the sinus node is the dominant pacemaker. When it slows markedly or arrests, after the fourth beat, the "node" (actually A-V junctional tissue or bundle of His) becomes the pacemaker for the fifth and sixth beats. The sinus node then resumes the pacemaking function as the rhythm returns to regular sinus. The usual cause of sinus arrest is increased vagal activity, but drugs (such as digitalis) or heart disease (disease of the coronary artery supplying the sino-atrial node) may also lead to sinus arrest.

Question 14. The rhythm is regular sinus rhythm at a rate of 75. The T waves are sharply peaked as best demonstrated in V_5 and V_6. The QT is prolonged to 0.46 second, due primarily to a long, straight S-T segment best seen in lead I and aVl. The narrow, peaked T waves are found in hyperkalemia. The prolonged isoelectric S-T segment is a result of hypocalcemia. This patient had a serum calcium of 7.5 mg. per 100 cc. and a serum potassium of 6.8 mg. per 100 cc. These electrolyte abnormalities are frequently found in severe renal insufficiency and are often reflected in the electrocardiogram.

Incinerators and air pollution

Installers of any new incinerator in New York State after January 1, 1968, must prove by actual test results that it meets State air pollution control standards, it was recently announced by the State Air Pollution Control Board.

Incinerators that do not meet standards will not be allowed to operate until remedial action is taken.

The new requirements were enacted by the State's Air Pollution Control Board to control incineration of solid wastes, a major source of air pollution in the State. An estimated 34 billion pounds of solid wastes are disposed of by incineration.

A permit for any installation after January 1 must be obtained from the State Health Department's division of air resources. Test specification of incinerators on sale in the State will be on file with the Department, and permit applicants will be responsible for determining the acceptability of a proposed installation.

Incinerators built prior to January 1, 1968, also come under control with the new regulations and will be required to meet standards that vary according to their construction date.

Case Reports

Acute Cardiopulmonary Lupus Erythematosus

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From the Medical Service of the St. Luke's Hospital

SYSTEMIC LUPUS ERYTHEMATOSUS is a disease of unknown cause, variable course, and multiple manifestations. Although reference to a similar disease dates back to Hippocrates, its first description was in the dermatologic literature in 1813. Descriptions relating generalized symptoms to the skin lesion of lupus began to appear later in the nineteenth century. Between 1895 and 1905 William Osler described the visceral complications of systemic lupus erythematosus.

The description of L.E. (lupus erythematosus) cell in 1948 by Hargraves, Richmond, and Morton permitted the early diagnosis of this disease. The L.E. cell phenomenon together with more advanced immunochemical technics had bolstered the central role of the immune mechanism in this disease. Although the auto-immune theory has the widest acceptance, Stevens'[1] suggestion of a bacterial source for the antigen precipitating the reaction is interesting.

The criteria for establishing the diagnosis of systemic lupus have been set forth and the clinical course well described.[2,3] Therapeutic measures have met with great success in altering the course of the disease.

The following case report illustrates the dramatic course that the disease can take and the remarkable efficacy of steroids in inducing a dramatic remission.

Case report

This patient was admitted to St. Luke's Hospital, Newburgh, New York, on September 17, 1964. At this time she gave a history of "arthritis" of the wrists and ankles dating back to 1959. Her symptoms were relieved by cortisone which she took for several years, discontinuing the medication for several years without exacerbation. In 1963 her joint symptoms returned, and she was placed on dexamethasone therapy with good relief. Five days prior to admission, she developed epigastric pain and anorexia. The pain radiated to the back and prompted her admission. The cortisone was withheld because of the question of a steroid-induced ulcer. The day after admission, she began to complain of pleuritic chest pain which prevented her from lying back. Decreased breath sounds and moist rales were heard in the right side of the chest posteriorly. Over the next few days, she was noted to develop decreased breath sounds at both bases and drowsiness. Her temperature rose to 103 F., and she developed a sore tongue and arthralgias. Chest x-ray film taken on September 18, 1964, revealed bilateral basilar effusions and an infiltrate in the right fourth interspace (Fig. 1A). She was treated with penicillin with no effect. Tuberculin skin test gave negative results. Laboratory data were as follows: urine, specific gravity, 1.007; albumin and sugar negative. Microscopically, 7 to 8 white blood cells and 2 to 3 red blood cells per high-power field. Fasting blood sugar was 103 mg. per 100 ml. Hemoglobin was 13.5 Gm. per 100 ml. Hematocrit was 40. White blood count was 7,300, with 79 per cent segmented neutrophils, 1 per cent bands, and 20 per cent lymphocytes. Erythrocyte sedimentation rate was 46 mm. per hour, Wintrobe. On September 29, 1964, she left the hospital against advice. Laboratory findings are shown in Table I.

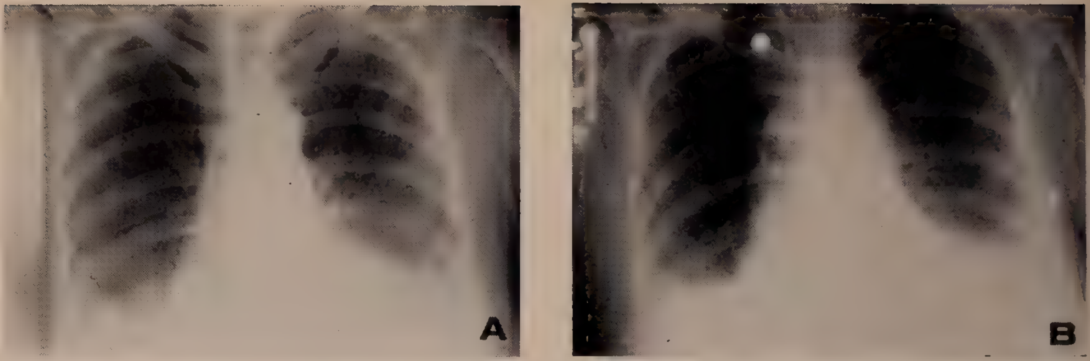

FIGURE 1. X-ray films. (A) September 18, 1964. Infiltration in right fourth anterior interspace. Bilateral pleural effusions. (B) October 20, 1964. Infiltration within posterior portion of both lower lobes.

Ten days later on October 9, 1964, she was readmitted to the hospital with bilateral pleuritic chest pains. These chest pains radiated to the shoulders and arms and were associated with shortness of breath. She had no joint pain at this time. In the month prior to this admission, she had had a weight loss of 30 pounds.

The physical examination showed blood pressure of 90/70, pulse 120, respiration rate 40 per minute, and temperature 101 F. Decreased breath sounds and scattered inspiratory rales were heard at both bases. Bronchovesicular breath sounds were noted at the left base posteriorly. There was no cardiac enlargement noted on physical examination. She was given digitalis treatment on admission because the attending physician felt there was an element of heart failure present. Dexamethasone 0.75 mg. a day was begun two days after admission. She ran a febrile course with temperatures between 100 and 102 F. which was unresponsive to chloramphenicol (Chloromycetin) and penicillin. Ten days after admission, her temperature rose to 105 F. without an associated chill. At this time she was noted to have a definite cardiac friction rub with no evidence of tamponade. Venous pressure was 120 mm. of saline, and circulation time, arm to tongue using dehydrocholic acid (Decholin), was 15 seconds. Figure 1B shows infiltration on x-ray film. Later that evening she became

TABLE I. Laboratory values

	September, 1964		October, 1964									April
Test	17	28	9	12	19	20	21	22	24	26	30	13, 1965
Hemoglobin (Gm. per 100 ml.)	13.5	12.3	13.2	12.5	...	11.1	...	8.6	9.7	10.0	11.1	13.5
Hematocrit	40	37	39	38	...	34	...	26	26	29	33	40
White blood count	7,300	5,500	6,750	7,100	...	11,500	...	...	...	12,200	9,300	11,000
Neutrophils	79	82	79	73	...	83	...	...	...	78	68	85
Bands	1	...	1	...	...	1	...	...	...	1	2	2
Lymphocytes	20	17	19	27	...	16	...	...	...	18	30	13
Eosinophils	...	1	1	...	...	...	...	...	...	3	...	...
Erythrocyte sedimentation rate	...	...	...	22	...	...	...	...	...	...	...	...
L.E. cell preparation	...	...	...	...	...	...	Positive	Positive	...	...	...	Positive
Reticulocte count (per cent)	...	...	...	...	...	...	...	2	...	...	...	...
Blood urea nitrogen (mg. per 100 ml.)	12.0	...	...	...	...	22.0	...	...	...	...	...	14.0
Fasting blood sugar (mg. per 100 ml.)	103	...	...	...	...	...	...	...	...	...	...	117
Coombs' test result	...	...	...	...	...	...	...	...	Positive	...	...	Negative
Total protein (mg. per 100 ml.)	...	...	...	...	7.2	...	...	...	...	...	...	...
Albumin (mg. per 100 ml.)	...	...	...	...	3.6	...	...	...	...	...	...	...
Globulin (mg. per 100 ml.)	...	...	...	...	3.6	...	...	...	...	...	...	...
Latex fixation test for rheumatic arthritis	...	...	...	...	Reactive	...	...	...	...	...	...	...
Stool for occult blood	Negative	...	...	...	...	...	...	...	Negative	...	...	...

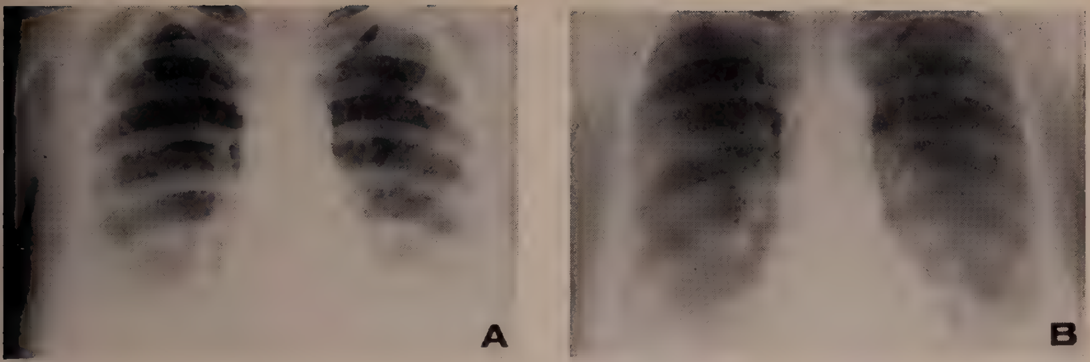

FIGURE 2. X-ray films. (A) October 26, 1964. Persistent obliteration of left costophrenic angle. Bilateral basilar increased structures. (B) April 14, 1965. Basilar infiltrations and plate-like atelectasis.

comatose, and at this point the clinical diagnosis of systemic lupus erythematosus was made. The latex fixation test for rheumatoid arthritis gave positive findings. There was a slight globulin elevation. Total protein was 7.2 Gm., albumin 3.6 Gm., and globulin 3.6 Gm. per 100 ml. Three L.E. cell preparations were strongly positive. One hundred milligrams of soluble hydrocortisone were given intramuscularly every eight hours with a dramatic response. The temperature fell to normal in twelve hours. Over the next seventy-two hours, there was clearing of the cerebral symptoms. Her remaining course was uncomplicated except that during the crisis her hemoglobin fell from 11.1 Gm. to 8.6 Gm. per 100 ml. with the development of a positive direct Coombs' test result. After the institution of steroid therapy, the hemoglobin returned to 11.0 Gm. per 100 ml. in about one week. The steroids were gradually tapered, and she was discharged on oral prednisone 10 mg. per day.

The electrocardiogram taken on admission revealed a first-degree heart block with PR 0.22 seconds and inverted T waves with depressed S-T segments across the precordium. Inverted T waves were also noted in leads I, II, III, and aVf. Repeat electrocardiogram taken on October 20, 1966, revealed a normal P-R interval, 0.16 seconds, and a return of the T waves toward normal in the standard and precordial leads. Because of the digitalis that was given, a definite statement cannot be made with reference to the cardiac involvement in this disease.

On April 12, 1965, she was admitted to the hospital because of recurrent pleuritic chest pain on the left side, fever, and shortness of breath. Her symptoms cleared on no change in medication. Chest x-ray films revealed the previously demonstrated plate-like atelectatic streaks noted just prior to discharge in October, 1964 (Fig. 2). The electrocardiogram gave normal findings with normal P-R interval and T waves. The L.E. cell preparations were negative. An intensive search for acid-fast bacilli was carried out, but none could be found. It was postulated that this pain was due to perisplenitis.

Comment

This patient represents a classic picture of systemic lupus erythematosus. Her disease probably dates back five years prior to the crisis that occurred in 1964. She had a nondeforming arthritis that was treated intermittently and successfully with steroids. Pleuritic chest pain, high fever, and eventually coma developed over a few weeks. It was not until five weeks after the onset of this acute phase that pericarditis developed leading to the clinical diagnosis of systemic lupus erythematosus. The laboratory assisted with positive L.E. cell preparations. Of the 520 cases reviewed by Dubois,[3] 26.5 per cent had the combination of polyarthritis and arthralgia, fever, pleuritis, unexplained pneumonitis, myocarditis or pericarditis, and anemia.

Although many cases of systemic lupus erythematosus have been seen and reported, the acute systemic crisis that developed in the course of this patient's disease offers an opportunity to review briefly the subject of cardiopulmonary lupus.

Pathology

The pathologic findings in the lung in systemic lupus erythematosus are nonspecific.[4] This is true in spite of the fact that pulmonary involvement is said to occur clinically in 60 to over 90 per cent of the cases sometime during the course of the disease.

L.E. cells are rarely found in the pleural fluid, and the perivascular involvement seen in other organs is rarely found in the lung. Bronchopneumonia of a patchy nature is frequently seen and is ascribed to a decreased resistance to bacterial infection systemically and locally. Basophilic mucinous interstitial edema was first described by Purnell, Baggenstoss, and Olsen[5] and has been frequently mentioned by other investigators. These authors and others have found this perivascular and peribronchial mucinous edema in the interstitial connective tissue of other organs.[5-8] Hoffbrand and Beck[9] felt that the mucinous edema, loss of alveolar structure, and alveolar mononuclear cell infiltration suggested the deficiency of surface-active film (a lipoprotein), perhaps on an allergic basis. Local areas of this alveolar atelectasis could be responsible for the patchy pneumonitis and linear atelectasis frequently reported clinically.

Pericardial involvement is found in two thirds of the cases. There may be found fibrinoid deposits, hematoxylin bodies, or chronic thick edematous fibrous tissue obliterating the serous cavities. The myocardial lesions are found in the connective tissue with the appearance of fibrinoid and scarring in the septa and perivascular areas. The endocardium may be involved with the appearance of the verrucose endocarditis lesions described by Libman and Sacks. Bacterial endocarditis has also been described.[6]

Clinical findings

The findings on chest x-ray examination may be in excess of the physical findings. Symptomatically, however, unexplained dyspnea has been reported as a frequent finding in systemic lupus erythematosus. Hoffbrand and Beck[9] reported 16 cases showing one or more of the following clinical pattern: (1) pleurisy, usually bilateral, without large effusion often associated with pericarditis, fever, and toxemia; (2) recurrent febrile attacks of cough, dyspnea, pleurisy, and scanty sputum resembling bronchopneumonia but unresponsive to antibiotics and improving dramatically with steroids; and (3) unexplained breathlessness.[9] Pulmonary function tests revealed a restrictive defect with tachypnea, decreased compliance, decreased vital capacity, and minor ventilation-perfusion imbalance.[9]

Bilateral linear plaques and focal patchy infiltrates, poorly defined and migratory in nature, are more classically seen.[7,10,11] In these cases respiratory symptoms are frequently absent. Micronodular infiltrates producing a ground glass pulmonic consolidation have been reported. None of these radiographic findings are diagnostic of systemic lupus erythematosus and may be seen in such diseases as periarteritis nodosa, rheumatoid arthritis, Sjögren's syndrome, and dermatomyositis.[8,11,12]

Cardiac involvement is rarely the initial manifestation of systemic lupus erythematosus.[13] Clinically, pericarditis is reported in 10 to 12 per cent of the cases. A gallop rhythm is found in roughly the same percentage. Cardiomegaly is reported in approximately 30 per cent of the cases. Heart murmurs of Grade II to VI strength or more are reported in roughly a third of the cases. The electrocardiogram shows T-wave abnormalities and S-T deviations in a third of the cases, while a smaller percentage show atrioventricular block, bundle-branch block, and ventricular hypertrophy.[6,13]

Central nervous system involvement cannot be proved in this case, but coma has been ascribed in the past to central nervous system arteritis and phlebitis.[3] This has been seen much less commonly than before the advent of steroids. When coma has been reported, the response to "high doses" of steroids has been dramatic.

Several serologic abnormalities frequently seen in systemic lupus erythematosus were demonstrated in the presented case: A positive test result for rheumatoid factor is found in 30 per cent of systemic lupus erythematosus patients. (Rheumatoid factor is a 19S immune globulin.) A direct-reacting Coombs' test is present in 5 to 10 per cent of the cases with or without anemia. A false positive serology frequently reported was not tested in this case.[14]

Remissions of some months to years have been reported in the natural history of the disease in 70 per cent of the cases. Less than 10 per cent have exacerbation and remissions without acute crisis. The majority have a gradual onset and sometime later have an acute exacerbation which may or may not be fatal. The remainder have a course that begins with an acute severe onset and ends in early death.[2] The patient herein reported had a gradual onset with joint symptoms dating back five years. During the last two months, the acute phase developed and proceeded rapidly to the point of high fever, coma, and cardiopulmonary involvement. High doses of steroids produced a dramatic remission.

Summary

A case of systemic lupus erythematosus in acute crisis has been presented. There was significant evidence for cardiopulmonary involvement and presumptive evidence of central nervous system involvement. During the course of the disease, an elevated gamma globulin was present with both L.E. factor and rheumatoid factor being demonstrated. During the acute crisis, a Coombs' positive hemolytic anemia of rather mild nature developed. Two years later, the patient is clinically well on low doses of steroids.

345 Grand Street

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Ten commandments of physical fitness

Ten commandments of physical fitness have recently been compiled by the Home Life Insurance Company of New York—Family Life Institute. Formulated by an ex-coach, they are as follows:

(1) Thou shalt recognize thy body as the dwelling place of thy spirit and honor it accordingly; (2) thou shalt seek and follow the advice of thy doctor; (3) thou shalt seek and follow the advice of thy dentist; (4) thou shalt get sufficient rest each day to restore thy vigor and vitality; (5) thou shalt eat a regular, well-balanced diet; (6) thou shalt exercise regularly with sufficient vigor to maintain cardiovascular fitness; (7) thou shalt participate in lifetime sports which provide exercise for the body and challenge to the mind and spirit; (8) thou shalt not smoke; (9) thou shalt not drink to excess; and (10) thou shalt maintain proper personal grooming and hygiene.

Malabsorption Syndrome Secondary to Jejunal Stenosis with Massive Mesenteric Adenitis

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THE CLASSIC CLINICAL picture of intestinal obstruction is the usual finding with jejunal stenosis. Children whose symptoms result from malrotation of the colon usually present manifestations of high intestinal obstruction in early life except for a rare small number who are said to develop a syndrome similar to that of celiac disease.[1] Secondary celiac syndrome in children can apparently develop as a result of a partial obstruction of the gut as with stricture or from obstruction in the absorptive pathways as in tuberculous mesenteric lymphadenitis.[2] No correlation between the two mechanisms has been reported.

We have recently managed a case of jejunal stenosis, proximal chronic volvulus with massive mesenteric lymphadenopathy.

Case report

A 5-pound 8-ounce female infant was delivered spontaneously at term on May 10, 1962. The infant cried spontaneously at birth.

On examination, the physical findings were within normal limits. On the fourth day of life, the infant vomited six times. The vomitus was not projectile but consisted of green mucoid material.

Meconium stools were being passed. Intake of formula had amounted to from 6 to 12 ounces daily. Laboratory report of May 14, 1962, revealed hemoglobin 19.6 Gm. per 100 ml.; hematocrit 72; white blood count 6,000; and differential, polymorphonuclear leukocytes 48, lymphocytes 28, bands 16, juveniles 6, and monocytes 2. Barium enema on May 14, 1962, revealed a patent large bowel. There was also air in the stomach and in the intestinal tract.

X-ray films of the chest on May 15, 1962, revealed no unusual pulmonary densities. The heart was normal in size and configuration.

A gastrointestinal series with methylglucamine diatrizoate (Gastrografin) on May 16, 1962, demonstrated no lesions of the stomach, pylorus, or duodenal bulb (Fig. 1A). The opaque material passed promptly through the pylorus into the small bowel. The small-bowel loops seemed to be normally arranged, and there was normal progress of the opaque material through the small bowel into the colon, as shown in Figure 1A.

On May 16, 1962, the infant tolerated an oral intake of $2^1/_2$ ounces of formula. The weight was recorded as 5 pounds, 5 ounces. The infant remained active; she had 2 stools on May 16, 1962, and these were found to contain altered formula.

On discharge as of May 25, 1962, her weight was 5 pounds, 7 ounces, and physical findings were within normal limits.

The infant was lost to follow-up until the age of nineteen months. The mother returned on January 8, 1964, with the child, complaining of the child's failure of growth, abdominal distention, and intermittent vomiting. Physical findings revealed a weight of 24 pounds; head circumference $17^1/_2$, chest circumference 19, abdomen 22, and height $31^1/_4$ inches; anterior fontanel closed; and teeth 8/7. The abdomen was protuberant and softly distended.

Laboratory data on January 8, 1964, revealed hemoglobin 12 Gm. per 100 ml.;

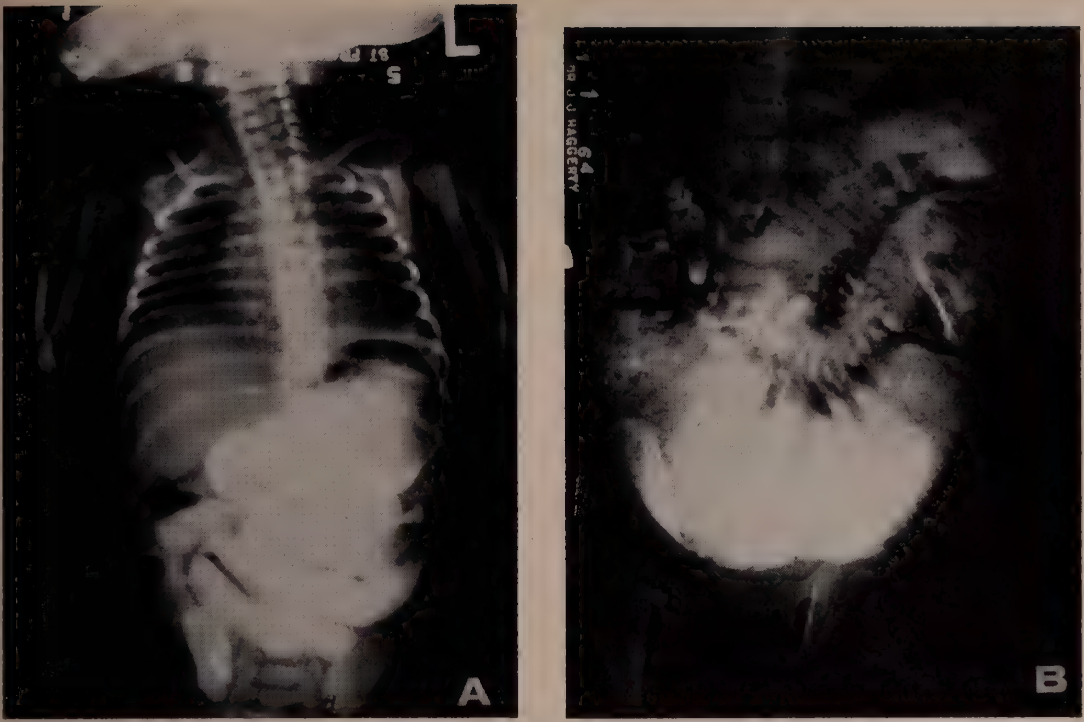

FIGURE 1. Gastrointestinal series with methylglucamine diatrizoate. (A) May 15, 1962. Failed to reveal evidence of obstruction. (B) January 1, 1964. Massive dilatation of several loops of small bowel with small degree of colonic filling.

white blood count 10,350; and differential 22 polymorphonuclear leukocytes, 1 band, 74 lymphocytes, and 3 monocytes. The urinalysis was normal. No megaloblastic anemia was noted, and hematologic consultation revealed iron-deficiency anemia.

On January 16, 1964, a gastrointestinal series and a small-bowel series demonstrated the stomach to be high in the abdomen and transverse in position. The stomach and duodenum were normal in size, and intrinsic lesion was demonstrated. There was no delay in the passage of the barium mixture from the stomach into the duodenum. Considerable dilatation of several loops in the small bowel were noted, which occupied a major portion of the abdomen (Fig. 1B). A twenty-four-hour film showed that the barium was still in the intestinal tract. In the upper right side of the abdomen there was a cluster of loops of ileum. Some of the barium was also noted in the hepatic flexure and the splenic flexure, sigmoid, and rectum. There was a partially obstructing process involving the small bowel.

The d-xylose excretion test with oral administration was not accurate, in that persistent vomiting was occurring in the preoperative period. The absorption of 5 Gm. of d-xylose showed an excretion of 0.5 Gm. in 90 cc. of urine in a five-hour period (approximately 10 per cent of the ingested amount).[3] Fecal fat studies could not be performed since no stool was excreted in the preoperative period.

The child was hydrated and taken to the operating room on January 18, 1964, where the following findings were noted: There was massive distention of the proximal small bowel with a 180-degree counterclockwise volvulus of the segment from the ligament of Treitz to the area of an obstructing band. The tremendous lymphadenopathy noted is shown in Figure 2A. The site of the stenosis is shown in Figure 2B. The bowel was rotated to its normal position, and a proximal to distal side-to-side entero-enterostomy was performed up to the point of the obstruction with two layers, and the abdominal wall was closed in layers. Cultures taken from the proximal loop revealed a heavy growth of Escherichia coli.

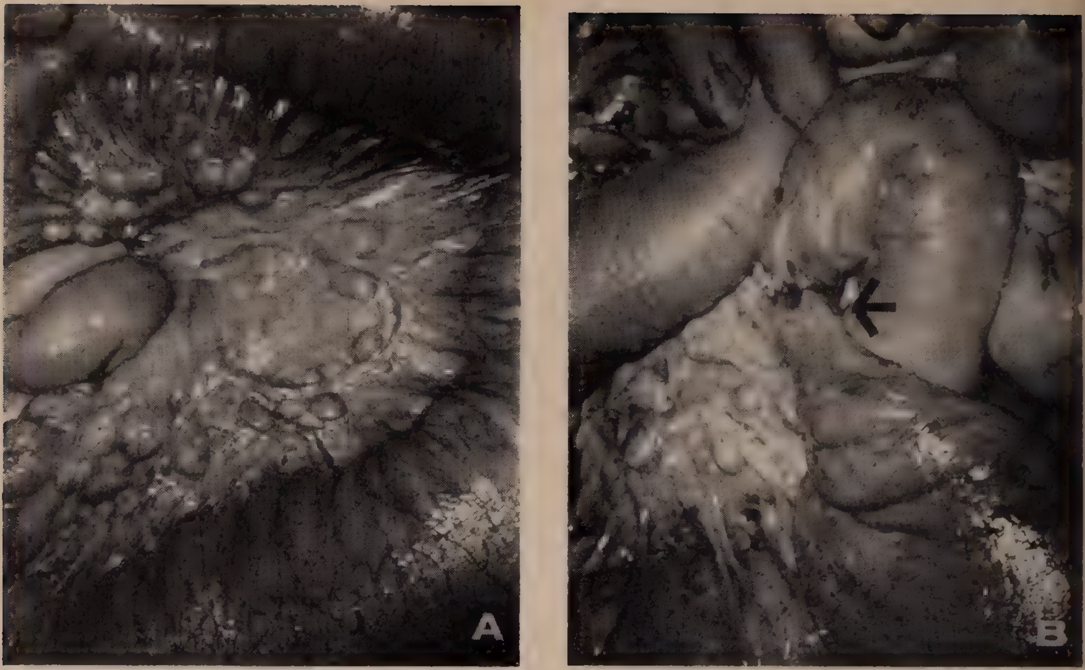

FIGURE 2. (A) Massive lymphadenopathy in mesentery of obstructed loops. (B) Site of obstruction in small intestine.

The child's postoperative course was entirely uneventful, and within the first postoperative visit on February 8, 1964, her weight was 23 pounds, height $31^{1}/_{4}$ inches, and her abdomen showed some diminution in size. By five months after the operation, the child was 27 pounds, $33^{3}/_{4}$ inches, and the abdominal circumference had diminished from 22 to $18^{1}/_{2}$ inches. Eighteen months postoperatively the child was perfectly well, having normal growth and development for her age.

Comment

Chronic partial intestinal obstruction is seen clinically as cachexia, abdominal distention, vomiting, and occasional diarrhea. These findings have been explained by obstruction alone. Malabsorption problems are well known since Farber's[4] original report of clinical and hematologic pictures of pernicious anemia was associated with intestinal stricture. Since this report, megaloblastic anemia alone, or accompanied by steatorrhea, has been found in patients with nonspecific inflammatory strictures of the small bowel, strictures of the small bowel secondary to tuberculosis or regional enteritis, postanastomotic strictures and blind loops due to bypass procedures, as well as diverticulosis of the small bowel.[5] This child did not have the syndrome of megaloblastic anemia despite lymphadenopathy and well-documented intestinal obstruction with stasis and poor emptying.

There have been no reports of this form of longstanding stenosis with malabsorption which have documented the presence or absence of local mesenteric adenitis. The question arises as to whether or not lymphadenopathy plays a more significant role in the malabsorption pattern of chronic partial intestinal obstruction than previously recognized.[6] Experience in tuberculous mesenteric adenitis suggests that this adenopathy has a definite role in the production of abnormal absorption patterns. It is assumed that lymphatic obstruction blocks the pathway of absorption. Lymphadenitis of the mesentery has not been mentioned in the clinical syndrome, accompanying so-called blind loop, or following the changes associated with coliform contamination or proximal obstructed bowel,[7] with or without volvulus or rotational change.

The cause of the lymphadenopathy could be from the bacterial overgrowth in an obstructed loop. Our case did show a very heavy growth of coliform organism in the small bowel. Intermittent venous obstruction by volvulus is the other possible major causation in mesenteric adenitis from simple overloading of the lymphatic system.

An interesting note in this case is the fact that at birth, because of some moderate abdominal distention, complete radiographic studies were taken which fail to reveal any abnormality.

Conclusion

A case is presented with jejunal stenosis and malabsorption syndrome. The observation of significant regional adenitis is made at operation. A possible cause of this adenitis is discussed, together with its potential relationship to the malabsorption.

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Accident prevention at night

Pedestrians and cyclists can help protect themselves from injury at night by wearing materials that reflect automobile headlight beams, it was recently recommended by the Public Health Service. These types of material and devices, called retroreflective, can be attached to clothing or accessories, carried as tags, or applied to motorcycles or bicycles.

Although this material is inconspicuous in daylight, at night a beam of light bounced off this material returns to the source of light with a considerable glare. It is at present used in various types of highway signs and markers.

A pilot demonstration of this device in Kansas has been highly successful, and future demonstrations are planned. Live models, on foot and on bicycles, will demonstrate the effectiveness of a wide variety of retroreflective devices. This will show how far away they can be spotted, if worn or carried.

The pedestrian injury problem annually accounts for 8,800 fatalities and an estimated 500,000 persons injured, it was stated. More than half of these occur at night. Many occur because of the failure on the part of the motorist to see the pedestrian or bicyclist.

In Finland and Sweden, two of the countries where this method is widely used, there have been no reports of deaths or injuries of persons employing this device.

Some Medical Allusions in *The Canterbury Tales*

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The pleasures of long-distance diagnosis of fictional characters are often enjoyed by persons whose interests embrace both literature and medicine. From the battlefield surgery of Homer to Lear's hypothesized heart attack to the hereditary neurosyphilis of Oswald Alving, literature has provided a rich field for armchair diagnosis. The advantages of literary, as opposed to clinical, diagnosis are two: The subject suffers no discomfort during the procedure, and no serious consequences ensue if the diagnosis happens to be wrong. The present exploration of some medical allusions in Chaucer's *The Canterbury Tales*, together with some diagnostic second-guessing where appropriate, is undertaken, therefore, with a satisfying awareness of its association with a noble tradition.

Nature of pilgrimage

The nature of the pilgrimage itself is associated with illness: the pilgrims visit the shrine of the "hooly blisful martir. . . that hem hath holpen whan that they were seeke." Thus a history of illness or disability is inferred about all of the pilgrims, and in most cases there is some major or minor disease or deformity still present. In at least two cases, the Summoner and the Pardoner, the medical symptoms predominate in the description, and it would not be unreasonable to suppose that the journey to Canterbury is being undertaken as much in expectation of present aid as in gratitude for past favors.

The Summoner suffers from some especially unpleasant form of dermatosis that is, very likely, venereal in origin. Curry[1] identifies the condition as gutta rosacea, a disease of the blood manifested by red pustules on the face "making it fyr-reed." Medieval medical lore attributed the disease to an immoderate diet, but the fact that the Summoner is "hoot. . .and lecherous, as a sparwe" cannot be a coincidence. The Summoner neglected neither the pleasures of the bed nor those of the table. The condition he suffers from is considered by many modern writers to be a form of leprosy, essentially a venereal disease. Chaucer apparently shared with the medieval physicians a belief that the disease could be caused by certain vegetables in the diet.[2] He includes a catalogue of the various agents which have proved to be ineffective in treatment. Most of these highly caustic medicines[3] fortunately are no longer in use, but arsenic per os remains a standard remedy for psoriasis and is approximately as valuable in the treatment of this stubborn malady as more recent and more sophisticated "cures."

The description of the Pardoner identifies him beyond question as a eunuch:

> A voys he hadde as smal as hath a goot.
> No berd hadde he, ne nevere sholde have;
> As smothe it was as it were late shave.
> I trowe he were a geldyng or a mare.

Some remarks by Fuller Albright, M.D., the distinguished American endocrinologist, highlight Chaucer's genius for selecting the relevant detail:

> A patient who complains of impotence or lack of libido does not suffer from a hormonal lack; a patient with real endocrine insufficiency, e.g., is, eunuchoidism, has impotence and absent libido, but does not complain of them, but of something more trivial, such as being mistaken for a girl over the telephone.[4]

The ills of the flesh or the psyche that trouble other pilgrims are worthy of note. The Host, for one, frequently suffers from the consequences of acute overindulgence in strong drink. He seems to be in good health otherwise, except that he was so much affected by the Physician's Tale that he "almoost have caught a cardynacle." What this worthy gentleman experienced, no doubt, was that awareness of one's own heartbeat that accompanies physical or emotional stress.[5] Another possibility is that the Host wished to compliment the Physician, and gracefully chose the latter's own frame of reference in which to do so.

The Canon's Yeoman presents the "discoloured . . . face" of "leden hewe" and the bleary eyes of a man daily subjected to "fumes diverse of metals." The Cook has an ulcer on his leg that occasionally secretes a white exudate. The association of the Cook's infirmity with his speciality, a blanc mange, might or might not have been intentional on Chaucer's part; most Chaucer scholars assume that it was. Medieval practitioners thought the Cook's lesion was due to an improper diet.[6] Of minor medical interest is the fact that the Miller has "a werte" on his nose and possibly elsewhere, and the fact that the Reeve is a "sclendre colerik" fellow who is so thin that he has no calves on his legs.

The Wife of Bath presents a complex of signs and symptoms that is second in interest only to the flamboyant disease of the Summoner. Her "reed of hewe" complexion, "hipes large," florid personality, and middle age are compatible with the mild chronic hypertension that is found so frequently in overnourished matrons of agreeable disposition. She is "somdel deef," an interesting and particularizing detail in itself and possibly related to her garrulousness; as long as hearing-deficient people keep talking, they need not struggle to hear. We may suppose that she suffers from a perforated eardrum, because her difficulty arose from a blow "that of the strook [her] ere wax al deef." Her gap teeth are simply gap teeth; these days a woman of the Wife's vanity and prosperity would avail herself of the expensive ministrations of the orthodontist. The Wife's noteworthy enthusiasm for sexual activity can be construed as nymphomania, but it is much more pleasant to enjoy her flourishing libido as much as she does and attach no more pathologic significance to it than she does sin.

Details in stories

As would be expected, medical details abound in the stories told by persons obviously aware of their own past or present infirmities, and one can find a wealth of medical allusion in the tales told by the pilgrims. The first description of illness in a character is found in the Knight's Tale. Arcite has a face disfigured by "humour malencolik." Later, the young man's wound on the battlefield proves mortal, and Chaucer provides a complete description of the consequences of trauma for which "lechecraft. . . ne . . . ben his helpyng."

Various maladies, frequently unspecified, advance the plots of many of the tales. The "old rebekke" in the Friar's Tale has a pain in the side; anything from colic to cancer can be assumed on the basis of the evidence. In the Reeve's Tale, we are told of a maunciple who "sik lay . . . on a maladye" of which we know nothing except that great distress is caused by "the wanges in his heed."

One of the most interesting references occurs in the Summoner's Tale, in which old Thomas has become ill from an unspecified disease. Seven lines after the first reference to the disease, however, we learn that the visitor "fro the bench . . . droof awey the cat." One can conjecture that Thomas had cat-scratch disease, an entity first described in 1932[7] but undoubtedly as old as the association between man and feline. The disease is even now difficult to diagnose without laboratory studies; its chief symptoms (elevated temperature, lymph-node enlargement, and generalized malaise) are common to many infectious diseases. The illness, which can be transmitted simply by a playful scratch from a cat who is itself unaffected, is benign and self-limited. Thomas would indeed have recovered in time to perpetrate his famous outrage.

Of the "invisible wounde" suffered by King Antiochus in the Monk's Tale, nothing is known except that its exceptional virulence does indeed suggest an act of God rather than any naturally occurring disease. One must forego an attempt at physiologic explanation and accept the Monk's evaluation that "swich gerdoun . . . belongeth unto pryde."

Childbirth is not specifically discussed in the Tales, but two characters, Griselda and May, refer to their antepartum discomfort. May might actually have been suffering from the pica of pregnancy when she "han to fruyt so greet an appetit, that she may dyen, but she of it have." Other problems attending the married state can be inferred from references to use of the numerous aphrodisiacs that could be found in any medieval pharmacopoeia. Januarie uses them "t'encressen his corage" but the restlessness of "faire May" casts some doubt on their efficacy.

We learn from the Parson's Tale that a knowledge of chemical contraceptive and abortifacient drugs was fairly general. The old man is noxiously explicit about any woman who drinks "venenouse herbes thurgh which she may nat conceyve . . . or elles putteth certeine material thynges in hire secree places to slee the child." In his peroration against unchastity, the Parson observes:

> For certes, namoore may maydenhede be restoored than an arm that is smyten fro the body may retourne agayn to wexe.

These days, of course, physiologic restoration of the maidenhead is no great feat. One can imagine the Parson's astonishment if he had been able to read the reports from Massachusetts General Hospital a few years ago, which described how a team of surgeons did in fact return an arm to the body from which it had been smitten.

Blindness occurs to one character, Januarie. It comes upon him "al sodeynly" and undoubtedly carries more allegorical than medical significance. In the Man of Law's Tale, there is an interesting reference to the "eyen of [the] mynde with whiche men seen, after that they ben blynde." The facility with which many blind people substitute some other means of perception for the visual one is, of course, well known.

Interaction of mind and body

There is ample evidence in the *Tales* that Chaucer is familiar with the interaction of mind and body that is the central thesis of psychosomatic medicine. In the sprightly person of Pertelote, for example, Chaucer delivers a homily about the association of dreams and digestion: "Swevenes engendren of replecciouns." But whereas the medieval physician considered that bad dreams could be caused by a disordered digestion, his modern-day counterpart might suggest that a disordered digestion is caused by bad dreams. In any event, the wise hen urges her harried spouse to "taak some laxatyf . . . that bothe of colere and of malencolye ye purge yow." She then discourses succinctly and explicitly on the armamentarium of purgatives that can be obtained free of charge from one's friendly neighborhood garden. Houseman[8] notes that this tale, like many others, demonstrates Chaucer's considerable interest in and knowledge about herbs, spices, and the varied possibilities of "kitchen chemistry."

Diet for the treatment of both physical and psychic ills was of paramount importance in medieval medicine, and there are frequent references to the salutary effects of a temperate diet.[9] The virtue of balanced and sufficient meals was preached and practiced by the Doctor of Physik:

> Of his diete mesurable was he,
> For it was of no superfluitee,
> But of greet norissyng and digestible.

The Summoner knows that those seeking spiritual salvation "moot faste and be clene . . . and make his body lene." The Pardoner advises:

> O, wiste a man how many maladys
> Folwen of excesse and of glotonyes
> He wolde been the moore mesurable
> Of his diete, sittynge at his table.

Don John, speeding an unsuspecting husband on his way, advises moderation in diet "in this hete." Both the Summoner and the Pardoner undoubtedly had ample opportunity to observe a man in his cups, who "of his throte . . . maketh his pryvee." As an example of the good health to be enjoyed by those who eat sparingly and drink no alcohol, there is the poor widow of the Nun's Priest's Tale.

The uses of malingering are not unknown to Chaucer's people. In the Man of Law's Tale, Custance feigns amnesia;

the chastity-obsessed daughter of Virginius, in the Physician's Tale, "syk . . . feyned" whenever circumstances seemed to warrant. The merchant whose business worries distract him from the pleasures of the bed, in the Shipman's Tale, presents an example of psychological impotence. (The cure was not difficult to effect.) Chaucer provides numerous instances to illustrate the fact that troubles affect both mind and body. Custance in the Man of Law's Tale and Palomon in the Knight's Tale indicate the extent to which desperate circumstances can derange one's wits.

Recovery

An astonishing number of Chaucer's sick pilgrims, and the subjects of their tales, seem to have recovered. Medical treatment was based chiefly on drugs compounded and administered according to astrologic systems, and the medieval physician could hardly have been very useful:

> [T]he silhouette of the physician of the fourteenth century, familiar to us from the miniatures of the time, entirely preoccupied with a sumptuous costume, examination of urine, and the day and hour best suited for bloodletting, is the best symbol that one can find of the very poor state of medicine at this period.[10]

That patients very often survived the treatment to which they had been subjected is a tribute to nature's stubborn ability to resist meddling. And perhaps a share of the credit does in fact belong to St. Thomas, for helping men "whan that they were seeke."

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Washington's experience with alcoholic patients

For years, Washington, D.C., treated chronic alcoholic patients much the same way as did other cities—threw them in jail. A recent issue of *J.A.M.A.* reports that this has now been changed.

In 1966 the United States Court of Appeals for the District ruled that an alcoholic individual be treated as a sick person rather than a criminal. This was a landmark decision.

Although court-committed individuals could not be placed in a meaningful treatment program because of their vast numbers, empty beds in the city's chronic disease and tuberculosis hospital were used for these individuals. Various clinic hours were also extended.

The health department did several things to improve the situation: Staffs for the rehabilitation clinic and a new mental health center were increased; plans were made to erect community housing for skid row alcoholic men; a women's reformatory was converted into a rehabilitation center; and a bill has been introduced in Congress which, if enacted, would authorize the Washington, D.C., health department to expand all these activities. It is felt that a start, at least, has been made to meet this growing problem.

Current Dilemma of Medical Education in United States of America

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THE MILLIS' CITIZENS COMMISSION report on the acute shortage of and graduate education of physicians is an excellent dissection and analysis of some of the problems the community and the medical profession are facing.[1] The plight of the general practitioner is fairly universal, at least in the better-developed countries.[2] Jonas[3] has suggested that it is time that general practitioners, in Britain, should be upgraded by allowing them to take a more active part in their patients' hospital treatment, but he hastens to add that this will require a change in medical education so that students would be taught the true place of the general practitioner.

I think it is regrettable that the Millis Commission did not consider a more radical change in the undergraduate training of medical students, since this, I believe, is the first essential step in the development of the modern "family" or "primary" physician.

The present medical graduate fresh out of school is hardly able to practice clinical medicine of any type. This is emphasized by the fact that a year's internship is compulsory in 37 states of the Union before the graduate may obtain licensure.[4] It is also required by the national Boards of medical examiners. That the present training of medical doctors is not adequate for the modern family physician is emphasized by the similar suggestions of the Millis Commission and the American Medical Association Council on Medical Education. Both of these have recommended that the man who is going to take care of the primary needs of the American citizen will need a three-year postgraduate training program in family practice to make him a "specialist" in that field.

This implies that the present undergraduate medical curriculum is a failure. It is a failure, because it is trying to do too many things at one and the same time. In the first place, it hopes to produce excellent clinicians at two levels: family practitioners, although many schools have already given up this pretense, and well-trained "graduates" for the specialty-residency programs that the university and other teaching hospitals are so firmly based on. In addition, the medical schools are aiming to produce men and women who are highly motivated to careers in research, either at a basic or at an applied level. Furthermore, they are looking for the future teachers of medicine among these selfsame individuals. With such an ambitious program, it is not surprising that clinical medicine today is in a state of chaos, especially since most of the "better" schools are fully engaged in worshipping the research calf. It is interesting to note the changes that are already occurring in the attitudes of medical men now that "Medicare" and "Medicaid" have been introduced. No longer will medical research-education be "subsidized" by National Institutes of Health research grants alone; the Federal and state governments will swell the funds of all hospitals, making it possible to employ full-time clinicians in addition to researchers. This should have a salutary effect on medical education, and it should enable schools to emphasize clinical instruction, should they so wish.

Modern industrialists, fortunately for the United States, are not as schizophrenic as medical educators. When difficult research problems arise, they assign men qualified for the task to devote their energies full-time to the solving of those problems. They do not expect these researchers to continue with their teaching activities and with their routine work to keep themselves in pocket while they are busily engaged in solving problems.

At present, the four-year training program in medical schools is geared to teach medical students as much as possible in each of the many disciplines in the basic sciences as well as in the clinical fields. Many of the departmental chairmen would like to see the brightest young men and women in the group continue in their particular fields, especially in the research laboratories. Consequently, the program is pitched to the most advanced in the group, frequently neglecting the "middle of the roaders" or exhorting them to climb on the research band wagon.

There is little attempt, on the part of those responsible for the training of medical undergraduates, to recognize the three mainstreams of medical practice. Not all medical students are equally brilliant and similarly motivated to a career in a specialty with or without research and/or teaching. That this may be expected from the students can be gleaned from the criteria set up by the admission, internship, and residency selection committees of the various medical schools and hospitals who try to select candidates who are likely to excel in all three fields simultaneously.

The Millis Report recommends the establishment of comprehensive care programs or services in the teaching and university hospitals. Looking at this plan realistically, one realizes it is most unlikely to succeed, for the hospital part of the program will be absorbed ultimately into a specialty service.

As an undergraduate student at the Witwatersrand University Medical School, Johannesburg, I spent three weeks of my sixth year at a health clinic in a severely underprivileged area. Together with several colleagues, under the direction of a few dedicated faculty members, we served some of the medical needs of approximately 100,000 people. This was a unique and rewarding experience since we functioned as general practitioners, in the broadest sense, referring to the hospital only those patients we could not handle. Straightforward deliveries, for example, were performed on a domiciliary basis. As exciting an experience as this was, few of my classmates were tempted away from the "more glamorous" specialties. This may have been because the exposure was too short, and/or perhaps the rest of the faculty failed to emphasize this aspect of medical practice, preferring to underline the role of the specialist.

Additionally, the Millis Report and also the American Medical Association Council on Medical Education are now recommending an extension to the current undergraduate medical program of approximately three years to mold certain individuals into becoming "family practitioners" or "primary physicians." This is a self-defeating attempt to provide the urgently needed family practitioners for the community needs of this country. A young man or woman, having gone through a highly specialized undergraduate medical training program, is most unlikely to want to give this up for a career in "family medicine." On the contrary, if present trends continue, he is more likely to want to specialize in one subject.

Suggested solutions

I think there are three main courses open to medicine today. One is the Russian-type general practitioner who is based in a health center and who acts essentially as a screen of the population at large. Since the vast majority of patients seen have minor complaints and minor illnesses, it is essential for these practitioners to be good screeners, and their primary asset should be in their ability to sort patients into those who require services of a specialist and those who require some form of simple management for their streptococcal throat, cold, gastritis, and the like. The Russian "screener" presumably is trained to pick up the patient who does not respond rapidly to his treatment, and he will then refer this particular patient to a specialist whose practice is confined to consultant work.

The gradual prostitution of internists and pediatricians and, for that matter, many American specialists, is quite apparent. Most have gone through rigorous training programs and acquired a considerable amount of specialized knowledge, ending up in private practice performing the functions of general practitioners. In essence, they are "specialized general practitioners," and they represent a considerable wastage of talent and money in the form of personnel overtrained for their duties.

The second course has already been experimented with in this country. In the age of computers, it is not surprising that an automated system of patient screening has been established at the Kaiser-Permanente headquarters in Oakland, California. A patient attending such a service completes a detailed questionnaire which is more exhaustive and detailed than any clinician's inquiry could be. He then undergoes a check list-type physical examination followed by routine x-ray examinations, electrocardiograms, and chemical and hematologic profiles. With autoanalysers, these latter studies have become readily available. All the information may now be fed into a computer which will advise further appropriate studies or give the patient a clean bill of health. Perhaps a few minutes with a psychiatrist at the end of this is all that is needed to restore the patient's peace of mind.

It is my belief that there is no need for this country, with all its economic wealth and resources, to accept either of these systems. I would prefer to see the following reorganization of undergraduate medical education which should provide the answer to the problem confronting the country at present.

Reorganization of undergraduate training

The first two years after college, and there may be many advantages gained from having another look at the four-year college course in its preparation of future physicians, should be devoted to a course similar to that in most medical schools at present, namely a study of the basic sciences with some introduction to the clinical fields. At the end of this period, the group will then be divided into two major subgroups.

The first of these will be the group of young men and women who plan to, or are directed by counselors, to go into family practice. They will be given a three- or four-year course in school, hospital, and the community in those fields which are especially suited to their needs. This, of course, will include general medicine and pediatrics, as well as psychiatry and rehabilitation; it will of necessity include, if not the details of surgery and the surgical specialties, at least an introduction to the diagnosis of surgical emergencies. This is essential for the family practitioner since it will be he who will be the first contact of those patients with conditions requiring the urgent attention of a specialist in one or other field. In such a program it will not be necessary, as it is now, for every medical student to forego the well-established texts of surgery for example, and to learn his surgical practice from the latest journals which are "hot off the press." That he may become an expert in the fields of general medicine, pediatrics, and psychiatry, will be acceptable and desirable, but he should not be required to dissipate valuable learning hours on the intricacies of surgical technic to satisfy the egotistical needs of his instructors.

The second group would comprise those who are going to undertake a specialty residency and/or medical research. These students should complete the second two years of medical school in much the same way as they are now geared, and they should then enter on their residency program directly from medical school, bypassing the internship year as the Millis Commission has recommended. For those young men and women who are more interested in research than in specialist clinical practice, it may be useful at the end of the four years of medical school to enter a research institute and complete a further one or two years obtaining the Ph.D. degree while so doing.

A major problem that would face the country's medical schools, should such a program be accepted, would be: Which schools should train family practitioners? Ideally, all schools should be so set up, for this would avoid the important problem of relegating status of certain schools which train family practitioners below those that are the "academic giants" in the field. It will also have the very important positive effect of cross-fertilizing the interests of the three major groups of medical graduates and their teachers. Alternatively, some existing and some new schools could be encouraged to develop divisions of family practice. By means of training grants, the Federal and state governments could make this possible, and desirable on the part of numerous schools, especially those not so well endowed. Then at the end of their preclinical program, students should be directed to the division most suited to their needs and capabilities.

The matter of which students should be directed to the divisions of family practice may create some objection, but it should not. In essence, there would be need for re-evaluation of all medical students after the second year. In fact, it may be possible to admit many more students to the first two years, not only to the recognized two- and four-year medical schools existing but also to certain other colleges approved by the American Medical Association Council on Medical Education. The admissions committees would then reevaluate prospective third-year students, sorting them into the two groups. This selection would be no less fair than the present system of selecting prospective medical students, and it may add considerably to the number of graduates we can turn out each year.

There may be criticism that this basic idea will create second-class medical schools, especially if the "better schools" of today do not adopt the scheme. This may be prevented if the machinery recommended by the Millis Commission, which is long overdue, comes into effect. The Commission on Graduate Medical Education, proposed by the Millis Commission, should make the supervision of these schools for primary physicians one of their main concerns. The basis of a first-rate medical service will depend in no small measure on the excellence of the physicians taking care of the health and the day-to-day needs of the community as well as the initial management of acute illnesses. Those acute conditions which the physician can handle himself in a hospital, or at home, he should manage this way, but he will always have available the services of consultants in different fields. One might ask, when should the practitioner call for assistance, and who shall arbitrate this? With ever-increasing review of medical practice by numerous hospital committees, this should not be a problem. Furthermore, if primary physicians are correctly trained, they will recognize their limitations.

At least such a system will relieve the highly trained pediatrician and internist of the burden of looking after "well babies," and "well adults." Perhaps the specialist obstetrician will divert some of his numerous normal deliveries he now performs. It might also relieve the acute shortage of anesthesiologists if the straightforward anesthetics were administered by these physicians. Above all, it will swell the ranks of primary physicians by enlarging the scope of medical practice in the eyes of college graduates and also, perhaps, by liberalizing the admission requirements. There is no proof that students who are not straight A graduates make inferior practicing physicians.

Summary

The Millis Commission report on the graduate education of physicians should go a long way to solving the problems facing the medical profession. However, their recommendation, supported by the American Medical Association Council, that family practitioners should undergo a three-year "residency" in family practice after graduating from medical school, is likely to be a self-defeating change. Few graduates from a school which now emphasizes specialties rather than family practice will choose to "revert" to comprehensive care.

A more radical change in undergraduate medical education, based on the recognition of the two major divisions already existing in clinical practice, is advanced with the aim of increasing the number of family practitioners and defining more clearly the role of the specialist as consultant.

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Medical Communications Day

FRIDAY
February 16, 1968

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and

AMERICAN MEDICAL WRITERS' ASSOCIATION
Metropolitan New York Chapter

Morning Session

VALENTINO D. B. MAZZIA, M.D., Pelham, New York, *Presiding*
Professor and Chairman, Department of Anesthesiology, New York University School of Medicine; Member, Editorial Council, *New York State Journal of Medicine*

9:00 A.M. Registration, *Royal Ballroom Foyer, second floor*

9:30 A.M. Welcome, *Royal Ballroom A, second floor*
WILLIAM HAMMOND, M.D., Scarsdale, New York
Editor, *New York State Journal of Medicine*

PANEL: ETHICS IN MEDICAL RESEARCH AND REPORTING
VALENTINO D. B. MAZZIA, M.D., *Moderator*

1. **The Middle Man or The Man in the Middle**
DAVID M. ENGELHART, M.D., Brooklyn, New York
Professor of Psychiatry, Downstate Medical Center, State University of New York

2. **Ethics and the Design and Reporting of Multi-Clinic Trials of New Drugs**
IRWIN C. WINTER, PH.D., M.D., Chicago, Illinois
Vice-President of Medical Affairs, G. D. Searle & Co.

3. **The Square Root of Information**
EARL UBELL, New York City
Science Editor, WCBS-TV

4. **Between Sensation and Silence—The Peril of Press Relations in Science**
JOHN E. FLETCHER, Rahway, New Jersey
Director of Public Relations, Merck & Co., Inc.

Panel Discussion

12:00 NOON Reception, *Royal Ballroom B, second floor*
(Courtesy Hoffmann-La Roche, Nutley, New Jersey)

12:30 P.M. Luncheon, *Royal Ballroom B, second floor*

Presiding:
WILLIAM HAMMOND, M.D., Scarsdale, New York
Editor, *New York State Journal of Medicine*
M. J. SCHIFFRIN, PH.D., Nutley, New Jersey
Director, Drug Regulatory Affairs, Hoffmann-La Roche, Inc.; President, Metropolitan New York Chapter, American Medical Writers' Association

ADDRESS: The Impact of Mass Media on Health Sciences
MARTIN TOLCHIN, New York City
Reporter, *The New York Times*

Afternoon Session

EDWARD VAN VLAANDEREN, New York City, *Presiding*
Senior Account Executive, National Communication Associates, Inc.

2:30 P.M. **PANEL: ETHICS IN MEDICAL COMMUNICATIONS**
M. J. SCHIFFRIN, PH.D., *Moderator*

1. **Ethics, Law, and Regulations in Medical Promotion and Advertising**

ROBERT OPPENHEIMER, Pearl River, New York
Assistant Advertising Manager, Lederle Laboratories

CORTEZ F. ENLOE, M.D., Washington, D.C.
Pharmaceutical Industry Consultant

RAYMOND D. MCMURRAY, ESQ., New York City
Partner, McLean, Morton and Boustead

2. **Ethics, Freedom, and Responsibility in Medical Publishing**

WALTER MODELL, M.D., New York City
Professor of Pharmacology, Cornell University Medical College; Editor, *Clinical Pharmacology and Therapeutics*

JULIUS HAUSER, Washington, D.C.
Assistant for Regulations, Office of the Associate Commissioner for Compliance, Food and Drug Administration

WILLIAM HAMMOND, M.D., Scarsdale, New York
Editor, *New York State Journal of Medicine*

Panel Discussion

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Necrology

William George Farlow, M.D., of Rochester, died on November 24, 1967, at the age of sixty-six. Dr. Farlow graduated from the University of Michigan Medical School in 1925. He was an attending thoracic surgeon and chief of thoracic surgery at Rochester General Hospital and a consulting thoracic surgeon at St. Mary's and Rochester State Hospitals, in Rochester, and Mount View Hospital, Lockport. A Diplomate of the American Board of Surgery and a Fellow of the American College of Surgeons, Dr. Farlow was a member of the Rochester Academy of Medicine, the New York Society for Thoracic Surgery, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Landrum Harris, M.D., of Northport, died on November 8, 1967, at the age of sixty. Dr. Harris graduated from the University of Louisville School of Medicine in 1932. He was a staff psychiatrist at the Veterans Administration Hospital in Northport. A Diplomate of the American Board of Psychiatry and Neurology (Psychiatry), Dr. Harris was a member of the American Psychiatric Association, the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Monroe Bradford Kunstler, M.D., of New York City, died on December 2, 1967, at the age of seventy-eight. Dr. Kunstler graduated from Columbia University College of Physicians and Surgeons in 1913. He was an attending gastroenterologist at St. Luke's Hospital Outpatient Department. Dr. Kunstler was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Jerome M. Linder, M.D., of Hempstead and Brooklyn, died on November 19, 1967, at the age of fifty-four. Dr. Linder graduated from New York University College of Medicine in 1936. He was an attending surgeon at Jewish Chronic Disease, Unity, and Goldwater Memorial Hospitals, an associate attending in thoracic surgery at Kings County Hospital Center and Brooklyn Women's Hospital, and an adjunct in pediatric surgery at Jewish Hospital of Brooklyn. A Diplomate of the American Board of Surgery and a Fellow of the American College of Surgeons, Dr. Linder was a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Carl Albert Ottley, M.D., of Rochester, died on July 24, 1967, at the age of sixty-five. Dr. Ottley graduated from the University of Vermont College of Medicine in 1930. He was an attending physician at Rochester General Hospital. Dr. Ottley was a member of the Rochester Academy of Medicine, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George Clifford Rosenberg, M.D., of Rockville Centre, died on December 5, 1967, at the age of sixty-seven. Dr. Rosenberg graduated from Loyola University School of Medicine, Chicago, in 1926. He was an attending physician in general practice at South Nassau Communities Hospital. Dr. Rosenberg was a member of the American Academy of General Practice, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Floyd L. Spaulding, M.D., of Cohocton, died on November 4, 1967, at the age of sixty-seven. Dr. Spaulding graduated from the University of Buffalo School of Medicine in 1898. He was a member of the Steuben County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur Purdy Stout, M.D., of New York City, died on December 20, 1967, at his home at the age of eighty-two. Dr. Stout graduated from Columbia University College of Physicians and Surgeons in 1912. A pioneer in the development of tumor pathology, he had been professor of surgery at Columbia University and professor of pathology and surgery at Columbia-Presbyterian Medical Center, until 1954 when he became emeritus professor of surgical pathology. Dr. Stout was a consultant in surgical pathology at Presbyterian, Francis Delafield, St. Luke's, St. Luke's Woman's Division, Lenox Hill, and White Plains Hospitals, the Hospital for Special Surgery, Huntington, Vassar Brothers (Poughkeepsie), and John T. Mather Memorial (Port Jefferson), Hospitals, and Roswell Park Memorial Institute (Buffalo), and a consulting pathologist at Roosevelt Hospital. A Diplomate of the American Board of Pathology (Pathologic Anatomy) and a Fellow of the American College of Surgeons, Dr. Stout was a member of the American Association for Cancer Research, the American Society of Clinical Pathologists, the James Ewing Society, the New York Academy of Medicine, the New York Pathological Society, the New York State

Society of Pathologists, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arno E. Town, M.D., of Sarasota, Florida, formerly of New York City, died on December 11, 1967, in Florida, at the age of sixty-six. Dr. Town graduated from Jefferson Medical College of Philadelphia in 1926. Before his retirement two years ago he had been an attending ophthalmologist at St. Vincent's Hospital and a consultant in ophthalmologic surgery at the New York Eye and Ear Infirmary. A Diplomate of the American Board of Ophthalmology and a Fellow of the American College of Surgeons, Dr. Town was a member of the American Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, and the New York Academy of Medicine.

Jules Wahrman, M.D., of Long Island City and Long Beach, died on October 23, 1967, at the age of seventy. Dr. Wahrman graduated from University and Bellevue Hospital Medical College in 1921. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

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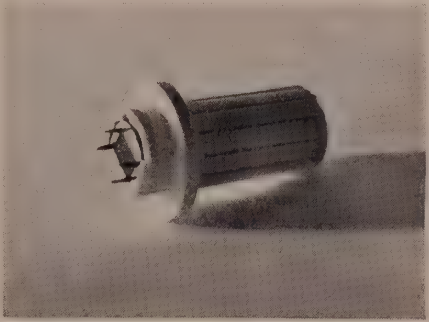

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References: 1. Selesnick, S. T., and Clemens, T. L.: From research film "Motion Picture Films in Psychosomatic Research," available from Roche Laboratories. 2. Clemens, T. L., and Selesnick, S. T.: *Dis. Nerv. System, 28*:98, 1967.

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Roche Laboratories, Division of Hoffmann-La Roche Inc.
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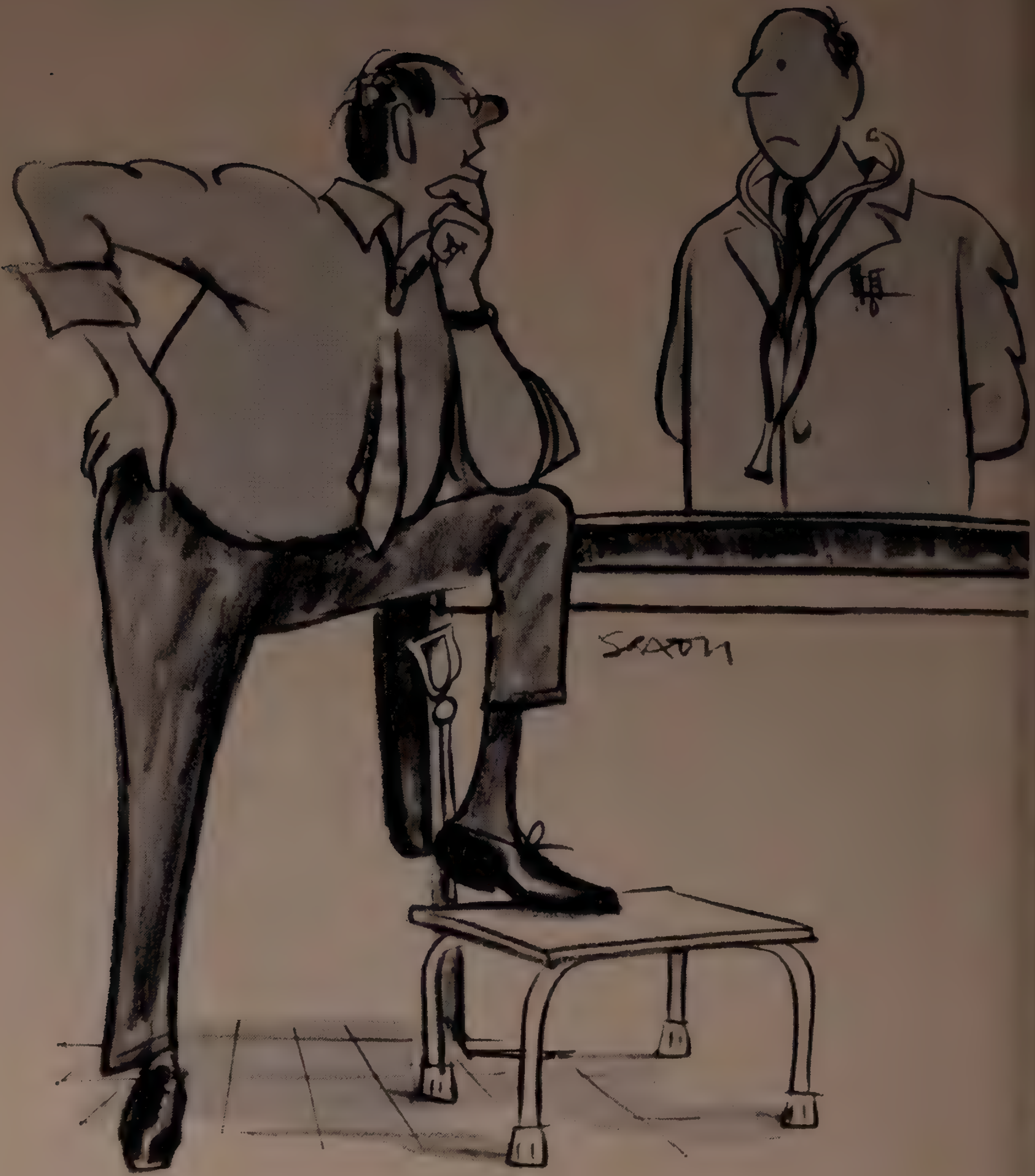
Valium®
(diazepam) Roche®

useful for somatic symptoms of psychic tension



Nothing else I've tried seems to work, so I decided to give you a crack at it.

Some U.R.I. patients are more miserable than others.

That's why we make Novahistine® tablets in two different formulations.

And let you control the dosage.

With Novahistine LP tablets and Novahistine Singlet tablets you have the range and flexibility of decongestant dosage that lets you prescribe for the needs of the individual patient.

Novahistine LP tablets are most useful for relief of nasal congestion in patients without pain or fever.

Novahistine Singlet tablets, which provide analgesic-antipyretic effect, as well as decongestant action, are indicated for upper respiratory infections accompanied by pain, aches and fever.

Whether you prescribe Novahistine LP or Novahistine Singlet, a total daily dose of 3 or 4 tablets will usually provide effective, continuous relief.

Use cautiously in patients with severe hypertension, diabetes mellitus, hyperthyroidism or urinary retention. Caution ambulatory patients that drowsiness may result.

Each Novahistine LP tablet contains phenylephrine hydrochloride, 25 mg.; and chlorpheniramine maleate, 4 mg.

Each Novahistine Singlet tablet contains phenylephrine hydrochloride, 40 mg.; chlorpheniramine maleate, 8 mg.; and acetaminophen, 500 mg.

DOW PITMAN-MOORE DIVISION OF THE DOW CHEMICAL COMPANY, INDIANAPOLIS

NOVAHISTINE
LP
NOVAHISTINE
SINGLET

New York State Journal of Medicine

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DON'T BE LULLED BY RELATIVE LACK OF FLU LAST WINTER. THIS WINTER BE PREPARED: WHEN THE COMPLAINTS ARE COUGH AND CONGESTION, YOU CAN RELIEVE THESE SYMPTOMS WITH TUSSAGESIC TABLETS. ONE TIMED-RELEASE TABLET AT MORNING, MIDAFTERNOON AND BEDTIME BRINGS UP TO 24 HOURS' RELIEF FROM TROUBLESOME COUGH AND STUFFED AND RUNNY NOSE. TUSSAGESIC IS THE FAMOUS TRIAMINIC FORMULA, PLUS THREE OTHER PROVED CONSTITUENTS. MAKES PATIENTS MORE COMFORTABLE. FAST. ASK YOUR DORSEY REPRESENTATIVE FOR SUPPLY OF STARTER SAMPLES, OR IF FLU IS ALREADY EPIDEMIC, PHONE COLLECT. SEE BELOW.

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Dosage: Adults—1 tablet, swallowed whole to preserve timed-release feature, in morning, midafternoon and at bedtime. Side effects: Occasional drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness or gastrointestinal upsets. Precautions: The patient should be advised not to drive a car or operate dangerous machinery if drowsiness occurs. Use with caution in patients with hypertension, heart disease, diabetes or thyrotoxicosis.

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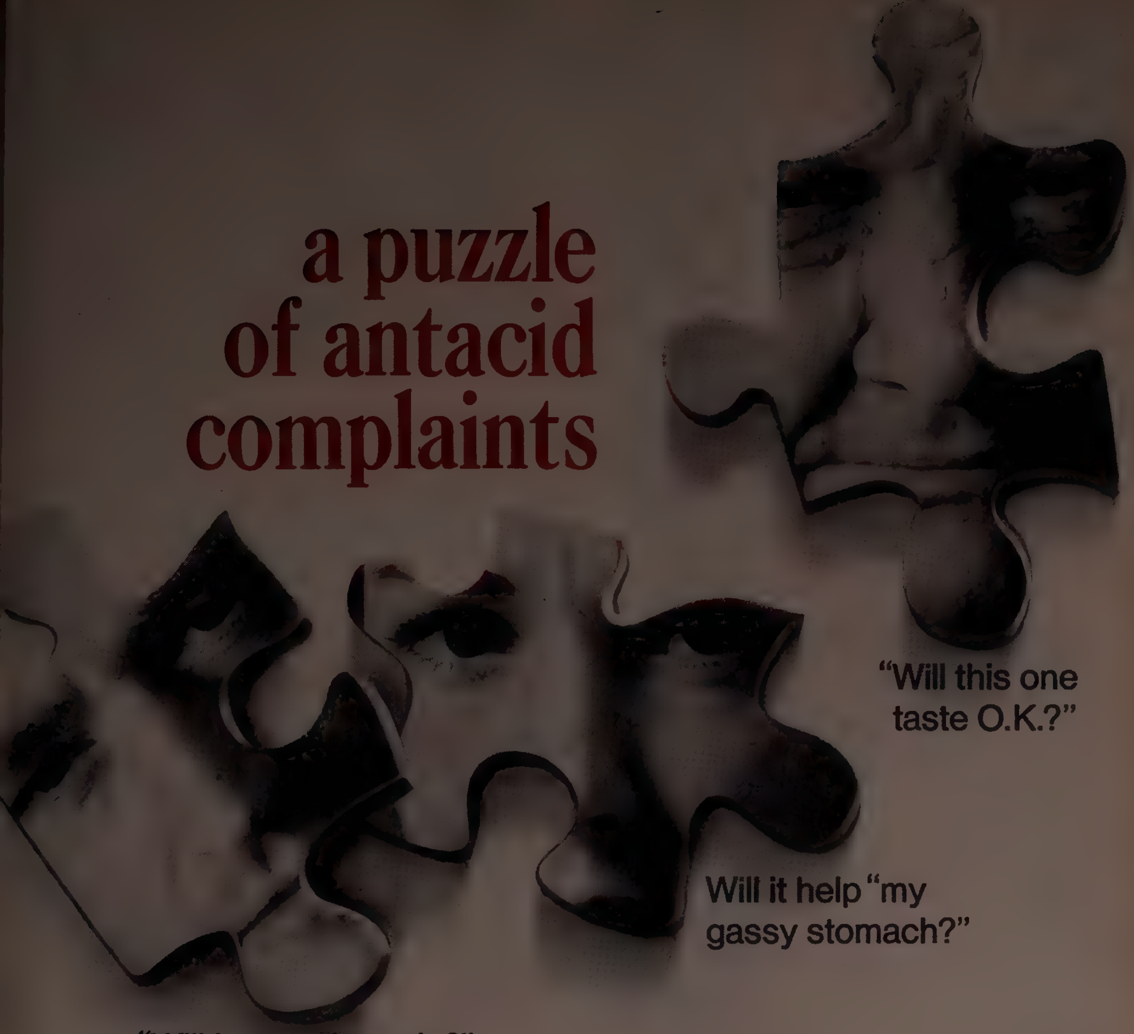
a puzzle of antacid complaints



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Will it help "my gassy stomach?"

"Will it stop the pain?"

Mylanta®

aluminum and magnesium hydroxide *plus* simethicone

a solution to peptic ulcer distress

Effective neutralization—
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Concomitant relief of G.I. gas distress—
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in 87.5% of 104 patients after a total of 20,459 documented days of therapy.[2]

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References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

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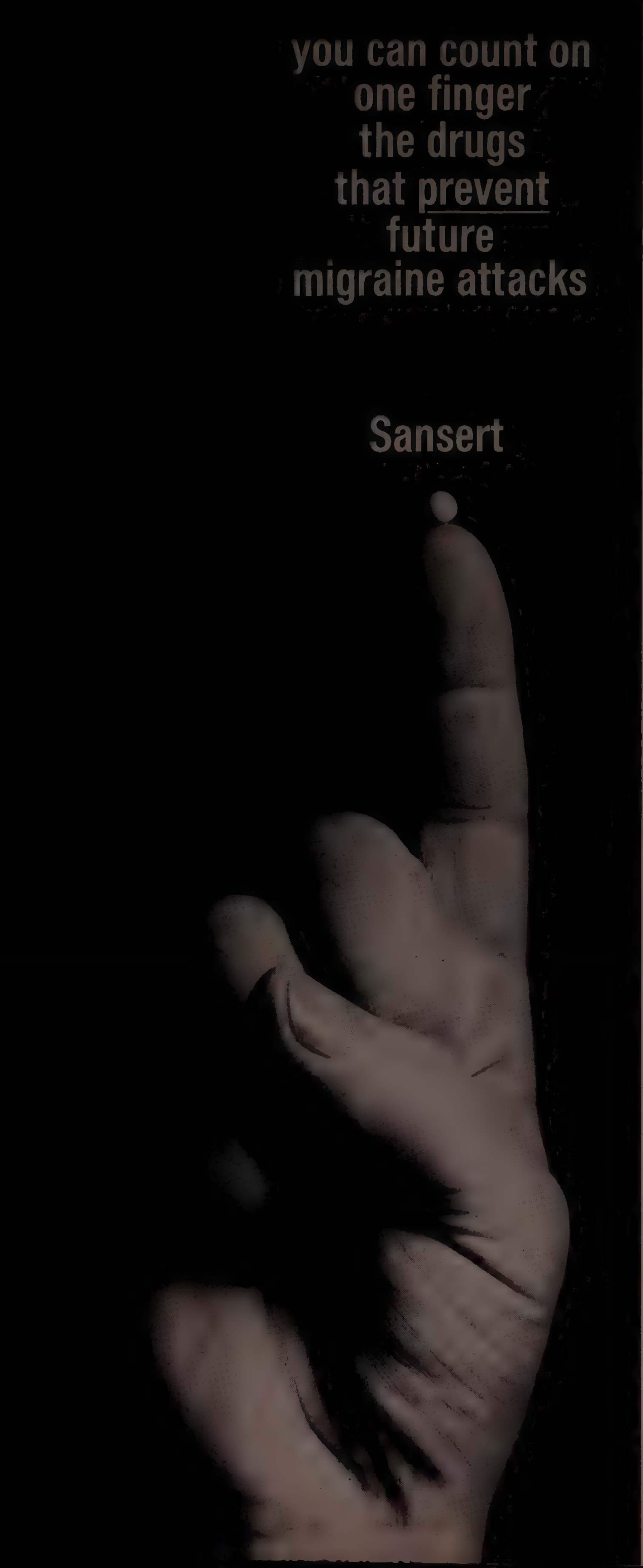

Sansert is the only specific for the prophylaxis of migraine attacks. Taken on a maintenance schedule closely supervised by the physician, it helps reduce the frequency and severity of future attacks, sometimes completely eliminating migraine from the patient's life.

This unique preventive is intended primarily for severe migraine sufferers: (1) the patient who experiences one or more attacks a week; (2) the patient whose episodes are so overwhelming and refractory to symptomatic treatment that preventive therapy is indicated regardless of frequency. It is important that the physician be familiar with the supervisory procedures required in the administration of the drug in order to minimize the possibility of adverse effects, particularly retroperitoneal fibrosis.

Contraindications: Pregnancy, peripheral vascular disease, severe arteriosclerosis, severe hypertension, coronary artery disease, phlebitis or cellulitis of the lower limbs, pulmonary or collagen disease, impaired liver or renal function, cachectic or septic states.
Warning: Continuous medical supervision is recommended. In a few patients retroperitoneal fibrosis, pleuropulmonary fibrosis, cardiac murmurs, vascular bruits, arterial insufficiency and/or shutdown of major vessels have been reported and are indications for discontinuation of the drug. Spontaneous reversal of clinical and laboratory findings can usually be anticipated upon withdrawal of the drug. Therapy should be interrupted for three to four weeks at six-month intervals.
Side Effects: Girdle or flank pain and dysuria, evidence of urinary obstruction, elevated sedimentation rate and/or elevated BUN, phlebitis or signs of venous obstruction of the lower limbs, chest pain, shortness of breath, pleural friction rub or effusion should alert the physician to the possible diagnosis of retroperitoneal or pleuropulmonary fibrosis and the drug should be withdrawn. Cold, numb, or painful hands or feet and leg spasms have been noted, but have a tendency to subside when the drug is withdrawn. Nausea, heartburn, vomiting, insomnia, lightheadedness, dizziness, "unworldly" feelings, dependent edema, weight gain, and thinning of the hair may occur, but are infrequent.
Adult Dosage: 2 to 4 tablets per day, preferably 1 tablet with each meal.

Before prescribing, see package insert for full product information.

the only known specific for the prophylaxis of migraine attacks

Sansert®
(methysergide maleate)

SANDOZ PHARMACEUTICALS, HANOVER, N.J. SANDOZ

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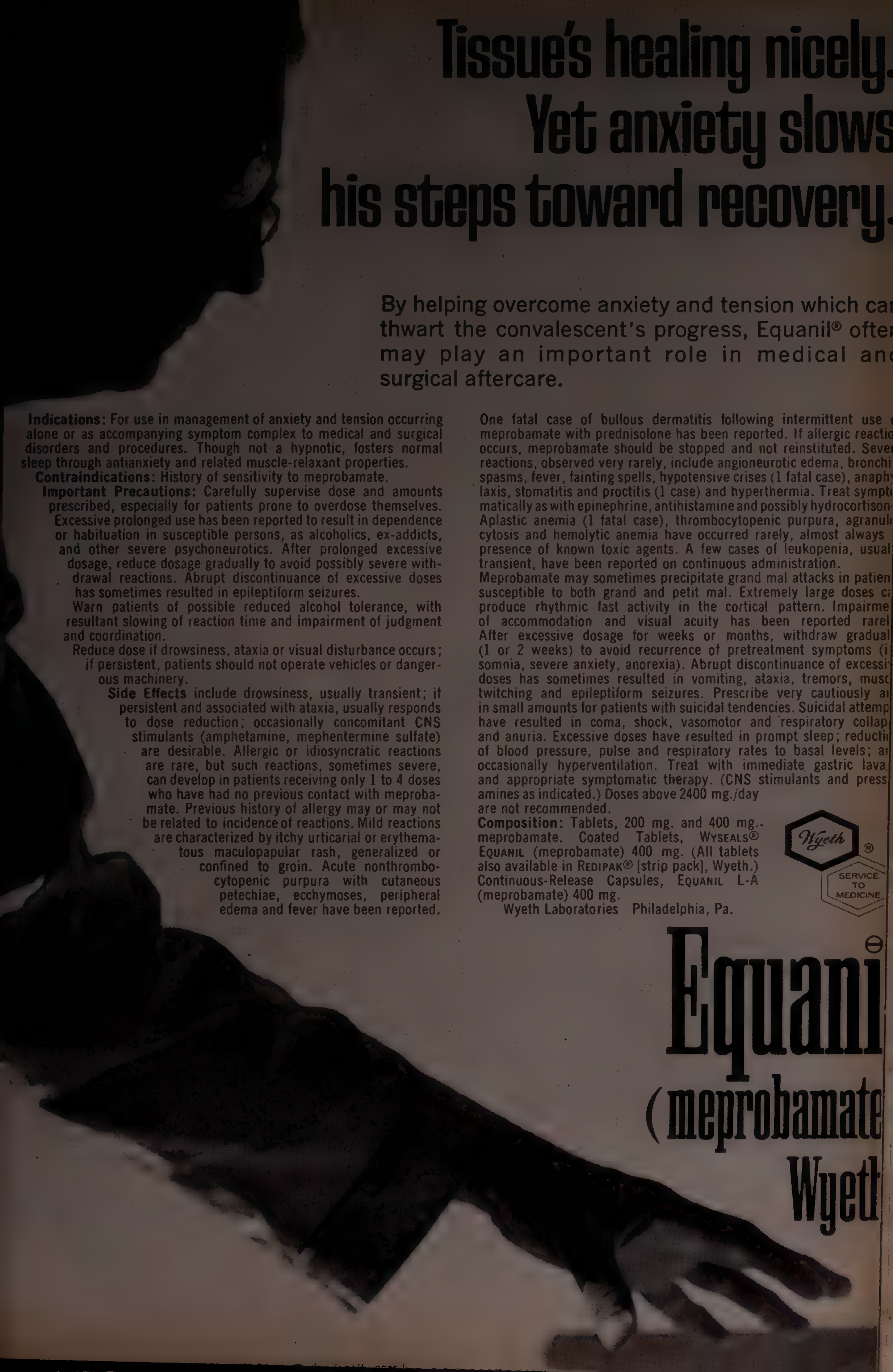

Tissue's healing nicely. Yet anxiety slows his steps toward recovery.

By helping overcome anxiety and tension which ca thwart the convalescent's progress, Equanil® ofte may play an important role in medical an surgical aftercare.

Indications: For use in management of anxiety and tension occurring alone or as accompanying symptom complex to medical and surgical disorders and procedures. Though not a hypnotic, fosters normal sleep through antianxiety and related muscle-relaxant properties.

Contraindications: History of sensitivity to meprobamate.

Important Precautions: Carefully supervise dose and amounts prescribed, especially for patients prone to overdose themselves. Excessive prolonged use has been reported to result in dependence or habituation in susceptible persons, as alcoholics, ex-addicts, and other severe psychoneurotics. After prolonged excessive dosage, reduce dosage gradually to avoid possibly severe withdrawal reactions. Abrupt discontinuance of excessive doses has sometimes resulted in epileptiform seizures.

Warn patients of possible reduced alcohol tolerance, with resultant slowing of reaction time and impairment of judgment and coordination.

Reduce dose if drowsiness, ataxia or visual disturbance occurs; if persistent, patients should not operate vehicles or dangerous machinery.

Side Effects include drowsiness, usually transient; if persistent and associated with ataxia, usually responds to dose reduction; occasionally concomitant CNS stimulants (amphetamine, mephentermine sulfate) are desirable. Allergic or idiosyncratic reactions are rare, but such reactions, sometimes severe, can develop in patients receiving only 1 to 4 doses who have had no previous contact with meprobamate. Previous history of allergy may or may not be related to incidence of reactions. Mild reactions are characterized by itchy urticarial or erythematous maculopapular rash, generalized or confined to groin. Acute nonthrombocytopenic purpura with cutaneous petechiae, ecchymoses, peripheral edema and fever have been reported.

One fatal case of bullous dermatitis following intermittent use
meprobamate with prednisolone has been reported. If allergic reactio
occurs, meprobamate should be stopped and not reinstituted. Seve
reactions, observed very rarely, include angioneurotic edema, bronchi
spasms, fever, fainting spells, hypotensive crises (1 fatal case), anaph
laxis, stomatitis and proctitis (1 case) and hyperthermia. Treat sympt
matically as with epinephrine, antihistamine and possibly hydrocortison
Aplastic anemia (1 fatal case), thrombocytopenic purpura, agranul
cytosis and hemolytic anemia have occurred rarely, almost always
presence of known toxic agents. A few cases of leukopenia, usual
transient, have been reported on continuous administration.
Meprobamate may sometimes precipitate grand mal attacks in patien
susceptible to both grand and petit mal. Extremely large doses c
produce rhythmic fast activity in the cortical pattern. Impairme
of accommodation and visual acuity has been reported rarel
After excessive dosage for weeks or months, withdraw gradual
(1 or 2 weeks) to avoid recurrence of pretreatment symptoms (i
somnia, severe anxiety, anorexia). Abrupt discontinuance of excessi
doses has sometimes resulted in vomiting, ataxia, tremors, musc
twitching and epileptiform seizures. Prescribe very cautiously a
in small amounts for patients with suicidal tendencies. Suicidal attemp
have resulted in coma, shock, vasomotor and respiratory collap
and anuria. Excessive doses have resulted in prompt sleep; reducti
of blood pressure, pulse and respiratory rates to basal levels; a
occasionally hyperventilation. Treat with immediate gastric lava
and appropriate symptomatic therapy. (CNS stimulants and press
amines as indicated.) Doses above 2400 mg./day are not recommended.

Composition: Tablets, 200 mg. and 400 mg. meprobamate. Coated Tablets, WYSEALS® EQUANIL (meprobamate) 400 mg. (All tablets also available in REDIPAK® [strip pack], Wyeth.) Continuous-Release Capsules, EQUANIL L-A (meprobamate) 400 mg.

Wyeth Laboratories Philadelphia, Pa.

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(meprobamate
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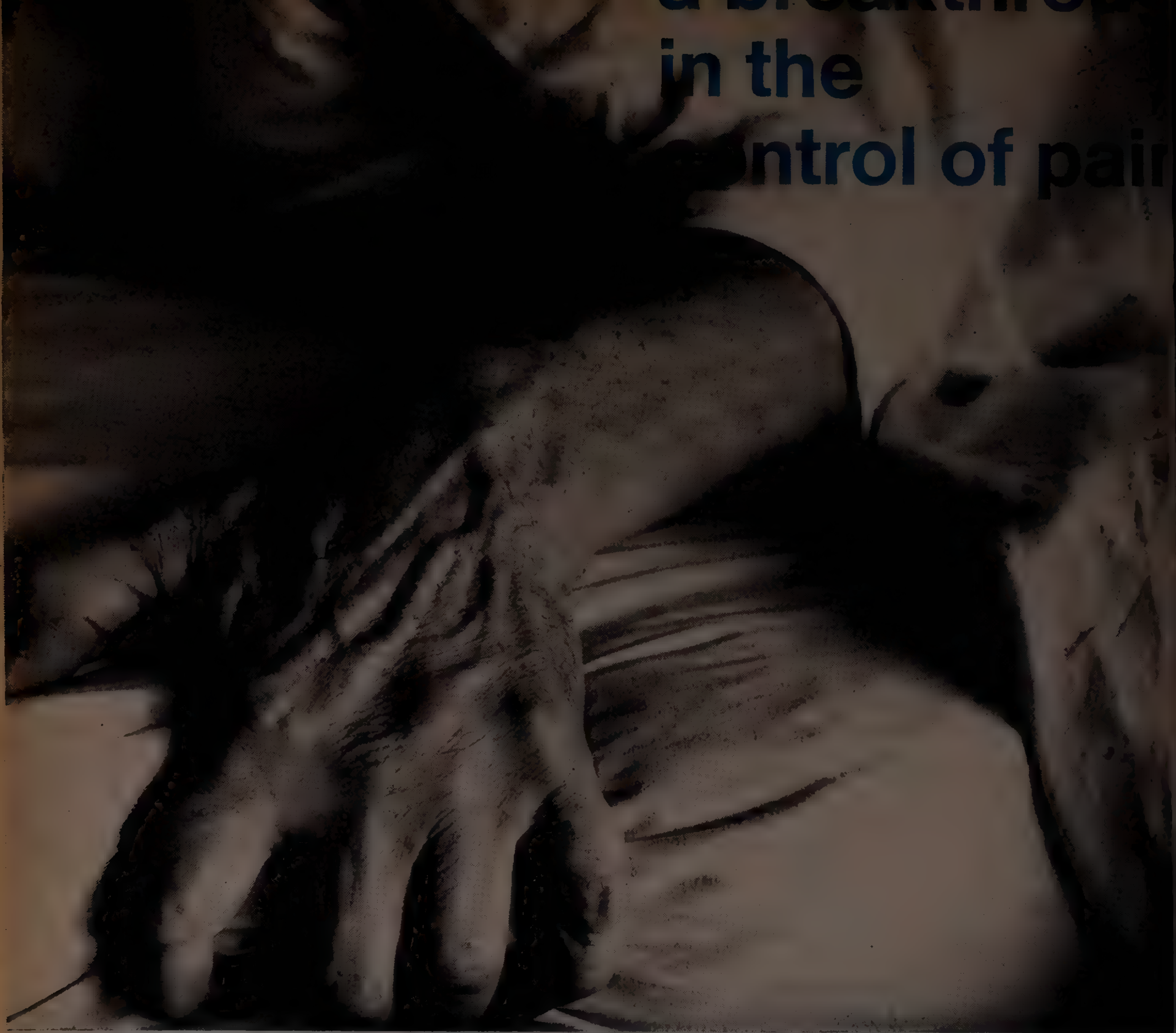


Talwin® — brand of pentazocine (as lactate)

ontraindications: *Increased Intracranial Pressure, Head Injury, or athologic Brain Conditions in which clouding of sensorium is ndesirable.* Talwin (brand of pentazocine) should not be adminis-ered in these cases, since drug-induced sedation, dizziness, nausea, or respiratory depression could be misleading.

Precautions: *Pregnancy.* No teratogenic or embryotoxic effects ttributable to the use of Talwin have been seen in extensive reproductive studies in animals; however, like all new drugs, Talwin should be given with caution to pregnant women. A large number of patients in labor have received the drug with no adverse reactions ther than those that occur with commonly used strong analgesics. However, as with other strong analgesics, Talwin should be used with caution in women delivering premature infants.

mbulatory Patients. Since sedation, dizziness, and occasional euphoria have been noted, ambulatory patients should be warned not o operate machinery, drive cars, or unnecessarily expose themselves to hazards.

ertain Respiratory Conditions. The possibility that Talwin (brand f pentazocine) may cause respiratory depression should be considered in treatment of patients with bronchial asthma. Talwin brand of pentazocine) should be administered only with caution nd in low dosage to patients with respiratory depression (e.g., rom other medication, uremia, or severe infection), obstructive espiratory conditions, or cyanosis.

atients Dependent on Narcotics. Because Talwin is a narcotic-ntagonist, patients dependent on narcotics and receiving Talwin may occasionally experience certain withdrawal symptoms. Talwin hould be given with special caution to such patients. It has been bserved that some patients previously given narcotic-analgesics or one month or longer had mild withdrawal symptoms when the rug was replaced with the analgesic, Talwin. After a short period f adjustment the subjects were usually able and willing to continue aking Talwin, and relief of pain was satisfactory.

onaddicted Patients Receiving Narcotics. Symptoms believed to be indicative of antagonism to the opiate may be observed rar with administration of Talwin to patients receiving opiates for short time. Intolerance or untoward reactions are seldom observ after administration of Talwin to patients who have received sing doses or who have had limited exposure to narcotics.

Impaired Renal or Hepatic Function. Although laboratory tests ha not indicated that Talwin causes or increases renal or hepatic i pairment, the drug should be administered with caution to patier with such impairment. Extensive liver disease appears to predispo to greater side effects (e.g., marked apprehension, anxiety, dizzine sleepiness) from the usual clinical dose, and may be the result decreased metabolism of the drug by the liver.

Myocardial Infarction. As with all drugs, Talwin (brand of pent zocine) should be used with caution in patients with myocard infarction who have nausea or vomiting.

Biliary Surgery. Until further experience is gained with the effe of Talwin on the sphincter of Oddi, the drug should be used wi caution in patients about to undergo surgery of the biliary tra

Adverse Effects: Talwin is relatively free from the undesirable si effects associated with morphine, such as constipation, urinary r tention, or severe respiratory depression. Furthermore, Talwin pr duces less nausea, vomiting, and diaphoresis than meperidine.

In over 12,000 patients who received Talwin intramuscularly, subc taneously, or intravenously, nausea, the most frequent adverse e fect, occurred in approximately 5.0 per cent. In decreasing order occurrence were vertigo, dizziness or lightheadedness; vomitin and euphoria. Respiratory depression was reported as an adver reaction in 1.0 per cent.

The incidence of each of the other adverse effects was well belc 1.0 per cent: constipation, circulatory depression, diaphoresis, u nary retention, alteration in mood (nervousness, apprehensio depression, floating feeling), hypertension, sting on injection, hea ache, dry mouth, flushed skin including plethora, altered uteri

-narcotic

alwin®

of

entazocine

(as lactate)

EVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

should not be used for patients with
d intracranial pressure,
ury or pathologic brain conditions.
ufficient experience is gained, it should not
nistered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

Talwin acts as rapidly as morphine; its duration of action may sometimes be less. Relief of pain with Talwin usually lasts three hours or longer.

Less constipation than with morphine
Less urinary retention than with morphine
Less risk of severe respiratory depression than with morphine
Less nausea than with meperidine
Less vomiting than with meperidine
Less diaphoresis than with meperidine

With Talwin — no narcotic controls
Talwin does not require a narcotic prescription or narcotic records. The World Health Organization Expert Committee on Dependence-Producing Drugs concluded that "...there was no need at this time for narcotics control of pentazocine [Talwin] internationally or nationally."
(*WHO Tech. Rep. Ser.*, no. 343, 1966, p. 6.)

Talwin relieves pain of all types and all degrees — mild, moderate, and severe — in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ons during labor, dermatitis including pruritus, dreams,
sia, and dyspnea occurred rarely after administration of
Furthermore, each of the following adverse reactions oc-
n less than 0.1 per cent: tachycardia, visual disturbance
vision, diplopia and nystagmus), hallucinations, disorienta-
kness or faintness, muscle tremor, chills, allergic reactions
edema of the face, taste alteration, insomnia, diarrhea,
and miosis; laryngospasm in one patient.

brand of pentazocine) has not produced severe respiratory
ssment in adults (never apnea), even with large amounts. A
mber of newborn infants whose mothers received Talwin
bor had transient apnea. The incidence of temporary dim-
n the rate or strength of uterine contractions is low after
ation of Talwin, similar to that following meperidine hydro-
(In reporting no interference with normal labor in patients
Talwin, one investigator further stated that the drug may
uterine activity.) Generally, no significant fetal heart rate
ccurs.

y tests of blood and of liver and kidney functions have
no significant abnormalities. A minimum and probably
ant increase in the per cent of eosinophils in peripheral
unts and bone marrow occurred occasionally.

well tolerated by patients with diabetes mellitus, and no
in insulin requirements have been observed.

and Administration: *Adults, Excluding Patients In Labor.*
recommended single parenteral dose is 30 mg., by intra-
, subcutaneous, or intravenous route; may be repeated
ee to four hours. Pain has been relieved in most patients
more than three doses daily. Infrequently, selected patients
ived single doses as high as 60 mg.

n Labor. A single, intramuscular 30 mg. dose has been most
administered. An intravenous 20 mg. dose has given ade-

quate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

Duration of Therapy. Patients with chronic pain who received Talwin for prolonged periods (e.g., over 300 days) experienced no withdrawal symptoms even when administration was stopped abruptly; furthermore, there was no tolerance to the analgesic effect.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Talwin has not produced apnea or severe respiratory embarrassment in adults, even in large doses. Occasionally, however, moderate respiratory depression may occur. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

Winthrop

Winthrop Laboratories
New York, N.Y. 10016

Month in Washington

President Johnson signed into law the Social Security legislation which included changes in Medicare and Medicaid advocated by the medical profession. It provides for a record high, minimum 13 per cent, increase in cash benefits for 24 million Americans, starting in March. Beginning April 1, one dollar a month of the increase will be withheld from the checks of those participating in voluntary Plan B of Medicare which covers part of physician fees and other medical services other than hospitalization.

The total premium for Plan B insurance is now $6.00 a month, half of which is paid by the Federal government. Beginning April 1, the premium will be increased to $8.00 with the government paying $4.00 and the participant $4.00.

According to HEW (U.S. Department of Health, Education, and Welfare) about 20 cents of the $1.00 increase was needed to cover costs which were originally underestimated. Another 25 cents would cover expected increase of use under the program. An anticipated 5 per cent increase in physician fees would account for another 25 cents, HEW said.

The Social Security taxable base also was increased, effective January 1, from $6,600 to $7,800. The tax rate for this year will remain the same as under the old law, 4.4 per cent on both the employe and employer and 6.4 per cent on self-employed. Tax rate increases are set for subsequent years through 1987.

Changes in Medicare include the following:

—Payment of physician fees is authorized either to the patient on the basis of an itemized bill, either unpaid or receipted as paid, or to the physician under the assignment method.

—Payment is authorized for full reasonable charges for radiologic services furnished by physicians to hospital inpatients.

—Hospital outpatient diagnostic services are transferred from the hospital insurance program (Plan A) to the supplementary medical insurance program (Plan B). The change was designed to simplify the procedure for paying benefits for hospital outpatients.

—The requirement of physician certification of the medical necessity for admission to general hospitals and for hospital outpatient services was eliminated.

—Medicare beneficiaries are given a lifetime reserve of sixty additional days of hospital care after the ninety days covered in a spell of illness. The beneficiary must pay the first $20 per day for the additional hospitalization.

—The Secretary of HEW was directed to study and report to Congress by January 1, 1969, the effects of covering drugs under Medicare and of establishing quality and cost standards for drugs provided under Social Security health programs.

—Services of podiatrists are authorized under Medicare to the extent that a state's law permits, but routine foot care is not covered.

—Outpatient services furnished by physical therapists are authorized within certain limitations.

—The Secretary of HEW was directed to study and make recommendations for adding the services of chiropractors and optometrists to Plan B.

—Payment is authorized under Plan B for diagnostic x-rays taken in a patient's home or a nursing home.

The following are changes in the Medicaid program:

—States are limited in setting eligibility income levels for Federal matching purposes.

—States are given until January 1, 1970, to buy-in Medicare Plan B insurance for aged Medicaid beneficiaries.

—States are authorized to make direct payments to Medicaid beneficiaries for physicians' and dentists' services if the beneficiary is not receiving cash assistance.

—States are permitted to select either the 5 basic health services, or 7 out of the 14 authorized, for the medically indigent. The basic 5 services, which include inpatient hospital services, outpatient hospital services, other laboratory and x-ray services, skilled nursing home services, and physicians' services, must be provided for those receiving welfare cash benefits.

—States must license administrators of nursing homes and set minimum nursing home standards if these institutions are to be eligible to participate in the Medicaid program.

—States must establish methods and procedures to safeguard against unnecessary utilization of health care services and to assure that payments for such services and drugs do not exceed reasonable charges.

Under the program for Aid to Families with Dependent Children, states now must offer birth-control services to appropriate beneficiaries with acceptance on a voluntary basis. Authorizations for Federal financial aid for maternal and child health programs are increased. Services of optometrists are added to child health programs.

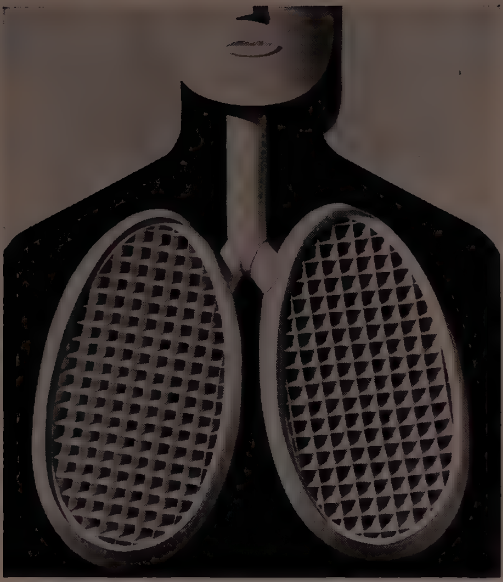
* * *

James L. Goddard, M.D., FDA (Food and Drug Administration) commissioner, estimated that about 300 drugs, marketed under 1,600

continued on page 476

Prepared by the Washington, D.C., Office of the American Medical Association.

The ventilator pill



Dainite® KI bronchodilator/expectorant

Each tablet contains: Aminophylline 3.00 gr, Phenobarbital 0.25 gr, (WARNING: May be habit forming), Ephedrine HCl 0.25 gr, Potassium Iodide 5.00 gr, Dried Aluminum Hydroxide Gel 2.50 gr, Benzocaine 0.25 gr.

Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

It helps reduce frequency and severity of asthma attacks, too. And, because it's systemic, you know you get action where you want it . . . in the system.

You might say The Ventilator Pill is a good name for DAINITE KI. Your patients will probably say the same thing.

Indications: For the treatment of mild or severe bronchial asthma, and in pulmonary emphysema, in chronic asthma, in chronic bronchitis and in those patients who consistently develop a thick, viscous, tenacious sputum and thus have difficulty in expectorating accumulated secretions from the bronchial tree during and following an asthmatic attack. DAINITE® KI has been specifically formulated to provide extensive therapeutic action in the asthmatic patient. Anti-nauseant factors afford the administration of a therapeutic dose of aminophylline without the high frequency of gastric intolerance usually associated with this drug. *Contraindications:* Should not be administered to patients sensitive to aminophylline or sympathomimetic drugs and should be used with caution in patients with cardiovascular disease and hypertension. Also contraindicated in those patients who have had a severe reaction or are sensitive to or have an idiosyncrasy to potassium iodide. *Precautions:* See contraindications. In some elderly patients, barbiturates may cause excitement rather than depression. *Side Effects:* Occasionally nausea, vomiting and gastric irritation occurs. In addition, side effects attributable to potassium iodide may occur, acne, rhinorrhea, metallic taste and parotitis. Prolonged use of iodides may rarely lead to hypothyroidism. Skin rash may be observed in patients hypersensitive to barbiturates. *Dosage:* Adults—1 tablet on arising, 1 tablet at 4 P.M., and 1 or 2 tablets at bedtime.

Neisler Laboratories, Inc., Decatur, Ill.
Subsidiary of Union Carbide Corporation.

NEISLER

continued from page 474

brand names, will be forced off the market because of ineffectiveness for treatment of medical conditions.

An evaluation of some 3,000 drugs placed on the market from 1938 to 1962 was started in June, 1966. It is being conducted by 29 panels of 200 medical and pharmaceutical specialists under the direction of the National Academy of Sciences-National Research Council. With the first panel reporting in January, the last report is due in mid-1969.

The FDA assigned the evaluation to the academy following passage of the Kefauver Drug Law in 1962. The law's main thrust was to give FDA power to pass on the efficacy as well as the safety of drugs marketed after 1962, but a provision authorized the government to review drugs already on the market.

* * *

The Federal government has licensed a live, attenuated mumps virus vaccine especially recommended for adolescent and male adults who can become sterile from the relatively innocuous childhood disease.

The vaccine, developed over a five-year period by the Merck Sharp and Dohme Research Laboratories, was not recommended for routine use in infants and young children pending development of more information on the duration of the immunity it provides.

William H. Stewart, M.D., surgeon general, U.S. Public Health Service, said excellent protection against naturally occurring mumps has been observed for the first year after the single-infection live vaccine.

"But limited data on natural exposure during the second year indicate continuing protection, although additional observation will be required to determine the duration of immunity protection," he said.

Abstracts

Spier, N.: Proposed regimen for therapy of refractory shock in acute pancreatitis, New York State J. Med. **68:** 527 (Feb. 15) 1958.

Newer aspects in the therapy of shock and how these relate to its occurrence in acute pancreatitis are discussed. The basic cause may be predominantly hypovolemic early in the course, while sepsis may be important later. A small group of patients do not respond to blood restoration and antibiotic coverage, and response to vasopressors is often transient. Inadequate perfusion brings about peripheral resistance, hypovolemia, and inadequate cardiac function. A regimen is proposed concluded from experimental knowledge, a rationale for integrating components to allow improved clinical results.

Benninghoff, D. L., and Alexander, L. L.: Treatment of lung carcinoma; radiation versus radiation combined with 5-fluorouracil, New York State J. Med. **68:** 532 (Feb. 15) 1968.

Of 55 patients with inoperable but apparently undisseminated lung carcinoma, 30 were treated by radiation alone and 25 with radiation and 5-fluorouracil in combination. The patients were selected at random, and the external radiation therapy given to both groups was the same. The second group was given a course of 5-fluorouracil during the first week of radiation therapy only. The results of treatment in terms of survival and of local regression of the primary lesion on radiographic measurement were apparently not significant.

When the talk turns to oral contraceptives, it makes medical sense to remember low-dose Norinyl-1.

(norethindrone 1mg. c̄ mestranol 0.05mg.)

Turn page for contraindications, precautions and side effects.

Reduction of oral contraceptive dosage to the lowest effective levels is a well-accepted principle of conservative medical practice. In keeping with this view, Norinyl is now also available as Norinyl-1, containing exactly one half the previous dosage of norethindrone and mestranol. Clinical experience has established that effective fertility control can be achieved with the same degree of reliability and safety with new Norinyl-1 when taken as directed.

What about switching patients from higher dosage forms?

In transferring patients to low-dose Norinyl-1 from higher-dosage oral contraceptives, some breakthrough bleeding may occur in the early cycles. In the majority of cases the bleeding episode is mild and self-limited. The long-term advantages of the lower dosage form should be weighed against the inconvenience of possible breakthrough bleeding in the individual patient.

thrombophlebitis or with a history of thrombophlebitis or pulmonary embolism. 2. Liver dysfunction or disease. 3. Patients with known or suspected carcinoma of the breast or genital organs. 4. Undiagnosed vaginal bleeding.

Warnings: 1. Discontinue medication pending examination if there is sudden partial or complete loss of vision or if there is a sudden onset of proptosis, diplopia or migraine. If examination reveals papilledema or retinal vascular lesions, medication should be withdrawn. 2. Since the safety of NORINYL-1 (norethindrone 1 mg. with mestranol 0.05 mg.) in pregnancy has not been demonstrated, it is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. 3. Detectable amounts of the active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this dose to the infant has not been determined.

Precautions: 1. The pretreatment physical examination should include special reference to breast and pelvic organs, as well as a Papanicolaou smear. 2. Endocrine and possibly liver function tests may be affected by treatment with NORINYL-1. Therefore, if such tests are abnormal in a patient taking NORINYL-1 it is recommended that they be repeated after the drug has been withdrawn for two months. 3. Under the influence of estrogen-progestogen preparations, preexisting uterine fibromyomata may increase in size. 4. Because these agents may cause some degree of fluid retention, conditions that may be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation. 5. NORINYL-1 should be used with caution in patients with a history of cerebrovascular accident. 6. In relation to breakthrough bleeding, and as in all cases of irregular bleeding *per vaginam*, nonfunctional causes should be borne in mind. In cases of undiagnosed vaginal bleeding, adequate diagnostic measures are indicated. 7. Patients with a history of psychic depression should be carefully observed and the drug discontinued if the depression recurs to a serious degree. 8. Any possible influence of prolonged NORINYL-1 therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. 9. A decrease in glucose tolerance has been observed in a small percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be carefully observed while receiving NORINYL-1 therapy.

rence of thrombophlebitis and pulmonary embolism in patients taking oral contraceptives, the physician should be alert to the earliest manifestations of the disease. 11. Because of the effects of estrogens on epiphyseal closure, NORINYL-1 should be used judiciously in young patients in whom bone growth is not complete. 12. T age of the patient constitutes no absolute limiting factor, although treatment with NORINYL-1 may mask the onset of the climacteric. 13. The pathologist should be advised of NORINYL-1 therapy when relevant specimens are submitted.

Side effects observed in patients receiving oral contraceptives: The following adverse reactions have been observed in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (su as abdominal cramps and bloating) breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlarge ment and secretion), change in wei (increase or decrease), changes in cervical erosion and cervical secreti suppression of lactation when give immediately postpartum, cholestat jaundice, migraine, rash (allergic), rise in blood pressure in susceptibl individuals, mental depression.

Although the following side effects have been reported in users of oral contraceptives, no cause and effect relationship has been established: anovulation post-treatment, premenstrual-like syndrome, chang in libido, changes in appetite, cystit like syndrome, headache, nervousn dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema no sum, hemorrhagic eruption, itchin

The following occurrences have bee observed in users of oral contraceptives (a cause and effect relationshi has been neither established nor di proved): thrombophlebitis, pulmon embolism, neuro-ocular lesions.

The following laboratory results may be altered by the use of oral contraceptives: increased sulfobromophthalein and other hepatic function tests, coagulation tests (increase in prothrombin, Factors VII, VIII, IX and X), thyroid function (increase in PBI and butanol extractable protein-bound iodine an decrease in T^3 values), metyrapone test, pregnanediol determination.

norethindrone — an original steroid from

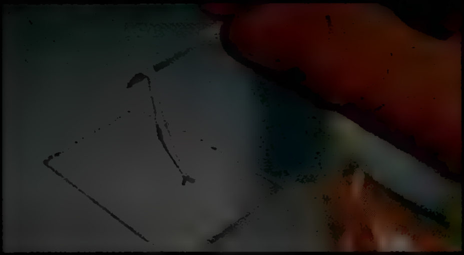
SYNTEX

LABORATORIES INC., PALO ALTO, CALIF.

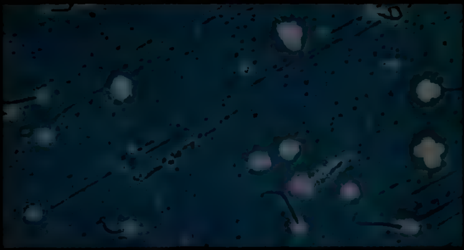
Here's why Norinyl-1 makes medical sense.

The effectiveness of Norinyl-1 as a low-dose oral contraceptive may be explained by its possible multiple action. In addition to its primary action of suppression of ovulation, Norinyl-1 may offer additional protective mechanisms... (1) creation of a cervical mucus that may be hostile to sperm penetration, and (2) development of an endometrium that may be out of phase with nidation. These effects are illustrated below.

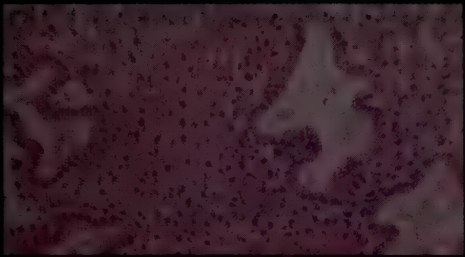
Untreated Patient



Cervical mucus at midcycle is usually thin and watery, with Spinnbarkeit (stretchability) of 15 to 20 cm.



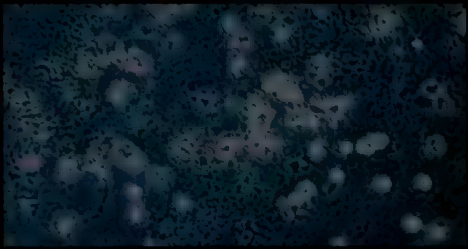
Spermatozoa appear healthy, active, freemoving.



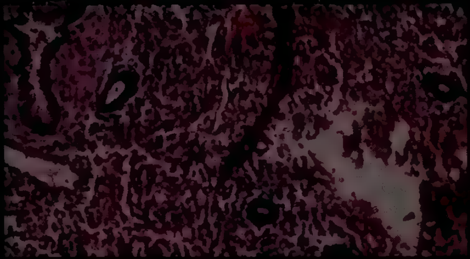
Endometrium of untreated patient is receptive to the fertilized ovum during secretory phase.

Norinyl-1 Patient

Cervical mucus at midcycle is scanty, viscous—with Spinnbarkeit of 1 cm. or less.



Immobile spermatozoa as they appear in cervical mucus taken from patient treated with Norinyl-1.



Norethindrone in Norinyl-1 accelerates secretory phase, suppresses glandular and vascular development.

Norinyl®-1 tablets
(norethindrone 1mg. c̄ mestranol 0.05mg.)

- new low dose of time-proved ingredients
- established norethindrone/mestranol ratio
- lower patient cost

Medical Meetings

Psychiatry in general practice topic of course

The State University of New York at Buffalo School of Medicine is sponsoring a postgraduate course for general practitioners in "Emotional Problems in the Office Practice of Medicine" to be held February 15 through March 21, at 8:00 P.M., under the direction of Duncan Whitehead, M.D., associate clinical professor of psychiatry.

The program will feature the following topics and speakers: "Depression—Physical and Emotional Expressions," John G. Robinson, M.D., associate professor of psychiatry; "Modern Psychiatric Drugs and Brief Psychotherapy in the Office Practice of Medicine," Harold P. Graser, M.D., assistant clinical professor of psychiatry; "Management of Emotional Crises," Bohdana Salaban, M.D., assistant clinical professor of psychiatry; "The Problems of the Mentally Retarded and Their Families," Samuel Feinstein, M.D., associate clinical professor of psychiatry; and "Emotional Problems of Adolescents and Their Families," Burton Stulberg, M.D., clinical associate in psychiatry.

There is no tuition fee, but advance registration is necessary For application forms and information contact: Continuing Medical Educational Program, Main Street Division, State University of New York at Buffalo School of Medicine, 2211 Main Street, Buffalo, New York 14214.

Institute of Ophthalmology offers special lecture series

A series of five lectures featuring Professor Alfred Huber of Zurich, Switzerland, is being offered by The Institute of Ophthalmology of the Americas March 25 through 29, from 3:00 to 6:00 P.M., at the New York Eye and Ear Infirmary, New York City.

Dates and topics of the lectures are as follows: March 25, "Papilledema: Diagnosis and Differential Diagnosis"; March 26, "Angiography and Phlebography of the Orbit"; March 27, "X-Ray Pathology of the Orbit"; March 28, "Visual Field Alterations in Brain Tumors"; and March 29, "Secondary Glaucoma."

Registration fee is $20 per lecture. For registration and information contact: Jane Stark, registrar, The Institute of Ophthalmology of the Americas, The New York Eye and Ear Infirmary, 218 Second Avenue, New York, New York 10003.

Course offered on contact lenses

The seventh annual course on contact lenses, sponsored by The Institute of Ophthalmology of the Americas, is to be held May 19 at the Gramercy Park Hotel, New York City. The program will include the following topics: "Detrimental Corneal Effects"; "The Specific Role of Contact Lenses in Infants and Children"; "Keratoconus"; and "Clinical Problems in Optics."

Registration fee is $50. For further information contact: Jane Stark, registrar, The Institute of Ophthalmology of the Americas, 218 Second Avenue, New York, New York 10003.

Radiation topic of course

A course in "Special Radiation Procedures in the Treatment of Cancer" and a "Radium Day" will be held May 27 through 29, from 9:00 A.M. to 5:00 P.M., at the Long Island Jewish Hospital/Queens Hospital Center Affiliation, Jamaica.

There is a registration fee of $100 for the course in radiation procedures and $25 for the Radium Day. Residents in training are exempt from paying fees but must submit a letter from training directors. For registration forms contact: J. J. Smulewicz, M.D., director, Department of Radiology, The Long Island Jewish Hospital/Queens Hospital Center Affiliation, 82-68 164th Street, Jamaica, New York 11432.

Cooley's anemia subject of symposium

The New York Academy of Sciences and the Cooley's Anemia Blood and Research Foundation for Children, Inc., are sponsoring a symposium on "Problems of Cooley's Anemia" which is to be held September 9 through 11 at the Waldorf-Astoria Hotel, New York City.

Material for inclusion in medical meetings section must be received six weeks prior to publication date.

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Sodium
Cephalothin
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SODIUM
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An uncommon steroid for common inflammatory dermatoses

In everyday topical steroid therapy, Synalar produces rapid resolution of inflammation and itching in steroid-responsive dermatoses—and at relatively low cost to the patient.

Advanced molecular design enhances potency

Synalar combines the advantage of earlier corticosteroid compounds with unique structural innovations. As a result, preparations of Synalar 0.01% and Synalar 0.025% have been reported to be more potent topically and significantly more effective than hydrocortisone 1.0%. The unique fluocinolone acetonide molecule provides one of the most useful topical corticosteroids for everyday practice.

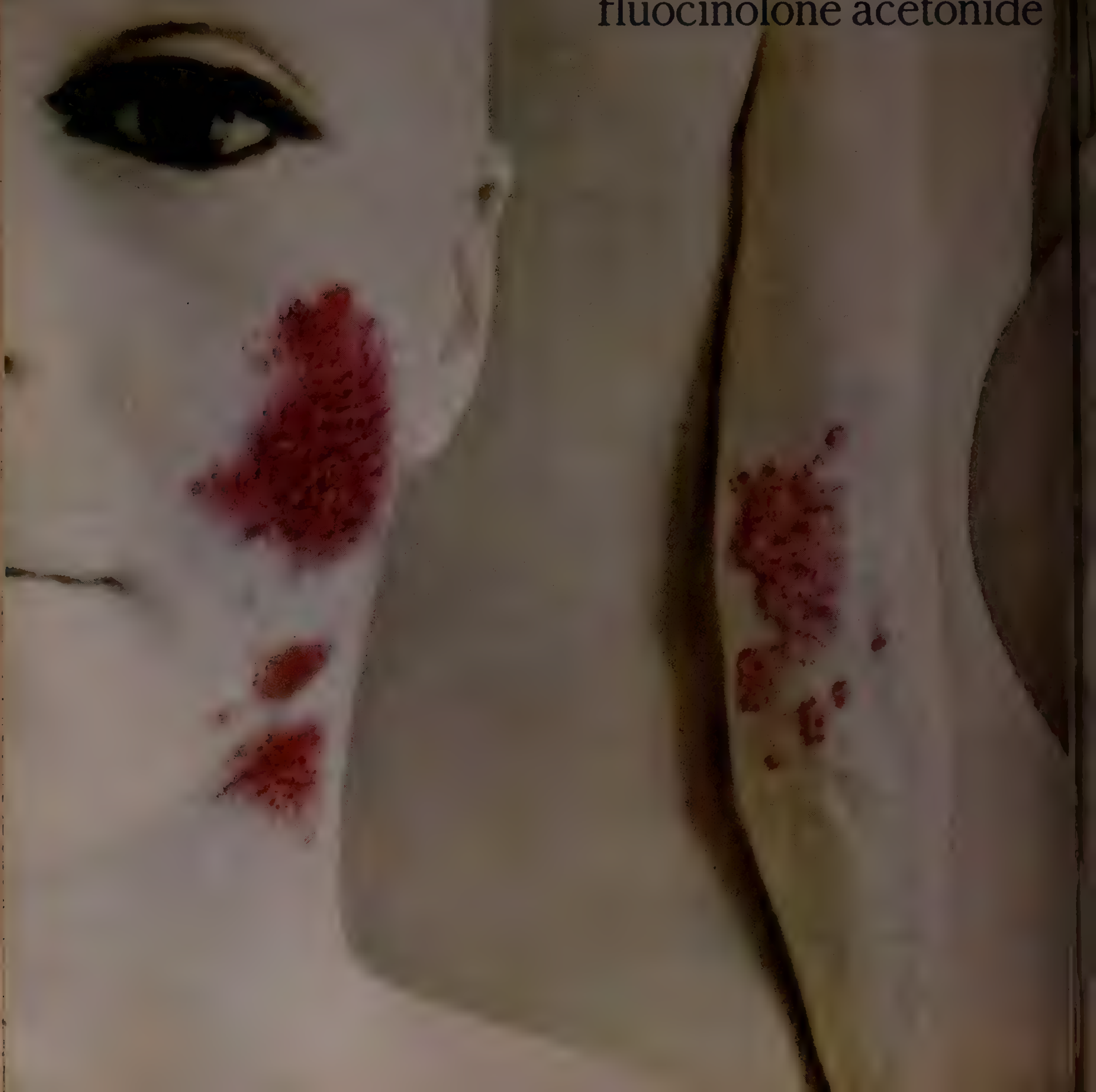
Impressive clinical results in a wide range of dermatologic problems

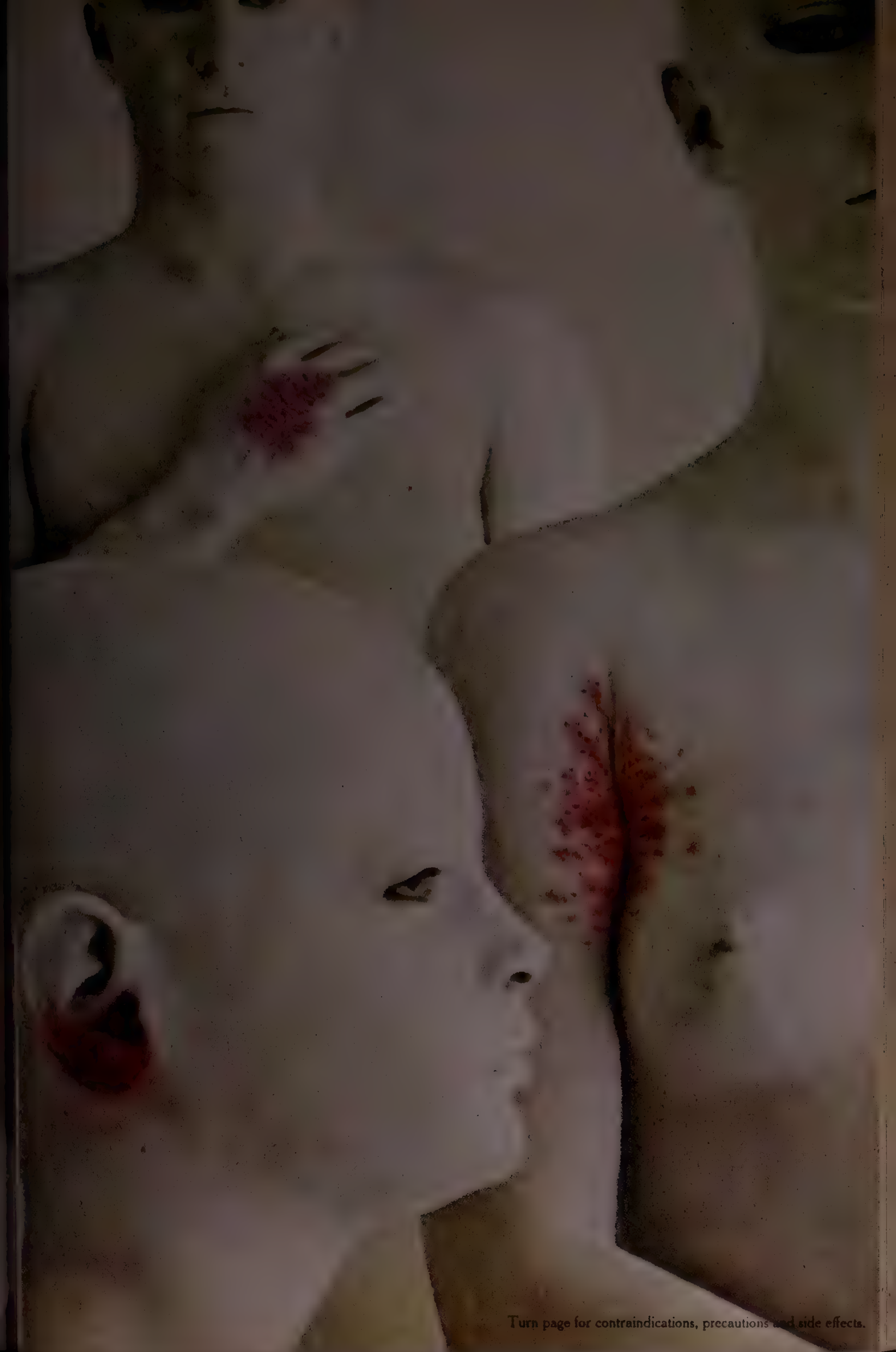
The clinical efficacy of Synalar has been extensively documented in the world literature. Commonly encountered diseases such as allergic and contact dermatitis, eczematous and seborrheic dermatitis, and neurodermatitis respond rapidly to Synalar, often where previous therapy with other topical corticosteroids has failed.

Low patient cost for wider usefulness

With Synalar, a high degree of efficacy does not mean high price. And—a small quantity goes a long way. Thus, your patients can often obtain the "economy" of a hydrocortisone preparation with the proved efficacy of a potent, truly advanced steroid.

Synalar®
fluocinolone acetonide





Turn page for contraindications, precautions and side effects.

For everyday topical steroid therapy

Synalar® 0.01%

fluocinolone acetonide

provides economy in two practical dosage forms

For general use, the most economical and widely applicable concentration of Synalar is 0.01% Cream in a water-washable, vanishing cream base. Synalar Solution 0.01% is especially valuable in dermatoses involving moist, intertriginous areas or hairy sites where creams and ointments do not spread or penetrate readily. Synalar Solution is a unique dosage form—clear, nongreasy, cosmetically elegant.

Product Information

Contraindications: Tuberculous, fungal, and most viral lesions of the skin (including herpes simplex, vaccinia, and varicella). Not for ophthalmic use. Contraindicated in individuals with a history of hypersensitivity to any of the components. *Precautions:* Synalar preparations are virtually nonsensitizing and nonirritating. However, the solution may produce burning or stinging when applied to denuded or fissured areas. In some patients with dry lesions, the solution may increase dryness, scaling or itching. Where severe local infection or systemic infection exists, the use of systemic antibiotics should be considered, based on susceptibility testing. While topical steroids have not been reported to have an adverse effect on pregnancy, the safety of their use on pregnant females has not absolutely been established. Therefore, they should not be used extensively on pregnant patients, in large amounts, or for prolonged periods of time. *Side Effects:* Side effects are uncommon with topical corticosteroid As with all drugs, however, a few patients may react unfavorably to Synalar under certain conditions. In such cases the agent should be discontinued and appropriate measures taken. *Availability:* Synalar (fluocinolone acetonide) Cream 0.025%—5, 15 and 60 Gm. tubes and 425 Gm. jars. Cream 0.01%—15, 45 and 60 Gm. tubes and 120 Gm. jars. Solution 0.01%—20 and 60 cc. plastic squeeze bottles. Ointment 0.025%—15 and 60 Gm. tubes. Neo-Synalar® (neomycin sulfate 0.5% [0.35% neomycin base], fluocinolone acetonid 0.025%) Cream – 5, 15 and 60 Gm. tubes.

fluocinolone acetonide — an original steroid from

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45 Gm.
TOPICAL USE
SYNALAR®
[FLUOCINOLONE ACETONIDE]
CREAM
SYNTE
60 cc
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
SOLUTION
.01%
SYNTEX
LABORATORIES, INC., PALO ALTO, CALIF., U.S.A.
60 Gm.
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
CREAM
SYNT
LABORATORI
Palo Alto,
U.S.A.
120 Gm.
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
CREAM
SYNTEX
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SOLUTION
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15 Gm.
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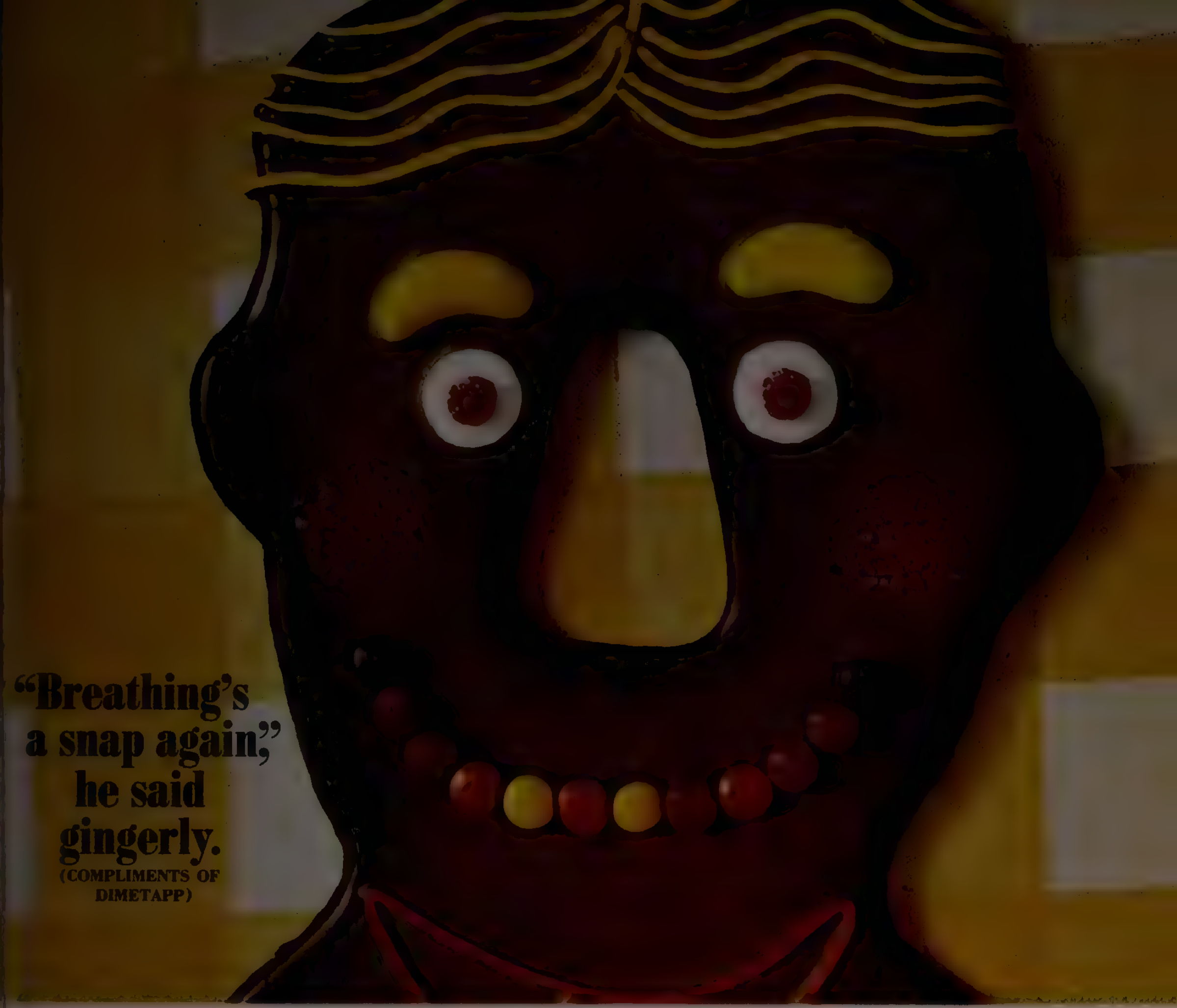
"Breathing's a snap again," he said gingerly.
(COMPLIMENTS OF DIMETAPP)

Help clear up that miserable stuffed-up feeling with Dimetapp. Each hard-working Extentab brings welcome relief from the stuffiness, drip and congestion of upper respiratory conditions for up to 10-12 hours. Yet, patients seldom experience drowsiness or overstimulation. The key to success is the Dimetapp formula: Dimetane (brompheniramine maleate)—along with phenylephrine and phenylpropanolamine, two time-tested decongestants. They get the job done... in a hurry.

Indications: Dimetapp is indicated for symptomatic relief of the allergic manifestations of respiratory illnesses, such as the common cold and bronchial asthma, seasonal allergies, sinusitis, rhinitis, conjunctivitis, and otitis. *Contraindications:* Hypersensitivity to antihistamines. Not recommended for use during pregnancy. *Precautions:* Until patient's response has been determined, he should be cautioned against engaging in operations requiring alertness. Administer with care to patients with cardiac or peripheral vascular diseases or hypertension. *Side Effects:* Hypersensitivity reactions including skin rashes, urticaria, hypotension and thrombocytopenia, have been reported on rare occasions. Drowsiness, lassitude, nausea, giddiness, dryness of the mouth, mydriasis, increased irritability or excitement may be encountered. *Dosage:* 1 Extentab morning and evening. *Supplied:* Bottles of 100 and 500.

A.H. ROBINS COMPANY
RICHMOND, VA. 23220
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in sinusitis, colds, U.R.I.

Dimetapp® Extentabs®

(Dimetane® [brompheniramine maleate], 12 mg.; phenylephrine HCl, 15 mg.; phenylpropanolamine HCl, 15 mg.)

up to 10-12 hours clear breathing on one tablet

ON
OFF
Anxiety and tension often "switch on" a multiplicity of physical complaints.

a tranquilizer with particular usefulness in functional disorders

Tybatran™

(pronounced TYE-buh-tran)

brand of tybamate

Extensive clinical experience, including eleven double-blind studies,[1-11] indicates that Tybatran is an effective agent for the relief of anxiety and tension. It appears to lend itself particularly well to the management of the anxious patient who "somatizes"—whose anxiety and tension find expression in complaints such as headaches,[4,8,10,11] fatigue,[4] insomnia,[2,4,8,9,12] anorexia,[3,8,9] and pruritus.[7]

Two salient features seem to set Tybatran somewhat apart from certain other commonly used tranquilizers.

1. Tybatran often proves more effective than meprobamate and chlordiazepoxide. In one study,[4] severe anxiety responded more effectively to tybamate than to meprobamate; in another,[8] symptom-response superiority of tybamate over chlordiazepoxide was marked at statistically significant levels of confidence.

2. Tybatran appears to be less sedating than other widely used tranquilizers. Side reactions are relatively infrequent; when they do occur, they may take the form of drowsiness, although insomnia, ataxia and other adverse effects have been reported. Nevertheless, Tybatran impresses many clinicians by its comparative lack of undesirable sedative action.[3,6,12,13] (If drowsiness or vertigo is present, activities requiring optimal alertness should be avoided.)

For patients in whom anxiety is manifested in any of a multiplicity of physical complaints, Tybatran deserves a clinical trial. These are the challenging patients, those with recurrent, persistent, ever-changing symptoms for which there is no clinical or laboratory evidence of organic disease.

Usual adult dose: one or two 250 mg. capsules 3 or 4 times daily. Adjust to suit individual requirements.

Prescribing Information

Dosage and administration. The suggested adult dose of Tybatran (tybamate) is one or two 250 mg. capsules three or four times daily. Dosage should be adjusted to suit individual requirements. While clinical experience with Tybatran (tybamate) in children has been very limited to date, the recommended daily dosage for children 6 to 12 years old is 20 to 35 mg./kg. body weight, in three or four equally divided doses. Dosage should be adjusted to suit individual requirements. Until further clinical experience is obtained, administration of Tybatran (tybamate) to children under [illegible] years of age is not recommended. Daily doses larger than 3000 mg. are not recommended, although in a few instances doses in excess of this figure have been administered. Tybatran (tybamate) is also available in 350 mg. capsules, for convenience in dosage adjustment, e.g., one capsule three times daily and two at bedtime.

Contraindications. Tybatran (tybamate) should not be administered to patients known to be hypersensitive to the drug. Since no studies have been done with this drug in human pregnancy, it should not be used in pregnancy unless the potential benefit outweighs the risk.

Warnings. Simultaneous administration to psychotic patients of tybamate with phenothiazines and other central nervous system depressants has in a few instances been associated with the occurrence of grand mal or petit mal seizures. Seizures have been reported with administration of phenothiazines alone, but not with administration of tybamate alone; nevertheless, tybamate should be used cautiously in individuals who are receiving other central nervous system depressants or have a history of convulsive seizures. Also, it should be borne in mind that simultaneous administration of tybamate with alcohol or with other psychotropic agents, particularly phenothiazines or monoamine oxidase inhibitors, which are known to potentiate the action of other drugs, may result in additive actions.

Precautions. There has been no evidence to date of the development of habituation or addiction. Investigators have not observed excessive self-medication or any withdrawal symptoms with use of Tybatran (tybamate), but

Prescribing information continued on next page.

A-H-ROBINS

Tybatran™
brand of tybamate

Prescribing information continued from preceding page.

the latter should be kept in mind with cessation of the drug after prolonged use. Because of the occurrence of withdrawal symptoms or exacerbation of presenting symptoms upon rapid withdrawal of other agents of this type, abrupt withdrawal of Tybatran (tybamate) should be avoided. Tybamate, like other psychotherapeutic agents, should be used with caution in addiction-prone individuals. Should symptoms of hypersensitivity occur, administration should be discontinued at once and appropriate symptomatic treatment initiated. Operation of motor vehicles or machinery or other activities requiring optimal mental alertness should be avoided if drowsiness or vertigo is present. As with any new drug, Tybatran (tybamate), should be used with caution in patients with a history of drug allergies, blood dyscrasias, and hepatic or renal disease; and prolonged and/or high doses of tybamate should be accompanied by periodic measurements of hepatic, hematopoietic, and renal function.

Adverse reactions. While these have only rarely required discontinuation of the drug, the most frequently encountered reactions have included drowsiness, dizziness, nausea, insomnia, euphoria. The drug was discontinued in one child because of a possible drug-induced urticaria, and skin rash and pruritus have been encountered in a few other patients. In a few patients, effects suggesting excessive stimulation such as hyperactivity, fidgetiness, flushing, and tachycardia have been encountered. Other reported side effects recorded only a few times to date have included ataxia, unsteadiness, confusion, feeling of unreality, "panic reaction," fatigue, headache, paresthesias, vertigo, gastrointestinal disturbances, glossitis and dry mouth. Grand mal or petit mal seizures have been reported in a few hospitalized psychotic patients to whom tybamate (up to 6000 mg. daily), phenothiazines, and other psychotropic agents were administered simultaneously. Convulsive seizures have not been reported with the use of tybamate alone. Until clinical experience has accumulated with this drug, inasmuch as tybamate is related to meprobamate, the physician should be cautious about the possibility of rare, serious adverse reactions such as may be encountered with the latter drug. Should excessive doses of tybamate be ingested, it is recommended that any drug remaining in the stomach be removed and symptomatic therapy, including central stimulants, be used as necessary.

Supply. Tybatran (tybamate) is available in green, sealed capsules of three strengths: 350 mg., 250 mg., and 125 mg. Each strength is supplied in bottles of 100 and 500.

Bibliography

1. Brick, H.; Doub, W. H. Jr., and Perdue, W. C.: Effects of tybamate on depressive and anxiety states in penitentiary inmates: a preliminary report. Int. J. Neuropsychiat. **2**:637 (Nov.-Dec.) 1966. **2.** Callis, S. B.: A new drug available for treatment of neurosis: double-blind study of tybamate. Int. J. Neuropsychiat. **2**:645 (Nov.-Dec.) 1966. **3.** Chesrow, E. J.; Kaplitz, S. E.; Sabatini, R.; Vetra, H., and Marquardt, G. H.: A new psychotherapeutic agent effective in the management of geriatric anxiety, depression and behavioral reactions. J. Amer. Geriat. Soc. **13**:449 (May) 1967. **4.** Chieffi, M.: A two-part, double-blind study of the anti-neurotic action of tybamate. Dis. Nerv. Syst. **26**:369 (June) 1965. **5.** Raab, E.; Rickels, K., and Moore, E.: A double-blind evaluation of tybamate in anxious neurotic medical clinic patients. Amer. J. Psychiat. **120**:1005 (Apr.) 1964. **6.** Seeherman, R.: Evaluation of tybamate in the clinical management of anxiety. Delaware Med. J. **36**:213 (Oct.) 1964. **7.** Shapiro, I.: Controlled study of the effects of tybamate on the neurotic component in dermatoses. Curr. Ther. Res. **8**:99 (Mar.) 1966. **8.** Splitter, S. R.: A new psychotropic drug: evaluation of tybamate in the treatment of anxiety and tension states. Psychosomatics **5**:292 (Sept.-Oct) 1964. **9.** Stern, F. H.: A new drug (tybamate) effective in the management of chronic brain syndrome. J. Amer. Geriat. Soc. **12**:1066 (Nov.) 1964. **10.** Vazuka, F. A. and McLaughlin, B. E.: Chemotherapy of symptoms of chronic anxiety states and other neurotic disorders. Psychosomatics **6**:73 (Mar.-Apr.) 1965. **11.** Button, J. T., and Cole, W. V.: Treatment of emotional disturbances in clinic patients. J. Amer. Osteopath. Ass. **64**:812 (Apr.) 1965. **12.** Slaughter, I.: Tybamate as an antineurosis drug in the treatment of emotional disorders. J. New Drugs **5**:177 (May-June) 1965. **13.** Dunlop, E.: Tybamate—A new tranquilizer: preliminary report. Mind **2**:115 (Apr.) 1964.

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Abstracts in Interlingua

Spier, N.: Proposition pro le maneamento therapeutic de choc refractori in pancreatitis acute (*anglese*), New York State J. Med. **68:** 527 (15 de februario) 1968.

Es commentate novemente elucidate aspectos del therapia de choc in lor signification pro choc occurrente in pancreatitis acute. In le precoce phases del curso clinic, le causa es predominantemente hypovolemia, plus tarde illo pote esser le disveloppamento de un stato de sepse. Un micre proportion del patientes non responde al restauration del sanguine e al application de antibioticos. Le responsa a vasopressores es frequentemente transiente. Inadequatia del perfusion resulta in resistentia peripheric, in hypovolemia, e in dysfunction cardiac. Le maneamento proponite es basate in datos experimental e deriva su orientation ab un maniera de argumentar que visa a integrar diverse componentes in le interesse de un melioration del resultatos clinic.

Benninghoff, D. L., e Alexander, L. L.: Tractamento de carcinoma pulmonar; radiation per se e radiation combinate con 5-fluorouracil (*anglese*), New York State J. Med. **68:** 532 (15 de februario) 1968.

De 55 patientes con inoperabile sed apparentemente non-disseminate carcinoma pulmonar, 30 esseva tractate con radiation sol e 25 con radiation in combination con 5-fluorouracil. Le patientes esseva seligite aleatorimente. Le therapia irradiatori administrate externemente esseva le mesme in le duo gruppos. Le administration de 5-fluorouracil (in le secunde gruppo) esseva restringite al prime septimana del therapia de radiation. Le resultatos del tractamento, judicate per le periodo de superviventia e le regression local del lesion primari manifeste in mesurationes radiographic, pareva revelar nulle significative differentias inter le duo gruppos.

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Medical News

Directory available listing maternity homes and residential facilities for unmarried mothers

A Directory of Maternity Homes and Residential Facilities for Unmarried Mothers has been prepared by the National Council of Illegitimacy. The Council is jointly sponsored by the Child Welfare League of America and the Family Service Association of America. This directory is available to all physicians at a cost of $4.50 plus 25 cents postage.

Physicians interested in obtaining copies of the *Directory* may do so by writing: Miss Ruth Chaskel, director, National Council on Illegitimacy, 44 East 23rd Street, New York, New York 10010.

Eye clinic set up in Vietnam by AMA volunteer physicians

A White Plains physician, Bernard M. Teschner, M.D., was one of the American physicians who volunteered to help develop an ophthalmology program in a Vietnam eye clinic under the auspices of the American Medical Association Volunteer Physicians for Vietnam program.

At the request of the Vietnam government, an eye clinic was started at Vinh Long Provincial Hospital in the Delta south of Saigon to (1) provide medical care, (2) develop a program of preventive medicine, (3) improve the administration of the Vinh Long ophthalmology service, and (4) teach the Vietnamese medical students.

To keep the eye program in operation, 12 ophthalmologists are needed in 1968. Physicians interested in this program are to contact: Charles H. Moseley, M.D., director of the volunteer program, American Medical Association, 535 N. Dearborn Street, Chicago, Illinois 60610.

N.Y.C. hospital first to receive payment under new Medicare payment plan

The first payment in the United States to a hospital for treatment of Medicare patients

continued on page 500

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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Betahistine hydrochloride in Meniere's disease

While the intravenous administration of histamine appeared to give fairly consistent results in ameliorating the symptoms of Meniere's disease, the mode of administration presented a problem of both time and expense. Encouraged by reports that orally given betahistine hydrochloride brought improvement to such patients, a clinical evaluation of the drug was undertaken by R. J. Wolfson, M.D., D. Myers, M.D., and W. D. Schlosser, M.D., and reported in a recent issue of the *Eye, Ear, Nose and Throat Monthly*. Calculations included the number of the episodes, based on the patients' history, for the group that might normally be expected during the experimental period and compared it with the number of episodes that occurred. On this basis, betahistine hydrochloride appeared to reduce the frequency of vertigo episodes in 15 of the 19 patients studied. Ten of these were followed in a longitudinal fashion with a concurrent control group. Eight of the ten remained free of vertigo from two to nine months.

The 19 patients who started the study were chosen on the basis of a history of Meniere's disease with typical audiometric and vestibular findings to eliminate any doubt about the diagnosis. Only patients with a high frequency of vertiginous episodes were included. There were four treatment periods of two weeks each. In the first and third periods, the active drug was given. During periods two and four, placebo tablets were given.

Sixteen patients completed all four periods. For the two-week period prior to starting the evaluation, these 16 patients had a total of 101 episodes of vertigo. During one active medication period, these same patients had 28 episodes and 28 episodes during the second active medication period. During the one placebo period they had 67 episodes and during the second placebo period 56 episodes. If spontaneous remissions did not occur, these 16 patients would anticipate 202 episodes during the four weeks they were given betahistine hydrochloride instead of the 56 they actually had. Also, 202 episodes would be expected during the placebo periods, whereas they had 123. One of the 16 reported no change in symptoms. The other 3 patients were dropped from the study for various reasons. In most cases there appeared to be a carry-over effect of the active drug into the placebo period. One of the patients dropped had a history of peptic ulcer which appeared to be reactivated after two weeks on this drug, and caution is suggested in giving it to patients of this type until more is known about its effects on peptic ulcer.

Abdominal aortic aneurysms

A series of 100 patients who underwent elective resection of abdominal aortic aneurysms from June, 1965, to February, 1966, were studied for clinical features and factors involved in surgical risk. Of the 100 patients, 34 had symptoms referable to the aneurysm; the other 66 apparently were asymptomatic. In 19 patients the aneurysms were found on plain films taken for other reasons and on scout films of 5 upper gastrointestinal series, 1 barium enema, 1 oral cholecystogram, and 1 intravenous pyelogram. Surgical mortality rate was 4 per cent.

This study, conducted by S. A. Friedman, M.D., *et al.*, and reported in a recent issue of *J.A.M.A.*, consisted of 83 men and 17 women with the average age of sixty-seven years in both groups. Only 2 patients were under fifty. Clinical manifestations, associated cardiovascular findings, complications of surgery, and surgical mortality rates were analyzed.

In the 34 patients who, under careful questioning, were able to describe symptoms referable to the aneurysm, the distribution was as follows: abdominal pain, generally described as dull, steady, and not related to activity or eating, 21; back pain, felt as a radiation from the abdomen in all but 3, 14; pulsation in abdomen, 11; and feeling of a mass, 6. In 99 patients the entire aneurysm was distal to the renal arteries at operation. Four patients, all men, died following surgery, 2 the first day after surgery, 1 on the tenth day, and 1 on the twenty-second day. Causes of death included cerebrovascular accident, popliteal artery occlusion, congestive heart failure, and cardiac arrest. It was felt that the surgical mortality rate appeared unrelated to the presence of coronary artery disease, of which none of the deceased had a history. Yet postoperative morbidity was highly correlated with the presence of prior coronary, peripheral, and cerebral artery obstruction. The absence of a history of symptomatic heart disease in the surgical fatalities may have been fortuitous, since the number of deaths and the number of patients without evident arterial occlusions were both small.

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*Medovy, Harry: *Canad. M.A.J.* 90:1354, June 13, 1964.

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1. Bradley, J. E., *et al.*: J. Pediat. *38*:41 (Jan.) 1951.
2. Bradley, J. E.: Mod. Med. *20*:71 (Oct. 15) 1952.
3. Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. *65*:311 (Feb.) 1953.

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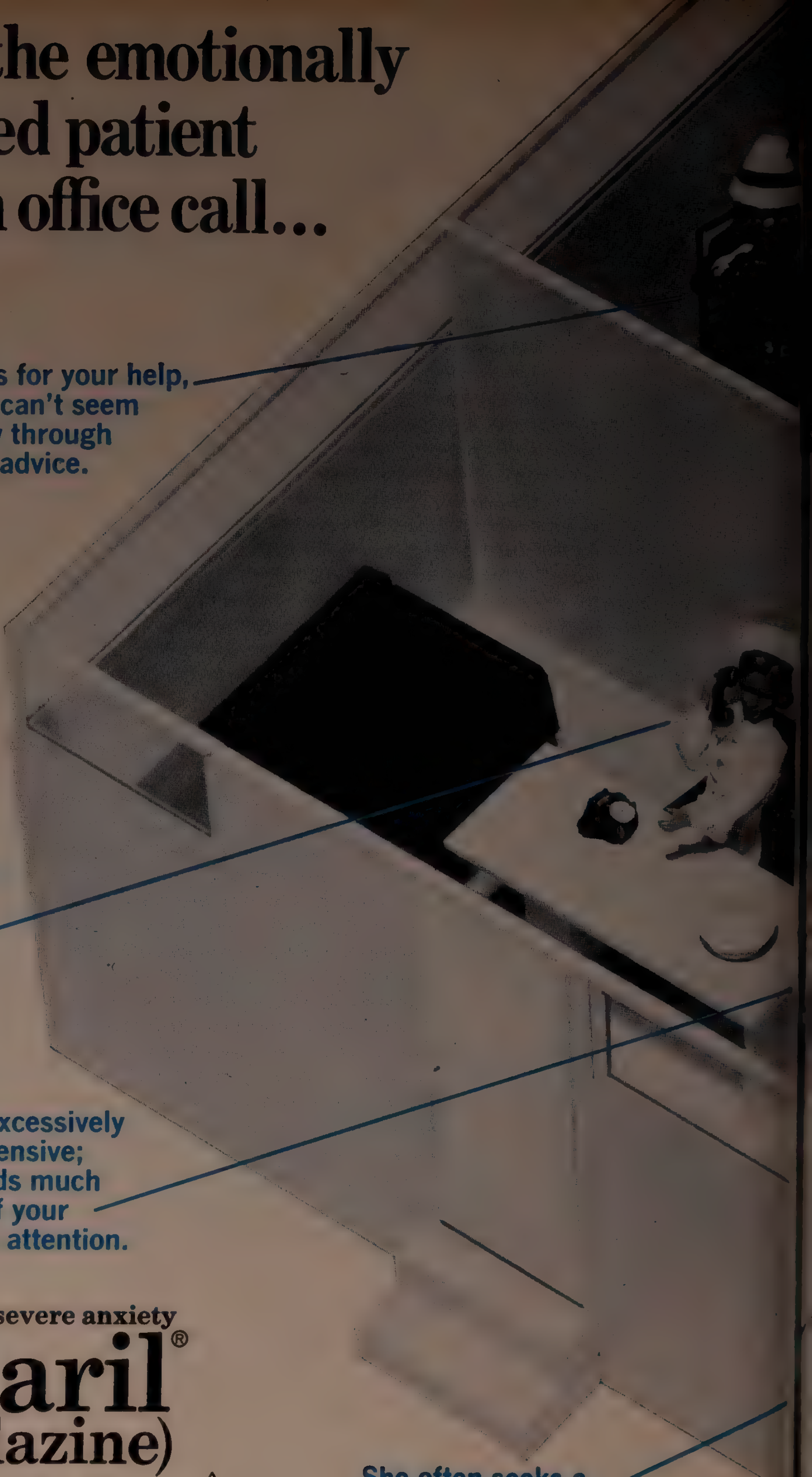

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continued from page 492

under the Social Security Administration's new payment procedure was made by New York's Blue Cross Plan to the Presbyterian Hospital at Columbia-Presbyterian Medical Center, New York City.

The new payment method was developed by the Social Security Administration in cooperation with the American Hospital Association and became effective January 1, 1968. Under this procedure, hospitals will receive an agreed on uniform Medicare payment each week. Detailed statements of services and charges will no longer be required in advance of Medicare payment. A hospital's weekly payment will be based on an estimated cost of the services it expects to provide Medicare beneficiaries in one year. That amount will be received in 52 weekly installments, and adjustments in the payment will be made at any time to reflect current costs. Final settlement and audit will take place once a year.

The Social Security Administration expects this plan to reduce the paperwork and also help hospitals to improve their financial planning and day-to-day management.

Clinical Center studies bilirubin metabolism

The cooperation of physicians is requested in the referral of patients with hyperbilirubinemia for studies of bilirubin metabolism being conducted by the metabolism branch of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Of particular interest are patients with chronic or intermittent unconjugated hyperbilirubinemia, in whom the diagnosis of hemolysis, Gilbert's syndrome, or a post-hepatic syndrome is suggested. Patients with conjugated or mixed hyperbilirubinemia, such as Rotor's syndrome or Dubin-Johnson syndrome, in whom obvious obstructive or active inflammatory disease has been ruled out, are also needed. A few patients with stable, compensated cirrhosis of the liver may also be accepted for study.

Selected patients will be admitted to the Clinical Center as inpatients for a minimum period of two weeks. Isotopic bilirubin clearance and red blood cell life-span studies, as well as dye-clearance studies, will be performed. Liver biopsy may be performed in selected situations. On completion of their studies, patients will be returned to the care of the referring physicians who will receive a summary of findings.

Physicians interested in having their patients considered for admission to these studies may write or telephone: Paul D. Berk, M.D., Clinical Center, Room 4-N-117, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 656-4000, extension 65955, area code 301.

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Books Received

*The following books were received during the month of November, 1967.**

Care of the Patient in Surgery, Including, Techniques. By Edythe Louise Alexander, B.S., M.A., R.N., Wanda Burley, B.S., M.A., R.N., Dorothy Ellison, B.A., M.A., R.N., and Rosalind Valleri, B.S., M.A., R.N. Fourth edition. Quarto of 898 pages, illustrated. St. Louis, The C. V. Mosby Company, 1967. $16.85.

Atlas of Urologic Surgery. By Philip R. Roen, M.D. Quarto of 394 pages, illustrated. New York, Appleton-Century-Crofts, 1967. $23.50.

Kinesiology and Applied Anatomy. By Philip J. Rasch, Ph.D., and Roger K. Burke, Ph.D. Third edition. Octavo of 488 pages, illustrated. Philadelphia, Lea & Febiger, 1967. $8.50.

Handbook of Congenital Malformations. Edited by Alan Rubin, M.D. Quarto of 398 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $14.50.

Atherosclerotic Vascular Disease. Edited by Albert N. Brest, M.D., and John H. Moyer, M.D. Octavo of 534 pages, illustrated. New York, Appleton-Century-Crofts, Division of Meredith Publishing Company, 1967. $17.50.

Depression: Clinical, Experimental, and Theoretical Aspects. By Aaron T. Beck, M.D. Octavo of 370 pages. New York, Hoeber Medical Division, Harper & Row, 1967. $10.50.

Modern Management of the Rh Problem. By John T. Queenan, M.D. Quarto of 303 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. $12.50.

Newer Methods of Nutritional Biochemistry. Volume III. Edited by Anthony A. Albanese. Octavo of 527 pages, illustrated. New York, Academic Press, 1967. $18.50.

Progress in Clinical Cancer. Volume III. Edited by Irving M. Ariel, M.D. Quarto of 369 pages, illustrated. New York, Grune & Stratton, 1967. $18.75.

Deep Thrombophlebitis; Pathophysiology and Treatment. By J. Alex Haller, Jr., M.D. **Major Problems in Clinical Surgery—Volume VI.** Quarto of 130 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $8.75.

Emergency-Room Care. Edited by Charles Eckert, M.D. Octavo of 373 pages, illustrated. Boston, Little, Brown and Company, 1967. Paper, $7.50.

Ciba Foundation Symposium on Myotatic, Kinesthetic and Vestibular Mechanisms. Edited by A. V. S. de Reuck and Julie Knight. Octavo of 331 pages, illustrated. Boston, Little, Brown and Company, 1967. $13.50.

Ciba Foundation Symposium on Drug Responses in Man. Edited by Gordon Wolstenholme and Ruth Porter. Octavo of 257 pages, illustrated. Boston, Little, Brown and Company, 1967. $13.

Louis A. Duhring, M.D.: Pathfinder for Dermatology. By Lawrence Charles Parish, M.D. Octavo of 137 pages, illustrated. Springfield, Ill., Charles C Thomas, 1967. $4.50.

Ciba Foundation Study Group No. 27. The Human Adrenal Cortex: its Function throughout Life. Edited by G. E. W. Wolstenholme and Ruth Porter. With 26 illustrations. Duodecimo of 146 pages. Boston, Little, Brown and Company, 1967.

Ciba Foundation Study Group No. 29. Antilymphocytic Serum. Edited by G. E. W. Wolstenholme and Maeve O'Connor. With 37 illustrations. Duodecimo of 165 pages. Boston, Little, Brown and Company, 1967.

Clinical Obstetrics and Gynecology. Volume 10 Number 3, September 1967. Gynecology of the Woman Over Sixty-Five. Edited by Warren R. Lang, M.D. **Problems in Gynecologic Malignancy.** Edited by George C. Lewis, Jr., M.D. **Special Article, Advances in Endocrinology: A 10-Year Review.** By Melvin L. Taymor, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Published quarterly (four numbers a year). $18 per year.

Modern Treatment. Volume 4, Number 4, July 1967. Advances in the Treatment of Poisoning. Guest Editor Jay M. Arena, M.D. **Treatment of Mental Retardation: Part I.** Guest Editor Charles M. Poser, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Published Bi-Monthly (six numbers a year). Paper, $16. per year.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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METHYCLOTHIAZIDE
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DESERPIDINE
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METHYCLOTHIAZIDE
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GYLINE
DESERPIDINE
PARGYLINE

Enduron: (methyclothiazide) A basic building block for mild hypertensives

METHYCLOTHIAZIDE
ENDURON®
5 mg

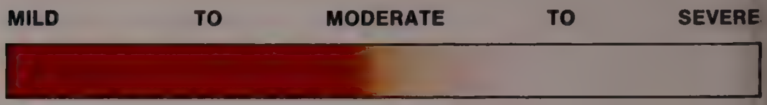
Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.



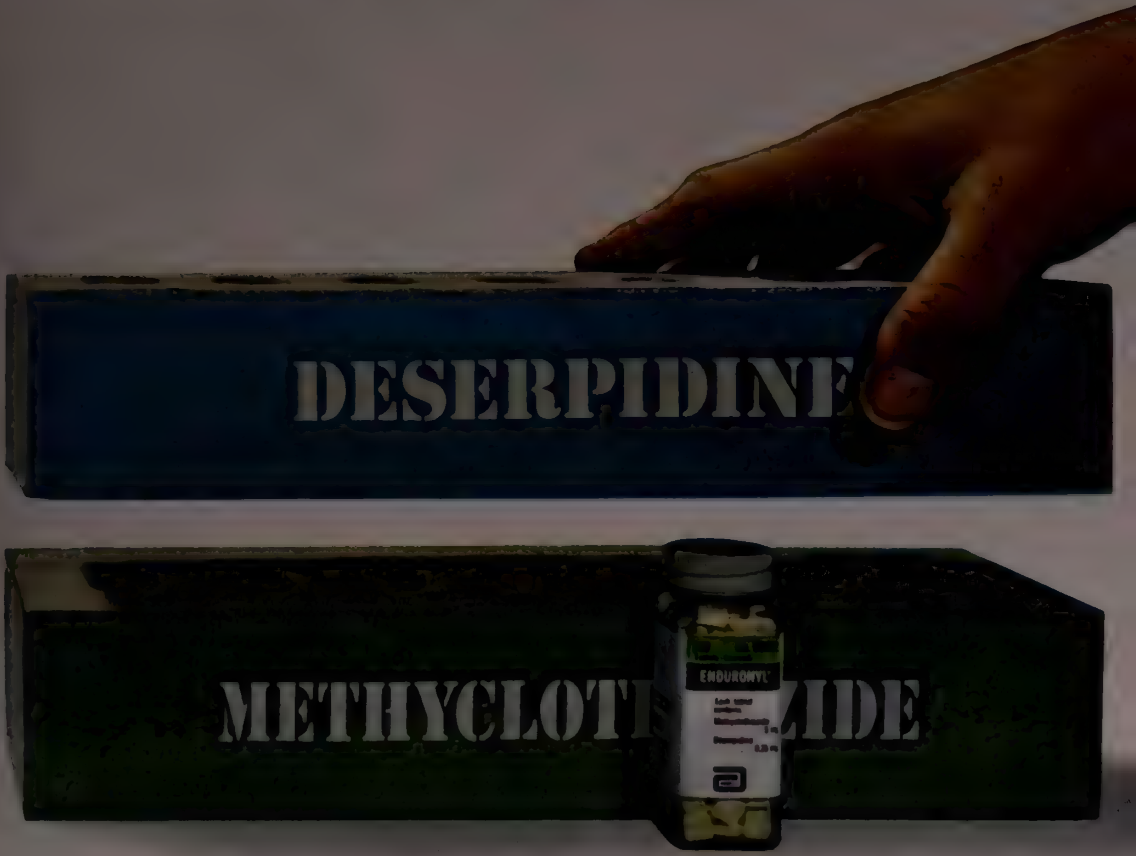
Once a day, every day

ENDURON®

METHYCLOTHIAZIDE

See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension



Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

Once a day, every day

ENDURONYL®

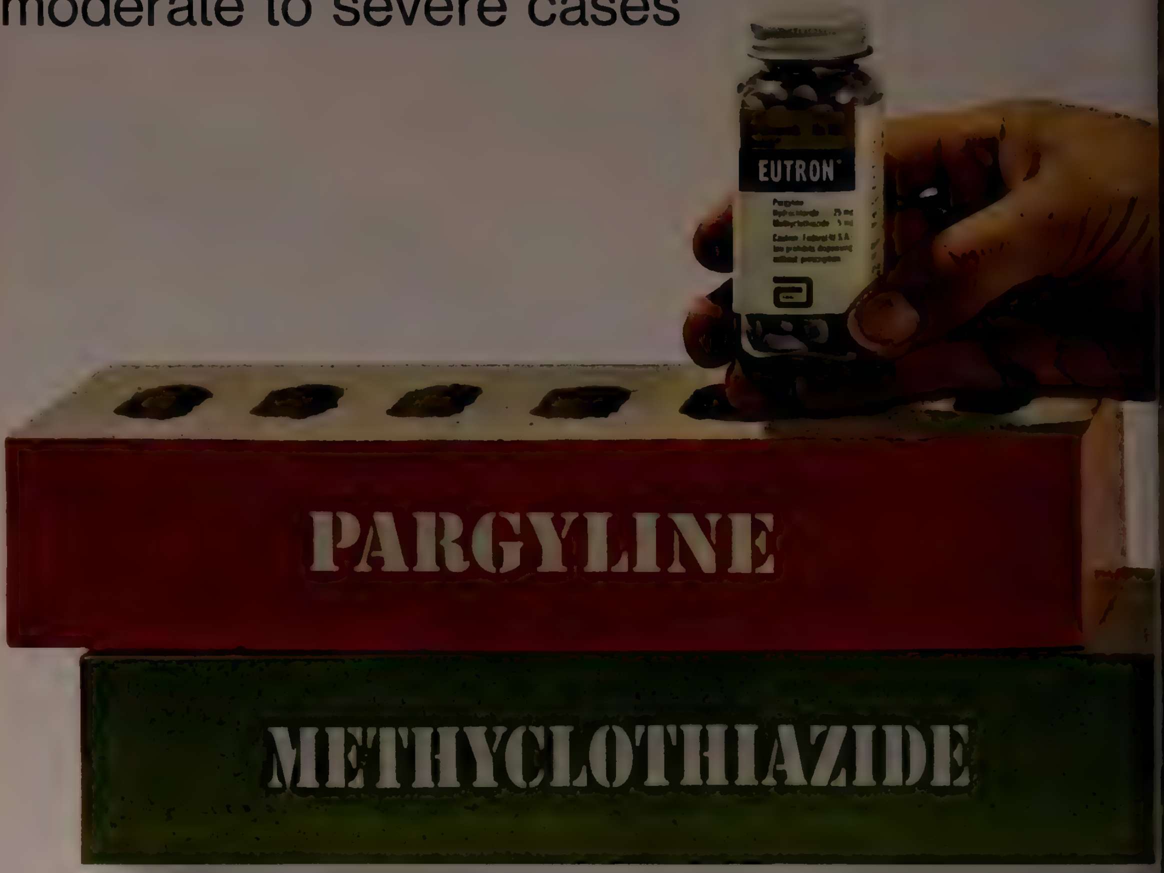
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

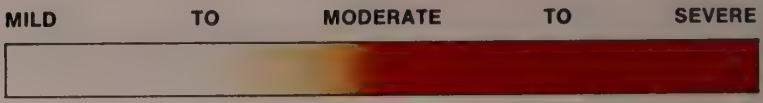
Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.



See Brief Summary on final page of advertisement

801094

ENDURON®

METHYCLOTHIAZIDE

ENDURONYL®

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications: For treatment of patients with moderate to severe hypertension, especially those with severe diastolic hypertension. Not recommended for patients with mild or labile hypertension amendable to therapy with sedatives and/or thiazide diuretics alone. It is desirable to establish the dosage of Eutron by administering component drugs separately.

TM-TRADEMARK

Contraindications: Pheochromocytoma, advanced renal disease, increasing renal dysfunction, paranoid schizophrenia and hyperthyroidism. Hepatic coma has been reported as consequence of hypokalemia with thiazide therapy. Until further experience is gained not recommended for patients with malignant hypertension, children under 12, or pregnant patients.

Concomitant use of the following is contraindicated: other monoamine oxidase inhibitors; parenteral forms of reserpine or guanethidine; sympathomimetic drugs; foods high in tyramine such as cheese; imipramine and amitriptyline, or similar antidepressants; methyldopa. 2 week interval should separate therapy and use of these agents.

Methyclothiazide is contraindicated in patients with known sensitivity to thiazides.

Warnings: Pargyline hydrochloride is a monoamine oxidase inhibitor. Warn patients against eating cheese, and using alcohol, proprietary drugs or other medication without the knowledge of the physician. When indicated, alcohol, narcotics (meperidine should be avoided), antihistamines, barbiturates, chloral hydrate, and other hypnotics, sedatives, tranquilizers, or caffeine, may be used cautiously in reduced dosage. In emergency surgery ¼ to ⅕ the usual dose of narcotics, analgesics, and other premedications should be used avoiding parenteral administration where possible. Carefully adjust dose of anesthetics to response of patient. Withdraw pargyline two weeks before elective surgery.

Warn patients about the possibility of postural hypotension. Those with angina or coronary artery disease should not increase physical activity with an improvement in well being. Pargyline may lower blood sugar.

Avoid use of enteric-coated potassium tablets, as these may induce serious or fatal small-bowel lesions consisting of stenosis with or without ulceration. These small-bowel lesions have caused obstruction, hemorrhage and perforation frequently requiring surgery. Medication should be discontinued immediately if abdominal pain, distension, nausea, vomiting or GI bleeding occurs. These products contain no added potassium salts and if added potassium intake is desired, dietary supplementation is recommended. Coated potassium tablets should be reserved for cautious use when adequate dietary supplementation is impractical. In patients with a history of allergy or asthma the possibility of sensitivity reactions should be considered.

Precautions: Measure blood pressure while patient is standing to determine antihypertensive effect. Use with caution in hyperactive or hyperexcitable persons. Such persons may show increased restlessness and agitation. Withdraw drug during acute febrile illness. Watch patients with impaired renal function for increasing drug effects or elevation of BUN and other evidence of progressive renal failure; withdraw drug if such alterations persist and progress. Use with caution in patients with liver disease. As with all new drugs, complete blood counts, urinalyses, and liver function tests should be performed periodically. With prolonged therapy, examine patients for change in color perception, visual fields and fundi. Also reported have been: blood dyscrasias including thrombocytopenia with purpura, agranulocytosis and aplastic anemia; elevations of BUN, serum uric acid, or blood sugar. Symptomatic gout may be induced. In surgical patients thiazides may reduce response to vasopressors and increase response to tubocurarine.

Adverse Reactions: Pargyline may be associated with orthostatic hypotension. Mild constipation, slight edema, dry mouth, sweating, increased appetite, arthralgia, nausea and vomiting, headache, insomnia, difficulty in micturition, nightmares, impotence, delayed ejaculation, rash, and purpura have been encountered with pargyline. Hyperexcitability, increased neuromuscular activity (muscle twitching) and other extrapyramidal symptoms have been reported in a few patients with reduced cardiac reserve.

During intensive or prolonged therapy, guard against hypochloremic alkalosis and hypokalemia (especially the latter if patient is on digitalis). Observe all patients for signs of hyponatremia ("low salt" syndrome).

Reported thiazide reactions also include anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, and pancreatitis. Nocturia has been observed with the combination.

801438

ABBOTT

Do you have patients who try to hide fear behind bravado?

They may be unable to face the pain of their depression. The head, the manner, the posture may shout security, success, and a leadership born of intellect. But it's all a cloak designed to cover failure, and the underdeveloped ego threatens to topple the overlarge frame.

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense. The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you. Whether depression is open or secretive, Aventyl HCl assists you in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

Lilly

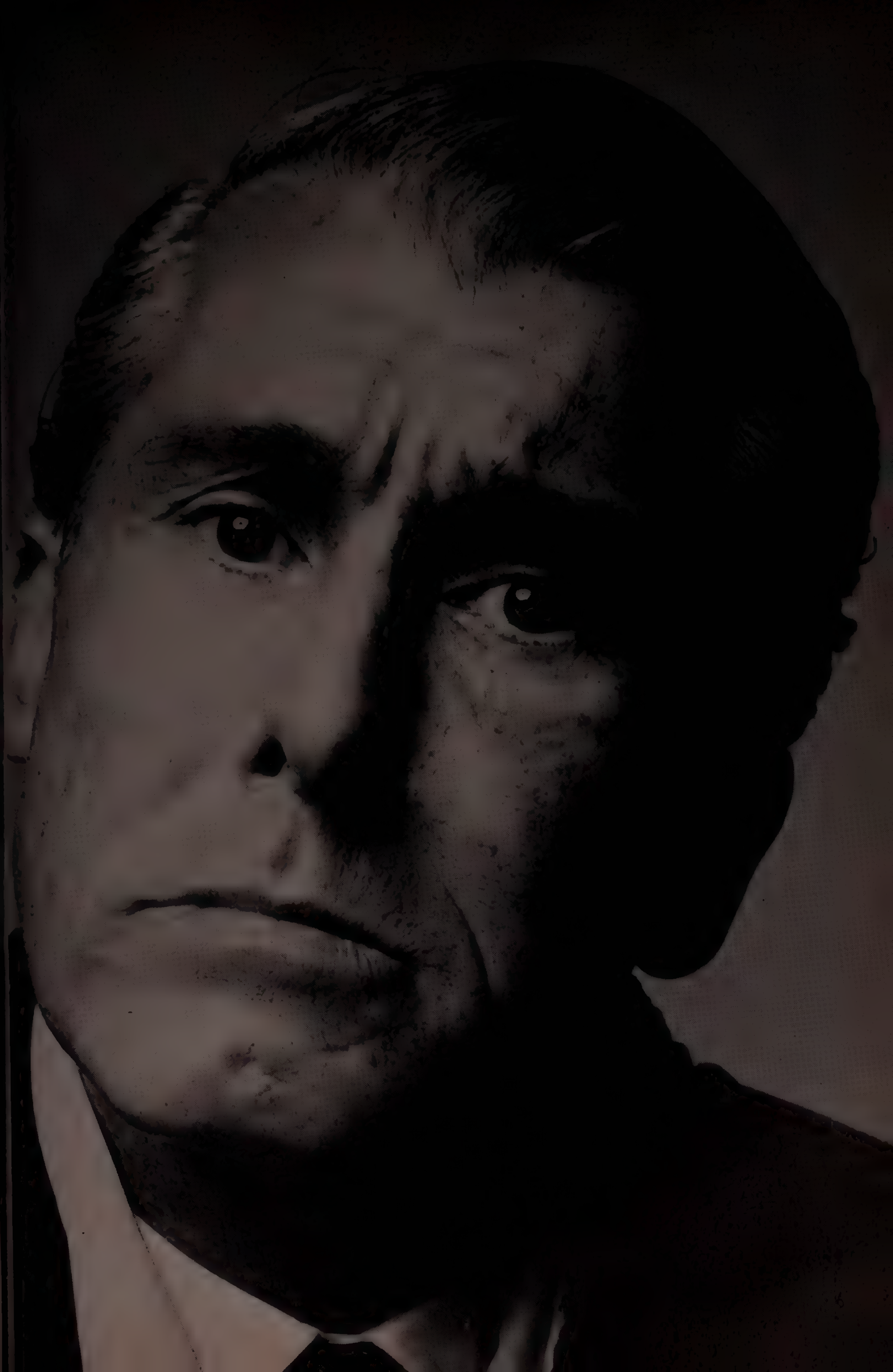
Eli Lilly and Company
Indianapolis, Indiana 46206

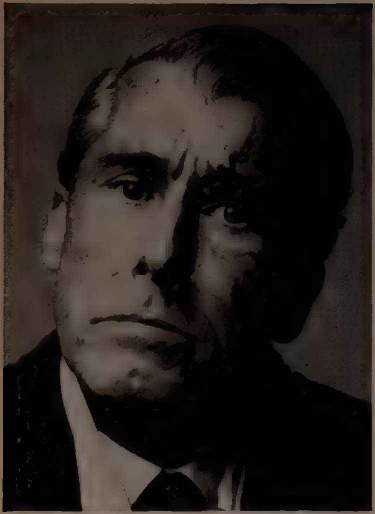
Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

701548

(See last page for prescribing information.)





Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl HCl under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

Adults—20 to 100 mg. daily

Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily

Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily

Children—1 to 2 mg. per Kg. or 10 to 75 mg. daily

Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily

Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid, 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500.

[101267]

Additional information available to physicians upon request. 800308

Lilly

Eli Lilly and Company
Indianapolis, Indiana 46206

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Modern Treatment. Volume 4, Number 5, September 1967. Treatment of Meningitis. Guest Editor William S. Fields, M.D. **Treatment of Mental Retardation: Part II.** Guest Editor Charles M. Poser, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Published Bi-Monthly (six numbers a year). Paper, $16. per year.

Book Notes

A Functional Approach to Neuroanatomy. By Earl Lawrence House, Ph.D., and Ben Pansky, Ph.D. Second edition. Octavo of 550 pages, illustrated. New York, The Blakiston Division, McGraw-Hill Book Company, Inc., 1967. Cloth, $13.50.

This book is written primarily with the medical student in mind and is designed to meet the needs of basic courses in neuroanatomy. The approach is functional but systematic, strictly adhering to the systems once the basic fundamental considerations of evolution, development, and anatomy have been covered. Illustrations are presented to amplify the text. They are concise black and white drawings with a minimum of labeling. Every chapter is followed by a summary which the authors hope will encourage frequent reviews. There is also a general bibliography at the end of the book.

Anatomy and Surgery of Hernia. By Leo M. Zimmerman, M.D., and Barry J. Anson, Ph.D. Second edition. Octavo of 368 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $17.25.

The authors of this new edition hope to reaffirm their conviction of the importance of reaching agreement on the essential anatomy and pathology of hernia and of the need for a more uniform and generally accepted nomenclature. Anatomic illustrations include not only the normal, well-muscled subject but also the variation from one specimen to another with particular reference to those changes which bear on the question of liability to herniation. Correct anatomic nomenclature has been adhered to and eponyms have been avoided whenever possible. In regard to surgery, greater emphasis is given to establishing scientific criteria for what-

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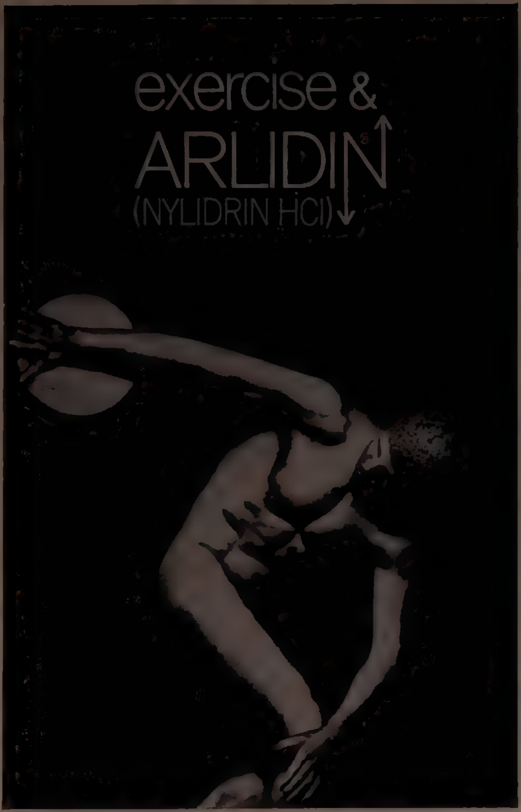

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find it first!

Make tuberculin testing routine
with every physical examination.

TUBERCULIN, TINE TEST (Rosenthal)

Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

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who goes for checkups?

A vital question. For if early diagnosis and treatment can cure cancer, obviously regular health checkups are essential. In a survey conducted for the Society, we discovered that only 26% of those questioned had such regular checkups. But 90% said, *if their physicians told them to do so,* they would have annual checkups.

This confirmed what we have long known—your key role, doctor, in *activating* your patients in good health practices. We alert the public with facts about cancer. You follow through by urging regular checkups. A life-saving combination.

AMERICAN CANCER SOCIETY.

continued from page 511

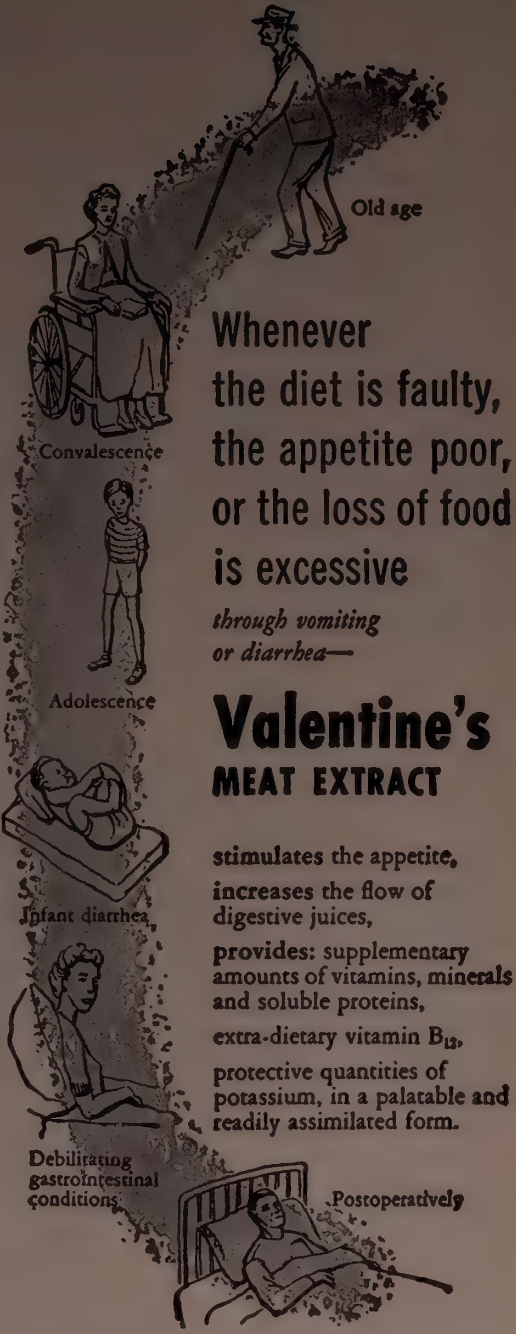
ever method used rather than urging any specific surgical technic.

The Office Assistant in Medical Practice. By Portia M. Frederick and Mary E. Kinn, C.P.S. Third edition. Octavo of 461 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $7.50.

This book is designed essentially as a teaching aid in training programs for medical assistants. It also may serve as a handy reference manual for all women employed in professional offices. In addition to offering suggestions for the most efficient ways to complete routine tasks, the book provides those already working in the medical field with a new perspective of their responsibilities. The text is divided almost equally into two major sections. The first emphasizes business and secretarial aspects and the second presents the medical aspects of office assisting. The experienced medical assistant who plans to take the national examination for Certified Medical Assistant will find this book useful in reviewing her knowledge in the areas covered by the examination.

French's Index of Differential Diagnosis. Edited by Arthur H. Douthwaite, M.D. Ninth edition. Octavo of 1,034 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $24.

The purpose of this work remains the same as when the book was first published in 1912, namely the presentation of symptoms and signs to enable the clinician in cases of difficulty to decide the exact cause of the malady which confronts him. Symptoms arising from modern therapeutics have added to the complexity of the subject in recent years. In this new edition a full revision has been carried out by the many contributors. The format has been altered to double-column pages which makes for greater ease of reading. Another change is that section headings and index now begin, where possible, with the anatomic name of the symptomatic area. Also, over 200 new and replacement illustrations have been incorporated, many of them in color.



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stimulates the appetite,

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provides: supplementary amounts of vitamins, minerals and soluble proteins,

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Supplied in bottles of 2 or 6 fluidounces.

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400,000 units of potassium penicillin V per teaspoonful

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Potassium Phenoxymethyl Penicillin

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Editorials

Equivalency

"All people are equal but some are more equal than others" is a semantic somersault that could very well be applied to drugs.

Testimony before the Senate Small Business Subcommittee has disclosed that in the case of one standard antibiotic released from patent rights early this year the product of new manufacturers fails to measure up to the product of the original patent holder.

This testimony brings into question the therapeutic equivalency of the newly manufactured product as measured by dissolution, blood and urine levels, and excretion rates.

In tests in simulated gastric juice, the trade-named antibiotic was 91.8 per cent dissolved in ten minutes and 98.6 per cent in thirty minutes. The generic equivalents ranged only between 8.3 and 48.7 per cent in ten minutes and at thirty minutes from 20.4 per cent to 94.3 per cent.

A high and rapid blood level is desirable. The trade-named product reached peak level in one to two hours.

A generic did not reach maximum until four hours after administration and then at lower levels than the trade-named product.

Evidence was also introduced confirming significant differences in excretion rates.

All products used on two groups of volunteers were purchased randomly at drug stores.

The trade-named product was Parke-Davis Chloromycetin.

Another club enters dancing

The success of Alcoholics Anonymous, Colostomy Clubs, and others has encouraged another group to face its problems collectively.

At the Beth Israel Hospital Institute of Newark, New Jersey, a Pacemaker Club has been formed. This is not the usual group that sets the pace in fund drives, but is the real thing. It consists of over 100 patients who carry implanted pacemakers to control the rhythm of their hearts and came about in this way.

Physicians of the "pacemaker team" of the Newark Beth Israel Hospital Institute became increasingly concerned about those patients who, after cardiac pacemaker implantation, remained fearful of even the slightest physical exertion. Several considered themselves virtual "cardiac cripples." No amount of verbal reassurance proved sufficiently effective in restoring normal and useful living patterns. Apparently, the medium of verbal communication was inadequate to overcome the fear and apprehension which condemned the patients to inactivity.

In consultation with medical communications experts of the hospital, it was decided to take the route of most direct and most effective communication: physical demonstration of the patient's capability to function. As a result, the patients were invited to participate in a "tea dansant of the Pacemaker Club." The event became a success far beyond anyone's expectations. Dancing to the strains of a five-man combo, patients happily compared notes on the performance of their pacemakers and the rhythm of their dance steps. Reluctant patients, still afraid of taxing their paced hearts, gradually gave in to the pretty and persuasive smiles of nursing students inviting them to dance. Many a tear of gratitude was shed as patients discovered that they were not invalids after all and formerly over-protective spouses joined their husbands or wives on the dance floor.

The National Broadcasting Company covered the event in a five-minute special news report.

The enthusiastic patients then spontaneously organized a Pacemaker Club, elected a president and formed various committees for the purpose of carrying the rehabilitation effort further.

This bold and imaginative approach opens new vistas for another group of science's salvagees. May the happy sound of "look Mom I'm dancing" ring round the world.

New weapon to control air pollution

Scientists of the Public Health Service's National Center for Air Pollution Control have developed a gaseous tracer system that is so sensitive that the gas used can be detected miles from the source in concentrations of 1 part per 100 trillion parts of air.

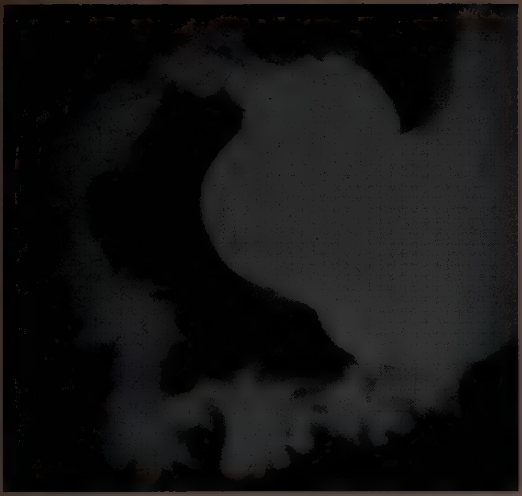
The gas, sulfur hexafluoride, which is nontoxic, can be released in a known concentration and measured downwind to determine how much it has been diluted by the atmosphere. Successful experiments have been conducted over a range of up to 70 miles from the source.

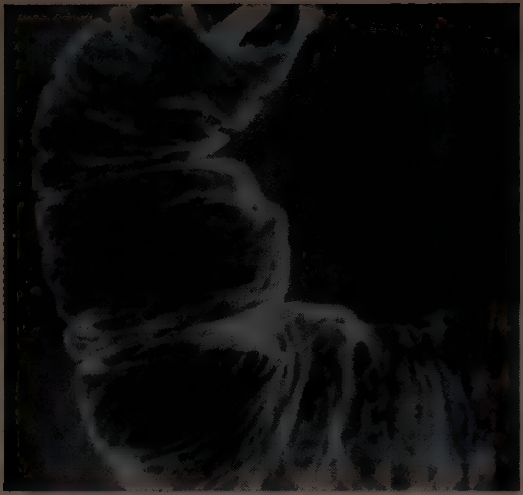
By using the gaseous tracer system, scientists of the National Center expect to expand present knowledge of the dispersion and dilution forces of the atmosphere on gaseous pollution transported from one city to another.

One use to which the new technic can be put is to measure the dispersal effectiveness of tall smoke stacks by releasing the tracer gas from the stack. Air pollution control authorities may be able also to use the method to show transport of pollution across jurisdictional lines, either interstate or intrastate. By releasing a known trace material such as sulfur hexafluoride that is usually absent in the atmosphere and then sampling and capturing it at another point downwind, they can obtain information on the transportation of harmful pollutants in the air.

First legislative session

During the first legislative session, over 1,100 bills of medical interest were introduced, compared with only 850 introduced during the first session of the eighty-ninth Congress. In addition to the social security amendments which cleared the Congress on the final day of the first session, Congress passed several bills of interest to medicine. Among other bills enacted into law were: mental health amendments, "doctor draft" extension, older Americans act, vocational rehabilitation act amendments, air quality act, mental retardation act amendments, the flammable fabrics act amendments, and the military pay act amendments. On 13 occasions the AMA submitted its views to Congress on pending legislation. On four other occasions, it provided informational statements.





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In the hypotonic duodenograph[1,2] reproduced above, the gastrointestinal tract was relaxed with Pro-Banthīne. The duodenum was intubated. Pro-Banthīne in a dose of 60 mg. intramuscularly was used to assure prompt aperistalsis and double-contrast visualization was achieved with ordinary barium and air.

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Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most *adult* patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthīne (brand of propantheline bromide) is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology. 89:438-443 (Sept.) 1967.

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STRESSCAPS

Approach to Psychodynamics of Obscene Telephone Calls*

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HAVING HAD CONTACT with cases wherein obscene telephoning was part of the symptom complex, I have been able to study this syndrome in some depth. The object of this report is to elucidate some of the dynamic forces which underlie the selection of this act as a symptom.

Under the New York State penal code, section 555, the perpetration of an obscene call to a woman or a minor or of a threatening call to anyone constitutes a misdemeanor. Much public indignation has recently been focused on this offense. Furthermore, the frequency of obscene telephoning has continued to increase. According to a spokesman for the New York Telephone public relations department, in the first quarter of 1966, 10 per cent more complaints of "annoyance calls" were registered with the Bell Telephone System than in the similar quarter of 1965. "Annoyance calls" have reached such a volume that on March 14, 1966, a separate annoyance calls bureau was established by the system. Of the 65,500 annoyance calls reported to the New York business office in the nine months from April to December, 1966, 5 per cent were threats and 19 per cent were obscene, in that an obscenity was used to any female or to a male child under ten. That represents an incidence of more than 16,000 in New York in nine months alone.† However, so far, the dynamics underlying the making of lewd telephone calls have received little attention. Even Karpman,[1] in his encyclopedic work of 1954, simply defined the act as an offense,[1] classifying it under scoptophilic and exhibitionistic activities and giving a single skeletal case history.[2]

Scoptophilia (scopophilia) can be defined as "sexual pleasure derived from contemplation or looking."[3] Exhibitionism is technically a scoptophilic act since "a typical exhibitionistic act is prompted by the desire to gain sexual pleasure by the spectacle of emotion—whether of corresponding pleasure, or of confusion, or of horror—in a person of the opposite sex."[4]

As Fenichel[5] stated in the classical interpretation, the exhibitionist seeks "reassurance against castration." Two of the messages he unconsciously conveys to the audience are: "Reassure me that I have a penis by reacting to the sight of it" and "reassure me that you are afraid of my penis, that is that you fear me; then I do not need to be afraid myself." Garnier,[6] as well as other authors, supports the view that the aim of the exhibitionist is to impress, as reflected by the choice of churches by exhibitionists as the fitting places for their act. Further, Stechel[7] opines that there is the "persistence of an infantile element" in the exhibitionist, regarding the exhibitionist's belief or hope in the magical power of his charm as a specialized form of narcissism. That this mechanism is not limited to the display of the phallus is also supported in the analytic literature. Jones[8] applied the term exhibitionism to fantasies of impressing people with one's skill.

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* Read before the 123rd Annnal Meeting of the American Psychiatric Association, Detroit, Michigan, May 9, 1967.

† Of the calls, 66 per cent were harassing, for example, the caller does not answer, and 10 per cent were interference, that is, the line is tied up so no outgoing calls can be made, calls in error, or unwanted calls.

It becomes evident that basically exhibitionism is an attempt to deny, at an unconscious level at least, the exhibitionist's morbid fear of his own inadequacy; and to gain, through the response of others, whether that response be positive or negative, a transient sense of power and importance. The perpetrator of the obscene telephone call appears similarly motivated. For his purpose, his medium has further advantages. He need not physically confront the other person. He can call on his imagination and intellect to provide an awesome picture of himself. And, from a safe distance, he can impinge on his victim more actively than does the exhibitionist. He may only present himself, but in many cases he may menace and threaten. He acts out his unconscious "identification with the aggressor" and takes a verbally and symbolically active part in inducing his victim to "reassure me that . . . you . . . fear me; then I do not need to be afraid myself."

Let us now examine these concepts in the light of the pertinent features of the history of 3 patients in whom obscene telephoning was part of the symptom complex.

Case reports

Case 1. This patient was a pudgy, sixteen-year-old white male, seen in intensive treatment while hospitalized by court order. He had been repeatedly apprehended making lewd telephone calls. His chief complaint was a "compulsion" to make such calls. He started telephoning to impress his friends. He felt he had little enough to impress them with: ". . . I did not fraternize much with the other boys my age. I was uncoordinated, and this hampered me from making friends." Once he dialed at random, asked to speak to "the lady of the house," represented himself as a pollster for a girlie magazine, and asked questions such as "what do you think of the current output of pornographic literature being sold to minors?" He hoped for curiosity, and then asked further, "what do you think of minors being allowed into sexy movies?"

Soon he started telephoning in private. Expanding, he would relate a hypothetical case about a mother who, "having heard her son talking of seeing a sexy movie, confronted him nude and asked how he felt looking at his own mother in the way he had observed those women on the screen. The boy, ashamed, ran from the room." He asked, "do you think this was too strict or daring a method to keep the boy from going to such movies?" He hoped for a discussion. He would finally thank the lady and hang up. Occasionally he ended the phone call by shouting obscenities.

The patient started calling the mother of a girl he did not like, say her daughter had been hurt and might die, and quickly hang up. Finally, after a slight from a girl he had "liked—quietly," he called her mother, saying that the girl had been attacked after school and was badly hurt. "When the mother was very worried, I told her I had her daughter and would hurt and even kill her if the mother did not mutilate herself in one way or another," which he described in lurid detail.

Later he dropped out of school, although he continued to be tutored. With increasing frequency he made phone calls of the threatening type; occasionally, recklessly, and impulsively making one call after another. He hoped to reach a woman who admitted having a daughter. He would claim to have captured the daughter and describe in detail damage he would do, usually to the daughter's breasts or genitals, unless the mother mutilated herself by burning her own breasts or genitals. Once he found a woman who responded with adequate horror to these calls, he would repeatedly telephone her. He would either repeat the same formula or go on to another installment. It was consequent to these repetitions that he was apprehended by the police.

There were ebbs in his need to call. One such ebb occurred when he had a job, another when he was at camp, and a third when he was first hospitalized. Exacerbations occurred when he became tense or fearful about his adequacy or performance in almost any area.

He reported a mounting tension, which he called a compulsion, until he telephoned. He was not dissuaded by reality dangers. He telephoned in such a characteristic manner that the police had become acquainted with his style and apprehended him with increasing speed and frequency. After he made a call there was an almost orgastic relief of tension but unaccompanied by any genital manifestation. While telephoning there was an admixture of frank fear; of loss of control, not knowing what he would do next, or "what will come out."

The patient had always had difficulty with control, of body and impulses alike, for which some partial organic basis could never be entirely ruled out. He worried about his awkwardness. His esteem for himself was always poor, both physically and generally. He had never felt genuinely close to anyone.

He was ambivalent in his feelings toward his family. He described his father, whom he feared but did not respect, as a cold and uncommunicative disciplinarian but meek toward the mother. His mother he described as bossy, overprotective, overinvolved, and dominating. His relationship with his sister, five years older, was distant. She was an object of vague liking diffused with jealousy.

Psychologic evaluations support the clinical picture of a confused, ambivalent adolescent with poor definition and poor control; grandiose and impatient with detail and frightened by his confusion, anger, and potential for destructiveness.

Case 2. This patient was a good-looking, verbal, and intense white graduate student in his mid-twenties. He came to therapy because of occasional premature orgasm or loss of erection and because of a general diffuse anxiety. He had potency difficulties when he felt "threatened," specifically when he was involved in an affair with a girl he judged to be his equal or superior.

Whenever he felt particularly unworthy because of an argument with his mother or because he did badly at school, he had an almost irresistible urge, which was accompanied by increasing tension until relieved, to demonstrate his superiority by demeaning a woman in a way connected with sex.

Impeccably dressed and carrying his briefcase, he went to a part of town frequented by Negro prostitutes, accosted one, and interrogated or propositioned her, using lewd terms. He hoped the woman would respond to the differences between her humble station and his exalted place in society. Although occasionally he consummated some sexual act during these sallies, his greatest interest was in demonstratively demeaning the woman. Infrequently he substituted frottage in the subway, again attempting to demonstrate the variance of his "crude" action from his appearance and station.

Once, after he had heard that girls at a nearby modeling school were dating and were sexually approachable, he telephoned, representing himself as a member of a fraternity in a nearby college. He planned to question and regale the girl who answered in a "jazzy, lewd way, as I do with prostitutes and lower-class girls," and decided not to while actually speaking to her on the telephone only because her voice was so "conventional" that he feared he would get no response.

The patient had always been a lonely youngster, unable to get close to anyone, trying repeatedly to gain a sense of mastery, and finally settling to strive for "inscrutability." With this supposed asset he thinly covered what projective psychologic examinations revealed: estrangement, rage, lack of differentiation from the female, and a constant attempt to deny a sense of inferiority and weakness.

He experienced his father as a weak, uninterested, and unmasculine failure. He saw his mother as a smothering, bossy, and unintelligent castrator. His first memory was of his mother feeding him a spoonful of sour cream which he forced down and vomited. He told his mother about his potency difficulties. She then confided that his "brother and father had the same trouble." He had always felt intense envy toward his older brother, especially about the father's affection. The brother had had a long course of therapy during which, according to the patient, the brother became inordinately attached to his therapist.

Case 3. This patient was a twenty-five-year-old, heavy-set, neat, white, Catholic, single man who was referred to a municipal hospital by the court because of exhibitionism. He stated that the desire to exhibit himself began at thirteen years of age. He exhibited himself to a seventeen-year-old neighbor girl and also to young girls in the neighborhood. He received many warnings about this activity. At the age of eighteen he joined the Marine Corps, allegedly in an attempt to control his acting out. While in the service, he had heterosexual relations for the first time. He also exhibited himself on several occasions but was never caught. He was shipped to Japan and Korea where he had heterosexual relations almost every night when he was on leave, up to four times a night. He found that coital activity helped to control his desire to exhibit himself. When he arrived back in the United States, he began making obscene telephone calls, mostly to telephone operators. He was apprehended during one of these acts and received a general discharge from the Marine Corps. On his discharge he relapsed to exhibitionism for which he was repeatedly apprehended and eventually referred to the hospital. He was planning to marry a woman who knew about his difficulties.

Neither the family history nor a detailed past history were available.

Psychologic examinations were felt to reflect immature sexual development, uncontrolled instinctual urges, and confusion of the sexual role and of identity. Schizoid and depressive trends were noted.

Comment

On correlating the case material, the low self-esteem and the dependence on the response of others for reassurance were most striking. No subject had it within his capacity to raise his self-esteem by his own efforts. Each needed to impress someone else. None felt he could influence anyone sufficiently in a socially acceptable way. In each case the phone call had a meaning symbolically similar to that of any other exhibitionistic act, although in each it was a more aggressive maneuver at a greater distance.

Explicit in Cases 1 and 2 and implicit

in Case 3 is a fluctuating but omnipresent fear of and rage at women. Mother was overly but falsely protective. Each of the telephonists saw women as two-faced but powerful. Telephoning expressed some rage. It attempted to neutralize the destructive power of women. Further, the telephonist sought to harness that power into supporting his defensive grandiosity and into denying his feelings of nothingness.

Regarding prevalence, Case 1 resorted to telephoning more frequently as anxiety or tension mounted, whenever self-esteem was seriously threatened. Case 2 usually was able to utilize a more direct but less primitively explicit approach in attaining reassurance. He was able to confront the prostitutes or other women from whom he sought awe, personally, to attempt to impress them by his supposed stature. Case 3 tended to exhibit himself. Thus, whereas Case 1 was unable to confront people in person, neither Cases 2 nor 3 usually had to resort to the telephone as an intermediary, nor, conversely to take as undisguisedly threatening a stance.

Case 1, in his adolescence, was trapped in the ambivalence about which Sullivan[9] speaks. Anxiety was aroused whenever he approached another person, especially one of the opposite sex. As long as he was prepubescent, he was able somehow to deal with these forces. However, when lust was added to his already major drives for approbation and closeness, he was unable to remain socially isolated. Reawakened by this conflict, there now raged anew in this patient the smoldering, lifelong resentment against the nonfeeding mother; the woman who, according to his fantasy, could supply sustenance and reassurance but who always remained out of reach. This rage was evidenced, thinly veiled, in his description of his mother, in his sadistic masturbatory fantasies, and in the projective data on his psychological examinations. As he approached girls, his disappointments resulted in a severe blow to his self-esteem, and he resorted to using obscene telephoning from which he had discovered he could gain satisfaction in another connection, in an attempt at repair. He expressed his rage now by becoming menacing. Consequently he resorted to telephoning in other cases when he needed rapid reassurance.

The second patient was better compensated than Case 1, although he, too, suffered from schizoid and obsessive character features. He had been able to get close enough to establish some superficial heterosexual genital relationships. As Rado[10] points out about depressed persons, however, his self-esteem continued to be dependent on the response of other people. He could usually get this response through confronting and demeaning prostitutes. That perverse activity was multiply determined in him. Man could only be potent through the defeat of woman. Ambivalent rage at women, from whom he, in a projection of his own poorly controlled desire for a symbiotic cleaving together, feared emasculation, infantilization, and actual absorption, could be found manifestly or latently in all his productions. For this patient, telephoning was an unsuccessful attempt to neutralize the proportionately greater prowess he feared in trying his approach with a victim of greater stature, through whom he had hoped to increase his yield of reassurance.

The third patient's history indicates that he used exhibitionism as a tension reducing and self-esteem raising device. While he could be sexually active, there was temporarily less pressure to exhibit himself. Conversely, under more stress and in a place where his status was less assured, he retreated to the use of telephone calls, withdrawing further from any physical confrontation in his attempt actively to coerce the world into denying or undoing his feelings of helplessness and impotence.

In each case telephoning was only one overt part of the symptom complex. In the overdetermination of this symptom, several items played a role. The offenders all had major disruptions in the area of self-esteem, with profuse self-depreciation and self-derogation at constant conflict with a grandiose self-concept. There were major schizoid and depressive features. There were major difficulties in getting close to anyone, at odds with an almost infantile dependence on and rage at woman, whose approbation could keep intolerable feelings of impotence at bay. The ambivalence became a major conflict under stress which increased both the need for reassurance and the anxiety on approach. There was rage at this intolerable lack of sustenance.

Through interposing a mechanical device between himelf and his victim, the telephonist decreases his anxiety at interpersonal confrontation. He feels safer from retribution. The telephone seems to him a protection, in his verbal exhibitionism, from being perhaps found uninspiring and laughable physically. It buffers him from coming too close and being absorbed. It protects him from his feared loss of control. Even while the telephone permits a lurid and primitive expression of the telephonist's rage, its mediation protects him from the danger of physically acting out a murderous fantasy. It may be precisely because he feels protected in this way, in some cases, that the telephonist dares to assume a threatening stance.

The question remains, as with exhibitionism, as to the causes of the phallic symbolization. The phallic terminology and symbolism seem, if anything, to becloud the real issue. The apparent phallicism may be more a concretization into conventional symbols of the teasing, phallic, nonfeeding mother. The issue does not appear to be any real genital involvement by the patient. His aim seems to be much less specific; for intensity rather than for positive response. He seeks being told that he is impressive and that he matters. Although he fears confronting her, it is only by the approbation of a woman that he can, for the moment, escape his particularly intolerable peak of anxiety.

Further elucidation and validation of these dynamics could be gathered from appropriate structured and unstructured interviews and projective psychologic testing of a matched group of exhibitionists and telephonists. Of corollary interest would be a similar study of the victims of one obscene phone call as against women who are repeatedly victimized.

Conclusion

The abuse of the telephone by men for the purpose of obtaining a sexually tinged shock response from a woman, either by lewdness or obscenity, is apparently an act essentially exhibitionistic in its dynamics and meaning. It can be postulated that the often unconscious main goal of the act is to bolster a faltering sense of potency by inducing awe or fright. A subsidiary goal is the active expression, from a safe distance, of the telephonist's ambivalent rage. The offenders tend to be poorly integrated, immature people who have severe difficulties in self-esteem and interpersonal relations and who are locked into obtaining their narcissistic supplies from the response of others. They tend to resort to telephoning when they are particularly alone, isolated, or otherwise intolerably anxious. Crucial in each of the cases presented is the desperate need, when self-esteem falls low enough, for a rapid infusion of assurance that the self is to be respected and of a dependence almost entirely on the awed response of a woman for this reassurance. The offender may be compulsively driven to commit the act. He tends not to be a menace physically.

Summary

Scant professional attention has hitherto been paid to the psychodynamics underlying the perpetration of obscene telephone calls, especially calls made in an effort to elicit a shocked or awed response.

Case material is examined to elucidate some of these dynamics. In each case the symptom of obscene telephoning is only a part of the clinical picture. The psychodynamics, genetics, and psychopathology of each case resemble and differ from each other in significant aspects.

The choice of obscene telephoning as a symptom, significance for which can be found at several levels, appears overdetermined. Real and symbolic similarities of obscene telephoning to exhibitionism and their essential differences are each important. Superficially, both perversions are scoptophilic. There is evidence in the case material to support the hypothesis that obscene telephoning is at the same time more aggressive and yet more distant an act than is exhibitionism. The former is associated with greater rage and greater anxiety in approaching people. Locked in a similar ambivalent need for the approbation of a woman as is the ex-

hibitionist, the telephonist acts out his perversion at a greater distance but more actively. He tends to be a person with a faltering sense of potency which he tries to bolster by inducing awe or fright. He has severe difficulties in self-esteem and in interpersonal relations and is caught up in an ambivalent struggle, transferential in nature, to obtain his supplies from the response of others. He tends to resort to using the telephone when he is particularly alone, isolated, or otherwise intolerably anxious and needs assurance that the self is to be respected. The telephoning may have a compulsive quality. The telephonist tends not to be a physical menace.

Theoretically, the case material supports the hypothesis that obscene telephoning becomes manifest when, psychodynamically, a more aggressive, rageful, yet distant act than the more passive exhibitionism is needed. Quantitatively comparable data could be gathered from psychological tests and interviews on appropriate subjects to test the hypothesis further.

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Proposed Regimen for Therapy of Refractory Shock in Acute Pancreatitis

NEWER ASPECTS *in the therapy of shock and how these relate to its occurrence in acute pancreatitis are discussed. The basic cause may be predominantly hypovolemic early in the course, while sepsis may be important later. A small group of patients do not respond to blood restoration and antibiotic coverage, and response to vasopressors is often transient. Inadequate perfusion brings about peripheral resistance, hypovolemia, and inadequate cardiac function. A regimen is proposed concluded from experimental knowledge, a rationale for integrating components to allow improved clinical results.*

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TO ATTACK A SPECIFIC aspect of a broad-based problem such as the shock of acute pancreatitis necessitates drawing strict limitations to the extent of the discussion. Otherwise we run the danger of simply restating endlessly many well-established facts concerning acute pancreatitis which, although pertinent to its possible culmination in refractory shock, are not pertinent to any new proposals for the therapy of such shock. Therefore, measures aimed against the basic causes of pancreatitis such as biliary disease, alcoholism, trauma, parathyroid tumors, and so on, will be taken for granted and not discussed. Furthermore, it is not the intention of this report to cover in detail all adjunctive measures in the therapy of acute pancreatitis, for example nasogastric suction, anticholinergics, antibiotics, intravenous calcium, insulin, tracheostomy, and so on. Such measures have been efficiently reviewed elsewhere.[1,2] This discussion will be confined to the newer aspects in the therapy of shock itself and how these relate to its occurrence in acute pancreatitis.

The basic cause of shock in pancreatitis may be predominantly hypovolemic early in the course of the disease, while later sepsis may be an important factor. In this regard, an interesting analogy may be drawn between the course of acute pancreatitis and that of severe burns. Indeed, pancreatitis may be considered a third-degree burn of the retroperitoneum. Initially in both instances, there is a massive loss of fluid into the so-called "third space" resulting in essentially hypovolemic shock. Even with correction of this volume loss, a delayed sepsis may appear secondary to failure to remove infected slough, whether it be of the skin or the peripancreatic tissues. The latter concerns the occasional need for delayed debridement and drainage of the lesser sac necessitated by peripancreatic abscess formation. Occasionally, like the skin in a burn, the body will be able to handle a smaller amount of pancreatic slough spontaneously, that is, through sterilizing and encapsulating it with pseudocyst formation. It is interesting to note that over the past two decades, percentage of deaths, both in acute pancreatitis and in burns, have decreased markedly during the initial phase of the disease with relative increase in the percentage of deaths during the later stages.[1] This of course speaks for our more efficient handling of what is in large part hypovolemic shock occurring initially in both illnesses.

The small group of patients, however, which do not readily respond to what is seemingly an adequate restoration of blood volume with adequate antibiotic coverage, is the group that we may consider in "refractory" shock. Response to vasopressors is often transient, and death frequently occurs. This is the group that will concern us in this report.

Nature of shock

Basic to the understanding of the therapy of pancreatic shock is an understanding of the elemental nature of shock itself. Over the past several years, great light has been shed on the clinical application of new findings in the field of shock by Lillehei *et al.*,[3] MacLean *et al.*,[4] and others.[5,6] It is first vital to understand that shock is a disease of inadequate tissue perfusion. Because of the constancy of lowered blood pressure in the face of shock and its ease of measurement, we have become mesmerized into attributing to it an etiologic role and in fact often mistakenly make hypotension almost synonymous with shock itself. This rather false correlation has been carried over into the therapy of shock by the widespread use of vasopressor drugs which raise the blood pressure but do not increase the vital tissue perfusion. Although vasopressors may "redistribute" blood to the cerebral and coronary circulations by virtue of their lesser effects on these vascular beds, they act as a "double-edged sword" since they decrease perfusion to other vital organs and, especially important, decrease flow in greatest degree to the splanchnic bed. It is the latter which apparently may play the greatest role in the creation of irreversible shock. To point up this fact, perfusion of the intestinal circulation of the dog with arterial blood at normal pressure and flow during hemorrhagic shock prevents the animal's death following retransfusion after a usually irreversible time period. Perfusion of other organs during shock does not produce this beneficial effect.[3]

With the understanding that perfusion, and perhaps particularly splanchnic perfusion, is our aim in therapy, we must first consider the ingredients of perfusion itself. The flow of blood through tissues must depend on three factors: blood volume, cardiac function, and resistance in peripheral arterioles (resistance vessels) and venules (capacitance vessels). No matter what the cause of the shock, whether it be hemorrhage, sepsis, pancreatitis, and so on, all three ingredients will be involved. In fact, they will simultaneously be changing in any single patient from one time to the next. Since, in this light, cause does not dictate the media of shock but merely sets them in motion, it is necessary to develop a rather unified concept of shock which transcends the boundaries of etiology. Therefore, to understand the shock of pancreatitis, it is necessary to introduce a basic understanding of shock itself.

The course of events, portrayed by Lillehei *et al.*,[3] occurring in the peripheral vasculature, is one in which there is both arteriolar and venular contraction early in shock and a relaxation of the arterioles with sustained spasm of the venules later in the course. This results in a great pooling and stagnation of blood in the capillary beds. The result is marked reduction in the effective circulating blood volume. These changes in peripheral resistance are brought about by endogenous catecholamines and, in the case of sepsis, perhaps aggravated by endotoxins combining with formed elements in the blood to produce sympathomimetic substances. This indictment of excessive peripheral resistance as a basic uniform factor is supported experimentally in dogs by their cross resistance to hemorrhagic, endotoxic, or epinephrine-induced shock if their endogenous catecholamine response can be lessened.[3] Exogenous vasopressors would appear to enhance the deleterious effect of endogenous vasoconstrictors while vasodilators would seem to combat it. This has been shown to be true in dogs no matter whether the cause of the shock is septic, coronary, or hemorrhagic.[3] Pharmacologic doses of hydrocortisone,[3] phenoxybenzamine hydrochloride (Dibenzyline),[3,6] and isoproterenol (Isuprel) hydrochloride[4] have all been utilized in shock therapy for their vasodilating effects.

In addition to changes in peripheral resistance, the other two major ingredients of inadequate perfusion, hypovolemia and inadequate cardiac function, must be considered. As stated previously, all three are involved and are constantly changing in any given case. To measure each factor independently would require technics and special setups not readily available in many institutions. Fortunately the advent of CVP (central venous pressure) determination has given us a simple readily available guideline to measure the effective circulating blood volume relative to the ability of the heart to pump it. This reflects in a single value the state of flux of the cardiac, blood volume, and peripheral resistance factors. Simple transfusion, therefore, of blood or plasma to raise the CVP to adequate therapeutic levels, 10 to 12 cm. water, should be sufficient if only the effective circulating volume is deficient. It should be kept in mind that the effective circulating volume in the face of peripheral pooling may be much higher than the "normal" blood volume for a patient of that size and weight. This accounts for the greatly limited value of blood volume determinations in these patients. If, however, elevation of CVP to adequate levels is not adequate to eliminate shock as measured handily by arterial blood pressure and urine output, then a cardiogenic component must be considered. MacLean *et al.*[4] were surprised to find that 10 of 20 shock patients had such a cardiac insufficiency while a cardiogenic factor was suspected clinically in only 2 of the 10. The finding of such a factor would suggest the use of an inotropic agent to enhance myocardial contractility and increase stroke volume. Inotropic agents such as norepinephrine, which must be used in conjunction with peripheral dilator to eliminate its pressor effect, and digitalis have been utilized.[3] However, isoproterenol hydrochloride, which combines in a single drug the beneficial effects of both inotropic agent and peripheral vasodilator, would seem best. This is borne out by the impressive results of MacLean *et al.*[4]

It should be mentioned here that constant vigilance is needed throughout the course of therapy to maintain the maximum effective blood volume as indicated by the CVP. For example, CVP may drop with vasodilating agents increasing peripheral vascular volume or with inotropic agents increasing stroke volume. If additional transfusions are not immediately utilized to fill newly opened peripheral beds or to maintain maximal ventricular filling, the beneficial effects of the vasodilating or inotropic agent will be lost. Indeed, as Rush, Rosenberg, and Spencer[6] point out, when using vasodilators to treat shock without benefit of added transfusions, the loss of perfusion pressure overwhelms any benefits accrued from vasodilatation. They found an actual decrease in oxidative metabolism in the "stagnant" areas opened to the general circulation.

With this brief summation of the current trend in shock therapy, it is hoped the reader will better appreciate much of the rationale for the following proposed therapeutic regimen of the shock of acute pancreatitis. We feel it will be of greatest value in the case of patients where therapy has been instituted relatively late and where shock is particularly prone to be refractory.

Proposed regimen

The proposed regimen for treatment of shock associated with acute pancreatitis is outlined as follows:

GENERAL MEASURES

1. Nasogastric suction
2. Intravenous catheter for rapid administration of intravenous fluids
3. Anticholinergics
4. Blood culture
5. Antibiotics
6. Serial hematocrits to trace hemoconcentration or complicating hemorrhage and determine character of replacement colloids such as plasma or whole blood
7. Serial serum calcium determinations to trace development of hypocalcemia or discover initial hypercalcemia suggestive of hyperparathyroidism
8. Periodic serum electrolyte determinations with suitable intravenous replacement
9. Fractional urines and periodic blood glucose to detect development of diabetes mellitus
10. Hypothermia blanket as needed
11. Tracheostomy as needed
12. Osmotic diuretic loading dose (mannitol 10 per cent, 250 cc.) permissible with onset of oliguria (urine output below 20 cc. per hour)
13. Antiproteolytic enzyme trasylol. Although there is evidence of theoretic and experimental nature to support its use,[7,8] an adequately large controlled clinical series is lacking
14. Measures versus related acute disorders such as acute cholecystitis, upper gastrointestinal hemorrhage, and so on

SPECIFIC MEASURES VERSUS SHOCK

1. Insert Foley catheter to measure hourly urine output

2. Insert central venous pressure apparatus
3. Transfer plasma or blood until response of blood pressure and urine output to normal range is obtained or until CVP of between 10 and 12 cm. water is reached, whichever comes first
4. Infuse isoproterenol hydrochloride (1 mg. per 500 cc. 5 per cent glucose in water) if transfusion is insufficient for relief of shock. Titrate to allow return of blood pressure and urine output to normal range while taking care to keep pulse rate below 130 per minute
5. Administer hydrocortisone (2 Gm. intravenously over several minutes and repeat in one to two hours) if isoproterenol hydrochloride infusion is insufficient for relief of shock
6. Additional transfusions of plasma or blood given, should isoproterenol hydrochloride and/or hydrocortisone cause CVP to fall below 10 cm. water

ADJUNCTS OF POSSIBLE VALUE VERSUS SHOCK

1. Phenoxybenzamine hydrochloride
2. Digitalis
3. Buffering agents
4. Surgical intervention for secondary complications contributing to shock such as peripancreatic abscess or retroperitoneal hemorrhage
5. Hyperbaric chamber

The general measures in therapy, not being pertinent to the scope of this report, are listed merely for the sake of completeness. They simply describe routine clinical management of acute pancreatitis and are discussed elsewhere.[1,2]

It is with the listing of specific measures versus shock that we hope to contribute a regimen which may yield a greater number of survivors in the refractory shock group. Initial steps are to insert a Foley catheter, to measure hourly urine output, and to establish a central venous pressure apparatus. We have found the external jugular vein most suitable to receive the CVP catheter. Although CVP in the normal individual may be 5 to 8 cm. water, therapeutic levels with transfusion should reach 10 to 12 cm. water. These levels seem without danger of congestive failure. MacLean *et al.*[4] noted in their series that even rapid transfusion in the elderly is safe with central venous pressures below 15 cm. water. Transfusion of plasma or blood is continued either until there is relief of shock, measured handily by arterial blood pressure and urine output, or until CVP reaches 10 to 12 cm. water. If shock persists, then isoproterenol hydrochloride infusion is started, 1 mg. per 500 cc. 5 per cent glucose in water via a microdrip. The rate of drip is titrated by return of blood pressure and urine output to normal range while taking care to keep the pulse rate below 130 per minute. In this regard it is to be remembered that isoproterenol hydrochloride has a strong chronotropic as well as inotropic effect. Pulse rates above 130 per minute will probably not provide adequate ventricular filling.[4] If the shock state cannot be overcome with the isoproterenol hydrochloride infusion, then additional peripheral vasodilatation may be obtained by the administration of pharmacologic doses of hydrocortisone. Intravenously, 2 Gm. given over a few minutes have been utilized to good effect.[3] This dose may be repeated in one or two hours. Lillehei *et al.*[3] stop steroid therapy abruptly after these doses without tapering off. It is important to be vigilant to give additional transfusions of plasma or blood, should the isoproterenol hydrochloride and/or hydrocortisone cause the CVP to fall below 10 cm. water. The importance of this has been discussed earlier.

Adjuncts of possible value versus shock as listed are additional steps which either may play secondary supporting roles in the therapy or are in the nature of "last ditch" efforts, should all of the previously proposed regimens fail.

Phenoxybenzamine hydrochloride is a potent vasodilator which has been used experimentally and clinically.[3,6] It may be given in doses of 1 mg. per kilogram intravenously.[3]

Digitalis, the best known of the inotropic agents, has been utilized in shock for this property.[3] Since we have already incorporated in our regimen a potent inotropic agent, isoproterenol hydrochloride, which has the additional beneficial effect of vasodilatation, we did not include digitalis in our primary regimen.

pH problems in shock are usually related to the metabolic acidosis secondary to anaerobic metabolism with accumulation of lactic acid and other acid metabolites. It has been suggested that correction of acidosis is a vital part of therapy,[5] while others point out that preventing the fall in pH in hemorrhagic shock in the laboratory does not change the course of the experiment.[3] The latter suggests that pH changes are probably secondary but not etiologic to irreversibility, or, in other words, acidosis may denote hypoxia, but correction of the acidosis does not denote correction of the hypoxia. Whether or not a direct depressing effect of acidosis on the myocardium plays a significant role is a moot point. On the other hand, when one considers that acidosis decreases peripheral vascular reaction to sympathomimetic agents, one may argue that it could play a compensatory role in shock by decreasing the deleterious effects of exaggerated peripheral resistance. At any rate, until the role of pH change in shock is better defined, we will mention its correction with exogenous buffers as only an adjunct to therapy.

Surgical intervention may be an adjunct to therapy if surgically amenable complications contribute to the shock. Examples are peripancreatic abscess formation, retroperitoneal hemorrhage from erosion of a major vessel, and upper gastrointestinal bleeding.

MacLean *et al.*[4] have suggested that irreversibility of shock in man may be denoted by the persistence of lactic acidemia after blood pressure, cardiac output, and urine output have been restored. At this stage the ability of oxidative metabolism has been lost even though adequate tissue perfusion has been restored. The use of a hyperbaric chamber decreased serum lactic acid levels in 2 patients with survival in 1. This finding may be an important new step in increasing survival rate in cases of protracted shock. "Irreversibility" is only a relative term based on our present knowledge. The state of irreversibility has retreated to later stages in the disease of shock with the recently accumulated knowledge of the importance and guidelines to maintenance of tissue perfusion. If the hyperbaric chamber can reverse anaerobic metabolism which fails to respond to restoration of tissue perfusion, then our definition of irreversibility must retreat still further to a later period in the shock episode.

Summary

Acute pancreatitis remains a deadly disease. Refractory shock is occasionally seen and often portends a severe prognosis. I have suggested steps which may enhance the prognosis in these cases. It must be emphasized that this is not a proved plan of attack supported by adequately controlled clinical experimentation. This is simply a regimen, concluded from present experimental knowledge with the individual components proved of value on reported clinical cases. What is proposed here is a rationale for integrating these components in an orderly manner to allow improved clinical results.

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Treatment of Lung Carcinoma

Radiation Versus Radiation Combined With 5-Fluorouracil

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FROM 1960 THROUGH 1963, 55 patients with inoperable but apparently undisseminated lung carcinoma at the Kings County Hospital Center were selected at random in a clinical trial of two therapeutic regimens: radiation alone versus radiation combined with 5-fluorouracil chemotherapy. This study was designed to answer two questions, namely: (1) Does additional chemotherapy enhance radiation-treated lung carcinoma survival?, and (2) can an additive or synergistic effect of radiation and chemotherapy be demonstrated?

The 55 patients comprising this study had been referred for radiotherapy from 1960 to 1963. Each patient had a pathologic diagnosis of lung carcinoma, either stage I, local tumor but physiologically unacceptable for surgery or surgery refused; or stage II, evidence of mediastinal extension as determined clinically or at thoracotomy. In each patient all clinically evident disease could be encompassed in a single x-ray or cobalt treatment field. There were no age restrictions or medical exclusions, except pulmonary tuberculosis, severe liver disease, or impaired bone marrow function. All patients had been untreated previously.

The patients were placed at random into two treatment groups depending on the hospital chart number, odd numbers in one group and even numbers in another group.

Technic of therapy

The external radiation therapy given to both groups was the same. At the beginning of the study 250-kilovolt x-ray therapy with a half-value layer of 2.5 mm. of copper was employed at 50-cm. target to skin distance. The dose given was 3,000 rads in three weeks. Later cobalt-60 was substituted for the 250-kilovolt radiation. The dose was 4,000 rads in three weeks. The primary lesion and mediastinum were treated with paired opposed ports, and a typical field size was 10 by 15 cm. This represented large volume, moderate dose, and short-time irradiation.

The second group was given a course of 5-fluorouracil during the first week of radiation therapy only. The radiation was then continued to completion. The dose of 5-fluorouracil was 500 mg. intravenously daily for five days for a total of 2.5 Gm.

Results

Thirty patients were treated by radiation alone, and 25 patients were treated with radiation and 5-fluorouracil in combination. The two treatment groups were alike in terms of age, sex distribution, histology of tumor, and clinical stages of tumor. No serious complications of radiation treatment or drug toxicity were observed in any of the patients. Mild to moderate nausea, vomiting, stomatitis, diarrhea, and leukopenia were noted.

The results of treatment are presented in terms of survival and in terms of local regression of the primary lesion on radiographic measurement. Figure 1A shows the survival curves of the two groups from initial treatment to death. The survival figures of both groups were so strikingly similar that only one dotted curve has been drawn. The 50 per cent survival time is eight months, while survival at one year is 34 per cent, two years 14 per cent, and at three years 5 per cent.

Comparison with respect to local regression of primary tumor was also made between the two groups. If tumor volume decreased by 50 per cent or more, it was considered to be a regression. Some of the patients proved unsuitable for this evaluation because of short survival times or because a measurable lesion was not demonstrated on the roentgenograms. Eight of 18 patients in the radiation treatment alone group showed regression of the primary lesion. In the radiation plus 5-fluorouracil group, 10 of 17 patients showed regression of the primary tumor. The over-all difference in results between these two groups is not significant.

OF 55 PATIENTS *with inoperable but apparently undisseminated lung carcinoma, 30 were treated by radiation alone and 25 with radiation and 5-fluorouracil in combination. The patients were selected at random, and the external radiation therapy given to both groups was the same. The second group was given a course of 5-fluorouracil during the first week of radiation therapy only. The results of treatment in terms of survival and of local regression of the primary lesion on radiographic measurement were apparently not significant.*

Comment

The objective of this study was the improvement in results of radiotherapy of lung cancer and to attempt to demonstrate a possible synergism between radiation and chemotherapy. There was no improvement in survival when chemotherapy was combined with radiation. This study should be compared to that of Krant *et al.*[1] who reported survival results in a group of lung cancer patients selected at random, utilizing three different treatment regimens, namely, x-ray alone, nitrogen mustard followed by x-ray, and x-ray in combination with nitrogen mustard. There were no differences in survival, and the therapeutic value of these methods of treatment was questioned. The 50 per cent survival time in their patients, moreover, was only fifteen weeks. This indicates that a more advanced group of patients was treated and that the local effects of radiation were less important than the lethal effects of generalized metastases.

In the present study, a forty-week 50 per cent survival time was observed. This increased survival time suggests that patients with nonresectable lung cancer without

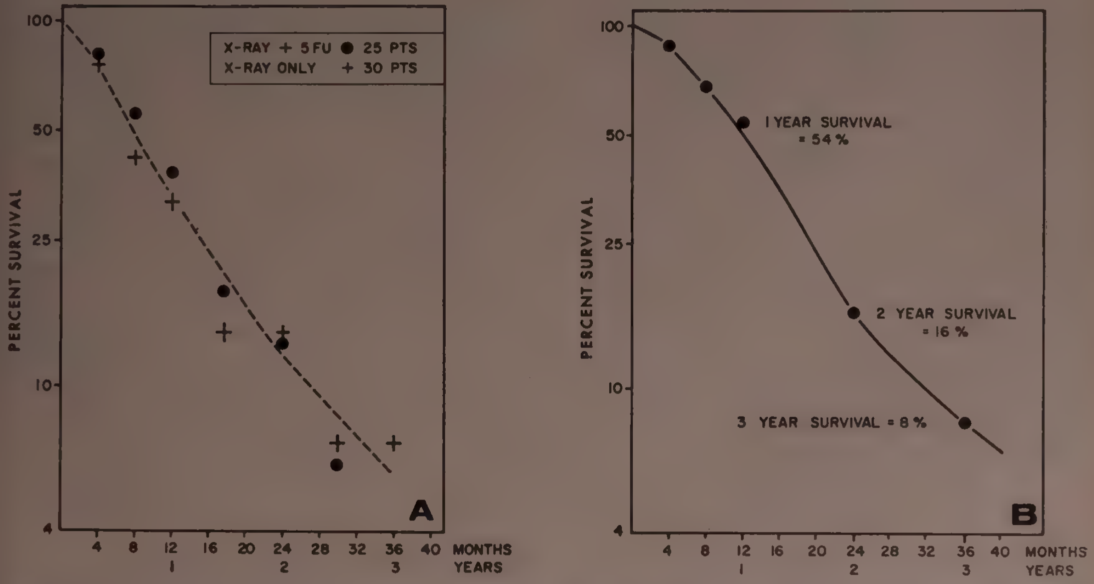

FIGURE 1. Survival curves, 1960 to 1963. (A) Two groups of patients from initial treatment to death. (B) Patients inoperable at thoracotomy.

generalized metastases will benefit from radiation, either alone or in combination with chemotherapy, and that both of these methods may improve chances of survival.

For chemotherapy to produce a synergistic or additive effect with radiation, the combined results of treatment should be greater than the sum of the individual responses. In a clinical setting adequate demonstration of a synergistic effect, the second objective of this study, appears difficult to accomplish. If it can be produced without critical reduction of radiation doses, it should be attempted. This study failed to demonstrate any additive effects of 5-fluorouracil. The mean survival time for the radiation alone as well as the radiation plus 5-fluorouracil groups of patients was nine months. The standard deviation of these mean survival times was eight months. Gollin, Ansfield, and Vermund[2] reported a mean survival time of six months and 16.8 months in two groups of lung cancer patients treated with radiation alone and with radiation plus 5-fluorouracil, respectively.

Their difference in survival was statistically significant, yet the standard deviation of their mean survival times overlaps the eight months standard deviation of the present series.

The results of this study agree with those of Von Essen, Kligerman, and Calabresi[3] who were unable to demonstrate a significant alteration in tumor response by addition of 5-fluorouracil to radiation.

The patient who was nonresectable at thoracotomy had a somewhat better survival time than the over-all group of patients in this series. The 16 patients so classified had a 54 per cent one-year survival (Fig. 1B). It would appear that a similar group of patients inoperable at thoracotomy would provide a satisfactory population to study the effects of combined radiation and chemotherapy within a multiple hospital cooperative study.

Summary

A clinical trial of two randomly applied treatment regimens was carried out with a group of 55 patients with locally advanced lung carcinoma. Radiation alone was given to 30 patients, while radiation plus chemotherapy (5-fluorouracil) was given to 25 patients.

No difference in survival of the two groups was evident. The 50 per cent survival time from onset of therapy was forty weeks. Local regression of the primary tumor, as assessed by serial chest roentgenograms, was the same for both groups. No evidence of additive or synergistic effects on the combination of radiation with chemotherapy was evident.

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Depression Sine Depression

(Masked Depression)

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MANY DEPRESSIVE SYNDROMES are initially manifested clinically as hypochondriac complaints or psychosomatic disorders referred to various organ systems. The depressive affect may be masked by these symptoms and signs to the extent that a physician may be unaware of the fact that a serious psychiatric disorder is at hand until a massive, full-blown depression erupts and dominates the clinical scene. This variation or phase of the depressive syndrome is known by different names such as depression sine depression, depressive equivalent, masked depression, or depression in disguise.

The literature dealing with this problem is rather sparse. Freud[1] referred briefly to the observation that physical manifestations may dominate the clinical picture in a depressed patient so that one is reminded of a somatic rather than a psychologic disorder. Similarly, Pletnef[2] stressed that somatic complaints are integral parts of the psychologic illness even if they appear to be disassociated from the psychic manifestations. Schick[3] presented several case histories in which somatic complaints represented phases of recurrent "periodic depressions." Hochstetter[4] found that the D.S.D. (depression sine depression) syndrome occurred in 27 of 258 patients (10.5 per cent) with a depressive syndrome. Recently one of the authors (S.L.)[5] reported that this type of illness was found in 100 of 324 (30.9 per cent) of depression patients studied by him during a period of two and a half years.

The type of practice in which the physician is engaged will determine in great measure the frequency with which D.S.D. syndrome will be encountered. Physicians specializing in organic medicine will find that patients with the D.S.D. syndrome will account for many, if not most of the depressions with which they will be confronted. Most psychiatrists, as noted in the Hochstetter report, find that this syndrome is seen in a more limited percentage of depressed patients.[4] It will be observed more commonly by neuropsychiatrists who are frequently consulted by internists and surgeons in a large general hospital.[5]

Unfortunately, this syndrome is frequently unrecognized by the nonpsychiatric physician. As a result the patient is often subjected to unnecessary and inappropriate treatments including surgery. Usually when this problem confronts the nonpsychiatrist, the appreciation that the patient's difficulties are primarily psychogenic in origin is gained by a process of elimination which includes intensive laboratory study. At times the underlying depression may precipitously manifest itself in suicidal attempts. In one study, two thirds of patients with the D.S.D. syndrome had suicidal preoccupations,[4] while in another report, suicidal preoccupations of various frequencies and intensities were found in 42 per cent of the patients.[5] These figures indicate that by the time such patients are seen by a psychiatrist, the depressions are severe and these patients are urgently in need of treatment. It cannot be stressed too frequently that suicide is one of the common causes of death in many countries.[6,7]

Patients with masked depressions pose a challenge to the physician's diagnostic acumen. However, this syndrome can be diag-

TABLE I. Age distribution

Age (Years)	Number of Patients
30 to 39	7
40 to 49	15
50 to 59	9
60 to 69	9
70 to 79	2

TABLE II. Duration of illness

Duration (Years)	Number of Patients
Less than 1	6
1 to 2	6
2 to 3	7
3 to 4	5
4 to 5	4
5 to 10	5
10 or more	9

nosed readily by the nonpsychiatrist early in the course of the illness. There are usually definite symptoms and signs present to alert the physician to the fact that he is dealing with a psychologically ill individual.

At times the problem may be very complicated. A patient may have a true organic deficit with a D.S.D. syndrome superimposed. Thus a minor organic illness may be magnified by the psychogenic overlay. However, a patient with a severe organic lesion also may be plagued with a hypochondriac or psychosomatic process. To become preoccupied with the psychogenic illness at the expense of the organic deficit, in this instance, could have tragic implications. Therefore, a definitive capacity to recognize the D.S.D. syndrome as an entity and in relation to true organic lesions is of major importance.

Clinical studies

This report is based on the investigation of 42 successive patients with the D.S.D. syndrome who were studied jointly by the authors. The hypochondriac and psychosomatic symptoms were referred to many organ systems, namely cardiorespiratory, gastrointestinal, neuraxial, genitourinary, and endocrine. An evaluation of these patients revealed some very striking generalities.

AGE. The patients ranged in age from thirty-two to seventy-four years. This age span is more striking when one reviews its breakdown according to decades (Table I). The vast majority of patients, at the time of consultation, were in their forties, fifties, and sixties. There were no patients under thirty years of age. Seven were in their thirties. However, 5 of these 7 were between thirty-six and thirty-nine. At the other end of the scale, only 2 patients were over seventy. Of the 9 patients in their sixties, 8 were between sixty and sixty-four.

Therefore, the vast majority of the patients in this study, when first seen in consultation, ranged in age from thirty-six to sixty-four years. The syndrome may be said to be an ailment of middle age.

SEX. Twenty-seven of the patients were females, while 15 were males, representing a ratio of almost 2:1. In another study by one of the authors (S.L.) of 197 patients with atypical facial pain, most of whom had the D.S.D. syndrome, the female-male ratio was 9:1. This marked preponderance of females is explained by the fact that this D.S.D. syndrome is a phase of a common psychiatric syndrome which is most frequently known by the descriptive term, agitated depression. In our culture, this syndrome is seen, in the vast majority of instances, in middle-aged women, particularly immediately prior to, during, or following the menopause.

DURATION OF ILLNESS. Table II illustrates the duration of illness experienced by the patients prior to consultation with the authors. It will be noted that 36 (86 per cent) of the patients were ill for more than one year, while 30 (71 per cent) were ill for more than two years. However, the finding that is most striking is that 14 (33 per cent) of the 42 patients in this study were ill for more than five years. When this last figure is considered in relation to the fact that, without exception, these patients had been diagnosed and treated by one or more physicians for a primary organic disease process without consideration of possible psychiatric factors, the importance of early diagnosis and treatment of a patient with the D.S.D. syndrome becomes obvious.

It was noted that the diagnosis of this disease process may become infinitely more complicated at times if it appears in conjunction with a true organic deficit. Fifteen of the 42 patients in this series had organic lesions to account for some of their symptoms and signs. However, it was clear from the character, that is, intensity, quality, duration, and fluctuation, of the complaints together with the results of the physical and laboratory studies, that the organic process accounted for only a small part of the patients' complaints. At times a definite relationship between psychic traumas and symptom change could be documented.

General psychologic factors. All of the female patients were intelligent, capable, meticulous, and aggressive persons who were very self-demanding and self-critical. They handled life's problems in an exacting, mechanical fashion and often became preoccupied with minor situations. The men demonstrated the same type of compulsive driving personality. However, aggressiveness was not a constant characteristic in 5 of the 15 male patients. Instead, these 5 manifested an aggressive personality pattern at work but at home were controlled by stronger, more dominant wives.

There are factors in the patients' family backgrounds that are also very consistent. All of the patients had aggressive, meticulous, critical parents; in all but 7 the mother was the dominant parent.

Clinical characteristics of the D.S.D. syndrome. The vast majority of the patients with the D.S.D. syndrome are middle-aged women who present their histories in a very definite, forceful manner, marked by great circumstantiality to the point of logorrhea. If they have been seen by a number of physicians, the histories will be replete with medical jargon. The patients describe their symptoms in great detail, but in spite of this, the descriptions of their illnesses are vague and not classical for a specific organic lesion. Rather, their histories correspond to the more unusual organic possibilities. They describe their ailments in a dramatic fashion, repeatedly emphasizing the great suffering that they have endured. They are usually handicapped vocationally and socially to a far greater extent than are patients with true organic deficits.

By the time the patient is referred to the neuropsychiatrist, she has usually been exposed to many somatic therapies. The duration and cost of this treatment enhances the patient's hypochondriac fixation on her symptoms. This iatrogenic factor may be very marked. Indeed, it may be of such severe intensity as to prevent any hope of effective treatment.

The physician's questions initially should be aimed primarily at ferreting out the true organic symptoms. However, even the few clinical points already noted should alert the physician to entertain an intensive psychiatric survey. An apparently "innocent" question such as "these long-standing discomforts must put you under a great deal of pressure," will often precipitate a marked emotional reaction in the patient with a D.S.D. syndrome. A very classic response is the tearful exclamation, "Oh, doctor, if you only knew how much I have suffered!" Through gentle questioning, one may readily learn that the patient is constantly fatigued. Morning fatigue is most characteristic. The patient describes herself as being "very tense" and, usually in response to specific questions, will state that her symptoms are aggravated by stress. She will often relate that she is restless, frequently paces the floor, and suffers from insomnia and anorexia. It requires considerable effort on her part to complete routine vocational or social tasks. Her interest in her environment and even in her person is decreased. She has considerable difficulty concentrating on her work and usually is uninterested in the various entertainment media such as radio, television, and the movies. Everything is an effort.

She may complain that her memory is poor. Indeed, some patients express the fear that they are "losing their minds" because of poor memory for recent events which, in reality, is secondary to self-preoccupation which is common with most intensely anxious or depressed patients. On direct questioning, the patient will in almost all instances relate that she "feels blue." However, most will quickly follow this admission with the explanation that they would be "fine" if they did not have the "physical" symptoms.

An effort should be made then to determine the intensity of the depression. Many will admit to frequent crying spells. A question such as "do you ever feel as if you would like to go to bed and not wake up the next morning?" will frequently elicit a very positive answer. They will then add, "life is not bearable, if I have to suffer like this!" Finally, the patient should be asked, "have you ever had any thoughts of hurting yourself?" A large percentage of these patients will respond affirmatively. If so, an effort should be made to learn whether or not the patient has active suicidal ideas and how intense and dominant they are. A few patients in this series were planning to commit suicide.

The physician should correlate the fluctuations in the intensity of the symptoms in relationship to environmental traumas. To accomplish this, a careful history of the patient's life situation prior to as well as following the onset of the "somatic symptoms" must be obtained. Vocational, social, or family problems, long-term obligations, current illnesses, sexual problems, menopausal changes, and the like are commonly found to be the precipitating causes.

At times no specific dramatic environmental traumas will be found. However, if one searches carefully, it will be noted that the patient has been under considerable emotional stress for a long period of time. Indeed, the patient may have been under considerable self- or environmentally-imposed pressures since childhood.

A careful elaboration of the patient's personality profile will reveal that she is usually a very capable, intelligent, compulsive, hard-driving personality. She has had the need to dominate her environment. Perfection is the aim. She must be the "best." The patient is often quite critical of others and of herself. She is intolerant of any failures on her part. However, if one probes deeper, he will find that she has basic feelings of inadequacy and that her hard-driving, compulsive behavior has been a lifelong attempt to compensate for these feelings.

The patient's background is quite typical. She comes from a home in which a parent, in our culture almost always the mother, was a very aggressive, perfectionistic, domineering, critical, and rejecting personality. The mother often is remembered as being a "martyr." The father, on the other hand, is commonly described as a rather passive, dependent personality who was dominated by the mother. The patient, if married, has a husband who is usually a passive, dependent personality somewhat similar to her father. The dependent husband accepts every "somatic complaint" by the patient at face value. Although the patient may be greatly handicapped in her performance, the passive husband remains dependent on her; he is unable to assume the routine responsibilities that she now finds unbearable. The patient expresses great guilt feelings with regard to her inability to carry on routine vocational or social chores.

The physical examination usually is within normal limits. If there is a true organic deficit, a hypochondriac overlay may necessitate intensive and repeated examinations before one can accurately evaluate the relative weight of the organic and psychogenic factors.

Excessive laboratory studies should be carefully avoided in patients in whom one suspects the D.S.D. syndrome, for they may exaggerate and even fixate the patient's preoccupation with her symptoms.

It is important to educate the patient in a very gentle fashion to the fact that her complaints are psychogenic manifestations of an underlying emotional problem, rather than being caused primarily by an organic lesion. In the instance where an organic lesion is present, it is imperative to make the patient cognizant that her symptoms may be triggered or exaggerated by a psychogenic process. One must be very cautious in the manner in which he presents this information. Many patients will be offended by any suggestion that their ailments are associated with psychogenic difficulties. Usually this can be avoided, if the physician proceeds slowly and gently, and if he initially presents his clinical impression in a manner which he suggests that the patient's "physical symptoms" are "aggravated" by emotional stress. At times it may require several visits before the patient will entertain the suggestion that psychogenic factors play a role in her complaints.

The psychodynamics that account for the hypochondriac or psychosomatic symptoms often may be determined in the first visit. On other occasions several visits may be necessary before this is possible. In most of the patients, an investigation of the psychodynamic processes will readily indicate that the prime emotional traumas occurred in early childhood. Most recall events indicating that they felt rejected by a parent or parents whom they remember as being critical and lacking in understanding. This feeling of rejection is accompanied by fear of and anger toward the parent, the anger being usually covert. Also the parent's real or imagined rejection caused feelings of worthlessness and inadequacy in the child. This self-derogatory image lingered, and the patient unconsciously, and at times consciously, anticipated that her teachers, schoolmates, and her later social contacts had the same image of her as she had of herself.

The patient attempts to compensate for these feelings of inadequacy by working hard and by performing on as high a level as possible. She becomes obsessed with the mechanics of life and is intolerant of any mistakes on her part. At times she projects her frustration and is therefore highly critical of others. While she attempts to prove herself to the world, she is in reality attempting to prove herself to herself. Frequently, her aggressive personality alienates other persons, particularly of the same sex.

Quite often the patient has a history of being excessively frightened and frustrated by any physical ailments, since these inhibited her in her nagging pursuit to prove herself. If, in addition, one of her parents had hypochondriac trends, she will often mimic the parent's complaints; that is, if the parent had cardiovascular symptoms, the patient will have cardiovascular symptoms; if the parent had headaches, the patient will be head-conscious.

As we have previously indicated, the patient is usually a very capable woman, and her struggle against imagined adversity will often enable her to reach greater heights than the average individual. She is usually able to compensate for her feelings of inadequacy until the menopausal or post-menopausal period. Menstruation is equated with youth in many women. The psychologic impact of the termination of fertility plus the actual biochemical changes that are part and parcel of the menopause often place this type of patient under overwhelming stress.

Fatigue is an early and prominent complaint for which initially the patient is able to compensate. The feeling of fatigue is associated with mounting anxiety as the patient struggles to perform tasks that formerly were routine. She becomes terrified that she will be unable to exert sufficient effort to prove to herself that she is equal to others. As her emotional fatigue is enhanced by insomnia, her level of performance falls. This further magnifies her anxiety and is followed by feelings of guilt, worthlessness, and depression. At times this mood becomes so intense that the patient's very existence becomes intolerable to her, and suicidal preoccupations followed by one or more suicidal attempts may occur.

Another source of depression is commonly noted in this type of depression. These are angry individuals, the anger originally being directed toward the real or rejecting parent. Unconscious anger directed toward a parent is commonly associated with marked guilt feelings that also serve as an omnipresent force driving the patient to prove herself. When this type of patient is unable to perform, the guilt mechanisms become increasingly prominent. Expressions of irritability or anger which are very common in this type of patient may precipitate an overwhelming increase in guilt leading to a psychologic mechanism that has been called "retroflex rage" in which the anger is turned inward, leading to feelings of depression and even impulsive suicidal acts.[8,9]

Case reports

CASE 1. This patient was a forty-year-old married female executive who had a two-year history of pain involving the left side of her face and head that consisted of typical episodes of cluster headache (autonomic faciocephalalgia).[10] This pain, on all but two occasions, began one hour after she retired or one hour before she was scheduled to awaken. The pains were agonizing in degree, and if untreated, would last from twenty minutes to one hour. They began as a tingling distress over the medial portion of the left maxilla and quickly became burning in quality. The area of distribution spread rapidly to involve the side of the nose, the eye and the periorbital area, temporomandibular region, and temporal area, all on the left side. There was marked injection of the conjunctival vessels and profuse lacrimation in the left eye. The ipsilateral nasal mucosa and hard palate became very edematous, and the entire area was exquisitely tender to touch. The patient lived in terror of closing her eyes at night in anticipation of the onset of these pains.

General medical and neurologic examinations were entirely within normal limits except for the presence of a nasal polyp on the left side; this was removed without relief from her discomforts.

The first episode of pain occurred after the patient had been working for many months on an important assignment that would have brought her great professional recognition. Shortly before the project was to have been completed, she learned that she was to be replaced by a woman who was her former schoolteacher. The first episode was triggered by her initial conversation with this woman. The second episode occurred when her husband, who had been philandering, asked forgiveness. Subsequently, her episodes of pain could be very closely correlated with periods of emotional stress related to a very demanding job which she handled in an extremely inflexible, meticulous fashion. A detailed history uncovered the presence of a severe underlying depression with feelings of helplessness and transient periods of suicidal preoccupations.

The patient came from a background in which the mother was a very exacting, compulsive personality who dominated the entire family. In addition to this the mother was quite critical, and nothing the patient did came up to her standards. The father was a very passive personality. The patient always tried to win her mother's approval but never felt that she functioned on a sufficiently high plane. She had had two marriages to passive, dependent men who leaned on her for emotional and financial support.

The patient's paroxysmal bouts of pain could be handled temporarily with parenteral ergotrates. On a combination of psychotherapy and psychotropic drugs the emotional trigger was ameliorated, and the patient's problems, somatic and psychologic, remitted.

This is an example of a psychosomatic disorder related to migraine in which psychic factors triggered the autonomic dysfunction that was associated with agonizing pain. In our experience, the cluster headache syndrome in women is characteristically seen in association with a masked depression.[10,11]

Case 2. This patient was a sixty-one-year-old, married, female office manager who had a fifteen-year history of headaches for which she had been studied intensively without any evidence of an organic lesion being found. Eight months prior to her consultation, she reported that she began to drop objects and had an unsteady gait. "People commented that I walked as if I were drunk." The patient stated that she felt as if "motors were vibrating throughout her body." There was dizziness but no true vertigo. In addition, she complained of diffuse weakness and fatigue, most marked in the morning, and marked anorexia and insomnia. All of these symptoms were magnified by any stress-provoking incident. During some of these periods of emotional stress, she complained of precordial and left-arm pain lasting up to fifteen minutes. General physical examination was within normal limits. The only noteworthy finding following an extensive laboratory investigation was a nonspecifically abnormal electrocardiogram and a small hiatus hernia.

Further questioning revealed that about the time the patient's current symptoms began, she was in a "battle to the finish" with her landlord. This entailed eviction attempts and court appearances. In addition, her husband, who was completely dependent on her, had a serious urologic ailment. She was also very disturbed by the fact that her son had been called into the army for a six-month enlistment. Following each argument with the landlord, her symptoms were magnified.

As the psychiatric history unfolded further, it was learned that the patient was very restless and cried on occasions. She was unable to continue with her job. Her inability to function filled her with feelings of guilt. She became depressed and had feelings of hopelessness. Three weeks prior to her consultation she had planned to commit suicide.

The patient had always been a very active, perfectionistic, domineering, self-critical individual. Her aggressiveness had alienated most people so she had few contacts outside her family circle. Her father had been a most rigid, meticulous, unaffectionate patriarch who criticized the patient's activities to a marked degree. She was never able to please him although she spent most of her childhood and adolescence attempting to do so. The patient compulsively drove herself to perform at the maximum of efficiency in her job and in her home. Her efforts had been rewarded by success in the business world and by social isolation. When she was no longer able to work, she felt "lost."

Through combined psychotherapy and psychopharmacologic treatment, the patient's depression together with the symptoms of dizziness, unsteadiness, weakness, and fatigue were ameliorated. The patient's precordial distress, which was felt to be the result of intermittent coronary artery disease, decreased markedly in frequency and intensity.

This patient presented two variations of the D.S.D. syndrome. Her neurologic symptoms were hypochondriac manifestations without any organic basis. The anginal symptoms were caused by an organic deficit magnified in intensity by a marked psychogenic overlay. It is a rather interesting observation that the patient was primarily concerned with her neurologic symptoms, which were purely hypochondriac manifestations, and registered relatively little concern about her cardiac problems which had an organic basis.

Case 3. This patient was a thirty-two-year-old married salesman who had a nine-month history of dyspnea. It began suddenly, while the patient was resting in his automobile. The episode consisted of shortness of breath followed by a ten- to fifteen-minute period of deep breathing. The episode cleared spontaneously. A few weeks later, after some light exercise, it recurred. This terrified him, for he was convinced that he was having a heart attack. His local physician found no cardiac abnormalities and placed him on tranquilizers. In spite of this, the patient remained preoccupied with his heart. While shopping with his wife one month after the initial episode, he experienced marked dyspnea and "pins-and-needles" sensations in his feet. He again panicked, fearing that he was dying. Similar panic episodes recurred every few weeks. Progressive fatigue was also a complaint.

Physical examination and extensive laboratory studies revealed no abnormalities.

Psychologic evaluation revealed that the patient had always been a very tense individual. His job was "his life." He spent fourteen to sixteen hours of every day working. In spite of this immense effort, he repeatedly complained, "I should do better!" The patient had a history of hypochondriac complaints beginning in his early adolescence. At various times he was convinced that he had cancer, heart disease, or tuberculosis. During early adolescence he was terrified that his brain was decaying because he masturbated. The patient had frequented the offices of many physicians. Their reassurances had, at most, a brief beneficial effect.

The patient's father had committed suicide when the patient was five months old. His mother was aged seventy-three and had suffered a severe cerebral vascular accident during the past year. She had always been an ultra-serious hard-working individual who was very exacting in her performance and demands. An older brother had severe hypochondriasis, resulting in a number of unnecessary abdominal operations.

An intense psychiatric evaluation revealed periods of depression which were moderate in degree but of short duration. With psychotherapeutic help, this patient's general emotional status improved with considerable amelioration of his hypochondriac complaints. Marked emotional stress continued to precipitate hypochondriac symptoms, but they were of less severe degree and of shorter duration.

This patient presents an early phase of the D.S.D. syndrome which, if unrecognized and untreated, would very likely have manifested itself as a full-blown depression as the patient became older.

Case 4. This patient was a fifty-six-year-old, married stockbroker who had a thirty-eight-year history of bowel difficulties. This took the form of severe cramp-like pains over the left side of the abdomen and in the low back area. Constipation was a frequent concomitant symptom. The patient had been seen by many physicians throughout the years and was told that he had "spastic colitis." He was obsessed with these abdominal symptoms and spent a great deal of time in the bathroom. Indeed, during his late adolescence, he was known by his friends by the nickname "Bathroom." At times the patient's discomfort was of such magnitude that he was unable to work. On several occasions he enjoyed spontaneous remissions lasting several months.

The patient's abdominal symptoms began at age eighteen. He had been reared by his aunt from early childhood when his parents moved to another part of the country. At age eighteen his parents demanded, against his wishes, that he visit them when his younger sister became ill. This was at about the time when he was preparing for a university scholarship examination, which he later won. On returning home from his visit to his parents, he experienced his first bout of abdominal cramps. A few months prior to the time that he was due to enter a university he was struck by an automobile, requiring many weeks of hospitalization. On the day following his release from the hospital, he suffered an acute attack of appendicitis which required further hospitalization. This caused him to lose his scholarship. The patient became agitated and required a brief period of psychiatric hospitalization. The persistent abdominal symptoms dated from that period.

He had always been a hard-working, conscientious, and meticulous person who devoted most of his life to his work. He reacted strongly to any mistake on his part. The patient's father was a passive individual dominated by an aggressive, rejecting, dominant mother. The patient was married to a capable woman on whom he leaned whenever he was plagued with abdominal discomfort. In direct questioning, both the patient and his wife readily reported that whenever he was faced by any emotionally stressful situation, abdominal discomfort soon followed. At times the cramp-like pains were associated with marked feelings of depression and even suicidal preoccupations. On other occasions the depressive episodes were mild. Despite the fact that the patient had been seen by literally a score of physicians in the past, the psychic aspects of his clinical syndrome had never been investigated.

Physical examination and extensive laboratory studies were within normal limits except for spasm of the anal sphincter noted on proctoscopic examination.

The patient responded dramatically to psychotherapy in combination with antidepressant drugs. This therapy permitted an extended amelioration of his abdominal complaints for the first time in almost forty years. As in the case of the previous patient, this patient's symptoms had begun in adolescence. This particular patient demonstrated how the underlying depressive complex may become more severe if the hypochondriac or psychosomatic symptoms are not diagnosed early in the course of the ailment as being manifestations of an underlying depression.

Case 5. This patient was a fifty-seven-year-old female who was referred because of "severe rheumatic heart disease which might possibly require cardiovascular surgery." The patient was first told of her cardiac ailment at the age of ten years but had been symptom-free until the age of thirty-five. During her late twenties and early thirties, she had undergone two pregnancies without difficulty. She first noted ready fatigability and dyspnea on exertion at the age ot thirty-five. Digitalis was prescribed, but the symptoms progressed rather insidiously until four months prior to admission. She then began to experience sudden attacks of dyspnea considered to be caused by left ventricular failure. This led to repeated hospitalizations. The physical examination was unremarkable except for a systolic murmur at the apex. The aortic second sound was greater than the pulmonic second sound. There was no evidence of cardiac failure.

Extensive laboratory studies revealed a small hiatus hernia. Fluoroscopy of the heart was within normal limits without evidences of chamber enlargement or valvular calcification. An electrocardiogram was nonspecifically abnormal, consistent with the digitalis effect and myocardial disease. There was no evidence of cardiac hypertrophy.

During one of her attacks of acute dyspnea, she was found to present evidence of bronchial spasm and responded rapidly to antispasmodic therapy. Having observed the acute attacks of dyspnea, we were led to make a diagnosis of bronchospasm rather than cardiac asthma and decided to investigate both the allergic and psychogenic factors responsible for this condition. On the basis of routine testing, it was found that the patient was sensitive to house dust and shellfish.

Psychiatric evaluation opened up a veritable "Pandora's box." The patient vehemently expressed her hatred of her husband whom she characterized as being a philanderer and an inadequate, nebulous personality. She also was angry at him for forcing her to perform "perverted sexual acts." In addition to the difficulties with her husband, she had problems with her oldest son who was under psychiatric care. She described her relationship with her youngest son in very glowing terms. She particularly emphasized the fact that he followed her bidding and cared for the house," as if he were the father." The patient had planned to leave her husband and live with her older brother. However, at approximately the time when the patient's asthmatic attacks began, this brother died as the result of cancer. Also about the same time, her youngest son informed her that he was planning to marry and to move away from her home. Further questioning very readily uncovered the fact that currently and many times previously the patient had felt markedly depressed, the depression accompanied by feelings of hopelessness.

In her own quiet way, this patient was a very aggressive, domineering woman who ran her home, husband, and children with an iron hand. Her husband was a weak man who felt rejected by her and who sought comfort with other women. On a number of occasions following marital arguments, the patient asked her parents for permission to return to their home. On every occasion her request was refused. During the initial period of hospitalization, the patient continued to be plagued by asthmatic attacks. Following a relatively short period of supportive psychotherapy in combination with tranquilizing drugs, there was a complete remission of these attacks.

This case illustrates the fact that a patient may have a true organic deficit that may not be the prime cause of her symptoms and signs. In this instance, it was the chronic psychogenic problem in combination with various allergic sensitivities that produced the overt clinical manifestations.

Desensitization therapy together with supportive psychotherapy help brought about a complete remission of the asthmatic attacks.

Comment

It should be reiterated that the early diagnosis of the masked syndrome is of extreme importance. Unfortunately, as mentioned before, the vast majority of these patients are misdiagnosed as having purely organic diseases and travel from physician to physician in an attempt to gain relief from their distress. They are exposed to a multitude of diagnostic examinations together with various organic therapies. Many are placed under great financial stress as a result of repeated expensive laboratory tests, medications, hospitalizations, and even surgery. The repeated organic therapies often produce a severe iatrogenic overlay that immeasurably complicates the patient's illness. The most tragic complication of misdiagnosis in these patients is a suicidal attempt.

We would like to emphasize that the diagnosis of the D.S.D. syndrome is not made by a process of elimination. In most instances the careful history will indicate that the patient's complaints have either no relationship or only partial relationship to an organic lesion. The patient's history almost always deviates from the classical description of primary somatic ailments associated with a given organ system. For example, patients with epigastric distress simulating peptic ulcer usually do not have the typical pain relief from food. Similarly, patients complaining of angina-like pain usually refer their discomfort to a specific finger point area over the cardiac apex rather than the more typical diffuse substernal discomfort. Complaints of dyspnea and tachycardia in patients imitating cardiac problems are often unrelated to exertion.

Patients with symptoms referable to the central nervous system also give atypical descriptions. For example, headaches are usually band-like or suboccipital or the scalp is tender to touch. Other patients complaining of facial pain will present symptoms that do not follow realistic anatomic limits. Patients appearing with a story of vertigo do not have nystagmus associated with their symptoms. In many instances the diagnosis of vertigo is made when actually only "dizziness" is present.

These are but a few examples of the types of findings that should alert the physician to the possibility or even probability that a psychogenic factor is present. However, we stress the point that the very possibility that a psychogenic factor may be present makes it mandatory that the clinician be as thorough as possible to rule out a true organic lesion. An atypical clinical pattern stemming from a true organic lesion or an organic lesion with a superimposed psychogenic factor must be ruled out.

It is our opinion that once the D.S.D. syndrome is suspected or diagnosed, the patient should be referred for psychiatric consultation. This is necessary for a number of reasons. Among them is the fact that the intensity of the underlying psychogenic disorder must be determined. In addition, these patients require specialized psychiatric treatment. In most instances supportive or psychoanalytically oriented psychotherapy in combination with selected antidepressant or tranquilizing drugs is the most effective regimen.[8,11] Electroshock therapy has been found to be necessary in a few patients with overwhelming suicidal drives.

The prognosis in patients with masked depressions is in great measure dependent on the duration of illness. If the correct diagnosis is made early and appropriate treatment is instituted promptly, very satisfactory results may be obtained. In another study it was found that excellent or good results as evaluated by the amelioration of presenting symptoms and vocational and social adaptation are obtained in slightly more than half of the patients who have been ill for one year or less. Only 1 in 4 patients who have been ill for two years have had good or excellent results.[5] The prognosis in patients who have been ill for more than two years has been relatively poor in our experience.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

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Cancer of Male Breast*

Part I

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THE PURPOSE OF this report is to review the world literature on cancer of the male breast and to evaluate 198 cases seen at Memorial Hospital during the forty-one-year period from 1924 through 1964 inclusive.

Cancer of the male breast is a relatively rare disease which many physicians may never see in a lifetime of medical practice. The unusual amount of clinical material seen at this hospital enables us to present the largest series of cancers of the male breast reported from a single institution and to provide additional data on natural history, diagnosis, and treatment. An average of approximately 5 cases of male breast cancer were seen annually, but the number varied considerably from one year to another. The range extended from as many as 12 patients in 1943 to only one in 1937. There has not been a noticeable increase in number during the past fifteen years. A brief historical background is of interest.

History

In the early fourteenth century a British physician, John of Arderne, recorded what was probably the first clinical description of cancer in the male breast. He noted a priest of Colstone with a progressively enlarging sore on his right nipple. A barber promised cure, but John, with the usual physician's disdain for barber surgeons, would "let no cutting come there-nigh."[1] Franciscus Arcaeus (1493–1573) wrote: "carcinoma occurs in the male breast, although not as frequently as in the female."[2] An early reference was made to male breast cancer by Ambroise Paré (1510–1590).[3] The first case report of this disease is credited to Fabricus Hildanus (1573–1619).[2] In an inaugural address presented to the German Surgical Society, Lorenz Heister (1683–1758) gave a dissertation on the male breast.[4] Velpeau in 1883 reported 14 cases of cancer of the male breast, and in the same year a thorough and systematic study of the disease was published by Paul Poirier.[5,6] By 1886 Schuchardt[7] had collected 406 cases of tumors of the male breast. The first reference in the English language to male breast cancer was made by Williams in 1889.[8]

Ontogenetically, male and female breasts are similar. But phylogenetically, the adult male breast is said to resemble more closely that of lower animals such as those with flat sieve-like nipples which are licked by offspring (Ornithorhynchus) or those with pouches in the skin instead of nipples (Echidna).[4] The adult male breast is also similar to the breast of preadolescent girls. However, the male breast remains anatomically and functionally in a rudimentary stage, while the female breast undergoes anatomic development and functional activity which accompany menstruation, pregnancy, and lactation. The infrequent occurrence of cancer in the male breast is said to be in accord with the general rule that cancer seldom arises in vestigial organs.[9]

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Cancer of female breast versus male breast

Prognosis. Most authors state that the prognosis is poorer in the male when compared with the female with breast cancer.[3,10–12] Poor results have been attributed to greater delay in males and a more advanced stage of disease at the time they seek medical consultation. It has also been cited that the sparsity of breast tissue in the male allows for more rapid local and systemic extension of disease. In our experience the difference between cancer of the male breast and female breast is mainly one of frequency of occurrence. If analogous stages of the disease in the two sexes at the time of treatment are compared, there is no evidence to support the opinion that cancer of the male breast is more lethal than the corresponding disease in women.

Incidence. In statistical studies the ratio of male breast cancer to all cancer in the male ranges from 0.38 per cent to 1.5 per cent with an average of 0.7 per cent. Pack and LeFevre (1930) found that male breast cancer comprised 0.41 per cent of all male cancers.[13] When compared with primary breast cancer in both sexes, the incidence for the male is about 1 per cent. In 1926 a report from the census bureau of England and Wales showed that out of a total of 5,339 cases of breast cancer, 0.08 per cent occurred in males.[14] Williams[8] in 1889 analyzed 2,444 breast tumors in four London hospitals. There were 2,397 females and 25 males, a ratio of approximately 100 to 1. He noted that of the 25 males, 16 had carcinoma, 3 had sarcoma, and 6 had benign tumors. Sachs[15] in 1941 found the male to female ratio to be 1.32 per cent, Peck[16] 2.5 per cent, and Payson and Rosh[9] 2.2 per cent. A series from Johns Hopkins covering the years 1889 to 1931 listed 9 out of 950 cases of breast cancer in the male, a ratio of 0.94 per cent.[9] The incidence of cancer of the male breast compared with all primary breast cancer (male and female) has been less than 1 per cent at our institution.

Available data indicate that the most common tumefactions of the male breast are gynecomastia, 65 per cent, and cancer, 25 per cent, with benign lesions other than gynecomastia comprising the remaining 10 per cent of lesions.[4,17]

Geschickter[18] refers to a collected series of 150 male breast lesions of which 108 were gynecomastia, 30 carcinoma, 3 sarcoma, and 9 other benign lesions. Of the 406 male breast tumors reported in 1886 by Schuchardt,[7] 85.7 per cent were malignant. In agreement were the findings of Deaver and McFarland[19] in whose series 80 per cent of male breast tumors were malignant and 20 per cent were benign. Cheatle and Cutler[11] in a composite of various statistics available in the literature show the frequency of malignant tumors of the male breast to be 87.5 per cent compared to 12.5 per cent benign tumors.

It is apparent that cancer is by far the most common true neoplasm arising in the male breast.

Epidemiology. Japan and Finland report the lowest death rates for cancer of the male and female breast. Crude death rate figures show, for male breast cancer, that there are 0.07 deaths per 100,000 in Japan compared to 0.25 per 100,000 in the United States.[20] This is reported to be a significant statistical difference even when corrected for the average earlier death of Japanese males. An analysis of the average annual death rates in New York City between 1953 and 1958 in white males over forty-five years of age showed a higher rate of death due to male breast cancer among Jews than among Catholics and Protestants.[20] In a review of available background data there appeared to be a predominance of Russian Jewish males in the Memorial Hospital series. However, the significance of this fact is questionable in view of the nature of the population in the New York City area, the notation of descent rather than nativity on hospital charts, and the increasing intermarriage among various religious groups.

It is of interest to note that breast cancer occurs less frequently in married males with a comparative excess mortality rate in widowed and divorced males. By contrast, there is a striking excess mortality rate from breast cancer in the unmarried female.[20] The significance of these observations is obscure.

Etiology. The cause of male breast cancer is at best speculative. A thorough review of the histories of our patients yielded no evident predisposing factors.

Lacassagne[21] produced mammary carcinoma by administering estrogens to male mice belonging to a strain with a high incidence of breast cancer. Cancer of the male breast has been said to develop during the course of estrogen therapy for advanced prostatic cancer. In 1948 Abramson and Warshawsky[22] stimulated considerable interest by first reporting a case of male breast cancer apparently arising in gynecomastia secondary to estrogen therapy. Subsequently, bilateral breast cancer in a fifty-six-year-old male on estrogen therapy for bladder cancer was reported by McClure and Higgins.[23] It was implied that prolonged estrogen therapy constituted an etiologic factor in the development of breast cancer in these patients. Data to the contrary was gathered by a questionnaire sent to 150 urologists by a committee of the American Medical Association in 1946. More than 17,000 cases of prostatic cancer treated with estrogens were surveyed, and only two instances of breast cancer were found. Furthermore, in a critical review of 12 cases previously reported in the literature relating breast cancer in the male to estrogen therapy, Campbell and Cummins[24] concluded that such tumors represented prostatic metastases rather than primary estrogenic-induced tumors. Only 1 patient in the Memorial Hospital series had cancer of the prostate, and this was diagnosed simultaneously with the breast cancer. No hormone therapy had been given. At present there does not appear to be a causal relationship between male breast cancer and estrogen administration.

Recent reports in the British literature by Jackson *et al.*[25] and Sandison[26] have indicated a high comparative incidence of male breast cancer in patients with Klinefelter's syndrome. This entity which was first described in 1942 by Klinefelter, Reifenstein, and Albright[27] is characterized by gynecomastia, aspermia, testicular hypoplasia, and increased gonadotrophic hormones. Jackson reported 21 cases of male breast cancer among which 3 patients were shown to have chromatin-positive Klinefelter's syndrome. He concluded: "even with the highest estimated incidence of Klinefelter's syndrome in the male population (1:400), the incidence of breast cancer associated with this syndrome is 66.5 times higher than in non-Klinefelter males." According to this report the approximate incidence of breast cancer in Klinefelter's syndrome approaches the incidence of breast cancer in women. In chromatin-positive males with Klinefelter's syndrome, acinar development and formation of true lobules identical with those found in the female breast have been seen.[26]

Histories of women with breast cancer usually include the number of pregnancies and births. Unfortunately, many histories of male patients do not include the number of children fathered by the patient, or if the number of children is listed, there is no assurance that the male had not married a woman who already had a family. We evaluated the spermatogenic activity of patients with cancer of the male breast seen in the last fifteen years at Memorial Hospital. Of 85 patients, 5 had never been married. Of the 80 married patients, there was no information concerning the number of children in 24 instances. Nine patients were listed as having no children, yet several of these patients had orchiectomy performed and the histopathologic examination revealed evidence of spermatogenesis. Some patients with as many as 4 children did not have orchiectomy performed until they were in their sixth or seventh decade at which time the testes were described as "atrophic," "focal areas of atrophy," "negative," or "atrophic testes with diminished spermatogenesis." Specific chromosomal studies for diagnosis of Klinefelter's syndrome were not done, but it seems doubtful in our series that gynecomastia and aspermia are causally related to the development of cancer of the male breast.

In a thought-provoking paper, El-Gazazerli[28] reported 218 cases of breast cancer in Egypt (1950–1959) with 14, or 6.4 per cent, occurring in males. This is an unusually high incidence of male breast cancer. Remarkable also is an average age of forty-one years among these males. Seven of 8 traceable cases had bilharziasis. However, the reported incidence of bilharziasis in Egyptians is variously estimated between 30 to 70 per cent.[28] A proposed hypothesis is that hyperestrogenism secondary to bilharzial liver fibrosis may have been an etiologic factor.

Several investigators have reported the coexistence of gynecomastia and breast cancer. Ewing[29] wrote that unusual development and activity of the breast, regardless of the cause, are predisposing conditions for cancer of the male breast. Gilbert[12] in an early series from Memorial Hospital noted 9 patients with gynecomastia among 47 male breast cancer patients and claimed that patients with gynecomastia are more liable to develop cancer. Geschickter[18] also assumed that gynecomastia predisposes to breast cancer. The association between gynecomastia and breast cancer is reported in the early literature by Schuchardt,[7] Berns,[30] and Villeon.[31] On the other hand Cheatle and Cutler[11] point out that the development of cancer in the breast with gynecomastia is so rare that the event may be regarded as coincidental. In no instance can one confirm the transition from gynecomastia to a malignant tumor. Furthermore, one would expect a higher frequency of male breast cancer if there were a direct etiologic association between the two diseases.

In the Memorial Hospital series one thirty-five-year-old patient had clinical evidence of bilateral gynecomastia at the time of diagnosis of breast cancer, and 1 sixty-two-year-old man with intraductal carcinoma showed "areas of gynecomastia" on histopathologic examination of the removed breast. There was no anamnestic evidence of a pre-existing gynecomastia in the remainder of the entire series. Also conditions commonly associated with the appearance of gynecomastia were conspicuously absent, such as cirrhosis, digitalis effect, malnutrition, and testicular atrophy or tumors.

Trauma is mentioned as a probable etiologic factor in most of the earlier papers on male breast cancer. Gilbert[12] found a history of trauma in 29 per cent of male patients with breast cancer. Bryan[32] recorded a 50 per cent incidence of trauma in male breast cancer as opposed to a 13 per cent incidence in female breast cancer. Charache[33] believed trauma to be a greater contributing factor to breast cancer in the male than in the female. Some rather striking examples are cited in the literature. Wainwright[3] noted breast cancer in a male at the site of a sword thrust. Another described a lesion at the point of a gun shot wound of the breast. Bryan[32] refers to a twelve-year-old male who developed breast cancer at the site of a golf ball injury. Murphy[34] noted cancer in a male breast which had been struck three months earlier by a bottle. On the other hand only 1 patient in Somerville's[2] series of 19 cases mentioned a history of trauma. In 50 males with breast cancer reported by Neal,[35] there was a definite history of trauma in only 4. In agreement were the findings of Judd and Morse[10] who could elicit a history of trauma in only 1 of 17 patients. Chase[4] believed that trauma was only an incidental finding in male breast cancer. Although trauma was noted in more than 10 per cent of our patients, it was impossible to establish any definite correlation between trauma and the appearance of male breast cancer. It is the authors' opinion, based on the physical findings on admission, that in most cases the traumatic incident merely called attention to a pre-existing lesion.

In our series 8 patients were Negroes, an incidence of about 4 per cent. All the remaining patients were Caucasian. Race is thought to be of no significance.

Heredity also appears to be of inconsequential etiologic importance.

AGE. The median age for the development of male breast cancer ranges from fifty-two to sixty-four years. Wainwright[3] found an average age of 54.2 years among 401 cases. Average ages in other representative series include: Sachs[15] 57, Huggins[36] 64, Bryan[32] 60, Somerville[2] 55.1, Neal[37] 57.7, Charache[33] 62, and Gilbert[12] 54.4. The opinion is shared among nearly all observers that breast cancer develops at a later age in males than females. Moss[40] found a median age of sixty-four in males compared with fifty-eight for females. At the extremes, Bryan in 1914[32] reported a case of breast cancer in a twelve-year-old male and Charache[33] a case in a male ninety-three years of age.

The youngest patient in the Memorial Hospital series was twenty-four-years-old and the oldest, eighty-five. The average

age of the total group of 198 patients was fifty-six years. In the last ten years we have seen fewer patients in the younger-age groups and more in the later decades.

Since cancer of the male breast can occur in relatively young adults, physicians should be cautioned about observing a patient on the basis of a clinical diagnosis of gynecomastia. This is particularly true when the lesion is unilateral and the patient exhibits no symptoms commonly associated with gynecomastia. In these cases biopsy should be freely employed to rule out the presence of carcinoma.

Symptomatology

A review of the Memorial Hospital records showed the following symptoms, either alone or in combination: breast mass or swelling; serous or bloody discharge from the nipple; nipple retraction, encrustation, or ulceration; axillary swelling; and local or distant pain.

In the vast majority of patients the first symptom was a unilateral discrete, painless, and firm mass usually located in the central part of the breast. Tenderness was seldom present. In the series of Wainwright[3] and Geschickter,[18] the initial symptom was a breast mass in one half of the patients and nipple changes in the remaining half.

True nipple discharge, not associated with ulceration, was reported by 26 of our patients. The discharge was most often bloody, although at times it was serous, and was almost always associated with a mass. Nipple discharge in the male is a significant finding and deserves surgical investigation without delay.

Six patients had cancer detected during the course of a routine physical examination without being aware of the presence of a breast mass.

Duration. In the current series, the duration of symptoms varied from a few days to many years. Twenty per cent of the patients were uncertain about the date of onset. In the remainder the median duration was about seven months before first medical consultation. A review of the literature indicates that the average period between onset of symptoms and the time of first clinical examination is longer in the male than the female. Moore[39] reports an average delay of 2.4 years in 343 cases of male mammary cancer. Wainwright[3] found an average duration of symptoms of twenty-nine months in 418 cases. In Sachs'[15] series there was a delay of about one year. A consensus of reports in the literature suggests an average delay of about two years in the male compared to one year in the female from the time of initial breast symptoms to the time medical advice is sought. In one previously reported instance a patient was observed by his brother, a physician, for two years before admission to Memorial Hospital, at which time examination revealed a 3-cm. ulceration at the former site of the nipple and metastases to the homolateral axillary nodes. In the literature several cases are noted in which there is a history of very long duration of breast masses. One patient of Judd and Morse[10] stated his mass had been present for eighteen years. Wainwright[3] referred to several patients with breast masses of twenty-years duration. Guthorn's[40] series contained 3 cases with a history of mass being present for ten, twenty-one, and twenty-five years, respectively.

During the past ten years physicians and laymen have manifested a greater awareness of the possibility of cancer of the male breast so that more patients are being seen within three months from the development of the initial symptom. In Moss'[38] series of 507 collected cases of male breast cancer, there was a median delay of only five months. Bloody nipple discharge usually results in earlier consultation than the presence of a mass

Physical findings. *Inoperable group.* The physical findings in the primary inoperable and recurrent inoperable groups at Memorial Hospital included a wide range of clinical pictures varying from massive local disease to widespread dissemination or a combination of both. The appearance of advanced mammary cancer is familiar to all, therefore no statistical evaluation was made in this group. Figures 1 through 4 show some of the more typical physical findings.

Operable group. Of greater interest were the physical findings in the primary operable cases. These have been tabulated to increase the level of suspicion on the part of the physician who does the first examina-

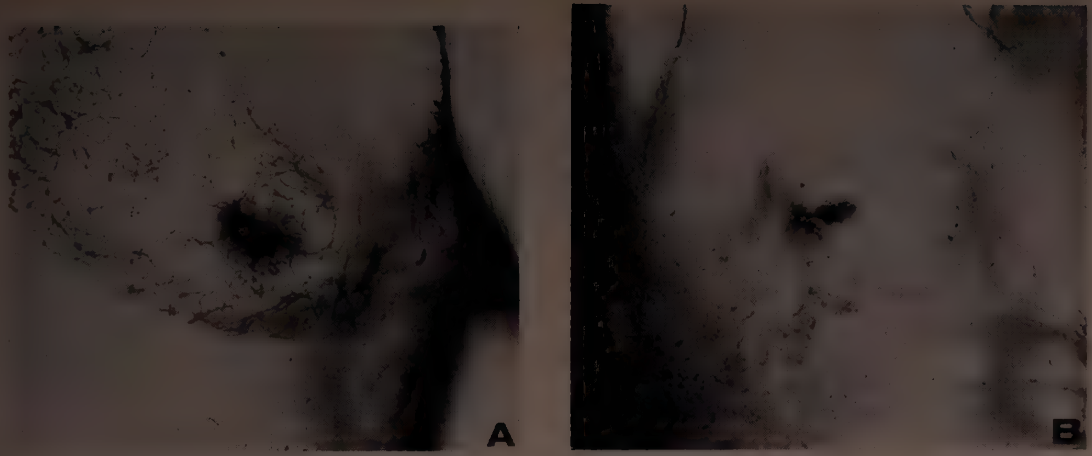

FIGURE 1. Nipple retraction. (A) Seventy-nine-year-old white male with 2.5-cm. hard mass behind left areolar and nipple retraction. (B) Eighty-three-year-old white male with firm nodule under right nipple and marked nipple retraction.

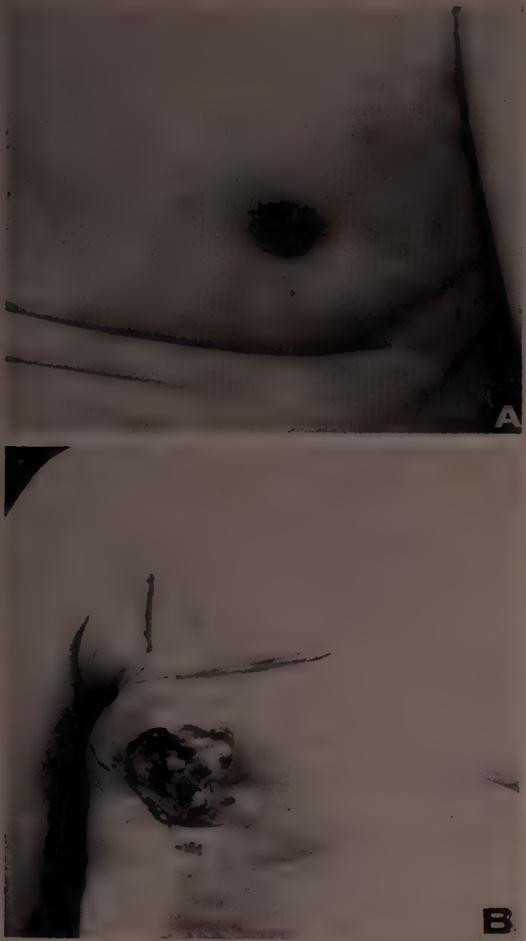

FIGURE 2. Ulceration. (A) Fifty-eight-year-old male with early ulceration of nipple. (B) Sixty-one-year-old white male with 7-by 4-cm. ulceration of right breast and extensive axillary node involvement.

tion. The various combinations of findings are listed in Table I. In only 22 of 110 primary operable cases was a mass present without an associated finding. This would indicate that breast cancer is suspected much later in the male than the female. The term "skin fixation" indicates attachment of the breast mass to the overlying skin but does not include frank ulceration. Ulceration occurred most often within the areolar margin and showed nipple destruction. Therefore, ulceration has been included as a nipple abnormality. Encrustation implies a superficial scaling or eczematoid appearance of the nipple and/or the areola. True nipple discharge, without ulceration, was discovered during the course of routine palpation.

Table II is a further breakdown of the significant physical findings in the primary operable group. A discrete mass was noted in 90.9 per cent of the cases, and 67.3 per cent of the entire group showed nipple abnormalities of one type or another. If a palpable mass in the adult male breast warrants suspicion of cancer, then certainly a mass and nipple abnormality (60 per cent) should confirm that suspicion clinically, especially when nipple retraction is noted (32.7 per cent).

Ulceration, as a solitary finding, was present in only 7.3 per cent of the cases, yet 22.7 per cent of the primary operable group showed cancer invading and ulcerating the overlying skin at the time of admission.

Skin fixation without ulceration was pres-

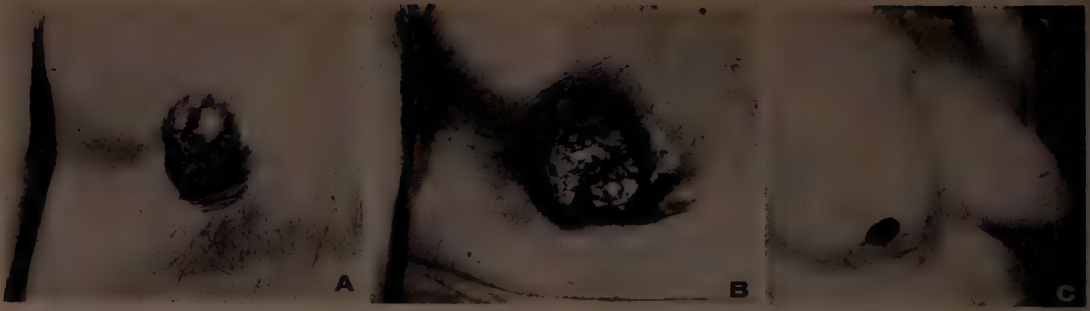

FIGURE 3. Protuberant lesions. (A) Forty-seven-year-old white male with 3-cm. elevated tumor with superficial crusting and ulceration. (B) Sixty-three-year-old white male with bulky fungating ulcerated 8-by 7-by 6-cm. mass and markedly enlarged axillary lymph nodes. (C) Fifty-four-year-old white male with 12-cm. firm left breast mass without skin fixation. Lesion was low-grade myxoliposarcoma.

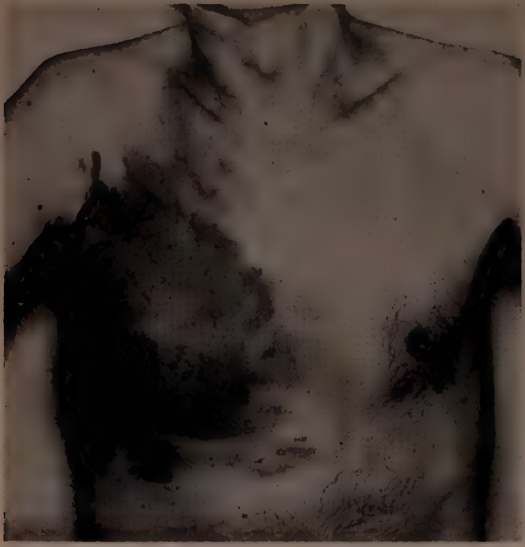

FIGURE 4. Fifty-two-year-old white male with inflammatory carcinoma of right breast and homolateral supraclavicular nodal involvement.

TABLE 1. Physical findings on admission in 110 primary operable cases of cancer of the male breast

Physical Findings	Number of Cases
Breast mass only	22
Breast mass plus	
Nipple retraction	20
Nipple retraction, skin fixation	7
Nipple retraction, nipple discharge	3
Nipple retraction, ulceration	3
Nipple retraction, encrustation	2
Nipple retraction, skin fixation, peau d'orange	1
Ulceration	14
Skin fixation	13
Nipple discharge	11
Nipple discharge, skin fixation	2
Encrustation	1
Skin fixation, peau d'orange	1
Ulceration only	8
Nipple discharge only	2
TOTAL	110

ent in 21.8 per cent and peau d'orange in only 1.8 per cent. The higher incidence of skin and nipple involvement in the male may be related to the small volume of breast tissue.

The incidence of true nipple discharge, 16.4 per cent, was surprising, in view of the vestigial nature of the male breast and absence of lactogenic hormonal stimulation. Since some patients, in addition, gave a history of nipple discharge before ulceration or prior to the development of an inoperable situation, it is the authors' opinion that the importance of nipple discharge, especially when bloody, has been underemphasized in the diagnosis of male breast carcinoma and should be considered as an early manifestation of cancer until microscopically proved otherwise. Treves, Robbins, and Amoroso[41] found that of 577 male patients with benign breast lesions only 12 (2.1 per cent) showed nipple discharge. Four of these patients (25 per cent) had a sanguineous nipple discharge. By contrast, of 131 males with breast cancer, 18 (13.7 per cent) had nipple discharge. Fourteen of the 18 or about 80 per cent showed bloody discharge at some time. These findings are in contrast to the significance of bloody nipple discharge in the female which is usually due to a benign intraductal papilloma.

Enlarged lymph nodes in the homolateral axilla were noted at the time of the initial examination in about one half of the pa-

TABLE II. Physical findings on admission in 110 operable cases of cancer of the male breast

Physical Findings		Number of Patients	Per Cent
Palpable Mass		100	90.9
Nipple abnormalities		74	67.3
Retraction	36		32.7
Ulceration	25		22.7
Discharge	18		16.4
Encrustation	3		2.7
Mass and nipple abnormality		66	60.0
Skin fixation (without ulceration)		24	21.8
Ulceration only		8	7.3

TABLE III. Multiple Primary cancers in male breast-cancer patients

Second Primary Diagnosed	Number of Cases
Prior to breast cancer	
Sigmoid cancer	2
Tongue cancer*	1
Lymphosarcoma	2
Simultaneous with breast cancer	
Tonsil cancer	1
Kidney, papillary cancer	1
Esophageal cancer	1
Buccal mucosa cancer	1
Subsequent to breast cancer	
Prostatic cancer	1
Esophageal cancer	1
Gastric cancer	1
Lung, oat-cell cancer*	1
Rectal cancer	1
Lingual cancer	1
Chronic lymphatic leukemia	1
TOTAL	16 (15 patients)

* One patient had cancer of the tongue, then breast cancer, then oat-cell cancer of lung.

tients. The following data from the literature are noted for comparison.

Nipple retraction was found in 33 per cent of Sachs'[15] patients, in 74 of 75 patients in Huggins'[36] series, and in 32 per cent of patients reported by Payson and Rosh.[9] It is noteworthy that the last author found evidence of skin attachment in 12 of 27 (44.4 per cent) of benign tumors of the male breast. This suggests that skin attachment may not constitute as reliable a sign indicating malignant disease in the male as compared to the female.

Ulceration was noted in 27 per cent of patients by Gilbert,[12] 38 per cent by Wainwright,[3] 50 per cent by Charache,[33] 30 per cent by Speese,[42] and 27 per cent by Schuchardt.[7]

Axillary nodal metastases varied from 60 per cent in the series of Cheatle and Cutler[11] to 91 per cent in the cases of Charache.[33]

Laterality. On admission, 111 patients in our series had cancer of the left breast and 85 of the right breast. The predilection of breast cancer for the left side in both male and female is unexplained. Two patients were admitted with simultaneous bilateral breast cancer.

Three patients subsequently developed a new primary cancer in the opposite breast. The total incidence of bilateral breast cancer was 2.5 per cent (5 patients) which is considerably lower than the incidence in females. In Gilbert's[12] series there were 26 cancers of the left breast and 20 involved the right. Wainwright[3] reported 170 cancers of the left breast, 163 of the right, and 3 bilateral. Huggins'[36] series showed essentially equal distribution. Chase[4] believes there is no specificity for either breast, and Payson and Rosh's[9] 25 cases demonstrated a higher incidence of cancer of the right breast, 15 patients, compared with 10 on the left. Williams[8] found right-sided involvement in 38 cases (53 per cent) and left-sided tumors in 33 cases (47 per cent). Most reports show bilateral involvement in about 1 per cent.

Size. The smallest breast mass described in the Memorial Hospital series was 4 to 5 mm. and the largest, a sarcoma, was 12 cm. The median of the maximum diameters was 3 cm. This is about the average diameter of the male areola. However, the size of the breast mass may be misleading when considered in terms of early diagnosis, since some patients with a 3-cm. mass had complete destruction of the nipple and others showed clinical evidence of axillary involvement. Fourteen patients in the primary inoperable group presented 3- to 5-cm. breast masses yet showed evidence of supraclavicular, pulmonary, or osseous metastases.

Multiple primary cancer. Fifteen patients in the Memorial Hospital series had an associated primary cancer arising in another anatomic site. The distribution is shown in Table III. The incidence of a significant second primary cancer was 7.5 per cent and is not considered unusual in

TABLE IV. Clinical classification and group distribution in cancer of the male breast

Classification	Total Number of Cases		Total Per Cent (Approximate)	
Inoperable		67		34
Primary	23		12	
Recurrent	44		22	
Operable		126		64
Primary	110		56	
After local excision	10		5	
Recurrent	6		3	
Prophylactic	5	5	2	2
TOTAL		198		100

view of the average age of the patients studied.

Clinical classification. Each patient was assigned to a specific clinical category, based on the physical findings at the time of admission. This classification is, in general, similar to that used in classifying female patients with breast cancer at Memorial Hospital. The requirements for grouping are as follows:

Primary operable breast cancer
1. No previous surgical therapy
2. Absence of findings listed in the inoperable category

Recurrent operable breast cancer
1. Previous local excision of tumor or subtotal mastectomy
2. Clinical evidence of recurrent disease limited to the breast or homolateral axilla
3. Absence of findings listed in the inoperable category

Prophylactic breast cancer
1. Previous radical or simple mastectomy
2. No evidence of recurrent disease, local or distant

Primary inoperable breast cancer
1. No previous surgical therapy
2. Clinical evidence of metastases beyond the homolateral axilla, for example, supraclavicular, pulmonary, osseous and so forth
3. Inflammatory cancer
4. Fixation of the primary tumor to the chest wall
5. Local extension of ulceration beyond the reasonable scope of surgical ablation. Ulceration alone did not warrant a conclusion of inoperability. The small size of the male breast seems to result in ulceration earlier and more frequently than in the female
6. Multiple satellite metastases
7. Ulceration or fixation of axillary metastases. Lymph-node size per se was not a determining factor

Recurrent inoperable breast cancer
1. Previous surgical therapy of any type
2. Presence of findings listed in the inoperable category

The distribution of cases according to clinical classification is given in Table IV.

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More babies surviving birth defects

As recently as fifteen years ago, the occasional baby born with an intestinal deformity had less than a one-in-ten chance of survival. Today 75 to 90 per cent of these children are being saved.

An article in a recent issue of the *J.A.M A.* stated that this improvement has come from prompt recognition and intensive medical and surgical treatment.

A child with intestinal deformities occurs only once in a thousand births. Warning signs include an infant who vomits frequently; has a distended, boat-shaped abdomen; or fails to pass meconium, the dark green liquid found in the intestines of all newborn infants.

Fairly obvious and easy to treat are a closed anus or an umbilical hernia; harder to spot, however, is the child with intestinal closure or a fistula of the trachea or esophagus. X-ray films, close attention to the baby's swallowing and vomiting, if any, plus other physical signs help in diagnosis.

In many hospitals, videotape playbacks are often used to watch the swallowing mechanism. Close-circuit television transmits fluoroscopic images from the examining room to a central office where several radiologists can view them simultaneously.

The premature baby with suspected gastrointestinal obstruction is usually too sick to be a problem in restraint while being examined. He must be handled in a warm room, however and should be briefly removed from the incubator.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Beekman-Downtown Hospital
New York City
June 27, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by MORRIS SHOROFSKY, M.D.

Sarcoidosis, Hypertension, and Renal Failure

Case history

M. Minalai, M.D.: A sixty-six-year-old retired European-born male who had intermittent productive cough and sputum for several years and shortness of breath for several weeks was admitted.

The patient had smoked one pack of cigarets per day since age seventeen. His past history was otherwise essentially negative. At age sixty-three the patient developed increasing shortness of breath, copious sputum, nocturnal paroxysmal dyspnea, and a 12-pound weight loss. Several months later, admission x-ray film at another hospital showed a diffuse infiltrative nodular process throughout both lung fields. At that time, the blood pressure was 150/90; the pulse rate 120 and regular, and respirations 18 per minute. There were coarse rhonchi throughout both lung fields; the liver edge was firm and 1 fingerbreadth below the right costal margin. A skeletal survey, gastrointestinal and small-bowel x-ray film series, barium enema roentgenogram, electrocardiogram, routine urinalysis, Fishberg concentration test, Bence Jones protein determination, complete blood count, gastric analysis, serum glutamic oxaloacetic transaminase, and liver function tests showed normal findings. A total serum protein was 7.5 Gm. (albumin 4.2 and globulin 3.3 Gm.), the serum calcium 10.6 mg., and the phosphorus 3.2 mg. per 100 ml. The phenolsulfonphthalein test showed decreased excretion, totaling 52 per cent in two hours. The bone marrow was mildly hyperplastic with increased numbers of lymphocytes, eosinophils, and normoblasts; no tumor cells were seen. A scalene node biopsy was unsuccessful. Liver biopsy was reported to show "a granuloma."

Following discharge from the other hospital, the patient remained ambulatory for one month, but because of increasing shortness of breath, he sought admission to the Beekman-Downtown Hospital.

First admission. The blood pressure was 200/100, the pulse rate 92, the respirations 20 per minute, and the temperature was 98.6 F. The patient was well nourished and in no acute distress. Moist rales were audible at both lung bases, with diminished breath sounds at the base of the right lung. The liver edge was 2 fingerbreadths below the right costal margin and was nontender. The hemoglobin was 13.7 Gm. per 100 ml.; the white blood cell count was 8,400 with a normal differential. The urine specific gravities were 1.019, 1.015, and 1.021. The purified protein derivative test for tuberculosis, histoplasmin, and coccidioidomycosin skin tests showed negative results. The electrocardiograms showed only incomplete right bundle branch block.

The chest x-ray film showed a diffuse fine miliary pattern throughout both lung fields with coalescence in the right lower lung field and occasionally larger nodular densities (Fig. 1A). The cardiac silhouette was not remarkable.

The blood urea nitrogen was 32.5 mg., the serum calcium 11.8 mg., and the serum phosphorus 2.7 mg. per 100 ml. The liver chemistries were normal. The total serum protein was 7.6 Gm. (albumin 4.6 and globulin 3 Gm.) per 100 ml. Serum protein electrophoresis was within normal limits. The serum uric acid was 5.9 mg. and creatinine 1.3 mg. per 100 ml. The serum acid and alkaline phosphatase determinations were within normal limits. Three stools

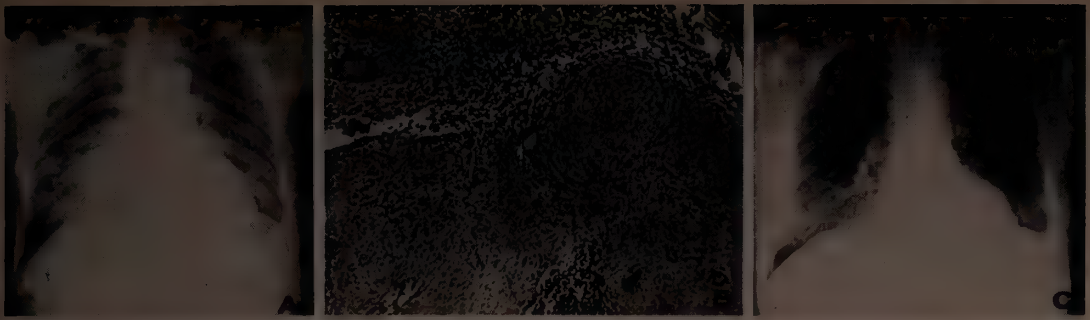

FIGURE 1. (A) Chest x-ray film showing fine miliary densities throughout both lung fields. (B) Scalene node biopsy revealing noncaseating granuloma with giant cells. (C) Chest x-ray film showing clear lung fields taken eight months after (A).

gave negative results for blood, ova, and parasites. The sputum showed negative results for acid-fast bacilli, fungi, and tumor cells. Spirometric studies indicated a markedly diminished vital capacity and reduced maximal breathing capacity without obstructive elements, compatible with a pulmonary granulomatous process. The arterial oxygen saturation was markedly reduced at rest. A scalene node biopsy showed granulomatous nodules consistent with sarcoidosis (Fig. 1B).

Steroid therapy was begun; four days later the patient complained of sudden epigastric pain, radiating to the back, with nausea and sweating. Thereafter, he remained afebrile and asymptomatic until discharge one month after admission.

The patient continued taking prednisone 20 mg. daily for only ten days. Thereafter he developed peripheral edema, shortness of breath, severe headaches, and fever.

Second admission (*three weeks later*). The blood pressure was 130/80, the pulse was 72, respiration rate was 32 per minute, and the temperature was 99 F. The patient was slightly dyspneic, with occasional rales at the base of the right lung and marked pitting edema of both lower extremities. The complete blood count, urinalysis, total protein, and albumin-globulin ratio were normal. The blood urea nitrogen, which was initially 26 mg., later rose to 41 mg. per 100 ml.; the carbon dioxide-combining power was 33.7 mEq. and the serum potassium 4.6 mEq. per liter. The electrocardiogram was normal. The chest x-ray film showed no change.

The patient remained afebrile; after treatment with diuretics, digoxin, and steroids, the edema cleared. Blood gas studies showed significant improvement in arterial oxygen saturation. The patient was discharged after ten days and continued taking prednisone 10 mg. per day. He did well for seven months when he began to develop a more productive cough and blood-streaked sputum. Because of sweating, weakness, nausea, and vomiting, he was readmitted.

Third admission (*seven months later*). The blood pressure was 200/120, pulse 92, respiration rate 20 per minute, and the temperature 100.8 F. The patient appeared apprehensive and flushed. The lungs were clear; the liver edge was soft and nontender, 1 fingerbreadth below the right costal margin. No lymph nodes were palpable. The urinalysis showed a specific gravity of 1.020, with a 4 plus test for albumin; the microscopic examination was negative. The hematocrit was 48 and the white blood cell count 18,200 with a normal differential. The blood urea nitrogen was 47 mg., the serum calcium 9 mg., the phosphorus 5.2 mg. per 100 ml., and the total serum protein was 6.7 Gm. (albumin 4.5 and globulin 2.2 Gm.) per 100 ml. The carbon dioxide-combining power was 32.2 mEq., the serum potassium 2 mEq., the serum sodium 138 mEq., and the serum chlorides 83 mEq. per liter. The sputum showed negative results on smear and culture for acid-fast bacilli. The 17-ketosteroid excretion per twenty-four hours was 16.2 mg. (normal 8 to 18 mg. per twenty-four hours); the absolute eosinophil count was within normal limits.

The chest x-ray film showed only exaggeration of the bronchovascular markings with otherwise clear lung fields (Fig. 1C), and x-ray films of the hands showed normal bony, soft-tissue, and joint structures.

Throughout the eighteen days in the hospital, the temperature remained normal. The blood pressure fluctuated between 220/120 to 130/80. The patient was treated with reserpine (Serpasil), hydrochlorothiazide (Hydrodiuril), prednisone 10 mg. three times a day, and potassium supplements. The Tine test result was 1 plus positive. The patient complained of frequent headache and weakness of the left leg; neurologic examination showed negative findings. Bronchoscopic examination showed entirely negative results. Cytologic examination of bronchial washings showed only atypical cells, not suggesting malignant disease. Hemoptysis ceased; the patient was discharged two weeks after admission and continued taking the medication described.

During clinic follow-up, over the next ten weeks, a chest x-ray film revealed a prominence of the right side of the mediastinum. The serum cholesterol ranged from 400 to 500 mg. per 100 ml. Two weeks before the final admission the patient noticed increased shortness of breath on exertion and productive cough. There were audible wheezes over both lungs and rales at the base of the right lung. The blood pressure was 180/90. The patient was readmitted.

Fourth and final admission. Physical examination on admission showed a blood pressure of 204/108, the pulse 118, the respiration rate 34 per minute, and temperature 100 F. The patient was in mild respiratory distress. Pigmented areas were noted over the forehead, nose, malar regions, forearms, and hands. No lymph nodes were palpable. There were diminished breath sounds at the base of the left lung but no rales. The heart sounds were distant, and no murmurs were audible. The liver and spleen were questionably palpable.

During the three-month hospitalization, the urine specific gravities ranged from 1.002 to 1.020, with a trace to 4 plus albuminuria and negative microscopic examinations; however, late in the hospital course the urine showed many red blood cells and white blood cells but no refractile bodies. The hemoglobin was 12.6 Gm. per 100 ml. and the white blood cell count 11,000 with a normal differential. The carbon dioxide-combining power was 27.7 mEq. per liter; the serum potassium initially was low (2.4 mEq. per liter), later rising to high normal values with therapy. The blood urea nitrogen throughout the hospital course remained slightly elevated and terminally was 48 mg. per 100 ml.; the creatinine initially was 4.5 mg. per 100 ml. (normal 1 to 2 mg.) and terminally was 3.5 mg. per 100 ml. The creatinine clearance was 23 ml. per minute (normal 70 to 160 100 ml.). The twenty-four-hour urinary protein was 2,694 mg. (range 25 to 70 per 100 ml. per twenty-four hours). The fasting blood sugar remained slightly elevated between 100 and 152 mg. per 100 ml. but without glycosuria. The total serum protein was 6.3 Gm. (albumin 4.1 and globulin 2.2), the calcium 10.4 mg., and phosphorus 4.1 mg. per 100 ml. The serum protein electrophoresis showed only an elevated alpha 2 globulin.

The patient's sputum showed negative results on culture for acid-fast bacilli. The spinal fluid glucose, protein, and chlorides were normal and culture showed negative findings. Thyroid function studies (protein-bound iodine, L-triiodothyronine) revealed normal results. The total serum lipids were 1,753 mg. (normal 400 to 800), the phospholipids 257 mg. (normal 60 to 350), triglycerides 52 mg. (normal 0 to 165), and cholesterol 539 mg. per 100 ml. The total urinary catecholamines were 6.5 micrograms per twenty-four hours (normal 0 to 165) and vanilmandelic acid 0.84 mg. (normal 0 to 10 mg. per twenty-four hours).

Initially the chest x-ray film showed an enlarged cardiac silhouette and slight diffuse accentuation of pulmonary markings with coalescence in the right lower lobe of the lung. Widening of the right superior mediastinum was again noted. One week later, the heart appeared normal in size, and the lung fields were clear. The intravenous pyelogram showed there was poor visualization of the left kidney, and the faintly outlined left ureter appeared normal (Fig. 2). Renal scan showed no retention of radioactive mercury in the area of left renal shadow indicating a nonfunctioning kidney. The right kidney appeared normal. The electrocardiogram indicated left ventricular hypertrophy, intraventricular conduction delay, and digitalis effect. Pulmonary function studies showed no evidence of an obstructive type of disorder.

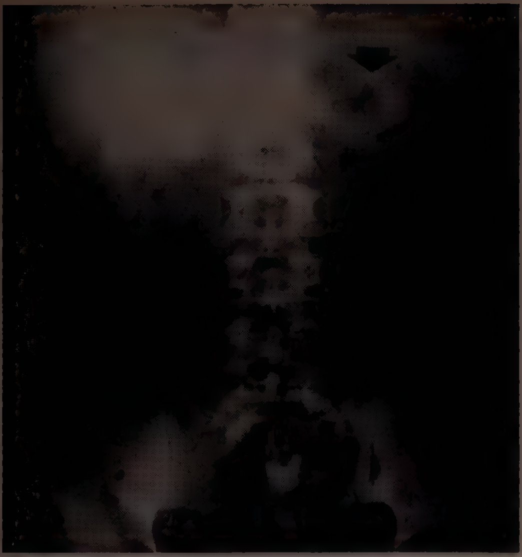

FIGURE 2. Intravenous pyelogram showing poor visualization of left kidney (upper pole at arrow).

Except for four days during the twelfth hospital week, the patient remained afebrile. Medications included tetracycline, potassium supplements, hydrochlorothiazide (Hydrodiuril), digoxin, prednisone, spironolactone (Aldactone), methyldopa (Aldomet), and meralluride (Mercuhydrin). The blood pressure fluctuated from 220/114 to 160/100 but generally remained in the area of from 180 to 200/100 to 130. The patient continued to cough and exhibited dyspnea; he gradually lost weight and complained of weakness in the lower extremities which was thought to be due to a low serum potassium. At times the patient complained of pain in the right lumbar region, radiating into the right chest and lower axilla; an attempt to perform a retrograde pyelogram was prevented by an apparently small left ureteral orifice. Renal arteriography and biopsy were considered, but the patient's condition prevented the procedure.

With increased use of steroids, the patient appeared to improve with less dyspnea, but the blood pressure was noted to be 250/130. Terminally the patient had recurrence of dyspnea with orthopnea, profuse sweating, and crepitant rales over the lower third of both lung fields. He developed anuria; was found to be in cardiac arrest on the afternoon of the ninetieth hospital day, and could not be resuscitated.

Discussion

Morris Shorofsky, M.D.*: Let me review the protocol briefly.

This was a sixty-six-year-old gentleman who was a chronic smoker with cough and shortness of breadth. During admission to another hospital, he was noted to have copious sputum and paroxysmal nocturnal dyspnea; a chest x-ray film showed a diffuse infiltrative process throughout both lungs. His liver was enlarged, and an aspiration biopsy revealed an hepatic granuloma. At that time he had an elevated or a high-normal serum calcium and renal insufficiency.

During his first examination at the Beekman-Downtown Hospital he was found to have hypertension and hepatomegaly. Chest x-ray films again showed the miliary pattern of the lung fields. He was also found to have mild azotemia and hypercalcemia. The diagnosis of sarcoidosis was proved by scalene node biopsy. Pulmonary function studies were compatible with the diagnosis of alveolar capillary block syndrome. While on steroid therapy he developed epigastric pain, nausea, and radiation of pain to the back, presumably due to a complication of the steroid therapy, or he could have had gastritis, pancreatitis, vascular insult, or enlargement of the mesenteric nodes due to sarcoidosis. Following reduction of steroids, his pulmonary symptoms increased.

During his second admission here, a 4 plus edema of the lower extremities was noted, which disappeared on a cardiac regimen. Again hypercalcemia was present, and hemoptysis was also noted.

During the third admission he was again found to be hypertensive with 4 plus albuminuria, azotemia, and hypopotassemia. The patient's hypertension responded to antihypertensive medication. At this time we begin to find evidence of more severe renal failure. The hyperlipidemic state and a urinary protein content of 2.7 Gm. in twenty-four hours suggest a nephrotic-like picture. The left kidney was faintly visualized on intravenous pyelogram and on the radioisotope scan appeared to be nonfunctioning. The elevated serum alpha 2 globulin was consistent with chronic disease. The elevated blood sugar could be a complication of the steroid therapy. The patient's terminal course was marked by lumbar pain, intermittent respiratory difficulty, and anuria.

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My discussion of this very complicated case will be divided into four parts: (1) the diagnosis of sarcoidosis, (2) the pulmonary disease, (3) the renal disease, and (4) the terminal events.

Is the diagnosis of sarcoidosis on firm ground? The three-year course and progressive pulmonary symptoms are entirely compatible with this disease, as are the hepatomegaly, the hyperglobulinemia, hypercalcemia, and the negative results from tuberculin tests. The frequency of organ involvement in autopsied cases of sarcoidosis is reported to be 85 per cent in the lungs and lymph nodes, 50 to 65 per cent in the liver, and 7 to 19 per cent in the kidneys.[1] Biopsies of scalene nodes draining neoplastic, mycobacterial, and fungal lesions may show a sarcoid reaction. However, in the majority of cases of sarcoidosis, the scalene node biopsy has proved to be diagnostic. Similarly in the liver there are many diseases including syphilis, tuberculosis, schistosomiasis, and histoplasmosis that commonly produce noncaseating granulomas. The clinical findings, the demonstration of typical lesions, and the exclusion of specific etiologic agents convinced me that the diagnosis of sarcoidosis is correct.

The next problem I should like to discuss is the pulmonary disease. Hilar adenopathy with right paratracheal enlargement occurs early in sarcoidosis. When these are found associated with lung mottling, a more advanced stage is present. The pulmonary function abnormalities in sarcoidosis are usually of the alveolar-capillary block syndrome, with reduction in the diffusion capacity, increase in the rigidity of the lungs, and decrease in the arterial saturation and partial pressure of oxygen. Hemoptysis which occurs frequently in sarcoidosis has been attributed to granulomas involving the walls of the pulmonary vessels, endobronchial granulomas, or secondary bronchiectatic changes. The differential diagnostic possibilities then include miliary tuberculosis, pneumoconiosis, histoplasmosis, lymphangitic carcinoma, alveolar cell carcinoma, alveolar macrolithiasis, amyloidosis, idiopathic pulmonary hemosiderosis, and Goodpasture's syndrome. This patient gave a history of smoking for nearly half a century, and a primary pulmonary neoplasm cannot be definitely ruled out. The clinical course as well as the rarity of finding carcinoma and generalized sarcoidosis together makes the former unlikely. Finally, resolution of the hilar nodes and of this pulmonary involvement usually signifies a relatively late stage of sarcoidosis. Could we now review the films?

JOHN BATILLAS, M.D.: The initial chest x-ray film during his admission to another hospital in November, 1964, demonstrated a rather diffuse miliary or reticular nodular pattern scattered throughout both lung fields. There was some coalescence at the base of the right lung medially and a prominence in the right paratracheal region suggestive of enlarged nodes. The first x-ray film taken at the Beekman-Downtown Hospital approximately two months later shows the same pattern (Fig. 1A). Four months later, the lungs have cleared, the miliary pattern has resolved, although we still have rather heavy markings and calcifications scattered about in the hilar regions and in the lung fields (Fig. 1C). On the x-ray films taken throughout 1966 and in early 1967, the lung fields remain clear. Finally in April, 1967, we see the reticular-nodular pattern once more, although somewhat coarser than during its earlier appearance.

DR. SHOROFSKY: Are these changes compatible with the diagnosis of sarcoidosis?

DR. BATILLAS: Yes, but a full differential diagnosis of this miliary pattern would be quite lengthy and would have to include miliary tuberculosis and fungus disease. The subsequent clearing would exclude carcinomatosis and pneumoconiosis, but many other possibilities would need to be considered.

DR. SHOROFSKY: Was there any suggestion of pulmonary embolism?

DR. BATILLAS: No, although in February, 1967, one x-ray film study shows that the patient did go into congestive heart failure which subsequently cleared.

HARRY FONG, M.D.: Does not the heart appear enlarged on those earlier films?

DR. BATILLAS: Yes, the x-ray films in early February, 1967, suggest that there had been a progressive enlargement of the heart by the time the patient was in failure, and as the congestive failure cleared, the heart size appeared to diminish. Incidentally numerous other x-ray films, including a gastrointestinal work-up, showed entirely negative results except for evidence of a small hiatus hernia. A skeletal survey showed some small radiolucent areas of nonspecific type in the proximal phalanx of the right fifth finger and in the head of the metacarpal. These findings would fit the diagnosis of sarcoidosis. The intravenous pyelogram in February, 1967, shows that the left kidney is smaller than the right and does not function as well (Fig. 2). There was very faint visualization of the left ureter and collecting system of the left kidney.

DR. SHOROFSKY: Is the right kidney enlarged?

DR. BATILLAS: The right kidney I would say is normal. The photoscan in April, 1967, showed no uptake of mercury-203 by the left kidney with a normal uptake by the right kidney. The uptake of mercury in the liver, seen in this scan, is due to poor renal function.

DR. SHOROFSKY: This leads us to the third aspect to be discussed, that is, the renal disease. Compromised renal function was noted during the patient's first hospital stay, two years prior to his death. Could the renal failure be attributed to the sarcoidosis? It is rare to find sarcoid lesions of the kidneys so widespread as to cause renal insufficiency. There have been only 4 such cases reported in the literature.[2] Accelerated or malignant hypertension may be superimposed on the renal involvement. More commonly, impairment of renal function is usually attributed to the hypercalcemia, associated with sarcoidosis resulting in nephrocalcinosis and renal calculi. A diffuse nephrocalcinosis may not be visible on x-ray examination.

The peripheral edema during the second admission may have been related to congestive heart failure rather than renal disease. Venous pressure determinations might have helped in clarifying this point. At any rate, the edema responded well to a cardiotonic and diuretic regimen, and the elevated blood pressure was controlled with antihypertensive medication. During the final three months, the patient began to develop a nephrotic-like syndrome, with hyperlipidemia, hypercholesterolemia, and 4 plus albuminuria. However, the total twenty-four-hour urinary protein was less than that usually seen in a nephrotic syndrome, and the serum albumin was not diminished. The terminal event, I believe, was caused by renal vein thrombosis and multiple pulmonary emboli. Several explanations have been set forth to explain the thrombotic tendency that might occur in a nephrotic syndrome. Among these are an increase in the fibrinogen in the plasma and a relationship of the fat metabolism to the thrombotic state. Also, antifibrinolytic activity has been attributed to the alpha 2 globulin which is elevated in the nephrotic syndrome. Finally, there may be an increased incidence of thrombotic disease in patients on corticosteroid therapy.[3] I would also suggest that some degree of dehydration induced by a diuretic can further predispose to thrombosis.

In conclusion, I propose that this man had pulmonary sarcoidosis with alveolar capillary block syndrome, sarcoid involvement of the kidneys with nephrocalcinosis, and, terminally, renal vein thrombosis with multiple pulmonary emboli.

JOHN T. FLYNN, M.D.: When you listed the possible causes of the patient's abdominal pain you mentioned a vascular insult. What did you have in mind?

DR. SHOROFSKY: I was considering thrombosis of the inferior vena cava, dissection of an aortic aneurysm, and acute arteritis as a complication of prolonged steroid therapy. However, sarcoid involvement of the mesenteric nodes has been implicated as a cause of abdominal pain.[4]

DR. FLYNN: The 17-ketosteroid excretion for twenty-four hours was actually within normal limits at a time when the patient was getting steroids. Since the ketosteroids are elaborated by both the adrenals and by the testes, a twenty-four-hour urinary excretion is only partially reduced by exogenous steroids. The twenty-four-hour urinary hydroxysteroid excretion is a much more reliable index of adrenocortical suppression during steroid therapy. Incidentally, about 40 per cent of ingested cortisol appears in the urine as an hydroxysteroid, but only about 10 per cent of ingested prednisone does so.[5]

DR. FONG: In the outpatient depart-

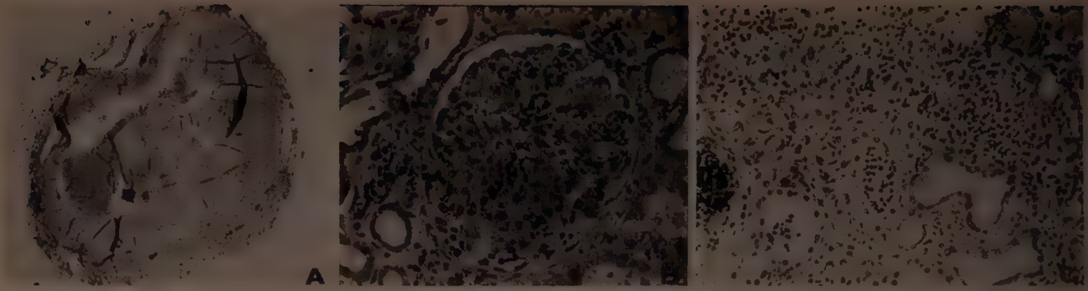

FIGURE 3. (A) Cross section of left renal artery showing occluding thrombus. (B) Left kidney glomerulus showing cellular proliferation with focal hyaline changes. (C) Section showing acute and chronic pyelonephritis in left kidney.

ment several sputum studies of this patient showed negative results for acid-fast bacilli. Toward the end of his illness, the Tine test showed positive results. With the administration of steroids over such a long period of time, there is always a possibility of stimulating an old tuberculous focus. There has been mention in the literature lately that many cases of sarcoid will show evidence of active tuberculosis if the search is long and vigorous enough, especially where there is increased hilar adenopathy.[6] In cases of far-advanced sarcoidosis, the yield in the search for tuberculosis organisms is much greater. On the other hand, recovery from sarcoidosis could permit a reversal of the tuberculin hypersensitivity reaction from negative to positive.

Dr. Shorofsky: I agree. Steroids may affect the course so that a superimposed tuberculous infection may be present. It has been stated though that a positive result from a tuberculin test during the course of sarcoidosis indicates actually a tuberculous infection.[7]

Robert Baxt*: Why did you rule out Goodpasture's syndrome which would involve the lungs and the kidneys?

Dr. Shorofsky: Classically you should see hematuria and an eosinophilia, which was not the case here.

Duk-Jhe Shun, M.D.: This patient might have had a long-standing vasculitis, probably of an allergic nature.

Dr. Flynn: What would make you think of vasculitis?

Dr. Shun: I had seen a similar case with widespread involvement of smaller vessels including those of the lung with resulting pulmonary hypertension. The patient had been on steroids, which were believed to have precipitated a widespread vasculitis involving even the vessels of the gastrointestinal tract and the pancreas.[8]

Clinical diagnoses

1. *Hypertensive cardiovascular disease, with enlarged heart*
2. *Sarcoidosis of lungs and lymph nodes*
3. *Bronchopneumonia, terminal*

Dr. Shorofsky's diagnoses

1. *Sarcoidosis with pulmonary and renal involvement (nephrocalcinosis)*
2. *Renal vein thromboses with multiple pulmonary emboli, terminal*

Pathologic report

Charles M. Karpas, M.D.: The most significant findings at the postmortem examination involved the cardiovascular and genitourinary systems. There was marked and extensive arteriosclerosis associated with hypertensive cardiopathy. The enlarged heart weighed 500 Gm. with both right and left ventricular hypertrophy. I was unable to find any myocardial fibrosis, valvular deformity, or mural thrombi. The left kidney was slightly hypotrophic, weighing 100 Gm., while the right kidney weighed 200 Gm., indicating mild compensatory hypertrophy. The left renal artery, which was much more sclerotic than the right, was completely occluded by a thrombus. Multiple sections through the thrombus showed partial organization suggesting a chronic process (Fig. 3A). The gradual development of the thrombus most likely compromised the blood supply to the

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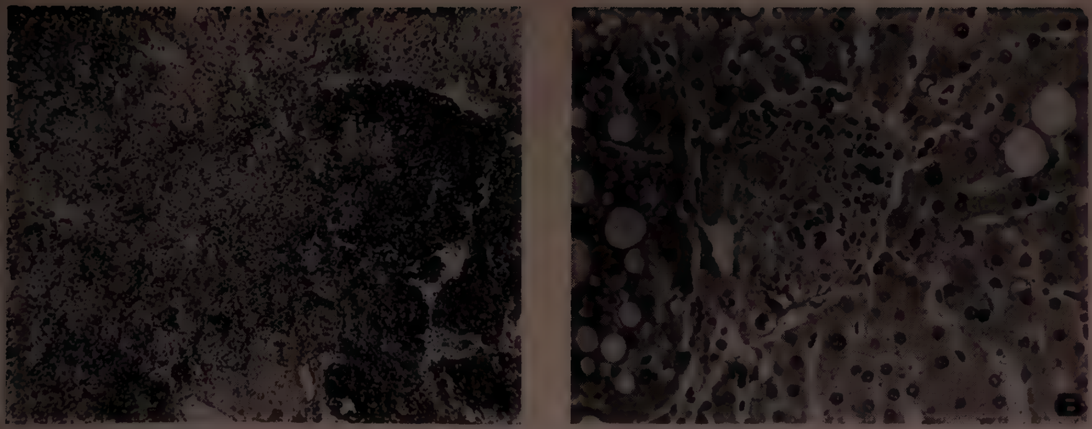

FIGURE 4. Sections of (A) hilar lymph node showing poorly demarcated hyaline nodules (healed sarcoid); and (B) liver showing focal fibrosis and hyaline changes (healed sarcoidosis) (× 160).

left kidney and in effect was equivalent to a renal artery stenosis which can result in renovascular hypertension. I believe that the partial occlusion became complete only in the terminal phase of the illness, since there was no evidence of infarction of the left kidney. Microscopic sections of the involved kidney revealed a focal glomerulitis with capillary "hyaline thrombi" within the glomerular tufts. These changes were associated with some leukocytic infiltration and cellular proliferation (Fig. 3B). Crescent formation in some involved glomeruli was associated with local fibrotic changes, again suggesting a chronic process. Both kidneys exhibited diffuse and marked interstitial edema, tubular degeneration, and venulitis—the nephrotic changes usually found terminally in patients with renal insufficiency in hypertension. In addition, the left kidney showed evidence of an acute and chronic infectious process characterized by clusters of polymorphonuclear leukocytes within the tubules and lymphocytes in the interstitial tissue (Fig. 3C). These inflammatory findings could be attributed to the gradually compromised blood supply to the left kidney. Incidentally, the glomeruli of the right kidney were intact and showed no evidence of glomerulonephritis. It is of interest to note that one of the anatomic-pathologic features of hypertension with renal insufficiency is the frequent occurrence of focal glomerulitis.[9] In this case since we found no significant arteriolitis in either kidney, it is not difficult to believe that these glomerular changes in the left kidney could be associated with the renal artery thrombus.

Unfortunately, the lung findings were not specific. There was a marked diffuse bronchopneumonia with areas of hemorrhage. We were unable to demonstrate any morphologic evidence of active sarcoidosis. There was diffuse thickening and fibrosis of the alveolar walls accompanied by prominent alveolar cell proliferation and the presence of numerous "heart-failure" cells. These latter changes associated with medial hypertrophy of the small and medium-sized pulmonary arteries suggest that the process is most likely related to longstanding passive congestion. Only an occasional irregular focus of fibrosis could be attributed to a healed granuloma; however, this is a matter of conjecture.

We were unable to demonstrate any evidence of active extrapulmonary sarcoidosis or other granulomata. Microscopic sections of several enlarged mediastinal lymph nodes revealed poorly demarcated hyalinized areas which could readily be interpreted as healed sarcoid nodules (Fig. 4A). Epithelioid or giant cells of the Langhans type could not be identified. Multiple sections of both the liver and spleen also showed small hyalinized nodules which again could represent healed generalized sarcoidosis (Fig. 4B).

In summary, the patient had a marked generalized arteriosclerosis highlighted by complete thrombotic occlusion of the left renal artery and a hypotrophic left kidney. The gradual diminution in luminal caliber of the left renal artery most likely compromised the circulation to the kidney resulting in renovascular hypertension simulating a Goldblatt kidney. The involved ischemic kidney also showed focal glomerulonephritis. It is of interest to note that focal glomerulonephritis occurs not only in subacute bacterial endocarditis, but also in many other diseases such as lupus erythematosus, Goodpasture's syndrome, Wegener's granulomatosis, periarteritis nodosa, the nephrotic syndrome, and primary hypertension.[10]

Dr. Flynn: I was interested in knowing whether the abdominal and back pain of which the patient complained might have been correlated with the development of the renal thrombosis. Also, could it be possible that fragments of clots from the thrombosed left renal artery repeatedly broke off and gave rise to glomerulonephritis? In such a situation, you would not expect steroids to reverse this picture of focal glomerulonephritis.

Dr. Karpas: Classically, focal glomerulonephritis in subacute bacterial endocarditis was attributed to the fragmenting of vegetations with repeated embolism to the glomeruli and the production of hyaline intracapillary thrombi. However, some authorities have noted that embolic glomerulonephritis could be due to the lodgment of bacteria rather than thrombotic vegetations in the capillaries. They further suggested that bacteria most frequently produced a glomerular capillary thrombosis. However, there is no unanimity of opinion in regard to this pathogenesis. I feel that the possibility of small emboli discharged from the thrombus in the left renal artery in this case cannot be entirely ruled out. Furthermore, the evidence of chronicity in the focal glomerulonephritis is a cogent argument in favor of Dr. Flynn's interpretation.

Dr. Flynn: We did not attempt an aspiration biopsy of the left kidney because of the patient's physical condition. But perhaps if we had made a more vigorous attack on this problem with the aid of renal arteriograms, we would have identified this Goldblatt kidney effect. Presumably a left nephrectomy would have solved this problem.

Lewis Bronstein, M.D.: Renal arteriograms were initially considered, but on the attempted retrograde pyelogram the ureteral orifice appeared quite small, and we began to think in terms of a congenitally small kidney. From another point of view, is it possible that the ureter would diminish in caliber along with the kidney atrophy due to gradual renal artery thrombosis?

Dr. Karpas: The upper portion of the ureter may or may not be supplied in part by the renal artery, although usually in part by a branch of the internal spermatic artery. The pelvic portion of the ureter is usually supplied by the superior vesical and middle hemorrhoidal arteries. Consequently, blockage of the renal artery alone would not be likely to affect the ureter significantly.

At autopsy, the ureter in this case was not unusually small; the difficulty during catheterization may have been only a technical one. I have seen many post-nephrectomy cases in which long after the operation the remaining portions of the ureters were intact up to the point where they had been transected, and over-all such segments appear to retain a normal diameter.

Final diagnoses

1. *Left renal artery thrombosis with focal glomerulitis and hypertension, and acute and chronic left pyelonephritis*

2. *Bilateral bronchopneumonia, marked; chronic passive congestion, marked, with pulmonary hypertension*

3. *Hypertensive cardiomegaly* (*500 Gm.*)

4. *Sarcoidosis* (*clinical*); *hyaline nodules in hilar lymph nodes, spleen, and liver* (*healed sarcoidosis*)

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Correlation Conferences in Radiology and Pathology

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Mass at Lower Midline of Abdomen

Case history

Richard L. Humphreys, M.D.[*]: A fifty-three-year-old man was admitted with a chief complaint of pain at the lower midline of the abdomen. His past history revealed that two years ago he had had a ruptured appendix. Since then he had gradually lost about 50 pounds. He had recently felt better but began to experience frequency, dysuria, and nocturia about two weeks before the time of his admission. He complained of pain of the lower midline of the abdomen which gradually became more severe during this period. He experienced no nausea or vomiting. He is diabetic.

Physical examination gave negative findings except for the presence of a rather soft mass approximately 15 cm. in diameter located in the midline in the lower part of the abdomen. It was slightly tender and appeared to be fixed in position.

Alfred Berne, M.D.[†]: The preliminary film shows most of the outline of the right kidney. I think it is normal. The left kidney is very difficult to discern on the preliminary film, but on subsequent films with opacification I think you can see the kidney, and its shape seems normal. The psoas shadows are well visualized. There is an ill-defined homogeneous increased density in the region in which the mass was palpated. There are several phleboliths in the pelvis, but I see no pathologic calcification. The contrast material seems to be excreted equally on each side, and the calyces and pelves seem grossly normal. When the patient is prone the superior surface of the anterior portion of the bladder does not fill out very well as though the mass is somewhat anterior and compromises the anterior portion of the bladder dome. When the patient is supine, no irregularity of the bladder is visualized.

E. Robert Heitzman, M.D.[**]: A barium enema was done, and the findings were normal. There was no displacement of the colon nor was there any impression on it. We also have a cystogram and can look further at the bladder abnormality which has been described.

Dr. Berne: The cystogram shows multiple rounded defects in the superior and anterior portion of the bladder shadow (Fig. 1A). They look like large mucosal folds. When the patient is supine and films are taken with a horizontal beam, it appears that a mass projects into the bladder from in front (Fig. 1B). The erect film shows the same sort of thing: an extrinsic pressure defect with large folds about it.

One of the first things to consider is that the changes are due to a congenital abnormality, that is, that they represent abnormalities secondary to a urachal cyst.[††] All of the findings could be explained if such

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[††] Lowman, R. M., Waters, L. L., and Stanley, H. W.: The roentgen aspects of the congenital anomalies in the umbilical region, Am. J. Roentgenol. **70:** 883 (1953).

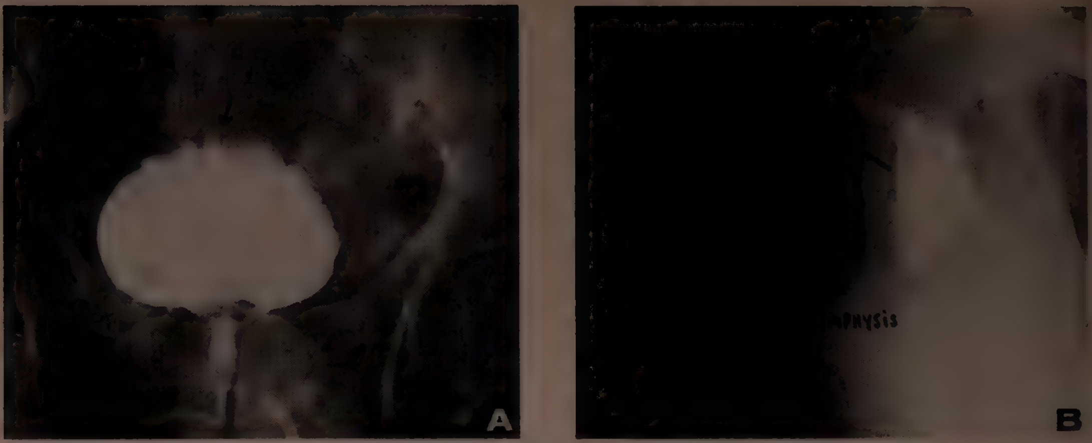

FIGURE 1. Cystograms. (A) Frontal film demonstrates marked irregularity of dome of bladder (arrows) secondary to localized edema of mucosal folds in this area. (B) Lateral film from barium air contrast cystogram. Patient supine and film made with horizontal beam. Mucosal edema (arrow) and impression on anterior superior surface of bladder (crossed arrows) are well shown.

a cyst became infected, increased in size, and impressed on the bladder. The local prominence of bladder mucosal folds could represent contiguous bladder inflammation. Another possibility is an infected diverticulum of the bladder secondary to an occlusion of the neck of a diverticulum. This certainly does not seem a likely possibility. The changes do not appear to be representative of an infiltrating lesion of the bladder or the primary neoplasm of the bladder. A tumor of other origin which has attached itself to the bladder seems an unlikely possibility to me because of the location of the mass and the description of its consistency.

Dr. Berne's diagnosis

Infected urachal cyst

Dr. Humphreys: At surgery, a large abscess cavity was entered, and about 30 cc. of purulent material were evacuated. This was indeed felt to represent an infected urachal cyst. It was marsupialized and packed.

Bedros Markarian, M.D.*: We received a 3-by 1-by 1-cm. fragment of tissue labeled "cyst wall." Microscopic examination reveals a great deal of collagenous scar tissue and some fatty tissue. There is a patchy accumulation of chronic inflammatory cells within the fatty areas. No epithelial lining is present to give us a clue as to the origin of this cyst wall. It is not uncommon for the epithelial lining of a cyst under pressure to undergo atrophy. The pathologist must then depend on the surgeon to supply us with an adequate history and description of his findings. In this case I think that the gross and histologic findings are compatible with the diagnosis of an infected urachal cyst.

Dr. Heitzman: The urachus represents a persistence of the allantois. This can remain patent from the bladder to the umbilicus. The allantois may fail to obliterate anywhere along the tract from bladder to umbilicus resulting in the formation of a urachal cyst. Sometimes these may communicate with the bladder. This lesion represented a large infected urachal cyst located immediately above the bladder producing secondary inflammatory changes in the bladder wall just as Dr. Berne predicted.

Final diagnosis

Infected urachal cyst

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Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Endotracheal Suction and Death

SUCTIONING OF THE trachea is a more hazardous procedure than commonly appreciated. (1) The insertion of a catheter into the trachea may produce cough, laryngospasm, or bronchospasm as a reaction to the foreign body and precipitate an acute hypoxic episode. (2) The placement of the catheter presents an obstruction to airflow; this is particularly pertinent when the airway has already been narrowed by an endotracheal or a tracheostomy tube.[1] (3) Suction via the catheter imposes a burden on the efforts at ventilatory exchange of the spontaneously breathing patient, while air exchange is interrupted totally in the apneic patient who is artificially ventilated by an intermittent positive pressure breathing method.[1] The following 3 case reports illustrate fatalities initiated by endotracheal suctioning.

Case reports

CASE 1. A seventy-seven-year-old man with diabetes underwent abdominoperineal resection under endotracheal nitrous oxide-oxygen-halothane anesthesia with intermittent infusion of a 0.1 per cent succinylcholine solution. He left the operating room awake and breathing well. On the second postoperative day, he began to produce copious sputum. During vigorous nasotracheal suctioning, he developed respiratory arrest accompanied by a short-lasting hypotension of moderate degree. An orotracheal tube was inserted immediately, and controlled respiration was started by means of a pressure-cycled ventilator. Within ten minutes, the patient resumed spontaneous respirations which were assisted by the ventilator. A chest radiogram revealed left lower lobe pneumonia. Six hours later, while on the ventilator with 40 per cent oxygen, his arterial blood oxygen pressure was 54 mm. Hg, carbon dioxide pressure was 62 mm. Hg, and his lungs were full of secretions. While suctioning was done through the endotracheal tube, the patient had a cardiac arrest. Resuscitation was started within thirty seconds, but he was severely hypotensive for approximately five minutes. Thereafter his systolic pressure never rose above 100 mm. Hg, and his urinary output declined progressively. He continued to deteriorate despite intensive therapy and expired on the fourth postoperative day.

CASE 2. A fifty-five-year-old man was admitted to the hospital with fever, cough, chills, weakness, and dyspnea. Ten months previously, he had undergone segmental resection and decortication of the upper lobe of the left lung because of bronchiectasis and hemoptysis. The surgical specimen disclosed aspergillosis. Postoperatively he had developed a bronchopleural fistula which responded well to a tailored thoracoplasty. At the present admission, positive physical findings were rales in the right lung base, cardiomegaly with a loud apical systolic murmur, and a temperature of 38.6 C. Chest radiogram showed a lower-lobe infiltrate of the right lung. The patient was started on antibiotic therapy and was given oxygen by nasopharyngeal catheter. He improved considerably. On the following day, because of

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severe pleuritic pain of the right side, 50 mg. of meperidine hydrochloride were administered intramuscularly. Four hours later, the patient was lethargic. Blood gases drawn at this time disclosed an oxygen saturation of 97.8 per cent, a carbon dioxide tension of 65 mm. Hg, and a pH of 7.12. An orotracheal tube was inserted immediately, and respirations were assisted by a pressure-cycled ventilator with room air. Over the next several hours, the patient became significantly less lethargic. During the night, after transendotracheal catheter suctioning, his pulse rate suddenly dropped to 20 to 30 per minute; this was followed rapidly by cardiac arrest. Resuscitative measures were unsuccessful.

Case 3. A sixty-seven-year-old markedly obese and moderately hypertensive woman underwent right upper lobectomy for removal of a malignant tumor under endotracheal nitrous oxide-oxygen-halothane anesthesia. The surgical procedure which was technically difficult because of severe inflammatory reaction around the hilum lasted five and one-half hours. Postoperatively, respirations were assisted intermittently by a pressure-cycled ventilator for thirty-six hours after which time the endotracheal tube was removed. However, four hours later the patient was in obvious respiratory distress, and a tracheostomy was performed. Respirations were again assisted by a ventilator. Secretions were a constant problem, and frequent suctioning was required. On the ninth postoperative day, after suctioning during which the patient became cyanotic, her blood gases showed an oxygen saturation of 58 per cent, carbon dioxide tension of 43 mm. Hg, and pH of 7.25. Shortly thereafter, she had a cardiac arrest. Although resuscitative measures were instituted immediately, the patient expired.

Comment

Electrocardiographic studies of 110 endotracheal intubations during cyclopropane anesthesia revealed that the significant factors responsible for the appearance of ventricular arrhythmias associated with or following endotracheal intubation are decreased arterial oxygen tension, increased arterial carbon dioxide tension, or both.[2] The same factors predispose to the cardiac dysfunction associated with endotracheal suctioning.

Cases 1 and 3 gave evidence of low oxygen tension while in case 2 increased carbon dioxide was suspect. Another hazard is the development of a negative intrapulmonary pressure from the negative intra-airway pressure necessary to aspirate foreign material.[1]

Five precautions may be recommended to improve the safety of endotracheal suctioning:

1. Hyperventilation with 100 per cent oxygen for two to three minutes prior to suctioning. Direct polarographic arterial oxygen tension determinations have shown that the oxygen uptake is very rapid, and arterial oxygen tensions rise quickly during inhalation of 100 per cent oxygen; on resumption of breathing room air, it takes approximately two minutes for the oxygen tension to fall to preoxygenation levels.[3]
2. Use of the smallest catheter which will achieve proper suctioning.
3. Use of a suction catheter with a side arm sufficiently large in diameter to prevent unnecessary suction during insertion and removal of the catheter.[1]
4. Limitation of the duration of suctioning with rest periods between active suctioning periods.
5. Oxygenation with or without hyperventilation during the rest periods.

These precautions should be taught to all medical and paramedical personnel who undertake endotracheal suctioning in the recovery room or intensive care unit.

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Case Reports

Exotic Angina Pectoris

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A CONSISTENT CLINICAL expression of coronary artery insufficiency is ischemic myocardial pain. Ostensibly, the syndrome angina pectoris is caused by an acute transitory coronary artery insufficiency and has been universally defined as an episodic oppressive retrosternal pain of limited duration, more often less than three minutes, radiating into the shoulders and inner aspects of the arms, usually provoked by extracardiac factors increasing myocardial demands for coronary blood flow such as exertion, exposure to inclement weather, eating, and excitement and alleviated by rest and sublingual nitroglycerin. The studies of Blumgart, Schlesinger, and Zoll[1] have demonstrated that, in the absence of aortic or mitral valvular disease and systemic or pulmonary hypertension, the syndrome of angina pectoris is associated with at least one remote complete occlusion and an average of 2.9 occlusions plus extensive atherosclerotic coronary artery stenosis. Because objective data, including electrocardiographic, are often lacking and the condition only suspected by an alert appraisal of a reliable history of the patient, the diagnosis of this grave manifestation of a compromised coronary artery circulation may not be obvious. In the following case routine electrocardiograms and the physical stress test were not informative, but the emotional influence of anxiety provided an unusual electrocardiographic response with classic anginal pain.

Case report

A white male, an endomorphic mesomorph, forty-three years of age, sought admission to The Kingston Hospital on August 1, 1966, because of a history suggestive of ischemic heart disease. He initially experienced retrosternal oppressive pain of ten minutes duration one hour after moderate swimming on July 24, 1966. Another similar episode occurred after playing shuffleboard on July 29, 1966, but neither seemed intimately related to activity, and seriate electrocardiograms disclosed no abnormalities. In the interval prior to admission, he noted no discomfort with ordinary physical activities.

Physical examination revealed no evidence of patent cardiovascular disease. Absent were hypertension, retinopathy, cardiomegaly, and adventitious sounds over the precordium. Conventional studies of the blood, including enzymes and cholesterol, were within normal limits. Coronary-prone tendencies were associated with job responsibility as evidenced by exaggerated sense of urgency of time, anxiety, tension, and inability to relax. A routine electrocardiogram demonstrated no pertinent abnormalities (Fig. 1).

The early clinical course in the hospital was characterized by frequent episodes of classic ischemic myocardial pain, all at rest and many with nocturnal rest and dreaming, and all promptly alleviated by sublingual nitroglycerin. The patient appeared overly disturbed by these episodes and developed marked tension despite mild sedation and reassurance.

On August 19, 1966, during the recording of an electrocardiogram at rest in bed, he suffered classic ischemic myocardial pain with pronounced RS-T elevations (Fig. 2A) and an episode of ventricular tachycardia (Fig. 2B). With prompt alleviation of the discomfort by sublingual nitroglycerin, the electrocardiogram returned to normal within five minutes (Fig. 3A). Shortly there-

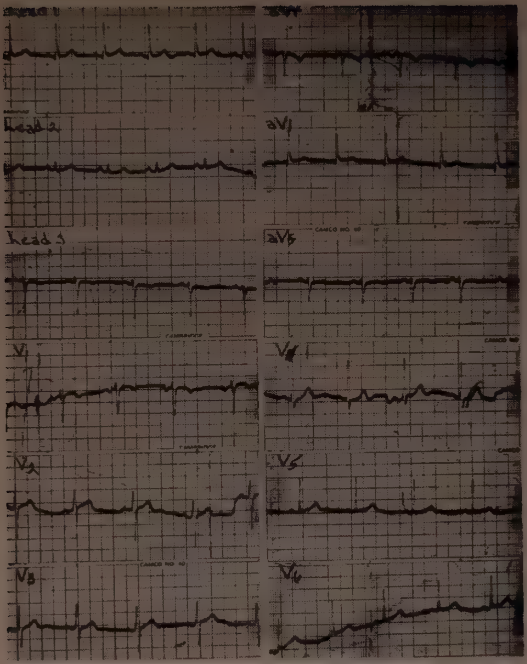

FIGURE 1. Routine electrocardiogram demonstrating no pertinent abnormalities.

after a double Masters stress test was free from any clinical or electrocardiographic evidence of coronary artery insufficiency (Fig. 3B).

The patient manifested no discomfort while ambulant until the recording of another rest electrocardiogram on August 25, 1966, when again the noted abnormalities recurred, obviously related to emotional tension (Fig. 4). The patient stated, "I felt all right but was worried that the test would show heart disease, and then I got the pain." Following discharge from the hospital on August 26, 1966, the patient's return to ordinary physical activity was unaccompanied by any signs or symptoms of coronary artery insufficiency with a regimen of mild sedation and superficial psychotherapy, including reassurance.

Comment

Prinzmetal *et al.*[2] in September, 1959, initially described a "variant form of angina pectoris" differing from the classic syndrome in that the pain is not evoked by effort but rather occurs at rest or with ordinary activity, RS-T segment elevations are noted rather than RS-T depressions, R waves become taller during attack, ventricular tachycardia frequently (50 per cent) appears, stress tests fail to reproduce the pain or electrocardiographic alterations, and the locations of future myocardial infarctions are predictable, arising in the same area as the RS-T segment elevations observed during the attack of pain. Significant atherosclerotic stenosis of a single major coronary artery was purported to be the major abnormal condition of the angina, and the pain was attributed to a normal

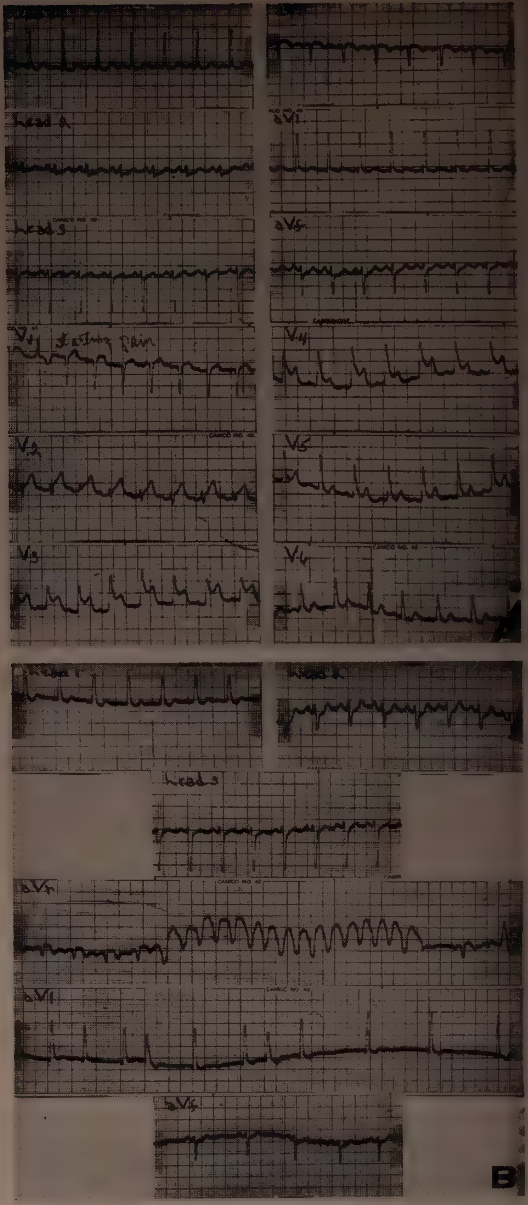

FIGURE 2. August 19, 1966. Electrocardiograms. (A) Pronounced RS-T elevations V_3 and V_4. (B) Episode of ventricular tachycardia (aVr).

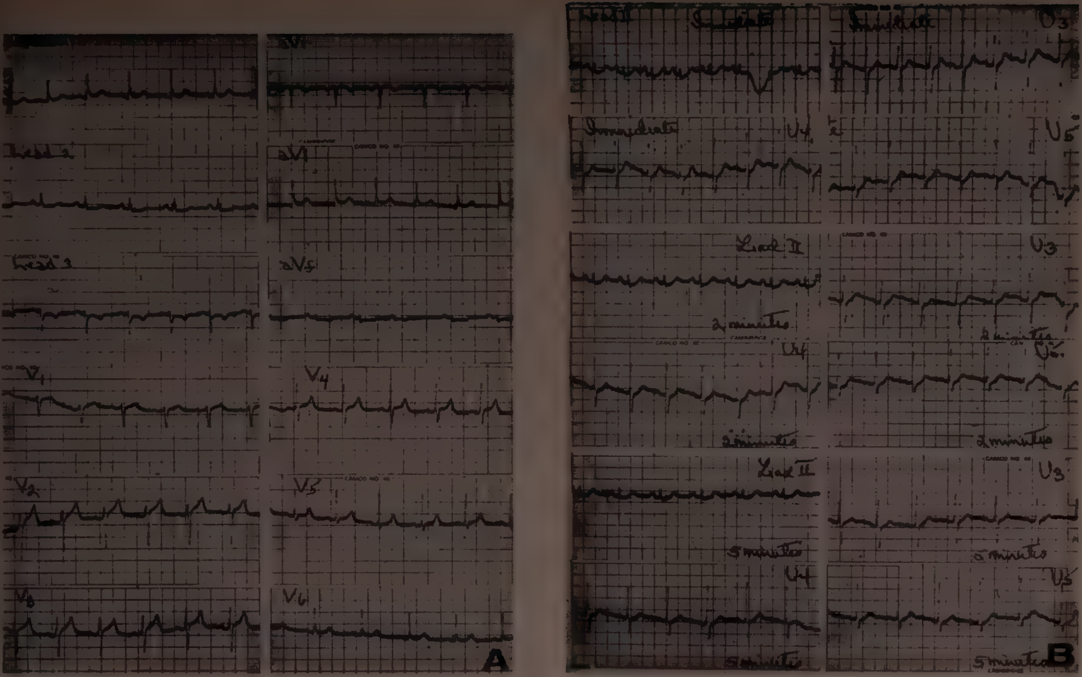

FIGURE 3. August 19, 1966. Electrocardiograms. (A) After alleviation of discomfort by sublingual nitroglycerin, electrocardiogram returned to normal within five minutes. (B) Electrocardiogram free from any clinical or electrocardiographic evidence of coronary artery insufficiency after stress test.

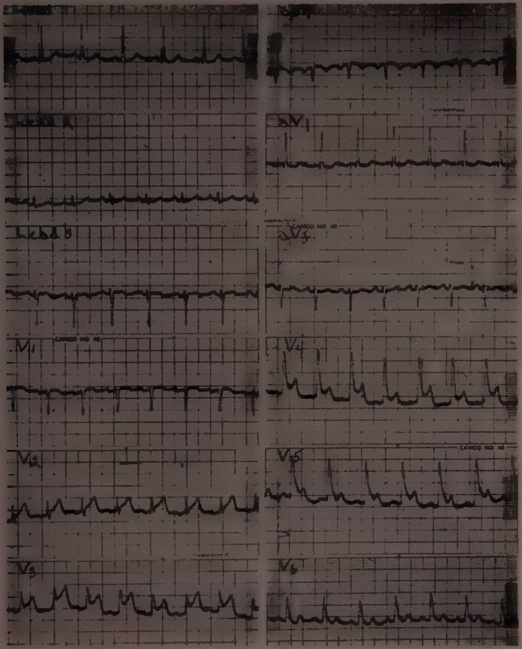

FIGURE 4. August 25, 1966. Abnormalities recurred, related to emotional tension.

increase in tonus of the vessel wall with temporary occlusion.

This case fulfills many of the criteria of "variant angina pectoris" but differs in that the anginal pain appeared related to emotional disturbances. Emotional factors have long been recognized to play an important role in clinical coronary artery disease. Sigler[3] described psychic trauma and emotional strain producing electrocardiographic abnormalities in some predisposed individuals. The changes were variable and apt to occur in the presence of appreciable coronary artery disease. Hall[4] demonstrated myocardial and coronary artery damage in dogs following overactivity of the parasympathetic nervous system. Fisher[5] believes cardiac patients often report a history of gradual increase of life stress situations prior to heart disease and that sufficient evidence has accumulated to indicate that the psychologic factors are related to the development of heart disease.

Russek[6] believes that emotional factors not only effect an acute coronary episode such as angina pectoris but envisions a possible ultimate myocardial infarction via acceleration of blood clotting, tachycardia, elevation of blood pressure, and necrotizing myocardial hypoxia. He is convinced that these personality traits and behavior patterns are characteristic of the young candidates for ischemic heart disease.

Our subject patently manifested stress and strain of job responsibility, and his recorded clinical and electrocardiographic reaction to emotional stimuli, in the light of the observations of Prinzmetal *et al.*,[2] forebodes progressive ischemic disease.

Conclusion

A case is reported of unusual electrocardiographic alterations accompanying the anginal syndrome precipitated by emotion. Noteworthy was the failure to elicit clinical or electrocardiographic evidence of coronary artery insufficiency by a conventional physical stress test.

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Allergy to fluoride

Seven patients, 6 children and 1 adult, showed various allergic reactions after using tooth paste and vitamin preparations containing fluoride. Urticaria, exfoliative dermatitis, atopic dermatitis, stomatitis, gastrointestinal allergy, and respiratory allergy were among the manifestations. In the adult patient, the etiologic relationship was confirmed by a double-blind test and in one of the children by means of a patch test. There was prompt improvement when fluoride-containing preparations were discontinued. All other measures to control the condition had failed.

The adult patient was a man forty-eight years old who came for treatment with a massive urticaria. Mainly covering the hands and feet, the lesions sometimes involved the entire body area. The patient had been using a fluoride tooth paste; the lesions usually appeared about a half hour after breakfast. The other patients were all girls ranging in age from six weeks to nine years. For the adult, who consented to the test, three identical-appearing bottles were prepared, all containing distilled water, but with one also containing fluoride. This was added in a proportion of 2.2 ml. sodium fluoride per 15 cc. water, equal to 1 mg. fluoride per tablespoon of water. The patient took 1 tablespoon of the fluid daily from the first bottle for the first week, the second bottle the second week, and the third bottle the third week. In the girl who was tested, patch tests were done for chewing gum, candy, a fluoride tooth paste, and a nonfluoride tooth paste.

J. J. Shea, M.D., S. M. Gillespie, M.D., and G. L. Waldbott, M.D., who conducted this experiment and reported it in a recent issue of *Annals of Allergy*, stated that when the adult patient got to the second bottle, the one containing the fluoride, he developed pruritus and edema in the distal joints of his extremities. He continued taking the fluid despite development of the lesions for three days more, developing hives on his right elbow, and pains in the lumbosacral area. These symptoms disappeared two days after he stopped taking the contents of this bottle.

The girl reacted positively to the fluoride tooth paste patch test, showing a 2 plus reaction. She also experienced a flare-up of the oral lesions and had severe abdominal pain accompanying the positive patch reaction. All symptoms subsided when she changed to nonfluoride dentifrices.

Isolated Calcific Pulmonic Stenosis

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ISOLATED CALCIFIC PULMONIC stenosis is an entity which is seldom encountered. To our knowledge only 1 case has been reported in the literature which was subsequently proved by cardiac catheterization and open-heart surgery.[1] The following case is of interest because of the marked calcification found in the pulmonic valve in the absence of organic disease of the aortic, mitral, and tricuspid valves and because for years the patient was diagnosed as having rheumatic heart disease with mitral and aortic valvular disease.

Case report

The patient was a forty-two-year-old Negro male who was admitted on May 5, 1963, for cardiac catheterization. He first came to the attention of the cardiac clinic in 1960 when he complained of marked fatigability, extreme shortness of breath, orthopnea, ankle edema, and chest pain. The electrocardiogram revealed atrial fibrillation, right axis deviation, incomplete right bundle-branch block, and right ventricular hypertrophy. He was treated with digoxin and chlorothiazide and responded rather well. An attempt at cardiac catheterization at the time was technically unsuccessful.

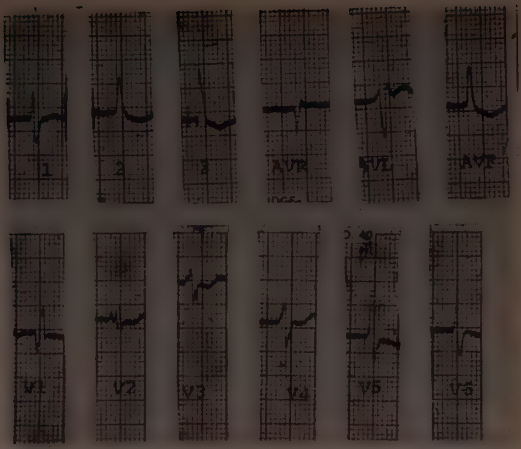

FIGURE 1. Patient's electrocardiogram demonstrating atrial fibrillation, right axis deviation, and right ventricular hypertrophy.

From 1960 to 1963 his cardiac status declined progressively. His failure became increasingly more difficult to control, and he was often dyspneic at rest. He had no hemoptysis, syncope, strokes, or anginal chest pains. He had been told by his parents that at age seven he had had acute rheumatic fever and that he had been left with a heart murmur.

Physical examination revealed a well-developed, thin, Negro who appeared chronically ill. He had a chronic, dry, hacking cough and was dyspneic at rest. The blood pressure was 120/80, pulse 84 per minute and irregular, and respirations 22 per minute. The neck veins were markedly engorged and expanded during systole. The chest was symmetrical and moved well with respiration. Moist inspiratory rales were present at both lung bases. Examination of the heart revealed that the point of maximal impulse was displaced to the sixth intercostal space at the anterior axillary line. A systolic thrill was palpable at the apex and along the lower left sternal border. There was a left parasternal heave. The first heart sound was soft, and the second heart sound was single at the base and not accentuated. A prominent third heart sound was audible at the base and at the apex. A Grade III high-pitched pansystolic murmur was heard at the apex and radiated to the axilla. A Grade III harsh systolic crescendo-decre-

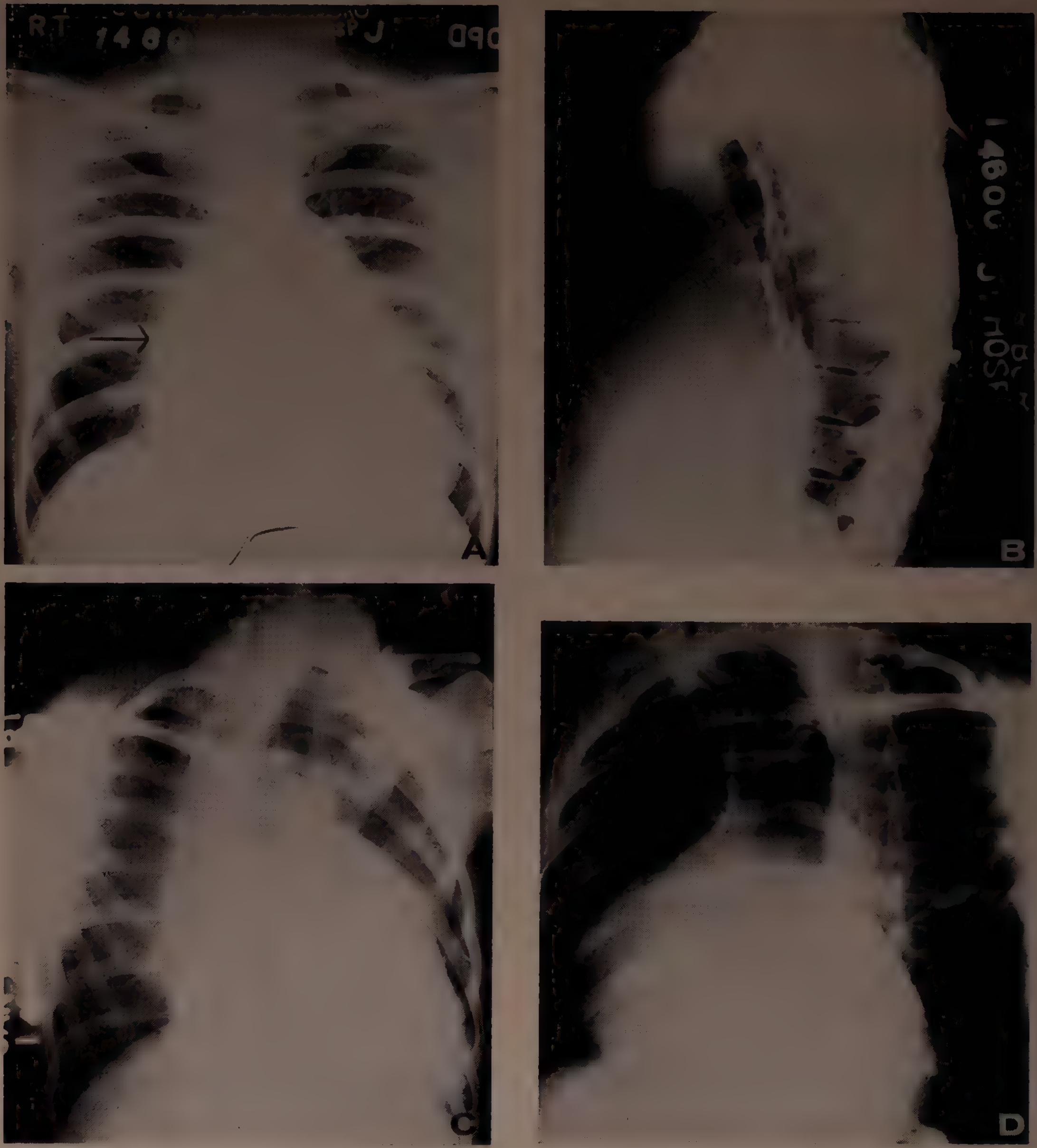

FIGURE 2. Roentgenograms. (A) Posteroanterior view showing prominent pulmonary arterial segment. Convexity along superior portion of border of right side of heart (arrow) interpreted as representing enlarged left atrium. (B) Lateral view demonstrating posterior displacement of barium-filled esophagus. (C) Right anterior oblique view revealing prominent main pulmonary artery segment. (D) Left anterior oblique view. Overlapping of spine by heart thought to represent large left ventricle. Right atrium enlarged.

scendo murmur which appeared to begin with the first heart sound was heard best in the aortic area but heard well all along the left sternal border. This murmur did not radiate to the neck and did not change with respiration. The liver was enlarged, 7.5 cm. below the right costal margin, firm, tender, and pulsatile. There was 4 plus pedal edema but no clubbing or cyanosis of the extremities.

The venous pressure was 26 cm. of water, and the dehydrochloric acid (Decholin) circulation time, arm to tongue, was twenty-five seconds.

Laboratory findings were hemoglobin 12 Gm. per 100 ml.; hematocrit 30; and

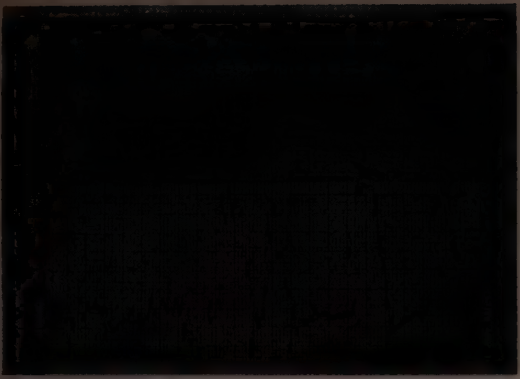

FIGURE 3. Withdrawal tracing from pulmonary artery to right ventricle demonstrating valvular stenosis. No infundibular gradient recorded.

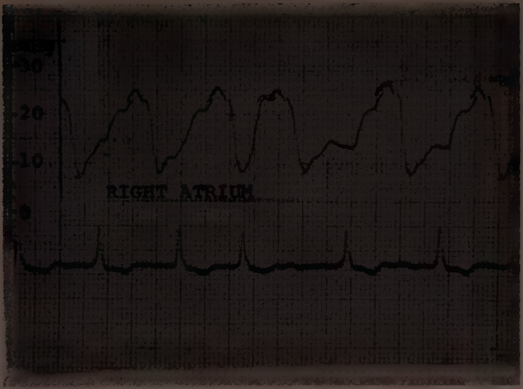

FIGURE 4. Prominent regurgitant wave in right atrial pressure pulse indicative of tricuspid regurgitation.

white blood count 4,800 with normal differential, erythrocyte sedimentation rate, C-reactive protein, VDRL test result, fasting blood sugar, and serum electrolytes. Blood urea nitrogen was 35 mg. per 100 ml., the serum glutamic oxalopyruvic transaminase 77 units, and the prothrombin time 25 seconds with control 15 seconds. Urinalysis revealed 2 plus proteinuria and 1 to 3 hyaline casts per high-power field.

The electrocardiogram revealed atrial fibrillation, right axis deviation, incomplete right bundle-branch block, and right ventricular hypertrophy (Fig. 1).

Four cardiac views with a barium-filled esophagus revealed marked right ventricular enlargement with a prominent pulmonary arterial segment (Fig 2). The barium-filled esophagus was displaced to the right and posteriorly suggesting an enlarged left atrium. The left anterior oblique view showed the apex of the heart extending beyond the vertebral column suggesting a large left ventricle. The lung fields were clear. The deviation of the esophagus to the right and the prominence at the superior portion of the border of the right side of the heart was interpreted as representing a huge left atrium.

The consensus at this time was that the biventricular and the left atrial enlargements were caused by combined mitral valvular regurgitation and stenosis. It was felt that tricuspid regurgitation was present on the basis of right ventricular hypertension. On May 7, 1963, the patient underwent cardiac catheterization of the right and left sides of the heart. The left ventricle was entered with a catheter passed retrogradely from the femoral artery. The left atrium was entered by the transseptal technic. It was extremely difficult to pass a catheter into the pulmonary artery. However, this was eventually achieved, and a withdrawal tracing across the pulmonic valve revealed a peak systolic gradient of 60 mm. Hg between the pulmonary artery and the right ventricle. The continuous withdrawal tracing was typical of that seen in pulmonary valvular stenosis (Fig. 3). Simultaneous pressures taken from the left atrium, left ventricle, and the brachial artery failed to reveal abnormal gradients across the mitral or aortic valves. The right atrial and right ventricular end-diastolic pressures were greatly elevated, and there was evidence of marked tricuspid regurgitation in the right atrial pressure pulse (Fig. 4). The left ventricular end-diastolic pressure was not clearly defined, however; it was probably normal in view of the normal left atrial pressure. The cardiac output was diminished. The catheterization data are tabulated in Table I.

Cineangiography performed after injection of contrast material into the left atrium demonstrated a normal-sized left atrium, left ventricle, and aorta. The left ventricle filled and emptied well ruling out a constrictive or restrictive process. There was no left-to-right shunt. An injection into the right ventricular chamber revealed marked narrowing of the right ventricular outflow tract and marked dilatation of the main pulmonary artery (Fig 5). Angiocardiographically, the obstruction appeared

TABLE I. Cardiac catheterization data

Type	Amount
Ventilation (liters per minute, standard temperature and pressure, dry)	7.91
Oxygen consumption (cubic centimeters per minute)	223
Oxygen consumption (cubic centimeters per minute per square meter of body surface)	130
Arterial oxygen capacity (volumes per cent)	16.30
Arterial oxygen content (volumes per cent)	15.82
Arterial oxyhemoglobin saturation (per cent)	98.5
Arteriovenous oxygen difference (volumes per cent)	5.24
Cardiac output (liters per minute)	4.26
Cardiac index (liters per square meter of body surface)	2.38
Pressures (mm. Hg)	
Right atrium	18
Right ventricle	90/17
Pulmonary artery	30/14
Pulmonary artery mean	20
Left atrium	11
Left ventricle	104/–
Aorta	116/76
Aorta mean	89
Pulmonary vascular resistance (dynes-second-centimeter^{-5})	169
Systemic vascular resistance	1,400

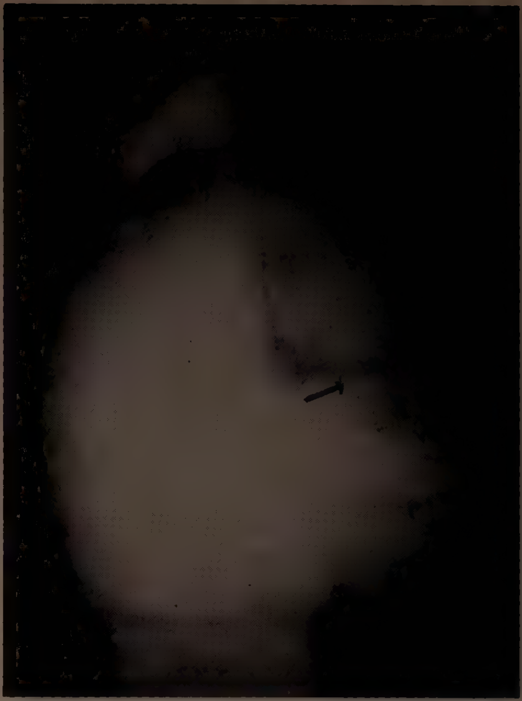

FIGURE 5. Angiocardiogram revealing marked narrowing of right ventricular outflow tract (arrow). Valvar stenosis could not be defined. Note huge right atrium, right ventricle, and main pulmonary artery.

to be infundibular in nature. It was not possible to define the valvular stenosis that was demonstrated by the withdrawal pressure tracings.

Following intensive medical therapy, the patient showed marked improvement and was subsequently readmitted for open-heart surgery.

At surgery, a moderate amount of pericardial fluid was found. An intense systolic thrill was palpable over the right atrium, and moderate systolic thrill was palpable over the right ventricular outflow tract. The right atrium, right ventricle, and pulmonary artery were huge. The left atrium and left ventricle were normal in size. With the patient on complete cardiopulmonary bypass, the pulmonary artery was opened. The pulmonic valve was noted to be markedly calcified and had an opening which was less than 0.5 cm. in diameter. The infundibulum was also markedly thickened. The pulmonic valve was then widely opened and the arteriotomy closed. Although the heart action appeared to be quite good at this time, there was a considerable amount of hemorrhage and diffuse oozing from many surfaces which was difficult to control. The patient's myocardial function then began to falter, and it was impossible to maintain a blood pressure. He then went into ventricular fibrillation, and all attempts at resuscitation were to no avail. Unfortunately, no postmortem examination was performed.

Biopsy of the right atrial appendage did not reveal the presence of Aschoff bodies or inflammatory activity compatible with rheumatic heart disease.

Comment

Calcific pulmonic stenosis is a rare entity whether encountered in rheumatic or congenital heart disease and whether it occurs alone or in combination with other valvular disease. Northway and Abrams[1] reported a case of calcific pulmonic stenosis in a forty-year-old male which was diagnosed preoperatively and confirmed at surgery. There was no other valvular disease. McGinnis, Eyler, and Alvarez[2] described a case of pulmonic valvular calcification, the location of which was proved with angiography. There was no mention of surgical or autopsy corroboration, nor was the status of the other three valves mentioned. Brock[3] in his discussion of congenital pulmonic stenosis states that "exceptionally the valve may be calcified."

In our case we effectively ruled out stenosis of the mitral, tricuspid, and aortic valves by cardiac catheterization. Angiography ruled out gross anatomic deformities of the mitral and aortic valves. The tricuspid regurgitation was felt to be secondary to the prolonged right ventricular hypertension.

It is difficult to state with certainty the cause of his heart disease. Although our patient stated that he had had rheumatic fever as a youngster, we have no way of verifying or corroborating the accuracy of that diagnosis. The right atrial biopsy showed nothing suggesting old or recent rheumatic activity. It is of interest to note that although there is frequent involvement of the pulmonic valve during active, acute, rheumatic carditis,[4-6] pulmonic stenosis in chronic rheumatic heart disease is an extreme rarity.[4,7,8]

There was no past history of cyanosis, flushing, asthma attacks, or diarrhea to suggest a carcinoid syndrome. Similarly, there was nothing in his history to suggest an episode of subacute bacterial endocarditis. A congenital cause is by far the most likely.

The factors responsible for calcification of valvular tissue are incompletely understood, and therefore the question of why a diseased or deformed pulmonic valve is infrequently calcified remains unanswered.

Of interest is the fact that for many years this patient was considered to have rheumatic heart disease with mitral regurgitation, mitral stenosis, and aortic stenosis. The x-ray findings were erroneously interpreted as showing, in addition to the large pulmonary artery and right ventricle, a large left atrium and left ventricle, thus emphasizing the difficulty one may have in applying ordinarily useful radiologic criteria for left atrial and left ventricular enlargement in the presence of a huge right ventricle. The presence of a loud pansystolic murmur and a third heart sound at the apex and a crescendo-decrescendo murmur to the right of the upper sternum fortified the erroneous impression of combined mitral and aortic valvular disease.

Summary

Calcific pulmonic stenosis is a rare entity. A case of a forty-two-year-old Negro male, who for many years was regarded as having rheumatic heart disease, is presented. Cardiac catheterization established the diagnosis, localized the obstruction to the pulmonic valve, and demonstrated the presence of marked tricuspid regurgitation. Angiocardiography revealed extensive hypertrophy of the right ventricular outflow tract. There was no evidence of mitral or aortic valve disease. At surgery, severe calcific pulmonic valvular stenosis was encountered. A valvotomy was performed, but the patient did not survive the procedure. The pertinent literature on the subject is discussed.

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Concurrent, Symptomatic, Sliding Hiatal Hernia and Parasternal Hernia (Hernia of Morgagni)

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PARASTERNAL HERNIA is the least common of the congenital diaphragmatic hernias.[1,2] In Harrington's[3] report of 404 congenital diaphragmatic hernias, only 8 were of the parasternal variety. The liver, omentum, or bowel can incarcerate in this type of hernia so that once a diagnosis is made, surgical repair is generally indicated. Occasionally the hernia may be incorrectly diagnosed as a pericardial cyst or mediastinal tumor, and the true abnormal condition found only at thoracotomy.

The present case report concerns a patient who had a symptomatic, sliding hiatal hernia and, at the same time, a different set of symptoms referable to a hernia of Morgagni. Preoperative diagnosis was made correctly by pneumoperitoneum, and satisfactory relief of symptoms resulted after transabdominal repair of both hernias during one operation.

Case report

The patient was a fifty-six-year-old female entering the North Shore Hospital on December 20, 1966. She had undergone left radical mastectomy by one of the authors (L.L.) six years prior to the present admission and had done well subsequently. Past history revealed that the patient had suffered from heartburn which had been relieved by antacids for approximately ten years. Associated with this symptom was occasional substernal burning with eructation of sour gastric contents into her mouth which became worse when lying flat and had caused her to sleep on several pillows for the past few years. In addition to this symptom complex, the patient noted a second entirely separate syndrome which she could not relate to the first set of symptoms either causally or temporally. This second set of symptoms had been present for about two years and was composed of marked subxiphoid bloating, occurring a half hour postprandially and causing the patient to sit up and crouch forward to obtain relief. Spontaneous or induced vomiting would give prompt amelioration of the subxiphoid discomfort. Past history also revealed that previous gastrointestinal series in 1962 had demonstrated a moderate-sized sliding hiatal hernia and a 3- to 5-cm. mass in the right pericardiophrenic angle.

Physical examination on admission revealed a healthy appearing white female in no acute distress. Pertinent physical findings were a well-healed left anterior chest incision extending into the axilla. The left breast was absent. Abdominal examination gave negative findings. There was no adenopathy.

Laboratory data were not remarkable except for an overnight twelve-hour gastric secretion which revealed a hyperchlorhydria with 900 ml. of gastric juice containing 41 mEq. of free hydrochloric acid.

The patient's radiologic investigation included a routine chest film revealing a 3- to 5-cm. mass in the right pericardiophrenic angle. A pneumoperitoneum revealed air in this mediastinal mass. An upper gastrointestinal series showed a sliding hiatal hernia (Fig. 1). With a diagnosis of right parasternal hernia and sliding hiatal hernia,

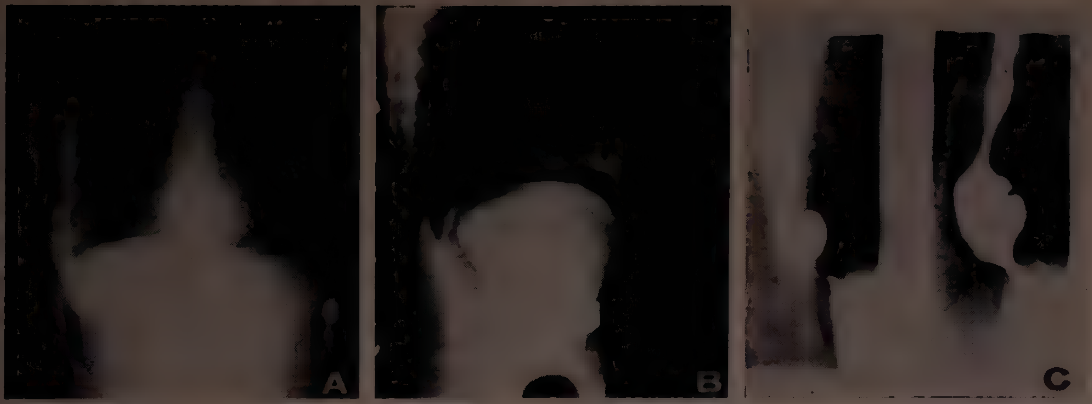

FIGURE 1. (A) Admitting chest x-ray showing hernia in right pericardiophrenic angle. (B) Pneumoperitoneum showing air in hernial sac just behind sternum and above diaphragm. (C) Admitting gastrointestinal series showing large sliding hiatal hernia.

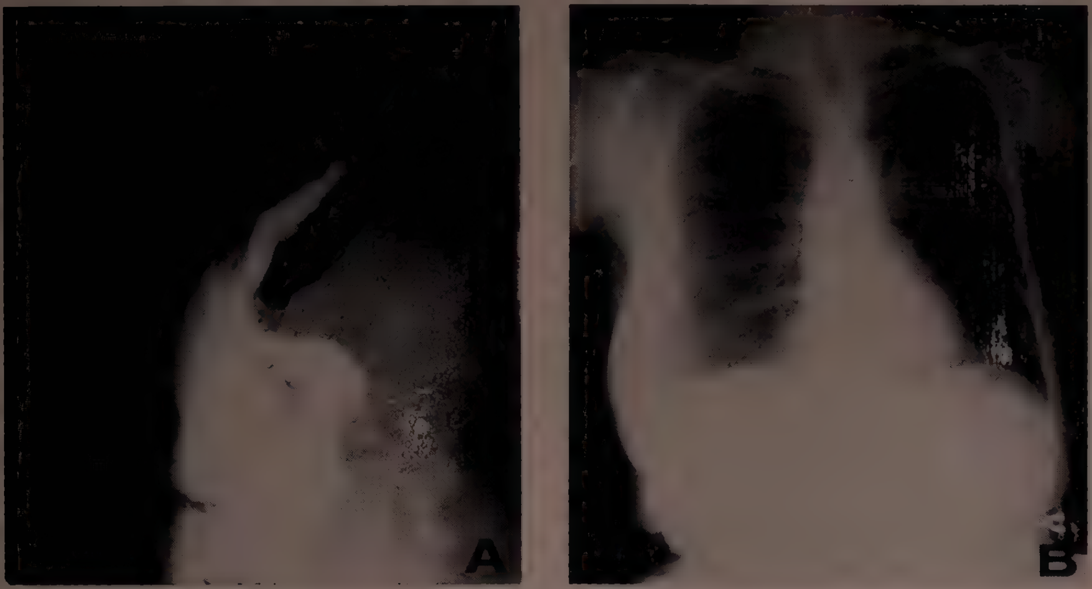

FIGURE 2. (A) Gastrointestinal series showing hiatal hernia repair three weeks after operation. (B) Chest x-ray six weeks after surgery.

surgery was elected as the best treatment for these simultaneous problems. On December 28, 1966, the patient was taken to the operating room, and both herniorrhaphies were carried out through an upper midline abdominal incision. The parasternal hernia contained some omentum and a large mass of properitoneal fat from the round ligament. No other abdominal viscera were present in the sac at the time of surgery. The hernial sac was removed with the mass of properitoneal fat, and the defect was closed with interrupted silk sutures approximating the free anterior edge of the diaphragm to the posterior surface of the posterior rectus sheath. The hiatal herniorrhaphy was then performed and combined with a vagotomy and pyloroplasty. The patient made an uneventful recovery.

Postoperatively, the substernal burning, eructation of gastric contents, and the inability to lie flat have completely disappeared. The subxiphoid bloating pain has also disappeared, but the patient noted some vague epigastric discomfort unrelated to eating or position which persisted for one month following the surgery. She is now essentially asymptomatic. Postoperative upper gastrointestinal series and chest x-ray film show both hernia repairs to be intact radiologically (Fig. 2).

Comment

Parasternal hernias are probably the rarest of the congenital diaphragmatic hernias, although the true incidence is not known. It is probable that many asymptomatic parasternal hernias go unrecorded. Because this type of hernia is sometimes associated with incarceration of peritoneal viscera, repair is indicated when the diagnosis is made. The diagnosis can usually be established by pneumoperitoneum, although occasionally the neck of the hernial sac may be obliterated by incarcerated abdominal viscera preventing peritoneal air from reaching the sac.

The parasternal hernia is more easily repaired using the abdominal approach. Transthoracic repair can be effectively performed and is necessary when mistaken preoperative diagnosis has indicated the thoracotomy for suspected mediastinal tumor or pericardial cyst. On rare occasion, if a large loop of intestine or part of the liver is in the sac, a combined thoracico-abdominal approach is necessary to safely reduce the hernia contents to the peritoneal cavity. In pediatric patients, the abdominal approach is always preferred.

In the patient presented, each lesion, namely, sliding hiatal hernia and parasternal hernia, could have been repaired with a transthoracic approach, but bilateral thoracotomy would have been necessary. Both lesions were satisfactorily repaired with an upper abdominal midline incision.

Summary

This case reports the concurrent problems of sliding hiatal hernia and hernia of Morgagni seen at the same time in the same patient. A different symptom complex was referable to each hernia. Aspects of diagnosis and operative approach are discussed.

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Medical centers erected in 31 communities

Thirty-one towns are building medical centers under the American Medical Association-Sears-Roebuck Foundation Community Medical Assistance Plan, reports an article in a recent issue of the *AMA Newsletter.*

In New York State, Cohocton, Greenville, White Lake, and North Rose have begun construction. Two towns that will build centers on commitments from physicians are Macon, Illinois; and King City, Missouri

Communities seeking additional physicians are Loyal, Wisconsin; Bayboro, North Carolina; Hawarden, Iowa; Sandstone, Minnesota; Manhattan, Montana; and Hardin and Bridgeport, Illinois.

Letters to the Editor

Scratch Test

To the Editor: Reading "Scratch Test," by Harold Bernstein, M.D., in the November 1, 1967, issue of the JOURNAL, recalled some exceedingly pleasant memories for me. Henry Joachim, M.D., an extremely gifted clinician of the old school, did indeed practice this method of outlining an organ from at least 1933 onward to my own personal knowledge. All of the house staff waited eagerly for the Thursday afternoon rounds at the old Beth Moses Hospital (of blessed memory) in Brooklyn to try to "stump" the chief. However, he was invariably correct in determining the size of various organs by using the exact method described by Dr. Bernstein. I am firmly convinced that Dr. Joachim felt that he had discovered a new method and had intended to report on it.

I was detailed to look up some background material and found that the method was known and used years before. Dr. Bernstein may also have independently rediscovered this method.

Cammann and Clark in 1841[1] were the first actually to have attempted to determine the size of the heart by a similar method. One end of a rod was placed against the chest wall of the subject and the other in the ear of the examiner. The examiner started to percuss a distance away from the organ and gradually approached it. The end point was reached when there was a sudden loudness as the organ was approached.

Bianchi[2] in 1884 used the phonendoscope, a stethoscope that had a rod and a small resonating chamber above it, and scratching of the skin instead of percussion. In the ensuing years, various types of percussion were used. Very light taps were used by some.[3] Others used friction of the skin with the finger nails going in concentric circles toward the organ.[4] Still others used friction stroke and a brush moving away from the stethoscope placed on an organ. Pal[3] was able to diagnose 2 echinococcus cysts rather than 1 in the liver by the scratch method.

The inevitable reaction came with the research of De la Camp[5] and Sehrwald.[6] These authors working on cadavers showed that by placing the stethoscope on certain spots and percussing toward it, they were able to shift the area of the left border of the heart at will. They concluded that certain friction patterns that were assumed to map out the size of the heart were really the result of conduction of the percussed patterns along ribs, sternum, muscle, and bone, and this could be shifted at will if the stethoscope were moved.

This line is written not to deprecate the method but to give something of its history, which Dr. Bernstein may want to use as background material in describing his text.

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Necrology

Eleanor Bertine, M.D., of New York City and New Milford, Connecticut, retired, died on January 3 at her home at New Milford at the age of eighty. Dr. Bertine graduated in 1913 from Cornell University Medical College. She was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Stephanie Irene Carrington, M.D., of The Bronx, died on May 7, 1967, at the age of twenty-nine. Dr. Carrington graduated in 1963 from Albert Einstein College of Medicine of Yeshiva University.

Alfred F. Cassebeer, M.D., of Rochester, died on November 9, 1967, at the age of eighty-four. Dr. Cassebeer graduated in 1908 from Columbia University College of Physicians and Surgeons. He was a member of the Rochester Academy of Medicine, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter Dreyfuss, M.D., of Amsterdam, died on July 1, 1967, at the age of seventy. Dr. Dreyfuss received his medical degree from the University of Heidelberg in 1921. He was an attending physician at St. Mary's Hospital and an honorary member of the medical staff at Amsterdam Memorial Hospital. Dr. Dreyfuss was a member of the Montgomery County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Natalie Feuerlicht, M.D., of Staten Island, died on January 4 at Richmond Memorial Hospital at the age of fifty-eight. Dr. Feuerlicht received her medical degree from the University of Vienna in 1934. She was director of the Pediatrics Department and an attending pediatrician at Richmond Memorial Hospital. Dr. Feuerlicht was a member of the Richmond County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph P. Klaar, M.D., of New York City, died on June 8, 1967, at the age of seventy-six. Dr. Klaar received his medical degree from the University of Vienna in 1915. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Lamberson, M.D., of Binghamton, died on April 26, 1967, at the age of eighty-six. Dr. Lamberson graduated in 1907 from Columbia University College of Physicians and Surgeons.

E. Forrest Merrill, M.D., of Rochester, died on August 3, 1967, at the age of seventy-one. Dr. Merrill graduated in 1920 from the University of Michigan Medical School. He was a consulting radiologist at Rochester General Hospital. Dr. Merrill was a Diplomate of the American Board of Radiology (Roentgenology), a Fellow of the American College of Radiology, and a member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., the New York and Rochester Academies of Medicine, the New York Roentgen Society, the Radiological Society of New York State, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ernst Ludwig Metzger, M.D., of Rego Park, retired, died on November 26, 1967, at his home at the age of seventy-two. Dr. Metzger received his medical degree from the University of Frankfurt in 1920. He was an emeritus associate attending ophthalmologist at Lenox Hill Hospital and an associate attending ophthalmologist at City Hospital Center at Elmhurst. Dr. Metzger was a Diplomate of the American Board of Ophthalmology and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Elvira O. Ostlund, M.D., of New York City, died on August 29, 1967, at the age of seventy-one. Dr. Ostlund graduated in 1923 from Washington University School of Medicine, St. Louis. She was a consulting pediatrician at St. Luke's Hospital and an attending physician at the Pediatric Cardiac Clinic at St. Luke's Hospital Outpatient Department. Dr. Ostlund was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Peter Benedict Riley, M.D., of Rochester, died on June 25, 1967, at the age of fifty-nine. Dr. Riley graduated in 1934 from Albany Medical College. He was a Diplomate of the American Board of Psychiatry and Neurology

(Psychiatry) and a member of the American Psychiatric Association.

Marshall B. Sponsler, M.D., of De Witt, retired, died on July 6, 1967, at the age of eighty-three. Dr. Sponsler graduated in 1911 from Johns Hopkins University School of Medicine. He was a Diplomate of the American Board of Otolaryngology.

Margaret Warwick, M.D., of Buffalo, retired, died on September 19, 1967, at the age of eighty. Dr. Warwick graduated in 1913 from the University of Minnesota Medical School. She was a Diplomate of the American Board of Pathology (Clinical Pathology and Pathologic Anatomy) and a member of the American Association of Pathologists and Bacteriologists, the American Society of Clinical Pathologists, and the Buffalo Academy of Medicine.

Arthur Starkey Wilson, M.D., of Portland, Oregon, retired, formerly of New York City, died on December 27, 1967, at the age of eighty-nine. Dr. Wilson graduated in 1900 from Columbia University College of Physicians and Surgeons. He was a consulting bronchoscopist at Flushing Hospital and Dispensary and a consulting otolaryngologist at Manhattan Eye, Ear and Throat Hospital. Dr. Wilson was a Diplomate of the American Board of Otolaryngology and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Fatal home accidents

A study by the Metropolitan Life Insurance Company of fatal home accidents among its policyholders indicates that such accidents among persons in their prime working years, fifteen to sixty-four, account for about 8,300 fatalities and more than 8.5 million nonfatal injuries annually.

This study covered persons aged fifteen to sixty-four who died in home accidents during 1964 and 1965. It involved 537 male and 310 female fatalities, of which nearly 15 per cent of the former and about 20 per cent of the latter were found to be associated with drinking.

While millions of Americans drink alcoholic beverages without subjecting themselves to any appreciable hazard, the insurance study provided evidence of the extent to which injudicious drinking can become dangerous.

There were 61 home accident fatalities reported as caused by acute poisoning by solids and liquids, and half of these were associated with drinking. Barbiturates were the culprit in nearly 75 per cent of these alcohol-associated poisonings, underscoring the lack of understanding about the accentuated effects of drugs when taken together with alcohol.

Alcohol was involved in nearly 20 per cent of 87 accidental deaths at home reported caused by absorption of poisonous gases and vapors, mostly motor vehicle exhausts. Many of the victims lost their lives inhaling lethal amounts of carbon monoxide while sitting in automobiles in the family garage with motors running, as they slept or rested.

Falls from stairs or steps accounted for 117 accidents in and about the home, and about 20 per cent of the victims were reported to have been under the influence of alcohol.

Falling asleep with a lit cigaret, cigar, or pipe is a serious hazard for a tired smoker, even when he is not under the influence of alcohol. In the insurance study, alcohol figured in about 25 per cent of the 67 accidental deaths reported as caused by fires and other burns among careless smokers.

Drinking was implicated in about 15 per cent of the firearm accidents at home, about 12 per cent of the deaths from choking on food, about 20 per cent of the drownings, and all of the deaths from freezing.

Additional factors involved in fatal accidents at home are environmental hazards such as faulty building design or layout, poor housekeeping, inadequate maintenance of appliances or other home equipment, and slippery weather conditions. Less tangible elements, such as personal health, fatigue, and emotional tension, also play a role in home accidents. ■

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Precautions: Until patient's response has been determined, he should be cautioned against engaging in operations requiring alertness. Administer with care to patients with cardiac or peripheral vascular diseases or hypertension.
Side Effects: Hypersensitivity reactions including skin rashes, urticaria, hypotension and thrombocytopenia, have been reported on rare occasions. Drowsiness, lassitude, nausea, giddiness, dryness of the mouth, mydriasis, increased irritability or excitement may be encountered.
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up to 10-12 hours clear breathing on one tablet

Medical News

Summer camp for diabetic children

Applications for children with diabetes to attend Camp Nyda, Burlingham (near Middletown) will be sent on request of private physicians or sending agencies.

Children of all races and creeds from the greater New York area, from six through fifteen years of age, are accepted for a month's vacation. The need of the child for the camp experience is the determining factor, and first priority is given to newly discovered diabetics. Sending agencies and parents are encouraged to help defray the costs in accordance with their means.

Camp Nyda is maintained by the New York Diabetes Association, a nonprofit voluntary organization, and is supervised by physician members of the New York Diabetes Association Clinical Society.

For applications contact: Stanley T. Sajecki, director, Camp Nyda, New York Diabetes Association, Inc., 104 East 40th Street, New York, New York 10016.

Surgery of cornea topic of course

A concentrated and practical course in surgery of the cornea will be given under the direction of A. Benedict Rizzuti, M.D., at the Brooklyn Eye and Ear Hospital on May 1 through 3.

Highlights of surgical keratoplasty technics will be demonstrated on patients, special instrumentation, microscopic surgery, keratoprosthesis, and other related ancillary subjects will be discussed. Matriculants, under supervision, will perform corneal grafting procedures on animal eyes.

Tuition is $150, and the course is limited to 10 applicants. For application forms contact: F. C. Upton, administrator, Brooklyn Eye and Ear Hospital, 29 Greene Avenue, Brooklyn, New York 11238.

Newspaper on narcotic addiction available

The Attack on Narcotic Addiction and Drug Abuse, a 12-page newspaper published 5 times a year, in February, April, June, October, and December, by the New York State Narcotic Addiction Control Commission, is available to individuals and physicians interested in New York State's new prevention, treatment, and research program on narcotic addiction.

Copies can be obtained from any of seven Community Narcotic Education Centers located in the Metropolitan area: In New York City, at 25 West 125th Street, 507 Columbus Avenue, 2127 Third Avenue (at East 116th Street), and 180 Avenue B; in Brooklyn at 531 Eastern Parkway; in Queens at 89–08 Sutphin Boulevard, Jamaica; and in The Bronx at 1363 Jerome Avenue. Residents in the Buffalo area can obtain copies at the Commission's Community Narcotic Education Center at 1312 Jefferson Avenue.

The publication also can be obtained by writing to: *The Attack on Narcotic Addiction and Drug Abuse*, New York State Narcotic Addiction Control Commission, Executive Park South, Albany, New York 11203.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Personalities

Honored. Harold S. Diehl, M.D., by the American Cancer Society, on his retirement as senior medical officer.

Named. As editor-in-chief of the international journal, *Diseases of the Chest*, effective July 1, Alfred Soffer, M.D., senior editor of the *Journal of the American Medical Association* . . .J. Warren Toff, M.D., D.D.S., as assistant health commissioner for New York City. . .William L. Sutton, M.D., Rochester, as medical director of Eastman Kodak Company. . .Aaron D. Chaves, M.D., New York City, acting assistant commissioner for preventable and chronic diseases, New York City Health Department.

Retired. James H. Sterner, M.D., Rochester, as medical director of Eastman Kodak Company.

Appointed. Carl T. Weber, formerly executive director of Monroe County Medical Society and the Seventh District Branch, as administrator of the Regional Utilization and Medical Review Project, sponsored by the Genesee Valley Medical Foundation, Inc.

Speaker. Eli S. Goldensohn, M.D., New York City, at a course in clinical electroencephalography sponsored by the American EEG Society, to be held September 9 through 11, in San Francisco, California.

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(desipramine hydrochloride)

ANTIDEPRESSANT FOR RAPID IMPROVEMENT

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INDICATIONS: In depression of any kind—neurotic and psychotic.

CONTRAINDICATIONS: Glaucoma, urethral or ureteral spasm, recent myocardial infarction, severe coronary heart disease, epilepsy. Should not be given within two weeks of treatment with a monoamine oxidase inhibitor.

RELATIVE CONTRAINDICATIONS: (1) Patients with a history of paroxysmal tachycardia. (2) Patients receiving concomitant therapy with thyroid, anticholinergics or sympathomimetics may experience potentiation of effects of these drugs. (3) Safety in pregnancy has not been established. (4) Perform liver function studies in patients suspect of having hepatic disease.

PRECAUTIONS: (1) Outpatient use of desipramine hydrochloride should not be substituted for hospitalization when risk of suicide or homicide is considered grave. Suicidal ingestion of large doses may be fatal. (2) If serious adverse effects occur, reduce dosage or alter treatment. (3) In patients with manic-depressive illness a hypomanic state may be induced. (4) Discontinue drug as soon as possible prior to elective surgery.

ADVERSE EFFECTS: The following side effects have been encountered: dry mouth, constipation, dizziness, palpitation, delayed urination, agitation and stimulation ("jumpiness," "nervousness," "anxiety," "insomnia"), bad taste, sensory illusion, tinnitus, sweating, drowsiness, headache, hypotension (orthostatic), flushing, nausea, cramps, weakness, blurred vision and mydriasis, rash, *tremor*, allergy (general), altered liver function, ataxia and extrapyramidal signs, agranulocytosis.

Additional side effects more recently reported include: seizures, eosinophilia, confusional states with hallucinations, purpura, photosensitivity, galactorrhea, gynecomastia, and impotence. Side effects which could occur (analogy to related drugs) include weight gain, heartburn, anorexia, and hand and arm paresthesias.

DOSAGE: Optimal results are obtained at a dosage of 50 mg. t.i.d. (150 mg./day).

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For patients who can't take plain amphetamine

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10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

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DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

FRONT SIDE

The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.

the secret of controlling your weight

Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

FOOD DIARY

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories. 801444

To help you control your weight

Please see Brief Summary on next page.

Ask Your Abbott Man For Free Supplies

Brief Summary

DESOXYN® Gradumet®
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in Long-Release Dose Form

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

ABBOTT

801444

Abstracts

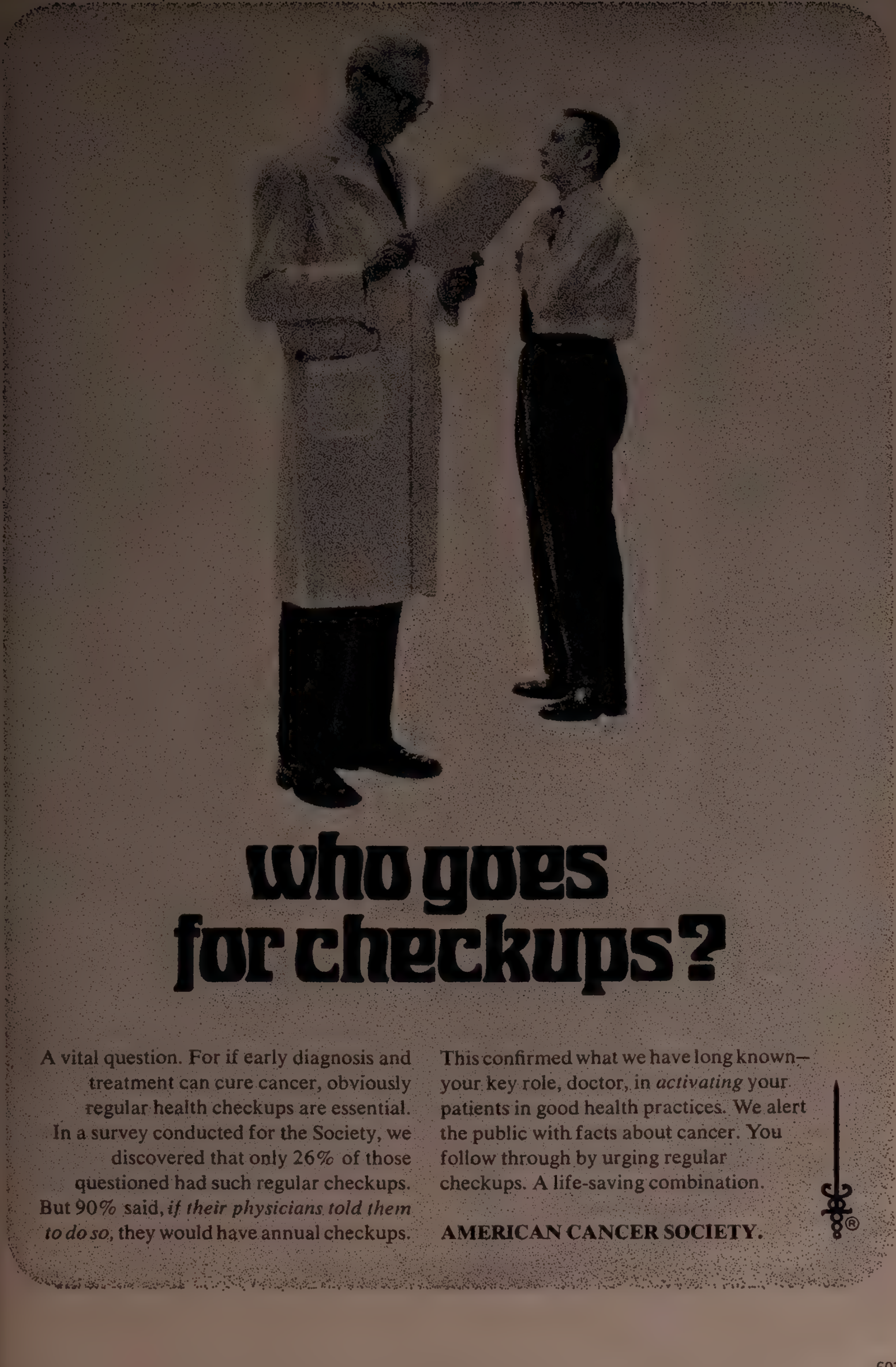
Zoneraich, S., Zoneraich, O., and Douglas, A. H.: Midsternal kinetocardiography with solid system recorder, New York State J. Med. **68:** 631 (Mar. 1) 1968.

Kinetocardiographic records of ultralow frequency movements produced by a probe attached to a transducer at the midsternal area (kinetomidsternum) are useful and satisfactory in studying events which occur in systole during the isometric phase and ejection period and those which occur in diastole. The relationship of this method to the phases of the cardiac cycle, using as reference the electrocardiogram, phonocardiogram, apex-cardiogram, and carotid pulse, is discussed. The tracings obtained are satisfactory because patients are able to breathe freely, interspace motion is avoided, and the probe is closer to the cardiovascular system.

Abstracts in Interlingua

Zoneraich, S., Zoneraich, O., e Douglas, A. H.: Kinetocardiographia mesosternal con un systema solide de registration (*anglese*), New York State J. Med. **68:** 631 (1 de martio) 1968.

Registrationes kinetocardiographic del movimentos de ultrabasse frequentias producite per un proba attachate a un transductor in le area mesosternal (kinetomesosterno) es utile e satisfactori in studiar evenimentos occurrente in systole durante le phase isometric e le periodo de ejection e etiam illos occurrente in systole. Le relation de iste methodo con le phases del cyclo cardiac—utilisante como referentia le electrocardiogramma, le phonocardiogramma, le apico-cardiogramma, e le pulso carotidic—es commentate. Le registrationes obtenite es satisfactori proque le patientes respira liberemente; motion interspatial es evitate; e le proba se trova in le vicinitate del systema cardiovascular.



A vital question. For if early diagnosis and treatment can cure cancer, obviously regular health checkups are essential. In a survey conducted for the Society, we discovered that only 26% of those questioned had such regular checkups. But 90% said, *if their physicians told them to do so*, they would have annual checkups.

This confirmed what we have long known—your key role, doctor, in *activating* your patients in good health practices. We alert the public with facts about cancer. You follow through by urging regular checkups. A life-saving combination.

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Medical Schools

Albany Medical Center

New rehabilitation chief. Boris J. Paul, M.D., a member of the Psychiatry staff since 1959, was appointed chairman, in December, 1967, Department of Physical Medicine and Rehabilitation at the Center and physiatrist-in-chief at the Center's hospital.

Downstate Medical Center

Visiting scholar. Dr. James B. Ackerman, professor and chairman, Department of Fine Arts, Harvard University, was visiting scholar in December, 1967. His subject was "Art and Science in the Notebooks of Leonardo da Vinci."

Visiting professor-in-residence. Dr. Alain E. Bussard, head, Cellular Immunology Laboratory, Pasteur Institute, Paris, arrived December 10, 1967, for a one-month visit as the guest of the Department of Anatomy, as one of the eminent scientists taking part in the visiting professor-in-residence program. Also the scientific director, National Center of Scientific Research, during Dr. Bussard's residency, he delivered a major lecture on "Recent Progress in the Primary Stimulation of the Immune Reaction in in Vitro Conditions."

Faculty notes. Samuel W. Bloom, M.D., professor, psychiatry, has been appointed special consultant for the World Health Organization to Hebrew University-Hadassah Medical School, Jerusalem, Israel. Irving Blumenthal, M.D., clinical assistant professor, psychiatry, was elected president, Metropolitan Electroencephalography Society, recently. Duncan W. Clark, M.D., professor and chairman, Department of Environmental Medicine and Community Health, was the chairman of the advisory committee to the American Public Health Association in a pilot study on "Short-Term Training and Continuing Education in Public Health. David M. Engelhardt, M.D., professor, psychiatry, was appointed a member of the Clinical Psychopharmacology Research Review Committee of the National Institute of Mental Health. Martin G. Goldner, M.D., professor of medicine, was appointed to the Committee on Professional Education of the American Diabetes Association. Merel H. Harmel, M.D., professor and chairman, Department of Anesthesiology, was appointed chairman, Committee on Medical School Preceptorships, the American Society of Anesthesiology. Arthur Shapiro, M.D., professor of psychiatry, recently was appointed consulting editor of *Psychophysiology*. Marvin Stein, M.D., professor and chairman, Department of Psychiatry, was elected chairman, Board of Directors, Foundations' Fund for Research in Psychiatry.

Faculty promotions. To professor: Dr. Edward J. Kuchinskas, biochemistry; Bernard S. Levowitz, M.D., surgery; Dr. Jerome Parnell, anatomy. To clinical professor: Andor A. Weiss, M.D., rehabilitation medicine. To assistant professor: Helen Schur, M.D., psychiatry. To clinical assistant professor: Joseph Bongiorno, M.D., pediatrics; and Eugene J. Rogers, M.D., rehabilitation medicine.

April visiting professor lecture. Hugo E. Aebi, professor and head, Department of Biochemistry, Bern University, Bern, Switzerland, will deliver the fifth visiting professor lecture on April 8 at 4:00 P.M., First Floor Lecture Hall, Basic Sciences Building. Dr. Aebi will discuss "Biochemical and Clinical Aspects of Acatalasemia." He will be in residence from March 20 through April 20 in the Department of Biochemistry.

State University of New York at Buffalo

Center for immunology. Announcement of the official establishment of a Center for Immunology was recently announced by Chancellor Samuel B. Gould. Ernest Witebsky, M.D., dean, will be the administrator. In the new Center the "emphasis will be on in-depth study and high quality performance on a teamwork basis, "said Dr. Witebsky. Members from the present Department of Microbiology who will be with the new Center are: Felix Milgrom, M.D., department chairman; James F. Mohn, M.D., and Noel R. Rose, M.D., professors; Ernst H. Beutner, M.D., Almen L. Barron, M.D., and Joseph H. Kite, M.D., assistant professors, as well as many investigators from other departments who are involved in immunological research.

University of Rochester School of Medicine and Dentistry

Rush Rhees athletics fund. George Hoyt Whipple, M.D., dean emeritus, has given $50,000 to the School for the establishment of an athletics fund in the name of the late Rush Rhees who was president of the University from 1900 to 1935. The fund will provide for new equipment and upkeep at the Medical Center gymnasium, tennis courts, and other recreational facilities.

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Books Reviewed

Urologic Roentgenology. By Marcy L. Sussman, M.D., George Jacobson, M.D., and E. Howard Jayne, M.D. Quarto of 302 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $17.

This volume is reprinted from "Golden's Diagnostic Roentgenology," where it formed a chapter on urologic conditions. It has been practically rewritten, and most of the illustrations have been replaced. The authors have compressed a large amount of material into approximately 300 pages. The entire subject is reviewed very concisely.

The first third of the book is particularly valuable in a discussion of methods of investigation and of the basic embryology, physiology, and anatomy of the urinary tract. The various types of pathology in the urinary tract are described briefly and are fairly well illustrated. The volume is particularly useful in its discussion of the more bizarre or controversial aspects of urologic roentgenology. The bibliography, while not complete, also has numerous references to the literature dealing with controversial or newer methods of study of the urinary tract.

This book may be used as an excellent introduction to the study of urologic roentgenology. It will be particularly valuable in a resident training library.—Emanuel Mendelson, M.D.

Current Perspectives in Gastroenterology. Edited by William S. Blakemore, M.D., and L. Kraeer Ferguson, M.D. Octavo of 319 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1967. Cloth, $13.50.

This book consists of contributions by 33 recognized authorities in gastroenterology. The editors are professors of surgery at the University of Pennsylvania School of Medicine. It is arranged in 5 parts: Stomach and Duodenum, Large Bowel, Pancreas, Small Bowel, and Gastrointestinal Bleeding.

Present concepts and advances in the field of physiology, diagnosis, and therapy in gastroenterology are presented in a most comprehensive and useful manner. Excellent roundtable discussions follow many of these sections.

This volume fulfills the authors' intentions to present the most recent advances in physiology, pathology, diagnosis, and medical and surgical treatment of diseases of the gastrointestinal tract. In addition it includes presentation of motility studies, selective arteriography, and cineradiography.

It is not a voluminous textbook. On the contrary, the subjects are presented with brevity, conciseness, and adequate references to accomplish its intent to present useful and timely material to the reader. This work is highly recommended to internists, surgeons, gastroenterologists, and practitioners who treat patients with gastrointestinal problems.—Milton J. Matzner, M.D.

The Surgical Relief of Pain in Arthritic Disease: The Hip and Knee Joints. By Robert A. Herfort, M.D. Octavo of 97 pages, illustrated. Springfield, Ill., Charles C Thomas, 1967. Cloth, $7.50.

Relief of pain is certainly a major part of the treatment of rheumatic disease. Over the years various surgical technics have been proposed in the management of the painful hip and knee of rheumatoid and osteoarthritis. Most of these technics have been found wanting due either to their inadequacy or to their radical coeffects.

Dr. Herfort proposes a neurosurgical approach depending on interruption of the fibers of the autonomic nervous system from the affected limbs. The role of the autonomic nervous system in the arthritic is far from clear, but it is well known, for instance, that rheumatoid arthritis is much less likely to affect a hemiplegic limb rather than the one which is not so affected. It may be that an intact autonomic nervous system is essential for the inflammatory response, and Dr. Herfort proposes that it is likewise essential in the perception of pain.

The results stated in this book would be more impressive if they were the result of a controlled study. It is most difficult to assess any agent, medical or surgical, in the management of arthritis owing to the large number of variable factors involved. It could be, however, that the author is correct, and if so further study of his technics would seem to be advisable. The value of the book, therefore, is largely one of calling attention to a new approach rather than a new technic, and it is doubtful that the book will be of great interest to the average practicing physician.—Charles M. Plotz, M.D.

Surgical Bleeding. Handbook for Medicine, Surgery, and Specialties. Edited by Alex W. Ulin, M.D., and Seymour S. Gollub, M.D. Octavo of 532 pages, illustrated. New York, The Blakiston Division, McGraw-Hill Book Company, 1966. Cloth, $23.50.

This text is a compendium of the contributions of 123 authors. The editors Alex W. Ulin, M.D., and Seymour S. Gollub, Ph.D., M.D., a surgeon and an hematologist, respectively, are suited ideally to the task this book undertakes. Four major categories include a basic science section and a clinical section, devoted to surgical bleeding including discussion of technical factors, bleeding disorders, and unexplained bleeding syndromes. Another section is devoted to problems encountered by the general surgeon as well as each of the surgical specialties. The last section discusses diagnostic and therapeutic measures as well as details of technical modalities useful to the surgeon.

These topics are well covered by the authors and the text becomes a handy reference to a wide spectrum of problems faced by the surgeon often, in turn, shared with the internist and only occasionally the hematologist.

This book is highly readable and offers assistance to all involved during surgical procedures including surgeon, anesthetist, hematologist, and internist.—ALAN N. MORRISON, M.D.

Frieboes/Schonfeld Color Atlas of Dermatology. By Joseph Kimmig, M.D., and Michael Jänner, M.D. American Edition Translated and Revised by Herbert Goldschmidt, M.D. Quarto of 304 pages, illustrated. Phila., W. B. Saunders Company, 1966. Cloth, $45.

The *Color Atlas of Dermatology* is a compilation of 927 photographs (all in color except for a few black and whites) illustrating diseases of the skin. The first edition was published in 1949 by Frieboes and Schonfeld.

This is the third edition of the *Atlas* and except for illustrations of some rare dermatologic and venereal diseases which were carried over from the second edition, consists of new photographs. These are faithfully reproduced and are easily recognizable. With the advances in the technology of color photography most of the color of the illustrations is vivid and distinct. The explanatory text, translated by Herbert Goldschmidt, M.D., of the University of Pennsylvania School of Medicine, is adequately and carefully written.

The *Atlas*, if used as intended by the authors, "in conjunction with one of the current textbooks of dermatology," greatly will benefit all medical students and all physicians. Practicing dermatologists will enjoy the photographs of the uncommon dermatoses and the practitioners of other branches of medicine will be helped in recognizing all dermatoses. This book should be in every dermatologist's library.—MORRIS ROTHSTEIN, M.D.

Care of the Critically Ill. By Stephen M. Ayres, M.D., and Stanley Giannelli, Jr., M.D. Octavo of 256 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $8.50.

The modern care of the critically ill patient has become a team effort requiring immediate expert management. The need for a book on this subject has been projected by the many recent noteworthy achievements in this area.

The authors are eminently qualified to present these new lessons after a vast experience of their own in the treatment of cardiorespiratory collapse. Circulatory and respiratory derangements have been emphasized and this requires an understanding of the normal and abnormal behavior of the circulatory and respiratory systems. Thus, the authors wisely include a brief and basic discussion of fluid and electrolytes which permits the physician to evaluate more discerningly the mass of current literature. Not only are the functions of the heart and lungs considered, but the peripheral circulation and sympathetic nervous system are also evaluated.

Biochemical events at the cellular level are stressed. The collapse of cellular respiration may follow acute blood loss, fluid and electrolyte imbalance, sepsis, myocardial infarction, severe pulmonary infection, and trauma. Various phenomena related to respiratory failure and shock are detailed. The physiologic consequences and treatment of arrhythmias in the critically ill is outlined in considerable detail. Thus constant monitoring technics and treatment by electrical means are described in some detail by W. J. Grace, M.D., a pioneer in this field. A special chapter on the nursing care of such a patient is a most valuable addition. Practical aspects are stressed throughout down to the contents of a mobile crash cart. The illustrations are profuse and to the point; the references for each of the 12 chapters and a good index complete the text.

There has been an urgent need for a book on this vital subject.

The rapidly expanding knowledge in this area will undoubtedly require revisions and new additions at relatively frequent intervals.—NATHANIEL E. REICH, M.D.

Postmortem Examination: Specific Methods and Procedures. By Roger D. Baker, M.D. Quarto of 183 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $8.50.

Dr. Baker had had great experience with autopsy pathology. The reviewer had a personal knowledge of Dr. Baker's interest in autopsy pathology while he was professor of pathology at Duke University and chief of pathology at the Veterans Administration Hospital at Durham. The book contains 177 pages and is illustrated with 108 diagrammatic drawings. The illustrations are simple, clear, and very valuable for the understanding of different procedures. All the technical aspects of the autopsy are well covered and supplemented with references to other sources. Some suggestions are made about recording the data, gross, and microscopic observations. Tables of weights and measures are included.

This book is very useful for both the student and teacher in the training of the performance of an autopsy.—J. V. KLAVINS, M.D.

continued on page 610

Medical Meetings

Diabetes Association holds meeting

The Clinical Society of the New York Diabetes Association will hold an open meeting on February 29 at 8:00 P.M. in the New York Academy of Medicine, Room 20, 2 East 103rd Street, New York, New York. The subject for the meeting is "Hypertension and Diabetes."

Coronary disease topic of lecture

Dwight Emary Harken, M.D., clinical professor of surgery, Harvard Medical School, and chief of thoracic surgery, Peter Bent Brigham Hospital, Boston, will deliver the fifth annual Arthur M. Master Lecture in the Blumenthal Auditorium at The Mount Sinai Hospital of New York on March 28, at 8:30 P.M.

In his lecture, "A Surgeon's View of Coronary Artery Disease: Rest, Repair, and Replacement," Dr. Harken will trace the historic background of coronary heart surgery and discuss some of its developments including early denervation, phenol de-epicardialization, and arterial implants, in which he was a pioneer, and direct arterial and venous grafts. Finally he will look at "where we are going from here"—with vascularization of the heart, with the mechanical heart, and with human heart transplants.

Cutaneous diseases topic of symposium

A symposium on "Virologic Approaches to Cutaneous Diseases," sponsored jointly by the Departments of Dermatology and Microbiology of the New York University Medical School, will be held at the medical school on May 1 through 3.

Rudolf L. Baer, M.D., George Miller MacKee professor and chairman, Department of Dermatology, and Milton R. Salton, M.D., professor and chairman of the Department of Microbiology, will serve as chairmen of the symposium. Alvin E. Friedman-Kien, M.D., assistant professor of clinical dermatology, and Jan T. Vilcek, M.D., assistant professor of microbiology, will be cochairmen.

The symposium will feature recent advances in basic virology involving virus replication, electromicroscopic investigations, interferon and oncogenic viruses, clinical virologic problems, such as diagnostic approaches, chemotherapy, vaccinations, histopathology, and immunology.

During the symposium, the Howard Fox Memorial Lecture on "Varicella—A Not So Benign Pox," will be delivered by Thomas H.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

continued on page 612

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The Blood Supply of the Lower Limb Bones in Man. By Henry V. Crock, M.B. Octavo of 104 pages, illustrated. Edinburgh, E. & S. Livingstone, (Baltimore, The Williams & Wilkins Company), 1967. Cloth, $18.

For a long period of time there has been missing from the surgical literature concrete information on certain aspects of the blood supply of bones. A knowledge of the blood supply of the tissues is fundamental to surgery. Complete familiarity with this vascular anatomy is important if our surgical procedures are to be safe and effective. The author of this book takes a giant step forward in providing this information.

This book is designed to provide a convenient source of information to the blood supply of the lower limbs of man. Venous drainage of bone and the anatomy of subchondral venous drainage are discussed at length. Great details are exhibited in the description of periosteal circulation and cortical bone blood supply.

The work is based on a study of bones at autopsy. The intraosseous vessels are injected via major arteries or veins in intact limbs. All the bones of the lower extremities are studied. The illustrations are in color and the reproductions are excellent.

In the last chapter the author discusses the blood supply of bones and the bearing on the development of certain disease processes. He also discusses how the knowledge of local blood supply of bone may influence operative technic and the choice between alternative methods of surgical treatment in certain cases. There are practical examples.

I recommend this book very highly. It is an excellent addition to the surgical literature.—Alan A. Kane, M.D.

Principles of Head and Neck Surgery. By H. Robert Freund, M.D. Quarto of 337 pages, illustrated. New York, Appleton-Century-Crofts, Division of Meredith Publishing Company, 1967. Cloth, $12.50.

In this book the author succeeds in giving a comprehensive picture of the treatment of head and neck tumors.

The subject is developed well, beginning with a historical review and following with a clear outline of the steps in proper diagnosis and methods of examination of the head and neck patient. The chapter on the behavior of head and neck tumors gives a clear and concise picture of the natural history of these lesions.

The chapters dealing with oropharyngeal and laryngeal tumors, together with the technic of radical neck dissection, are particularly well presented and complete. The accompanying illustrations and text make for a rapid and easy understanding of the proper treatment of these diseases.

Controversial viewpoints and statistical end results along with up-to-date references are included throughout.

The book is very well adapted for use by the resident who intends to train in head and neck surgery. But its extensive coverage of the subject makes it an excellent reference for those surgeons and allied physicians who are actively engaged in the treatment of these tumors.—Joseph F. Bochetto, M.D.

Dermatologic Allergy: Immunology, Diagnosis, Management. By Leo H. Criep, M.D. Octavo of 605 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $17.

This book is the first text in dermatoimmunology to be published in many years. The author, a world reknown allergist, was aided by 15 allergists and dermatologists, all authorities in dermatoimmunology.

The subject matter is comprehensively presented in 5 parts. In Part I the anatomy, physiology, and pathologic reaction patterns are included as well as definitions and classification of hypersensitivity. The immediate response is discussed in Part II and the delayed response in Part III. Part IV deals with diseases associated with circulating antibody or cellular sensitivity and in Part V therapy is discussed thoroughly.

The importance of the skin in clinical immunology is stressed and discussed in detail and the mechanisms of hypersensitive responses are explained. Many and varied skin disorders are well covered and the physiology, histopathology, diagnosis, and management are included.

The modern advances in immunology, including the biologic and chemical, are clearly presented. The newer technics employed in immunologic investigation are discussed. All in all, this book should be very useful to medical students and to all clinicians—allergists, dermatologists, as well as general practitioners, pediatricians, and internists.—Morris Rothstein, M.D.

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Weller, M.D., Richard Pearson Strong professor and chairman, Department of Tropical Public Health of the School of Public Health, Harvard University.

General practitioners to hold annual meeting

The annual meeting of the New York State Academy of General Practice is to be held May 5 through 9 at the Concord Hotel, in the Catskills.

The program will feature the following topics and speakers:

May 7—"The Examination for Board Certification in Family Practice," Carroll L. Witten, M.D., past president, American Academy of General Practice; "Training of the Primary Physician," Edmund Pellegrino, M.D., director, Medical Center, State University of New York at Stony Brook; and "Established Programs for the G.P. in Medical Schools," Thomas Leaman, M.D., chairman, Department of Family and Community Medicine, Hershey Medical Center.

May 8—A seminar on respiratory diseases will include the following topics: "The Role of Lung Function Study in Diagnosis in Pulmonary Disease," M. Henry Williams, M.D.; "A Masquerading Lung Disease," Harry H. Epstein, M.D.; "Management of Respiratory Failure," Theodore H. Noehren, M.D.; and "Typical Case Presentation of Pulmonary Emphysema," Bruce J. Sobol, M.D.

May 9—A seminar on rheumatology will include the following: "General Approach to the Patient with Joint Complaints," R. T. Smith, M.D.; "Serological Aids in the Diagnosis of Arthritis," Charles M. Plotz, M.D.; "New Concepts in X-Ray Diagnosis in Arthritis," D. L. Berens, M.D.; Modern Management of Rheumatoid Arthritis," N. O. Rothermich, M.D.; "Modern Management of Osteoarthritis, Gout, and Nonarticular Rheumatism," R. T. Smith, M.D.; and a panel discussion on controversial topics in "Diagnosis and Therapy of Arthritis Today," N. O. Rothermich, M.D., moderator.

For further information contact: Lawrence F. Kennedy, executive secretary, New York State Academy of General Practice, 84 Main Street, Binghamton, New York 13905.

Albany Medical College announces teaching days

The Department of Postgraduate Education of Albany Medical College is offering the following teaching day program for practicing physicians: March 7, Cancer; March 21, Pediatric Endocrinology; March 28, Radiology; and April 11, Urology.

This program is approved for Category I credit by the American Academy of General Practice. For further information write to: Department of Postgraduate Medicine, Albany Medical College, New Scotland Avenue, Albany, New York 12208.

Book Notes

Hamilton Bailey's Emergency Surgery. Edited by T. J. McNair, M.D. Eighth edition. Quarto of 1,026 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $32.

This book is not intended for the well-trained young surgeon working in a well-equipped modern hospital with a well-stocked library at hand for reference and an experienced senior available for advice. Rather, it is written to help the less-experienced surgeon working under conditions that may be far from ideal who is expected to possess a far wider knowledge of medicine than the modern specialized surgeon. Many illustrations, some in color, are provided and the work is well indexed. As the editor feels that the emergency surgeon is unlikely to have either the time or the facilities to consult references, these have been omitted from this edition.

A Synopsis of Children's Diseases. By John Rendle-Short, M.D., and O. P. Gray, M.B. Fourth edition. Duodecimo of 681 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $10.50.

Because of the rapidity of change in pediatrics at the present time, approximately one third of this book has had to be altered and some sections have been completely rewritten. The section on tuberculosis has been drastically reduced, since childhood tuberculosis is rarely encountered in developed countries. Other alterations are of a more minor nature, such as changes in nomenclature. Some of the many new syndromes discovered have been included by giving them brief mention in the text and indicating a reference whence further information can be obtained. References have been chosen which give a comprehensive review and are not necessarily the most recent.

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Editorials

Licensing of British physicians in New York State

There has been considerable recent publicity in press and radio here and abroad stating that New York State was now giving blanket endorsements of the British medical registration. This is incorrect and has caused a lot of inconvenience and disappointment within the British medical profession and also receipt of many calls and letters by the office of The University of the State of New York, the State Education Department, Albany 12204.

Each case of a British medical graduate is considered individually by the Board of Regents on the submission of completed petition forms. In certain instances in which there is evidence of advanced and extensive acceptable hospital training and in which the physician has obtained the FRCS of England, the MRCP of London or Edinburgh, the FFA or the FFR, endorsement of the British registration may then be considered by the Board of Regents.

If the British physician wishes to petition the Board of Regents for an evaluation of his education and training and a determination as to his eligibility for admission to the New York State medical licensing examination or to medical licensure, he should notify Donald C. Walker, M.D., at the State Education Department, Albany, New York, giving the name of the medical school from which he graduated and the date of graduation.

Instructions and appropriate forms will be sent to him.

Needs of medical schools with limited financial resources

Mounting demands for more physicians have resulted in the development of 15 new medical schools and nearly insurmountable pressures on all medical schools for considerable expansion of medical student enrollment.

Despite the impression that medical schools are wealthy, the precarious financial position of some schools is such that their very survival is at stake. Some method must be found to give high and selective priority to the financial crisis faced by a considerable number of U.S. medical schools. It would be a tragedy if any of the existing schools should fail to survive this period of growth and expansion.

While a number of different criteria may be used to characterize the financial status of medical schools, the most pertinent for the present purpose are the number of students in the teaching program in relation to the number of faculty and to the dollar expenditure for the teaching program, and the dollar expenditure for the total medical school operation. Utilizing these criteria, 10 fully developed four-year schools fall into the lowest quartile of all medical schools for at least 4 of the 5 items enumerated in Table I. It is likely that a different set of criteria might include some of these schools, exclude others, and encompass schools other than the ones listed here. These schools have been selected only to illustrate the magnitude of financial difficulty faced by a group of medical schools (Table I).

In comparision with the averages and medians for all U.S. medical schools, the 10 "have not" schools show expenditures for basic operating programs and total operations that are roughly half of the national level. Their students are being taught by a number of faculty that is also approximately half of the national level.

TABLE I. Characteristics of 10 medical schools with limited financial resources

School	Total Expenditures*	Regular Operating Expenditures	Total Exp. per Student Equivalent	Student Equivalents per Faculty	Basic Operating Expenditures per Medical Student
A	7,018,224	$ 1,909,284	$ 7,939	6.3	$ 4,300
B	6,197,397	1,553,926	7,003	6.0	3,534
C	5,078,573	1,496,420	7,502	4.7	5,196
D	4,524,308	2,351,563	8,167	6.2	6,514
E	4,480,463	2,507,190	3,263	11.6	6,615
F	3,895,941	1,920,369	3,955	8.2	4,837
G	3,740,394	2,148,839	6,813	3.9	6,211
H	3,705,951	2,553,097	5,340	6.3	6,464
I	3,076,574	1,663,342	7,040	5.8	4,907
J	1,755,838	1,374,420	3,124	11.0	3,894
TOTAL	43,473,663	19,458,450			
10 School Averages	4,347,366	1,945,845	5,720	6.7	5,208
All School Averages	10,439,387	4,354,163	11,618	4.5	11,247
10 School Medians	4,188,202	1,914,826	7,098	6.2	5,052
All School Medians	8,572,824	3,977,147	10,169	4.5	10,917

* All expenditure data are for the years 1965–66.

TABLE II. Deficits in total operating expenditures and regular operating program expenditures from assumed support levels

School	Deficits in Total Expenditures from $6 Million Support Level	Deficits in Basic** Expenditures from $2.5 Million Support Level
A	...*	590,716
B	...*	966,074
C	921,427	1,003,580
D	1,475,692	148,437
E	1,519,537	...*
F	2,104,059	579,631
G	2,259,606	351,161
H	2,294,049	...*
I	2,923,426	836,658
J	4,244,161	1,125,580
TOTAL	17,741,958	5,601,837
Average	1,774,196	560,184

* Schools exceeding the assumed minimum in a single category.

** Basic or regular operating funds are general funds not restricted to any particular program.

The enormity of the gap in resources from the richest to the poorest schools is evident in a comparison of the median total expenditure of these "have not" schools of $4.2 million with the median total expenditure of the 10 best endowed schools of $22.2 million, a ratio of more than 5 to 1. The fact that the resources available to the single most affluent school were equal to 85 per cent of the total expenditures of the 10 schools in Table I provides an even more dramatic example of this disparity.

Some method for assessing what measures would be necessary to ameliorate some of the multiple deficiencies of the 10 "have not" schools is needed. For this purpose it might be useful to examine the expenditures that would be required for these 10 schools to reach levels of support comparable to the top of the fourth quartile ($6 million). This is not meant to infer that this level of expenditures constitutes a required minimum for all schools with relatively low expenditures.

Table II compares the total expenditures of these 10 schools with the assumed support level of $6 million and compares their basic program expenditures with an assumed expenditure level of $2.5 million, showing the deficit, if any, for each school. The deficits resulting from these comparisons amount to $17.7 million in additional total expenditure support, of which $5.6 million would be required to raise basic program expenditures to the assumed level.

For these schools to attain the type of support needed to bring them into a position to respond adequately to some of the demands being made of them, it would be necessary for them to obtain annual financial support ranging from $0.5 million to over $4 million as indicated in Table II.

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Precautions — The pretreatment physical examination should specifically include the breasts, pelvic organs and a Papanicolaou smear. Endocrine and possibly liver functions tests may be affected by Ovulen. It is recommended that such tests be repeated two months after stopping the medication if their results were abnormal in a woman taking Ovulen. Pre-existing fibroids may enlarge under the influence of estrogen-progestin preparations. Because Ovulen may cause some degree of fluid retention, patients with epilepsy, migraine, asthma, cardiac or renal dysfunction, which might be influenced, require careful observation.

Ovulen should be used with caution in patients with a history of cerebral vascular accident. If breakthrough bleeding occurs adequate diagnostic measures are indicated in women with undiagnosed vaginal bleeding. Observe carefully patients with a history of psychic depression and discontinue the medication if depression recurs to a serious degree. Any possible influence of prolonged Ovulen administration on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. Observe diabetic patients carefully during Ovulen use since a decrease in glucose tolerance has occurred in a few such patients. Physicians should be alert to the earliest manifestations of thrombophlebitis and pulmonary embolism since such conditions occasionally occur in patients taking oral contraceptives. Use Ovulen judiciously in young patients in whom bone growth is not complete because of the effects of estrogens on epiphyseal closure. Age is no absolute limiting factor, although Ovulen use may mask the onset of the climacteric. Pathologists should be advised of Ovulen administration when relevant specimens are submitted.

Side Effects — The following adverse reactions have been observed in varying incidence in patients taking oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), changes in weight (increase or decrease), changes in cervical erosions and secretions, suppression of lactation when used immediately post partum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals and mental depression. Although the following side effects have been reported in users of oral contraceptives no cause and effect relationship has been established: post-treatment anovulation, premenstrual-like syndrome, changes in libido, changes in appetite, symptoms of cystitis, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption and itching. Thrombophlebitis, pulmonary embolism and neuro-ocular lesions have occurred in users of oral contraceptives; a cause and effect relationship has been neither established nor disproved. The following laboratory results may be altered by oral contraceptives: Bromsulphalein® and other hepatic function tests—increased; coagulation tests, including prothrombin, Factors VII, VIII, IX and X—increased; thyroid function—increase in protein-bound iodine and butanol extractable protein-bound iodine and a decrease in T^3 values; metyrapone test and pregnanediol determinations.

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SYMPOSIUM

Problems in Workmen's Compensation Involving Third-Party Actions

Moderator
NEIL CARTER, New York City
Assistant to the General Manager; Manager, Workmen's Compensation Department, Greater New York Mutual Insurance Company

Introduction

ROBERT KATZ, M.D.
New York City

Director, Division of Industrial Health and Workmen's Compensation, Medical Society of the State of New York

Most physicians treating Workmen's Compensation cases become fairly familiar with the special aspects which pertain to this portion of their practice. However, many of us find that third-party actions complicating Workmen's Compensation cases create particular problems which are not easily solved because of the complexity of issues which may confront us.

The chairman of the section on Medical-Legal and Workmen's Compensation Matters in consultation with the other members of the section therefore arranged for a panel discussion, "Problems in Workmen's Compensation Involving Third-Party Actions." Experienced and outstanding panelists were assembled who aired their views under the guidance of Mr. Neil Carter. The panelists included:

- JACOB SCHUTZBANK, Director of Claims, Workmen's Compensation Board
- MILTON STEGER, Esq., Attorney, Greater New York Mutual Insurance Company
- WILFRED T. OUIMETTE, Esq., Former Assistant General Attorney for the Special Funds Conservation Committee
- ABRAHAM MARKHOFF, Esq., Past President, New York Workmen's Compensation Bar Association
- JACOB D. MATIS, M.D., Attending Physician, Cardiac Clinic, Roosevelt Hospital; Senior Clinical Assistant, Cardiac Clinic, The Mount Sinai Hospital
- DAVID M. BOSWORTH, M.D., Former Director, Orthopedic Service, St. Luke's Hospital; Professor Emeritus, Orthopedic Surgery, New York Polyclinic Medical School and Hospital
- JOHN LoVERME, M.D., Neurosurgeon, Midtown Hospital; Associate Physician for Neuromuscular Diagnosis, Hospital for Special Surgery

The program reviewed the problems as seen by the administrator, the attorney, and the physician. Excerpts and high lights of the program are here recorded.

Rights, Benefits, and Obligations

JACOB SCHUTZBANK
New York City

Director of Claims, Workmen's Compensation Board

THE TOPIC UNDER DISCUSSION reminds me of a colloquy that took place between a presiding judge in the Appellate Division and counsel for the appellant: "Counselor, the points you raise are academic." . . . "Your Honor, that's what I thought when I raised the same before the judge in the court below, and that's why I am here today."

We are concerned with the rights, benefits, and obligations of interested parties as provided by statutory law. I believe it to be prudent before embarking on our discussion, since we are dealing with statutory law, to restate some basic provisions:

> 1. That every covered employer is required to secure compensation to his employes and pay or provide compensation for their disabilities or death from injuries arising out of and in the course of employment, without regard to fault as a cause of injury.[1]
> 2. The liability of an employer shall be exclusive and in place of any other liability whatsoever.[2]
> 3. The employer shall promptly provide for an injured employe such medical, surgical, or other attendance or treatment, nurse and hospital service, medicine, crutches, and apparatus for such period as the nature of the injury or the process of the recovery may require.[3]

These basic provisions stem from Article I, Section 18, of the Constitution of the State of New York, which came into being following the decision in the *Ives* vs. *South Buffalo Railway Co.*,[4] which declared unconstitutional the original Workmen's Compensation Law of New York, Laws of 1910, chap. 674, stating:

> Nothing contained in this constitution shall be construed to limit the power of the legislature to enact laws
>
> —for the protection of the lives, health, or safety of employes;
>
> —for the payment, either by employers, or by employers and their employes or otherwise, either directly or through a state or other system of insurance . . .
>
> —compensation for injuries to employes or for death of employes resulting from such injuries without regard to fault as a cause thereof,
>
> —except where the injury is occasioned by the wilful intention of the injured employe to bring about the injury or death of himself or of another, or
>
> —where the injury results solely from intoxication of the injured employe while on duty;
>
> —for the adjustment, determination, and settlement, with or without trial by jury, of issues which may arise under such legislation;
>
> —to provide that right of such compensation and the remedy therefor shall be exclusive of all other rights and remedies for injuries to employes or for death resulting from such injuries . . .
>
> —that the amount of such compensation for death shall not exceed a fixed or determinable sum . . .
>
> —that all monies paid by an employer to his employes or their legal representatives, by reason of the enactment of any of the laws herein authorized, shall be a proper charge in the cost of the operating of the business of the employer.[5]

Free Choice of Physician— Laws of 1935

The Workmen's Compensation Law enacted in 1914 embraces the concepts set forth in this section of the New York State Constitution.[6]

Between 1914 and 1934, the employer was charged with the responsibility of providing medical care and, except under certain conditions, selected the treating physician.[3]

During this same period, at the direction of our late President Roosevelt, while he was governor of the State of New York, and under the chairmanship of Howard S. Cullinan, an investigation of the administration of Workmen's Compensation was conducted and "widespread abuses in administration were brought to light" in that "both injured workers and employers were not receiving the protection and rights to which they were entitled."

In 1933 Gov. Herbert H. Lehman ap-

Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Medical-Legal and Workmen's Compensation Matters, February 15, 1967.

pointed a committee of ten eminent physicians representing the Academy of Medicine of New York and the Medical Society of the State of New York to inquire into the medical abuses stated in the Howard S. Cullinan report. Under the direction of Eugene Pool, M.D., and George Baehr, M.D., a plan was evolved to wipe out all improper practices in this field, to assure injured workers of first-rate medical care, and to encourage a better type of physician to undertake compensation work and to reduce the medical costs borne by the employer. Thus in March, 1935, the "free choice" amendment to the Workmen's Compensation Law came into existence.[3]

This committee made further recommendations which were enacted into law, the most significant being that an injured employe shall be given the right to select his physician, the establishment of a list of qualified and authorized physicians to treat injured workmen, and minimum charges and fees for such medical treatment and care.

Governor Lehman, in approving Senate Bill Int. 19, Print 774, stated:

> The bill provides that an injured employe, not his employer, shall be given the right to select his physician.
>
> A roster of physicians, qualified for and willing to do Workmen's Compensation work, is prepared by the commissioner upon recommendation of the various medical societies of each county, including any other physician who applies directly to the commissioner for the right to treat Workmen's Compensation cases.
>
> The employe then selects from this list.
>
> The commissioner is directed to establish a schedule of minimum charges and fees for such treatment and care.
>
> Any physician may after hearing be removed from the authorized list by the Industrial Council if found guilty of professional or other misconduct.
>
> During this session of the legislature the bill introduced by Sen. Norman A. O'Brien of Rochester and Assemblyman Edwin L. Kantowski of Buffalo, has been endorsed by organized medicine throughout the State, by enlightened employers, and by representatives of labor. . . . I am confident that under its provisions many of the medical abuses that have been detrimental to worker and employer alike will be eliminated. Unscrupulous physicians and so-called medical clinics will no longer be able to exploit the worker, the employer, and the insurance carrier through prolonged treatment, padded bills, and inferior professional service. Rebating, fee-splitting, organized solicitation of injured workers, and lifting of cases from members will become things of the past. This measure will directly benefit millions of workers in this State by making our Workmen's Compensation Act a more just and effective instrument of social insurance.[7]

Thus, the most outstanding and enlightened provisions under the Workmen's Compensation Law came into being, Section 13, subd. (a), Laws of 1935, chap. 258, and, as subsequently amended, now provides in part:

> The employer shall promptly provide for the injured employe such medical, surgical, or other attendance or treatment, nurse and hospital service, medicine, crutches, and apparatus for such period as the nature of the injury or the process of recovery may require.
>
> The employer shall be liable for the payment of the expenses of medical, surgical or other attendance or treatment, nurse and hospital services, medicine.
>
> The chairman shall prepare and establish a schedule for the State or schedules limited to defined localities of minimum charges and fees for such medical treatment and care in accordance with and be subject to change pursuant to rules promulgated by the chairman.
>
> Before preparing such schedule for the State. . . the chairman shall request the president of the Medical Society of the State of New York to submit to him a report on the amount of remuneration deemed by such society to be fair and adequate for the types of medical care to be rendered under this chapter, but consideration shall be given to the views of other interested parties.[8]

Later revisions

Gen. S. E. Senior, chairman of the Workmen's Compensation Board, in accordance with the provisions of law in promulgation of a new medical fee schedule effective July 1, 1966, sought and did receive the utmost cooperation from the Medical Society of the State of New York through the untiring efforts of the society's representatives in the advisory committee on the medical fee schedule, George Himler, M.D., Carl F. Freese, M.D., and Robert Katz, M.D.

As chairman of that committee I want to advise you of their outstanding effort and accomplishment in presenting the views and interest of all the physicians in this State and to thank them publicly for their effort, fairness, and solid contribution to the work of this committee.

Again, I must refer to another provision of the Workmen's Compensation Law pertinent to the subject under consideration, which provides:

> The liability of an employer for medical treatment as herein provided shall not be affected by the fact that his employe was injured through the fault or negligence of a third party, not in the same employ. The employer shall, however, have an additional cause of action against such third party to recover any amounts paid by him for such medical treatment, in like manner as provided in section twenty-nine of this chapter.[8]

Section 13, subd. (c), contained the recommendations of the State Medical Society that the employer should be liable to provide medical care for an injured employe where the injury had been occasioned by the negligence of a third party not in the same employ only until notice of election to sue, or the bringing of suit against such third party. At the time this language was introduced into the statute, the claimant did not have the right to receive compensation while suing the third party but on the contrary was required to elect his remedy as between Workmen's Compensation benefits to be paid by the employer and a monetary recovery paid by the negligent third party. On April 1, 1944, the words "unless and until notice of election to sue or the bringing of suit against such third party" were deleted from subd. (c) of the Workmen's Compensation Law (Laws of 1944, chap. 747). The elimination of the quoted words referred to from subd. (c) of Section 13, Workmen's Compensation Law, made the employer liable for the payment of medical expenses for medical care rendered both before and after the commencement of a third-party action.[9]

In 1937 and in 1944 the Workmen's Compensation Law was amended by granting to the injured employe the right as a matter of law to make his claim for compensation and medical benefits against the employer, collect such appropriate compensation and medical benefits, and, at the same time, pursue his action against the third party.[7]

These amendments further provided that where the claimant received such benefits, his employer or such employer's carrier was granted a lien on the proceeds of any recovery from such other, whether by judgment, settlement, or otherwise. After deductions of the reasonable and necessary expenditures, including attorney's fees incurred in effecting such recovery, to the extent of the total amount of compensation awarded under or provided or estimated by this chapter for such case, and the expenses for medical treatment paid or to be paid by it, to such extent such recovery shall be deemed for the benefit of such third-person association, corporation, or carrier.[10]

However, in the 1944 Moreland Act report by Commissioners Blakeley and Stichman to Gov. Thomas E. Dewey, they took the position that an anomaly and inconsistency existed in the Workmen's Compensation Law between Section 29 and Section 13, subd. (c), as heretofore referred to, which had the effect of terminating the claimant's right to treatment once suit was instituted against the third party. They recommended, and the legislature did, among other provisions, provide to the employer or his carrier the stated additional cause of action against the negligent third party to recover amounts paid for medical treatment.[11]

This amendment clearly expresses the legislative intent as to where the rights and liabilities of the parties rest, under the Workmen's Compensation Law. Again, the legislature clearly expressed the limitation, that is, the treating physician's recourse is to the employer or his carrier for payment for medical services rendered to a claimant, by providing:

> Fees for medical services shall be payable only to a physician or other lawfully qualified person permitted by Section 13-b of this chapter to render medical care under this chapter, or to the agent, executor, or administrator of the estate of such physician. No physician rendering treatment to a compensation claimant shall collect or receive a fee from such claimant within this State, but shall have recourse for payment of services rendered only to the employer under the provisions of this chapter. Any compensation claimant who pays a fee to a physician for medical services under this chapter shall have a cause of action against such physician for the recovery of the money paid, which cause of action may be assigned to the chairman in trust for the assigning claimant.[12]

> All such assignments shall run to the chairman and his successors in office. The chairman may sue such physician on such assigned cause of action with the benefits and subject to the provisions of existing law applying to such actions by the claimant himself. Hospitals shall not be entitled to receive the remuneration paid to physicians on their staff for medical and surgical services.[12]

The court has held that the claimant is entitled to medical care even after termination of this third-party action.[13]

We cannot escape the logical conclusion, that the injured employe may not accept direct responsibility for his medical care during the pendency of a third-party action or thereafter by any agreement, unless he has divested himself of compensation benefit rights.[14] The additional provisions of the Workmen's Compensation Law further emphasize this point, "No agreement by an employe to waive his right to compensation under this chapter shall be valid."[15] We must be ever mindful of this pertinent section of the Law now under discussion.

> . . .The chairman shall remove from the list of physicians authorized to render medical care under this chapter the name of any physician who he shall find after reasonable investigation is disqualified because such physician has directly or indirectly requested, received, or participated in the division, transference, assignment, rebating, splitting, or refunding of a fee for, or has directly or indirectly requested, received, or profited by means of a credit or other valuable consideration as a commission discount or gratuity in connection with the furnishing of medical or surgical care, diagnosis, or treatment or service. . ."[16]

Comment

It is my firm belief that under the present statutory provisions of the Workmen's Compensation Law drawn to your attention, the commencement by the claimant of a third-party suit does not free him or his physician to make any special arrangement for the payment of services rendered—whether during the time his case is before the Board

1. Is open and he has received cash benefits
2. Is closed with a finding "Pending outcome of third-party action" without specific findings of accident, notice, and causal relationship, even though in such instant he may have elected not to receive cash benefits and does need and does continue to receive medical treatment
3. Closed with a specific finding of accident, notice, and causal relationship, pending outcome of third-party action
4. Settles his third-party action "without consent" of employer or his insurance carrier, as provided in Section 29 of the Workmen's Compensation Law up to the time of such settlement.

However, there appears to be no statutory limitation covering the fee for a nontreating physician, for his appearance as an expert witness in behalf of the claimant before the court.[17] Throughout the pendency of the third-party action, so long as the right of the claimant to receive medical treatment by an authorized physician under the Workmen's Compensation Law continues, there remains the duty on the part of his employer or his carrier to supervise medical care and treatment.[18] The situation does change where the Workmen's Compensation Board has disallowed the case "on the merits," as stated.[19]

The employer's responsibility for payment of medical care continues notwithstanding termination of a third-party action by settlement with the carrier's consent or where the employe or his dependents obtained a compromise order from a justice of the court in which the third-party action was pending or where judgment is recovered against the third party.[20] Any agreement reached relating to proposed third-party actions to pay a fixed sum in excess of the compensation rates for medical services provided by an authorized physician treating a claimant covered under the Workmen's Compensation Law is not binding, unless authorized by employer and carrier or by voluntary payment of monies higher than the fees and charges fixed in the medical fee schedule established by the chairman of the Workmen's Compensation Board.[3]

The injured worker's recovery in this State, under the Workmen's Compensation Law, is still predicated on the wage-loss theory. He is entitled to unlimited medical care "as the nature of the injury or the process of recovery may require." The employer or carrier is entitled to a lien for sums paid and to be paid for cash benefits and medical care: all part of the worker's special damages, dependent on the nature and permanency of his injury against the negligent wrongdoer in the third-party action. However, a claimant has the right to present an additional element of damage for "pain and suffering" resulting from such injury.[21] His attorney has an over-all lien for services rendered in recovery by settlement or judgment.[22]

This is where in substance we stand today. In the study of jurisprudence we look to the moral fiber of existing law or whether present social or economic factors at this time cry out for a change! The best moral thinking of the medical profession helped bring about the changes in the development of the Workmen's Compensation Law which I have explored with you here. Our goal must be to achieve that which is in the best interest of the injured worker and those who serve him professionally. Certainly the fabric of our Workmen's Compensation system should not be stretched or weakened, particularly in these days when state compensation systems and free-choice principles are fighting a holding struggle.

References

1. Workmen's Compensation Law, Section 10.
2. *Ibid.*, Section 11; *Westchester Lighting Co.* vs. *Westchester County Estate*, 278 N.Y. 175, right of action over—primary negligence—indemnity.
3. *Ibid.*, Section 13, subd. (a), Laws of 1935, chap. 258.
4. *Ives* vs. *South Buffalo Railway Co.*, 201 N.Y. 271.
5. Constitution of the State of New York, Section 18, Article I.
6. Workmen's Compensation Law, Laws of 1914, chap. 41.
7. Gov. Lehman message, Senate Bill 19, introduction, Print 774, covering "free choice by claimant" of treating physician and authorizing chairman to establish medical fee schedule, in Workmen's Compensation Law, Section 29, amendment, Laws of 1937, chap. 684, effective September 1, 1937; *Wolkenstein* vs. *Luminant Lampshade Product, Inc.*, 263 A.D. 218 (1942).
8. Workmen's Compensation Law, Section 13, subd. (a), Laws of 1935, chaps. 258 and 930 as amended 1944, 1946, and 1947.
9. *Ibid.*, Section 13, subd. (c) as amended 1935 and 1944; *Butchers Mutual* vs. *Emerald Cab Corp.*, 174 Misc. 1.
10. *Ibid.*, Section 29, as amended, Laws of 1937, chap. 684, effective September 21, 1937.
11. *Ibid.*, Section 13, subd. (c), as amended, Laws of 1944, chap. 474.
12. *Ibid.*, Section 13 (f) (1).
13. *Metzger* vs. *Metzger Press*, 276 A.D. 936; *Simonette* vs. *Monro Waterproofing*, 282 A.D. 899; *Piccola* vs. *International Chimney Corp.*, 282 A.D. 226.
14. Workmen's Compensation Law, Section 13 (f) (1); Section 29.
15. *Ibid.*, Section 32, exceptions: personal assault. matter of *Jackson* vs. *Frederick Richman & Co.*, 15 N.Y. 2nd 877; *Berenberg* vs. *Park Memorial Chapel*, 286 A.D. 167; *Martin* vs. *C. A. Productions*, 8 N.Y. 2nd 226 (choice of remedy).
16. *Ibid.*, Section 13, subd. (d), (2) (g).
17. *Ibid.*, Section 13 (j), Rule 18, Rules and Procedure Relative to Medical and Surgical Care under Section 13.
18. Report to Hon. Averell Harriman, Governor of New York State, by Hon. Joseph M. Callahan, January 28, 1957, p. 31.
19. *Ennis* vs. *Kennedy Valve Mfg. Co.*, 282 A.D. 971.
20. Workmen's Compensation Law, Section 29, subd. (1) and Section 29 subd. (5), amended, Laws of 1966, chap. 840; *Crespo* vs. *Radio Corp. of America, Inc., et al.*, 26 A.D. 716; *Gray* vs. *Burns*, 5 N.Y. 975; *Cresci* vs. *Krasilousky*, 5 A.D. 2nd; and *Parchestsky* vs. *Kroll*, 267 N.Y. 410.
21. *Petterson* vs. *Daystrom Corp.*, 17 N.Y. 2nd 32.
22. *Dickman* vs. *The City of New York*, Court of Appeals, December 29, 1966, affirming 25 A.D., 2nd 931, "An attorney lien attaches to any compensation award."

The Physician Witness

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IT IS MY PURPOSE to state briefly that which is expected of the physician as a witness. To begin, let me first state that the doctor should always act as a physician and not as a lawyer, judge, or protagonist. Perhaps I can come back to this point as the topic develops.

We physicians are finding ourselves as witnesses in court with increasing frequency. This occurs because of the greater number of claims which are being presented both in compensation and liability. Therefore, it behooves the physician to ask what he can do to prepare himself and make himself a better witness: What should be emphasized and what should be avoided.

Justice Benjamin Cardozo wrote "Fraud includes the pretense of knowledge when knowledge there is none." It is incumbent on the physician witness to have true knowledge of the problem involved. Although there has been some recent adverse publicity to the contrary, the physician is always expected to be competent and honest. And this of course applies in whatever capacity he is serving as witness. The physician is expected to qualify well on both these grounds before the judge, the referee in a Workmen's Compensation

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court, the clerks, the attorneys, the claimant, and the spectators. All of these people will look on the physician and expect both honesty and competence. Occasionally, a medical witness will show a streak of the Thespian, and he may then become a more favorable witness. Not only what the physician says, but also the manner in which he says it can be quite important.

Preparation

Memory is often an issue at trial, and it would be well for the physician to prepare himself by knowing the facts concerning the case at hand. He can review the facts for himself, discuss some unclear aspects with the patient, and further his preparation by pretrial conference with the attorney involved, which is most helpful and certainly not looked down on as something which is out of order. Such knowledge concerning the case at hand will frequently overcome the nervousness which most people seem to experience when in a witness chair.

I think the physician should at all times manifest a certain seriousness in his testimony. No one expects humor on the part of the physician, and the one who attempts to ridicule his questioning attorney is headed for disaster. Attorneys think faster on their feet than physicians, can be expected to have a quicker sense of humor, and will invariably win in a battle of wits. Thus, stick to the serious facts. Likewise, stick to the medical facts. Recite them as you know them, give your opinion, and let the chips fall where they may. Remember that as a physician you are not playing the role of the judge or the lawyer. Defend your belief in a medical fact, but do not offer more than that which is asked of you. If you think your opponent attorney is being unfair or asking facts which are not all-inclusive, your have your own attorney to defend you and to elicit facts which you think should be further brought out.

While some of us have distinct prejudices and convictions, I believe the best medical witness will suppress these and always remember the oath which he takes on testifying, namely, to tell the truth, the whole truth, and nothing but the truth. Once you have these precepts in mind and the facts at hand, nothing should be able to disturb you in presenting the facts as you know them.

We should also remember that any witness in court can speak only about the facts which he has derived from his own perception. On the other hand, an expert witness may give his opinion which is derived from observation of a particular case, from experience over the years, from the writings of others, and from experimental observations. Generally, any licensed physician can be found qualified to testify as an expert on a medical subject under consideration. The experience of a physician in a special field may affect the weight of his testimony but should not affect his ability to qualify as an expert. Actually, the qualification of the medical expert lies within the jurisdiction of the court. In expressing his opinion the physician is relying on his total experience. This consists of all his years of training, clinical contact with patients, knowledge gleaned from publications and lectures, and deductions based on intellectual concepts. It is this total experience on which the physician should rely when expressing his opinion which is supposedly based on the best medical evidence.

Workmen's Compensation

I should like to take a minute to alert you to the difference in testifying in the court of law and a Workmen's Compensation case. To begin, attorneys, judges, and juries never quite possess the degree of medical knowledge which people in the compensation courts develop. Testimony in the Workmen's Compensation courts is almost always medical, and as a result of this, those who work in these courts possess a great deal of medical knowledge. Therefore, the use of complex terms is not confusing and need not be explained in most compensation cases. In fact, a physician who becomes too elementary in a compensation hearing may be wasting the time of the court or actually antagonizing the referee. On the other hand, the exact opposite prevails in the courts of law. There medical terms must be explained so that the juror who is a layman or the judge who is also a layman can understand the full significance of what is being described. Furthermore, there is a great deal of informality in the compensation hearing, and it would not be improper in this situation to suggest certain ideas or observations even though they are not distinctly called for. Such behavior on the part of a medical witness in a court of law might bring disdain. Similarly, in the Workmen's Compensation court it is not improper to mention the insurance carrier; while in a court of law neither should an insurance carrier be named, nor any reference be made to the fact that there are insurance provisions of any kind, or the fact that there is or was a compensation claim involved.

Records

There seems to be some confusion at least in the minds of physicians as to the use of records in testifying. I believe the safest policy is to bring all the records pertaining to the patient and use these as indicated when testifying as to the facts at hand. When making a compensation claim, the patient leaves himself open to investigation regarding pre-existent or tangential medical diagnoses. Thus, it is well to answer questions regarding prior treatment of the patient in the compensation court. On the other hand, there is certain information regarding prior treatment which would never be allowed or asked in a court of law. However, if the physician is fortified with his complete records regarding his patient, once it is determined what medical evidence is permissible, the physician can readily refer to his records and answer adequately. To refer to one's records regarding the treatment of a patient is not an admission of weakness or lack of knowledge concerning the patient. Rather, I would state that a well-kept office record is a further testimonial to accuracy and thoroughness on the part of the physician.

I trust that having in mind some of the things mentioned, we can perform our function as a medical witness more effectively and aid the cause of justice.

Rules and Procedures

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PROVISIONS OF the Workmen's Compensation Law essentially are the following:

Medical reports must be made on forms prescribed by the chairman of the Workmen's Compensation Board and require the authorization certificate number and code letters.

Reports are filed with the chairman, employer, or employer's insurance company, if known.

1. The first report is the forty-eight-hour report, the C-48 form.
2. Following this the physician sends a report within fifteen days. This should include a complete description of the injury, the progress, and treatment rendered. This is the C-4 form. Additional C-4 reports must be sent every three weeks. Failure to comply with this rule requires that the physician send a verified statement giving the reasons for the late filing.

The chairman may request more frequent reports, and these must be sent within a three-workday period of the request. The eye specialist's form is the C-5 form. The surgeon, on completion of surgery, files a C-24 form. If the case has been closed and the physician applies for reopening of the closed case, he files a C-27 form indicating the reasons for the support of such application.

In case of death, the physician files a C-64 final form. When the attending physician engages the services of a specialist, a consultant, a surgeon, x-ray examinations, or a physiotherapist, he must obtain authorization from the employer, the insurance company, or the chairman of the board if the cost exceeds $35. Additional requests for such services require authorization. These requests are sometimes granted and authorized by telephone, but it is wiser for the physician to obtain confirmation by letter. This removes any pos-

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sible misunderstanding. If, on the other hand, the authorization is denied or not received within five working days, or if the physician feels that the denial is not justified, he has the right to proceed with the services the patient requires, on the grounds that the employer or the insurance company has unreasonably withheld authorization and the patient's welfare consequently is jeopardized. Authorization in emergency cases is not required. The choice of the specialist is entirely within the jurisdiction of the injured.

A superseding physician must make a reasonable effort to communicate with the attending physician, informing him that he has been requested to take over treatment of the patient, procure information about the patient's condition and the history of the accident, his impression or diagnosis, and study already done. As a matter of courtesy he should state the reason for the transference. This should be done within forty-eight hours of the transference.

Records

Every doctor must be aware that his records probably will be subpoenaed, and, therefore, the records should be complete and in perfect order. Anything else can cause considerable embarrassment and possible discredit. When the physician is called to testify, to avoid inconsistent statements he should not rely on his memory. He must rely on what appears on his records. Therefore, his records should be precise and accurate. They should be in chronologic order, properly dated, and adequately descriptive. They should reveal the circumstances under which he saw his patient, the complete history of the accident or illness, all of the patient's complaints, complete details of the findings on examination, his impression and final diagnosis, the diagnostic studies performed with their results, and any reports of any consultant engaged. They should also include the type of treatment and medication employed in the therapy. If the patient does not return to him for further care or study and no definite diagnosis is made, he should label his record as a provisional diagnosis. The physician should remember that the history given to him is not fact, it is hearsay. What he was told may or may not be true or correct. His opinion thus is based on hearsay.

The record should be clear and legible. A poorly written record may well reflect on his professional management of the case and, indeed, his entire practice. Do not correct information given to you at the onset of the first interview, do not erase, and do not delete anything from the original record. If an error was made, draw a line across the error, but make it evident that you had no intention to blot out certain given information. If, in the course of treatment, a physician is given a different story which varies from the original obtained, an entry should be made on the record, indicating the date such information was received. This should be reflected on the subsequent report to the interested parties. This is the only way I know the physician can prevent serious embarrassment and discredit to himself and the patient as well. The record should never be tailored to fit the patient or the diagnosis. Helping a patient has always been and should be the motto, but nothing should be done that might reflect on the integrity of the physician.

I may say at this time that in the course of my practice I have read and evaluated hundreds of insurance company folders. In neurologic cases, for instance, the question of loss of consciousness, the period of loss of consciousness, and presence of cranial orifice bleeding often are not stated. The latter, of course, should be differentiated from bleeding from the lip, tongue, broken teeth, laceration of the gums, external ear, or nose. Any associated complaints of head injury, such as neck injury, should be noted. Sometimes these are first reported months after the injury occurred, when they may be held tenuous, to say the least. Sometimes they come to the fore at a hearing, in court, or in a consultant's report, again many months after the accident. I am cognizant of the fact that the claim may not be true and correct, but a statement by the attending doctor in the initial report will be most informative and helpful in the proper evaluation of the patient and often prevent any spurious claim.

I have noted innumerable C-4 forms of physicians who have treated patients for months and even years. I have noted exactly the same stereotyped reports, the wording and opinion exactly the same month after month, and treatment unchanged even though without benefit. It may be assumed that in some instances the condition of the patient remains static, but this certainly is not the rule. I would have liked to note, at least, some variations in the wording, prognosis, and so on. I have also noted very often that in spite of the fact the patient has resumed light work, even in those instances reports still disclose total disability. I have read and heard testimony by physicians who had no other record than the C-4's and in many instances relatively few of those, not in accordance with the many numbers of visits or with the rules of the department, often indicating only the dates of the patient's visits which appeared on a copy of a bill sent to the insurance company. I have seen hundreds of forms which were incomplete. These forms are legal forms, and it is important that they be filled out completely and informatively. And remember, gentlemen, that in every instance these reports bear the physician's signature. I am sure you must agree that this type of record does not enhance the medical profession, does not help the lawyers, and does not help the patient either. When the physician is called to testify, he should have all his records.

Finally, know your records well. This is the only way to achieve exactly what you want, and no one can disturb your position.

Subpoena

If the physician wishes to retain the privilege of treating compensation cases, he must realize that he may be called to testify. With repeated refusals or nonappearance when subpoenaed and after a reasonable investigation, the chairman of the board has the authority to revoke the physician's license to treat compensation cases.

A physician may exercise his right not to testify for the representing attorney. However, the attorney may subpoena the physician, and his appearance is mandatory; otherwise he may be held for contempt of court. If the physician's office is quite a distance from the court, if he is ill, or is outside of the state at the time, these may be accepted as justifiable reasons for not honoring the subpoena. A subpoena out of state is invalid. A fee for his time should be mutually arranged with the attorney before he testifies. Prior to his appearance in court, the physician should demand and obtain in full the fee for his service. Payment on contingency basis, in my experience, is not generally a satisfactory arrangement.

Treatment given after case has been closed pending third-party action

The case really is not closed, it is merely suspended, pending third-party action. If the treating physician is of the opinion that the patient needs still further care, then he should request authorization for treatment. The insurance company may assume that the liability on the case is good and in that case will give consent. If the contrary is assumed, the insurance company may refuse. The attorney representing the patient may not see fit to press the issue and may make some arrangement with the attending physician by promising payment at the termination of the third-party action. The physician may or may not accept payment on a contingency basis and can insist on payment for his services as the case is being treated. In that circumstance, with the insurance company unwilling to authorize payment, the case may be reopened and placed on the medical treatment calendar for disposition of the issue or treatment, both parties giving their evidence on that issue pending the third-party action. In the meantime, the physician must render the usual C-4 medical reports to safeguard his position and payment of his bill for services.

Conclusion

I know that a busy practitioner finds the paper work time-consuming and expensive. Having handled many of these cases over a period of years, I have learned that accurate records are essential and afford advantages to the physician. Moreover, it helps facilitate the disposal of the case and prompt payment of fee.

Midsternal Kinetocardiography with Solid System Recorder

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KINETOCARDIOGRAPHIC RECORDS *of ultralow frequency movements produced by a probe attached to a transducer at the midsternal area (kinetomidsternum) are useful and satisfactory in studying events which occur in systole during the isometric phase and ejection period and those which occur in diastole. The relationship of this method to the phases of the cardiac cycle, using as reference the electrocardiogram, phonocardiogram, apex-cardiogram, and carotid pulse, is discussed. The tracings obtained are satisfactory because patients are able to breathe freely, interspace motion is avoided, and the probe is closer to the cardiovascular system.*

In 1953 Eddleman *et al.*[1] introduced the term "kinetocardiogram" to represent records produced by a probe in contact with the chest wall, attached to a transducer responsive to ultralow frequency movements. Subsequently, Eddleman *et al.* used this method to study normal and abnormal hearts, particularly of patients with ischemic heart disease. In a series of 102 patients with myocardial infarction, a significant "bulge" was observed in 68 per cent.

In the present study, we have supplemented the positions on the thoracic wall defined by Eddleman *et al.* by the use of a midsternal location of the probe, and we used a solid system piezo-electric recorder instead of a probe attached to a bellows.

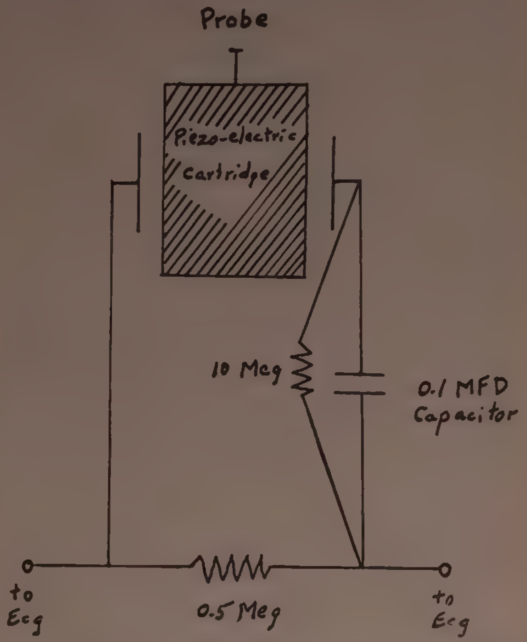

FIGURE 1. Time constant of this circuit (resistance in megohms times capacitance in microfarads) one second. Circuit simple and accurate for pick-up of low-frequency motions of chest wall. Tip of probe has diameter of 2 mm. (Ecg. impedance 10 megohms.)

Method

As a piezo-electric transducer, a phonograph cartridge with a frequency range of 50 to 5,000 cycles per second was modified as illustrated (Fig. 1).*

Only alternating current can cross the capacitor, and the time constant of this circuit is one second. Direct current has an alternate route across the 10-megohm resistance bridge. As illustrated, the cir-

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* Manufactured by The Astatic Corporation, Conneaut, Ohio; Astatic number 12 cartridge.

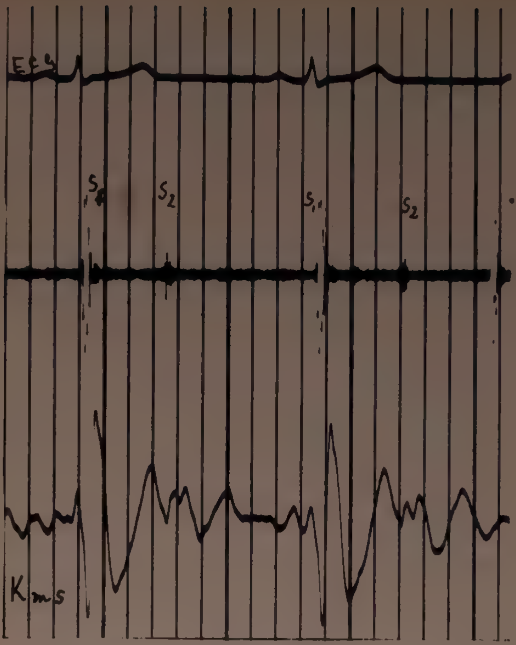

FIGURE 2. Normal kms pattern.

cuit gave a satisfactory record of ultralow frequency vibrations.

The output was connected with the terminals of either a Sanborn Twin-Viso recorder, a Sanborn Twin-Beam photographic unit,* or a four-channel Cambridge unit. Simultaneous recordings of the electrocardiogram, phonocardiogram, apexcardiogram, or the carotid pulse were performed.

The screw attached to the cartridge was used as a probe. It had a diameter at the tip of 2 mm. The probe was applied to the middle of the sternum, with the patient in a supine position. The pickup unit, mounted in a lucite box, was grasped in the arms of a clamp with a universal joint, attached by a bar to a sturdy stand.

In our recording system, the probe is placed over a point which lies at the intersection of the vertical line drawn from midsuprasternal notch to the xiphoid with a horizontal line corresponding to the fourth intercostal space. In other words, we are recording ultralow frequency movements in the presternal area over a point which lies between V_1 and V_2.

As has been pointed out, V_2 a standard terminology for various movements encountered in ultralow frequency tracings has not yet been accepted, and from the available data no systematic studies in the midsternal area have been done. For unknown reasons, this area seems to have been avoided.

We shall designate this area kms (kinetomidsternum).

Standard measurements were made of the duration of each deflection in seconds and of the amplitude of each deflection as a ratio or percentage. Because the significance of each wave is not fully elucidated, we prefer for the time being to use the terms "upward and downward movements" in relation to the base line for positive and negative deflections. The base line is an arbitrary horizontal line drawn through the point 0.04 seconds after the onset of QRS; it is the beginning of the preejection phase or isometric contraction.

Results

Sixty normal subjects, most of whom were employes or members of the medical staff of the hospital, have been studied. Both sexes were included. Their ages ranged between fifteen and sixty years. The kms was recorded several times on the same subject. The tracings were always reproducible, with the same pattern. Fifty patients with atherosclerotic heart disease and several with rheumatic valvular lesions have also been studied. The findings of this group will be discussed elsewhere. This report deals only with the normal pattern of kms, and only a limited number of abnormal tracings will be shown to stress the differences.

In our normal group of 60 subjects, the kms shows the first wave, corresponding to the preejection phase, with a duration of 0.03 seconds in 42 per cent of the cases, 0.04 in 28 per cent, and 0.05 seconds in the remainder. In only 2 cases was the time prolonged to 0.06 seconds.

The first positive deflection, corresponding to the ejection phase, is the largest one. In 68 per cent of the cases its peak is at 0.12 seconds after Q, and in 12 per cent 0.10 seconds after Q. In the remaining cases it occurs at 0.14 seconds after Q. The duration of this deflection is 0.06 seconds in 54 per cent, 0.08 seconds in 32 per cent, and 0.10 seconds in 14 per cent.

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* Sanborn Company, Waltham, Massachusetts.

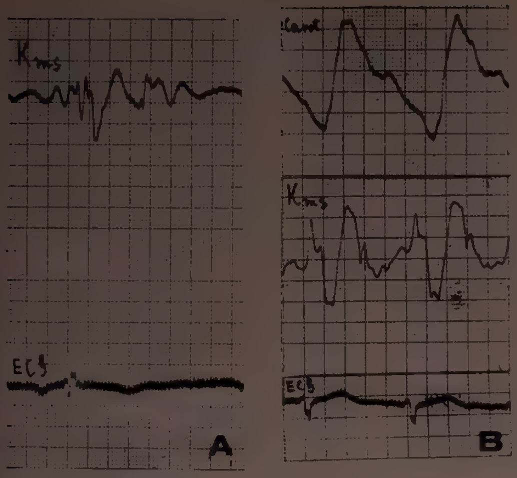

FIGURE 3. (A) Normal kms of twenty-two-year-old healthy man. After atrial wave, first upward movement which corresponds to isometric phase recorded 0.04 seconds after Q. First wave coincident with ejection phase occurs 0.10 seconds after Q wave, and last systolic wave 0.24 seconds after Q wave. (B) Twenty-four-year-old neurotic woman with moderate tachycardia. Single wave in ejection period; its peak 0.22 to 0.24 seconds after Q.

The last upward systolic movement has two thirds of the amplitude of the preceding one, and its duration is 0.08 seconds in 46 per cent, 0.10 seconds in 32 per cent, and 0.12 seconds in the rest. Its peak is found 0.32 to 0.34 seconds after the Q and is synchronous with the incisura of the carotid pulse in 80 per cent.

A representative normal kms pattern is presented in Figure 2. It consists of an upward movement, corresponding to the preejection phase or isometric contraction which starts 0.04 seconds after the Q wave of the electrocardiogram, simultaneously with the onset of the first heart sound. Its approximate duration is 0.04 seconds. This is followed by a deep downstroke, its peak occurring 0.08 seconds after Q.

Ejection wave. The ejection wave in the kms tracing shows an upward thrust, with a peak 0.12 seconds after Q or 0.02 seconds before the carotid upstroke. It is followed by a large downstroke with a peak 0.20 seconds after Q.

A second, smaller, systolic upward movement is recorded, with a peak 0.34 seconds from Q and an amplitude half that of the first systolic wave.

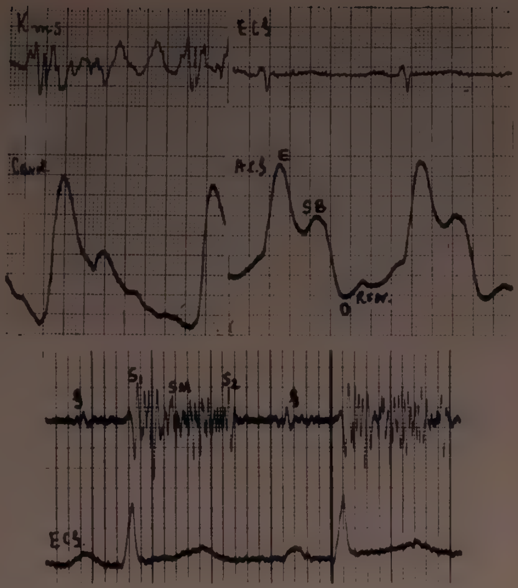

FIGURE 4. Twenty-two-year-old patient with rheumatic heart disease, mitral insufficiency, and left ventricular failure. Phonocardiogram shows pansystolic murmur and presystolic gallop (G). Apexcardiogram (ACG) shows systolic bulge (SB), deep O point (opening of mitral valve), and normal rapid filling wave (RFW). Kms recorded simultaneously with carotid pulse shows three-wave pattern during isometric phase. Two diastolic waves, first 0.04 seconds after incisura and second 0.44 seconds after leg of carotid. Second wave synchronous with presystolic gallop recorded in phonocardiogram.

Diastolic filling waves. A protodiastolic upward movement is recorded 0.04 seconds after the T wave of electrocardiogram (Fig. 3A). It is of low amplitude. The duration is 0.10 seconds. In some normal patients, this wave has a bifid appearance.

A second diastolic wave is recorded 0.65 seconds from Q and is of the same amplitude as the preceding one.

Atrial systole. The atrial systole is only occasionally diphasic. In the illustration, its peak is found 0.08 seconds after the peak of the P wave. In some cases, the atrial systolic wave is displaced slightly during respiratory motion to the preejection phase.

In 6 cases, 10 per cent, a variant of the usual pattern was obtained. In these cases the first wave, corresponding to the isometric phase, is larger and is of higher amplitude; its peak is 0.08 to 0.10 seconds after the onset of Q. There is only a single wave in the ejection period; its peak is 0.22 to 0.24 seconds after Q (Fig. 3 B).

Figure 4 shows a tracing recorded in a pa-

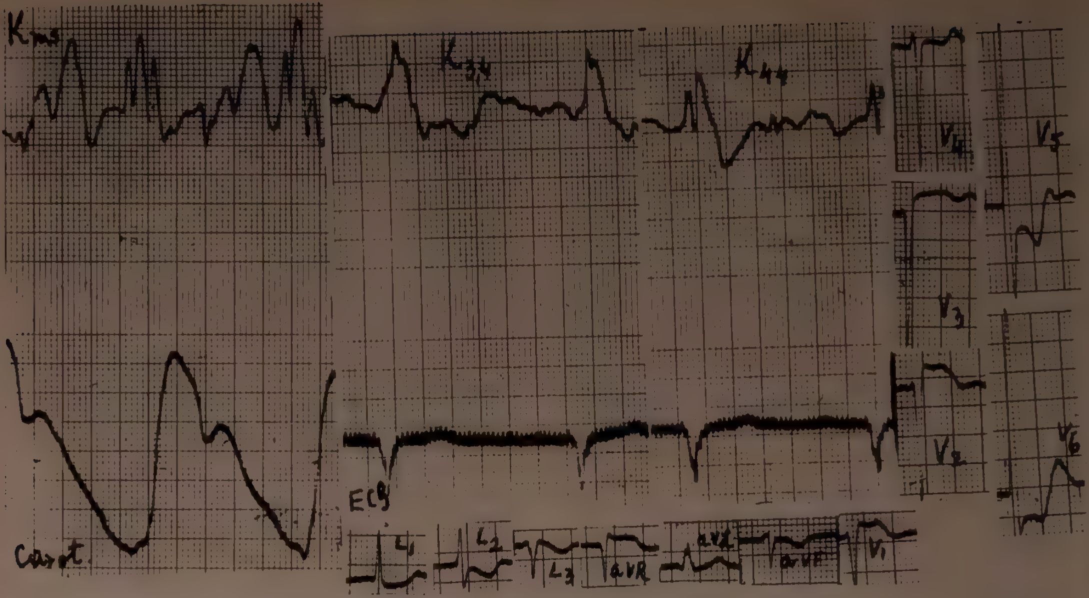

FIGURE 5. Fifty-year-old hypertensive patient admitted with severe coronary insufficiency. Electrocardiogram shows marked ischemic changes.

tient with rheumatic heart disease, mitral insufficiency, and left ventricular failure, where the phonocardiogram showed a pansystolic murmur and a presystolic gallop. The kms shows, in the preejection phase, a three-wave pattern.

In a patient with an acute myocardial infarction and atrial fibrillation, the kms shows an abnormal pattern in the preejection phase (Fig. 5). Three narrow, upward, peaked waves are recorded in the preejection phase of the carotid pulse. There is only a very small notched movement corresponding to the ejection phase 0.18 seconds after the leg of the upstroke of the carotid pulse. The largest wave is recorded 0.48 seconds after Q, and it represents an audible protodiastolic gallop.

On the same patient, an abnormal early outward systolic movement, as described by Harrison and Eddleman,[1,2,7,9] was recorded at K_{34}. This thrust replaces the isometric wave and goes over to the ejection phase.

Comment

The amount of information one is able to obtain from the study of ultralow frequency precordial movements is most impressive. This fact has been well known by those clinicians who have learned at the bedside to explain physiologic and pathologic phenomena which occur at the heart level by inspection and palpation of the precordial area.[3,4] A very small portion of heart vibration energy is audible to the human ear or to the usual phonocardiograph, most of the energy being below the audible threshold of 20 cycles per second.[5] Indeed, at the level of 20 to 50 cycles per second, the records are dominated by the valve sounds, and below this range, even the influence of valve sounds diminishes or nearly disappears. Thus, below 20 cycles per second, the impact of the heart on the chest wall may dominate the precordial tracing. Although the genesis of these tracings, which probably result from the interplay of complex changes in blood volume and pressure within the chest, have not yet been clearly defined, many methods have been devised. Some investigators feel that only kinetocardiography records chest wall response to low-frequency waves as distinguished from interspace motion.[6]

The method is considered by these authors to be very useful if correlated with other clinical data for more accurate evaluation of abnormalities of right ventricular function, ischemic heart disease, interatrial septal defects, mitral stenosis, aortic insufficiency, hypertensive heart disease, some atrial sounds, and pulmonary vascular resistance.

The method has certain limitations.

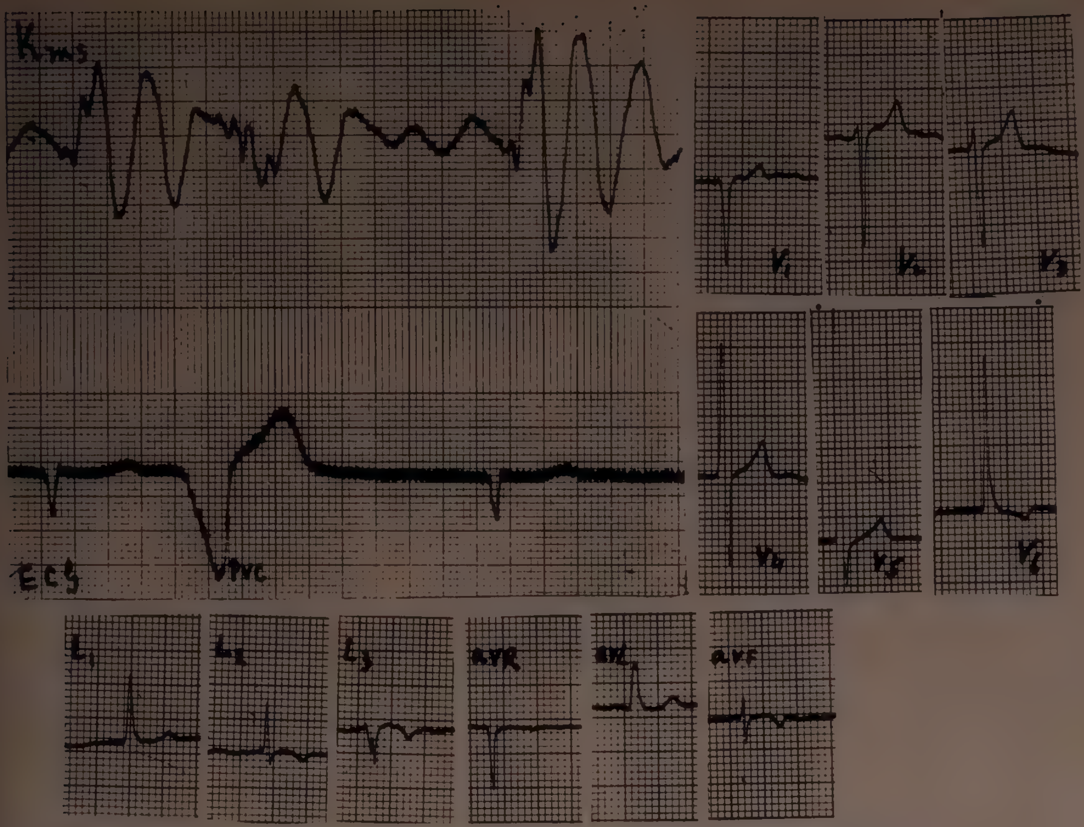

FIGURE 6. Kms and electrocardiogram of patient described in Figure 5 repeated three weeks later.

The tracings must be recorded during held respiration, and it is well known that abnormalities of cardiac function may be apparent only during normal breathing.[7] Frequently it is difficult to arrest respiration at the proper phase in untrained and in seriously sick patients. Other factors such as the thickness of the chest wall and the position of the heart may result in highly variable and uncontrollable individual characteristics.

The ultralow frequency tracing reflects several unknown factors involved in movements of the heart and particularly of the apex, which through rotation brings the ventricular wall closer to chest.[8] Among the known factors are a real stiffening of the myocardium during the tension period, decreased volume of the ventricular mass in diastole, transmission of pulsations of the large arteries, and so on. Because of the complexity of the physical forces involved, it is important to explore as many points as possible over the chest.

By using the kms, we try to avoid some errors due to interspace motion and respiratory variations, and we bring the recording probe as close as possible to the heart and great vessels.

The tracings from kms differ from K_{14}[1,2,7,9] by an additional upward movement which begins about 0.08 seconds after the onset of the Q wave of the electrocardiogram and terminates shortly after the left ventricular ejection begins. The second upward wave of the ejection phase in kms is usually represented in K_{14}[1,2,7,9] by an inward movement below the base line. The kms pattern resembles that of the left precordium with relation to the isometric contraction and the first outward movements which correspond to the first part of the ejection phase. In other words, kms records are somehow more like those of the left precordial movements as recorded by Eddleman *et al.*[1] except for the fact that in late systole positivities replace negativities. We do not intend to go into details explaining the genesis of each wave. This was done partially by Harrison,[9,10] and further elucidation is necessary.

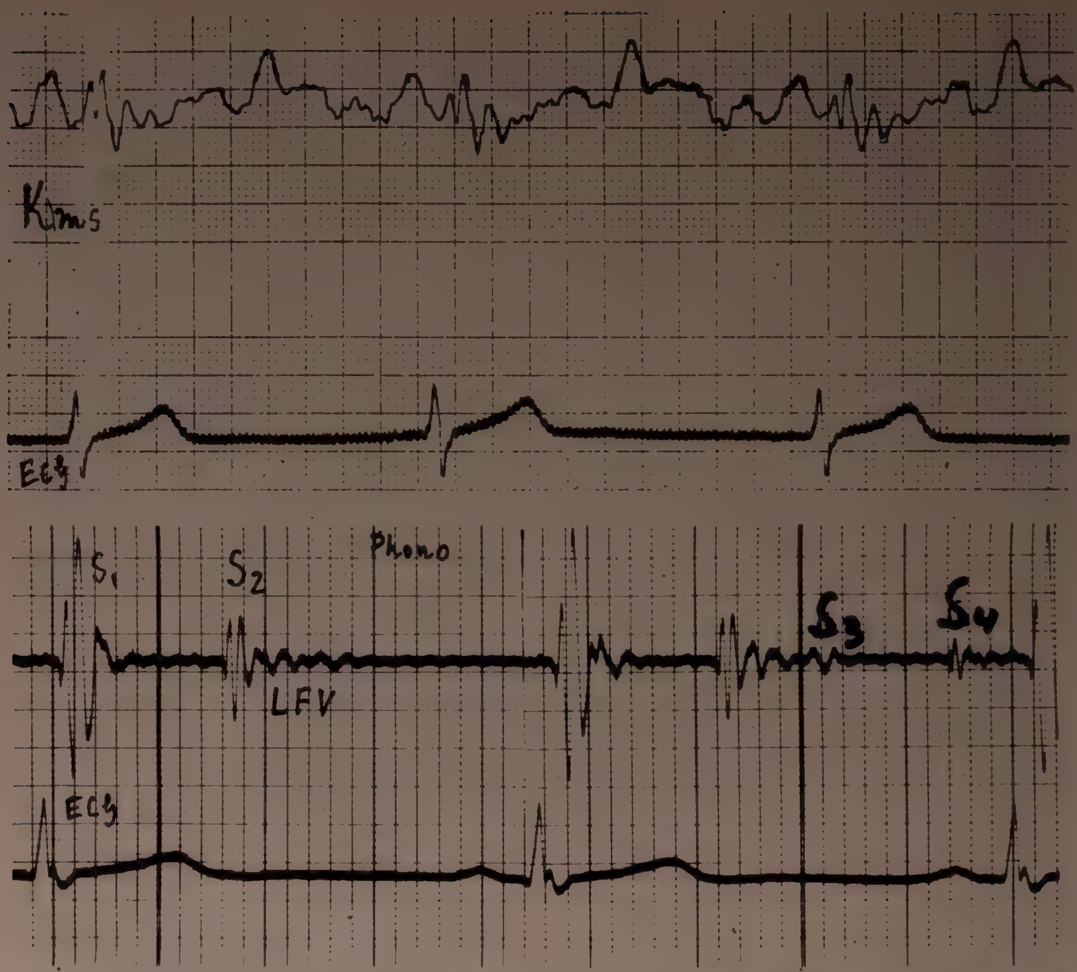

FIGURE 7. Twenty-year-old subject who presented on auscultation third and fourth heart sounds (S_3 and S_4). These extrasounds recorded on phonocardiogram. Low-frequency vibrations (LFV) recorded after second heart sound (S_2) at apex. Kms shows very large protodiastolic and presystolic waves synchronous with extrasounds.

Suffice it to say that with all the variations we mentioned, it was possible to obtain constant and reproducible tracings with the patients breathing normally. We have not failed to get recordings in one single case. The possibility of superimposing the systolic waves exists: The first wave which is unique, constant, and corresponds to the preejection or isometric phase, and the second and third waves which may correspond to the percussion and tidal waves recorded on the carotid pulse and which end simultaneously with the incisura in most of the cases.

As Figures 4 and 5 show, variations in the appearance and, to a lesser degree, the duration of the isometric contraction may indicate an abnormal condition such as mitral or coronary insufficiency.

In the case illustrated in Figure 6, a second kms taken at an interval of three weeks, after the clinical, laboratory, and electrocardiographic evidence of myocardial infarction improved, showed a changed pattern of the systolic waves, chiefly of the first wave which corresponds to isometric contraction. A single wave replaces the multiple waves of the normal kms, followed by a good ejection wave. Only during a premature ventricular contraction, possibly coming from the vicinity of the ischemic focus, does the kms show a notched isometric wave and a delayed ejection wave. The diastolic wave is similar in both tracings. We feel that septal involvement or papillary muscle dysfunction may account for these changes. On the same patient, who has atrial fibrillation, the carotid pulse taken simultaneously with the kms shows that the isometric phase remains unchanged, but the ejection wave and the carotid pulse vary in amplitude. This can be explained on the basis that the isometric contraction or preejection wave as reflected in the kms is constant, since it reflects a pressure change primarily, while the ejection waves of the kms apparently reflect more volume changes since they coincide with small carotid pulses. The early rapid passive filling, slow diastolic filling, and the filling caused by atrial systole, considered to have different vectors of force, are recorded perfectly in the kms.

This is true also for the third and fourth heart sounds, S_3 and S_4, in normal, healthy, young people (Fig. 7) as well as for protodiastolic and presystolic gallops observed in pathologic cases.[11] We have learned to make the diagnosis of gallops or of extra sounds from the kms with subsequent confirmation with the use of the Twin-Beam Sanborn phonocardiograph as illustrated in Figure 7.

Furthermore, we have been able to record in normal people early diastolic vibrations of low amplitude and low frequency, followed at times by a third heart sound (Fig. 7).

These vibrations, which are usually inaudible but which may occasionally give to a trained ear the impression of diastolic vibration, are seldom recorded on the phonocardiogram.

The kms thus opens new possibilities in the study of ultralow frequency vibrations and can supplement information obtained from other chest positions and other modalities.

Conclusion

A method for recording kms (kinetomidsternum) ultralow frequency vibrations during the cardiac cycle has been described. A constant general pattern has been obtained.

The relationship of kms to the phases of the cardiac cycle, using as reference the electrocardiogram, phonocardiogram, apexcardiogram, and carotid pulse is discussed.

Because patients are able to breathe freely, interspace motion is avoided, and the probe is closer to the cardiovascular system. This explains from the technical point of view why all the tracings obtained were satisfactory.

The advantage of this method for studying the events which occur in systole during the isometric phase and ejection period and those which occur in diastole—the early rapid passive filling, slow diastolic filling, and the filling caused by atrial systole—is stressed.

A few preliminary data concerning pathologic cases are presented to differentiate the normal pattern from the abnormal.

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Early Recognition of Emotional Difficulties

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OUR ATTENTION is focused on the emotional problems of children in Orange County which, I am sure, differ in no essential way from the problems of children in any county. We are especially interested in the early recognition of emotional difficulties with the thought that we may thus try to attain, at least to some degree, an earlier relief of, or lessening of, the burden of emotional dysfunction.

As we look in retrospect at even so specific a group as the children currently residing in the children's unit of the Middletown State Hospital, we find that the average age of onset of recognized deviant behavior or abnormalities of function is about three and a half years, whereas the average age of admission of this same group to the treatment facility is about nine years.

Evaluations of the outcome of treatment of children for the more than fifty years that child psychiatry has been identified with the child guidance movement, emphasizing psychotherapy directed at parent-child relationship in all behavioral problems of childhood, show no differences in the eventual outcome of the treated from the untreated child.[1] This finding does not negate the value that may derive in the course of treatment both to the child and to his family.

That we have an idea of the prevalences of psychologic disturbance in children has been pointed out to be a major misconception among the fundamental issues in the area of mental health in children. The determining of prevalence, as devised in a project for school children in New York City, was such a formidable undertaking that it was abandoned. However, the projection was that many more children with emotional disturbance would be identified by such a project than are so recognized at present.[2]

Consideration of normal

Our consideration here today of early recognition suggests, in some instances at least, signs and symptoms of difficulty in the preschool child; in others, in the early years of schooling. We might ask, "How do we determine that a child is emotionally disturbed?" And, "Who suggests it?" "Why is it suspected?" Many times in the presence of the fears and guilt feelings of the parents, we are faced with, "Who dares to suggest such a thing?" We may stop a moment here to say that we believe it is very important in establishing a climate for the improvement of mental health to make it known that we are not aiming to place blame when we try to assess the question of emotional disturbance in a child. As opposed to this we attempt to lift the onus of blame and guilt which we often find has weighed heavily on parental shoulders. This is not to say that alleviation of parental or familial faulty handling or responding will not be attempted in therapy, but all too often the parents have been staggering through insufferable conditions beyond endurance by the time professional aid is sought. To determine if a child is emotionally disturbed, we must first have a mental set that envisages the normal. Again we ask, what is normal? As we begin to speculate on the so-called limits of normal, we realize normal covers a wide band on a spectrum between the very slight on one side and the very great on the other, of almost any activity, action, or reaction. For example, by way of illustration, let us consider the reaction of temper tantrums. Any child may evidence temper, and, in fact, to the degree of temper tantrums. For this we would not label him abnormal. But should he have temper tantrums to the extent that they are exces-

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Presented at a program of the Orange County Mental Health Association, Inc., and the Orange County Planning Committee, together with the Committee on Emotionally Disturbed Children of the New York State Interdepartmental Health and Hospital Council, Goshen, New York, May 4, 1967.

sive, in frequency or in degree, we would be alert to the consideration that something may indeed be wrong: The child may be emotionally disturbed. And on the other end of the scale, should a child be so placid as to make no demands; evidence no hostility, aggression, or anger; in fact, show extreme placidity, again we would become alert to the possibility that something might be wrong. In common parlance, "he just wouldn't be normal." In this same way, we may fit any symptom a disturbed child may show on our scale and realize that any child may show such a symptom, but when the variation is excessive either quantitatively or especially qualitatively, the question of an abnormal or disturbed emotional reaction must be considered. This is particularly so when the precipitating factor is minimal.

Developmental picture

In human beings, the newborn child is a completely helpless being with a relatively long dependency on a mother figure for his needs of nurture and nature. Thus the important parent-child or, more specifically, the mother-child relationship is established very early and is probably the most important factor in determining the personality development of the child. Freud described step-by-step psychosexual development that goes on through an oral feeding and learning phase, through weaning and an anal phase with toilet training, and through a phallic and oedipal phase, toward the close of which, through identity with the parent or parent figure of the same sex, the child heads on into the latency period at about the same time as he heads toward the mystical world of school. The first child always bears the greatest risk, for no matter what position in the family a later child may have, the mother always faces him with experience in her favor. The first five years of a child's life comprise the important formative period in which he learns to tolerate anxiety and to handle frustration as he develops his response to people. This starts with a fulfilling of his needs, with satisfaction, a sense of security, a feeling of loving and being loved, and a seeking for approval, and through all of this there develops a response to authority figures relating first to the parents, then gradually to friends and neighbors, to the policeman on the corner, and, in or after the fifth year, to the teacher in school. If the handling has been secure, if the child has felt loved and wanted, and, except for the usual ups and downs, has reached and accomplished the usual developmental landmarks and maturational spurts, more or less at the usual times in an orderly fashion, the child goes from infancy through childhood and adolescence to adult life with no more than what we have come to accept as the usual molehills to scale, even though to any one individual at any given time they may seem mountainous.

Primary behavior disturbances

Although most children fall within the limits of normal emotionality in spite of, if not because of, parental handling, we recognize that some children are definitely abnormal. Of the various types of emotional disturbances, three main categories tend to encompass most of the disturbed children who come to our attention. First among these are the children whose disordered behavioral patterns develop in response to parental neglect, rejection, or even direct cruelty, abuse, or abandonment. They are children who have not been loved, have not learned to love in return, and who remain wary of, resistant to, and even defiant toward authority figures. They do not learn to tolerate frustration. They show ever-increasing hostile behavior at home, in school, and in the community, unless there is intervention and correction of the situation with relearning in the formative years. They are the children who are the potential sociopaths of adult life, engaging in antisocial acts against society. These children whose conditions are neither psychotic nor organic are usually considered to fall in the diagnostic category of primary behavior disorder with conduct disturbance.

Organicity: brain damage

The second group of emotionally disturbed children may tend to show behavior difficulties similar to those of the first group with inability to get along with other children or to respond in an acceptable manner to adults, but underlying these difficulties and even in many cases more prominent than these difficulties are what we have come to recognize as signs of brain dysfunction. Knobloch and Pasamanick[3] have labeled the condition "the syndrome of minimal cerebral damage." Birch[4] points out the developmental nature of the behavioral disturbances and the general lack of any neurologic confirmation of the fact of anatomic insult, thus making it clear that the term "brain damage" refers to a behavior syndrome and not to the fact of brain damage as such. Whether brain damage is minimal or the brain is damaged at all is entirely presumptive. There is further confusion because many with known and verified damage to the brain do not exhibit the patterns of behavior presumably characteristic of "brain damage." However, many show transient or persistent motor awkwardness, minor perceptual disturbance, and other evidence of visual-motor impairment as well as developmental lag.

The reasons for bringing a given child to attention vary with age; in general, the younger the child, the more likely it is that restlessness and overactivity will be a prominent feature of the complaint. In the child of school age, the referral may be based on all or any of such symptoms as disordered behavior (activity without clear direction, focus, or object), short attention span, emotional lability in which he is "dramatically unpredictable," social incompetence, defective work habits, impulsiveness, meddlesomeness, abnormal rigidity, perseveration, and specific learning disorders.[5,6]

Psychosis: childhood schizophrenia

The third category of emotionally disturbed children that we see quite frequently is the psychotic group, the children with childhood schizophrenia. Although there are those who view childhood schizophrenia as caused by the early mother-child relationship or family climate,[7] I feel that one of the clearer concepts of this condition is that given by Bender[8] and Chess[9] in which the cause of schizophrenia is viewed as a biologic process, as yet not identified, which may remain latent or may be triggered into a breakdown of defenses by another organic developmental problem, disease, trauma, or a critical developmental epoch. It is viewed as a lifelong process involving maturational lag at the embryonic level and a disturbance in all areas of integration on which behavior is formed. This offers a specific syndrome picture which can now be detected as early as shortly after birth (Fish, 1957).[8] This seems to resemble Gesell's[10] fetal infant, the difference being that the prematurely born infant will tend to outgrow his fetal characteristics, while the schizophrenic child carries them along even into maturity. These characteristics include (1) immature functioning in any or all of viscera and somatic symptoms with colics, pyloric spasms, celiac disease, skin sensitivities, allergic phenomena, vasomotor lability, and erratic growth; (2) respiratory and speech difficulties or asthmatic attacks; (3) sleep and waking patterns that do not tend to become normally patterned and states of consciousness that may wax and wane interfering with self-awareness and environment awareness; (4) disturbance of sensory impact through the vestibular system; and (5) tonic neck reflex attitudes that dominate all motor action and motility that is retained in the schizophrenic child. It is the retention of these primitive patterns of function characterized by an embryonic plasticity in all functions that suggest an inborn biologic defect.[11] The motor development of these children may most closely resemble the normal, but the growing need for activity, being badly integrated, often leads to such movement as body rocking, body manipulation, hand fluttering, or aimless darts into space. Hypersensitivity to perceptual or sensory experiences may lead to hyperexcitability, anxiety, hiding, or withdrawal. The autistic behavior may continue through early childhood, depending on the severity of the process, the potentialities of the individual child for growth and defense mechanism, environmental factors, and treatment. Immaturities and poor growth lead to frustration during this period because of demands for school achievement, independent social functioning, and competitive sports. Puberty, being a period of renewed spurts in growth, often brings the male child into a satisfactory remission. This may be followed by pseudopsychopathic defenses with antisocial acting out, poorly understood by the boy himself, his parents, or many professionals. This in turn may be followed by a psychotic break characteristic of the adult schizophrenic patient which may finally make the diagnosis clear to all.[8] There is a ratio of about 4 or 5 to 1 of boys over girls in the occurrence of schizophrenia in childhood, especially in the latency period, and a ratio of better than 2 to 1 of all emotional disturbances in childhood.[12] "Statistically the number of boys exceeds the number of girls in every type of growth or developmental disorder (B. Malzberg, 1953), especially in those associated with mental retardation."[13]

A review of pregnancy and birth histories of children with psychiatric problems showed a high incidence of histories of pregnancy and birth abnormalities. This was noted in children in all diagnostic categories, not only in those with obvious brain damage. A review of the literature revealed a growing number of studies relating prenatal and paranatal complications to childhood problems. The conclusion drawn was that the value and urgency of intensive inquiry regarding such factors in our patients' histories cannot be overemphasized.[14] Early developmental history is also of prime importance.

Conclusion

Emotionally disturbed children frequently do show early signs of difficulty. The younger the brain-damaged child, the greater the tendency to show hyperkinesia, the aimless, restless overactivity which seems to be driven from within with a restless shifting and touching with no discernible purpose or goal.[6,15] The child has no control over this activity and is unable to respond to corrective efforts to stop it. Such activity has been readily recognized as qualitatively different from that of the active normal child. Other signs of organicity or brain dysfunction also noted are short attention span, easy distractibility, perseveration, emotional lability with catastrophic emotional reactions, inability to get along with children his own age, and a seeking out of younger children and more babyish levels of play, with a marked tendency toward prolonged dependency needs. Early signs of emotional difficulties may also be noted in repeated accidents, in excessive hostility toward one or both parents, or in the loss of application to his usual interests. At school age, added to these symptoms is often the inability to function with peers, inability to sit still in class, and the frustrating occurrence of learning difficulties.[6]

In the schizophrenic child we may also find lack of or flattening of emotional response and a preoccupation with things, especially whirling, spinning objects, as well as the tendency to such activity himself (whirling, spinning) to the exclusion of goal-directed play and empathy toward people.

In the child with primary behavior disorder, with environmentally and experientially determined difficulties, problems often do not come to light until the child starts school. When he must respond to outside authority and conform to rules and regulations, which response he has not learned in the early developmental years, his defense is often found to be an acting out with hostile aggressive behavior or at least with disorganized disrupting of classroom activity and of the teacher's efforts to control the class. The length of time that such behavior is tolerated before the teacher gives up and seeks outside aid is sometimes amazing.

Therapy

I feel that this discussion of emotional disturbance in children should not be closed without some consideration as to therapy. Therapy in general should be constructive, preventive, and supportive, keeping in mind Bender's[16] finding that the child has an inherent capacity or drive for normality which is hard to block or divert by any abnormal condition. The following suggestions for therapy are offered:

1. Improved care of the expectant mother including educational material made available to her to inform her of the many governable factors over which she, herself, has control, to increase the potential for the birth of a normal child and to alert her to the dangers of known offending agents. Information as to facilities available to her should also be readily forthcoming.

2. Professional evaluation by general practitioner, pediatrician, psychiatrist, child psychiatrist, and/or interdisciplinary facilities of the child showing symptoms of emotional disturbance to establish a diagnosis. This is arrived at through a careful history, physical and neurologic examinations, psychological evaluation, and electroencephalogram findings. In our experience, the most important factor is the clinical evaluation of the child. Following this a possible treatment regimen should be set up for the child in whatever setting is considered best for all concerned. An opportunity should be offered for psychotherapeutic intervention and the creation of a healthier interaction in the family setting. For the very disturbed child, a period of institutional care in a therapeutic milieu program may serve best before any attempt at community solution of the problem.

It is our experience at the Middletown State Hospital children's unit that our best results have often been with the so-called "organic" children. We are often able to control or reduce the deviant factors of behavior through medication including amphetamines and related drugs, anticonvulsants, tranquilizers, and antidepressants as indicated. Medication is given only after a careful study and evaluation of each child. Another factor which we feel plays no small part in our results with this group of children is that a large percentage of them come from intact, accepting family settings where the responsible adults seek understanding and show a good response to the opportunity for ventilating their doubts and fears and a ready acceptance of psychological support in the handling of the disturbed children. We find, also, that medication is often helpful in reducing many of the incapacitating symptoms of the psychotic child, and, to some extent, of the primary behavior problem child, so that psychotherapeutic measures may be more effective.

3. Establishment of facilities available to school personnel so that early assessment may be made of any child who begins to exhibit persistent deviant behavior, especially in the early grades in school.

4. Further development of the program of classes for emotionally disturbed children so that all or at least most of the children in need of the more controlled, less demanding, less exciting, less competitive, and more specialized teaching of such classes with adequate facilities for each child's learning to his capacity may be available at various age or maturational levels.

5. Further development of programs of specialized teacher training so that mature, trained personnel will be available for the special classes.

6. Investigation into the possibility of establishing either an educational program or at least an organized and specially supervised activity program for emotionally disturbed children during the long summer vacation period. Their need for prolonged dependency would in itself make such a program valuable. In addition, current investigation seems to indicate more success in the learning process in handicapped children when the period of interruption is not prolonged.

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Scientific Session held at
Memorial Hospital
New York City
February 21, 1967

ABSTRACTS OF PROCEEDINGS

New York Society for Thoracic Surgery

ALLAN ELLIA BLOOMBERG, M.D., Editor

Introduction

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On February 20, 1967, the New York Society for Thoracic Surgery celebrated the fiftieth anniversary of its founding. On that evening at our annual dinner meeting in the University Club, Lawrence Miscall, M.D., talked most entertainingly on the early beginnings of the Society, illustrating his lecture with many slides of the memorabilia, carefully gathered by many of our members and by interested hospital librarians.

In preparation for the fiftieth anniversary of the American Association for Thoracic Surgery, Dr. Miscall, aided and abetted by our own Society, published a book entitled, *Founding of the American Association for Thoracic Surgery.** The following excerpts were taken from that book.

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* Published through the generosity of The Society of the Alumni of Bellevue Hospital, E. R. Squibb & Sons, Inc., American Optical Company Medical Division, and American Optical Company, Canada, Limited.

Founding of Association

LAWRENCE MISCALL, M.D.
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Visiting in Surgery, Bellevue Hospital Center

As the year 1917 began to take form, while war clouds lay heavy on our nation moving rapidly toward the gaping chasm of full-scale conflict, Willy Meyer and his dedicated group had reached the point where they were ready to take the first formal steps toward realization of their dream; 1917 hardly presented a climate conducive to such action, but the courage and determination of these men refused to be coerced into abandoning their plan at the behest of an oppressive world situation.

On February 20 of that year, Willy Meyer, M.D., welcomed at his office, in his home at 700 Madison Avenue, 20 of his New York friends for the purpose of founding a Society. He had two specific aims in mind which were inseparably connected. The first was to found The New York Society for Thoracic Surgery, to which all promptly agreed and which was soon accomplished at the meeting. The second, and more important task, was the duty of this group to issue at some later date, invitations to a larger group, selected from across the United States and Canada, consisting of those who had demonstrated sufficient interest in thoracic surgery to collaborate in founding a Society of national scope.

The minutes of this highly propitious meeting, as recorded by the then acting secretary, Kenneth Bulkley, M.D., read as follows:

> On the evening of February 20, 1917, on invitation of Dr. Willy Meyer, a meeting was held at his office, 700 Madison Avenue, for

the purpose of forming a New York Society for Thoracic Surgery. The following men, representing all specialties interested in the surgery of the thorax except anaesthesists and internists, had been invited by Dr. Meyer to be present:

1. Dr. John Auer, Rockefeller Inst.
2. Dr. Kenneth Bulkley, Asst. Vis. Surg., Bellevue, 104 East 81st St.
3. Dr. Eugene W. Caldwell, Presbyterian Hosp., 480 Park Ave.
4. Dr. Armistead C. Crump, Attg. Phys. G-E, Pres. O.P.D., 20 W 50 St.
5. Dr. Max Einhorn, 20 E. 63 St.
6. Dr. Hermann Fischer, Adj. Surg., Germ. Hosp., 111 E. 81 St.
7. Dr. Nathan W. Green, Attg. Surg., City; Assoc. A.S., St. Luke's, 152 W. 57th St.
8. Dr. Henry H. Janeway, Attg. Surg., Memorial, 375 Park Ave.
9. Dr. James H. Kenyon, Asst. Surg., Fordh. Babies, St. Francis & Neurol. Inst., Assoc. Surg., Hudson St., 57 W 58th St.
10. Dr. Adrian V. S. Lambert, Vis. Surg., Presb., 168 E. 71st St.
11. Dr. Howard Lilienthal, Vis. Surg., Bellevue & Mt. Sinai, 48 E. 74th St.
12. Dr. William H. Luckett, Attg Surg., Bellevue & Harlem, Hosp., 18 W. 87th St.
13. Dr. Walton Martin, Attg. Surg., St. Luke's, 151 E. 63rd St.
14. Dr. Sam. J. Meltzer, Rockefeller Inst., 13 W. 121 St.
15. Dr. Willy Meyer, Attg. Surg., German & P-Gr. Hosp., 700 Madison Ave.
16. Dr. Martin Rehling, Adj. Surg. German & P-G., 209 E. 61st St.
17. Dr. Wm. H. Stewart, Radiogr., Fordham, Harlem, German Hosps., 222 W. 79th St
18. Dr. Franz J. A. Torek, Attg. Surg., Skin & Cancer; German, 1021 Madison Ave.
19. Dr. Martin W. Ware, Adj Surg., Mt. Sinai, 27 E. 81st St.
20. Dr. Sydney Yankauer, Assoc. Surg., Mt. Sinai, 616 Madison Ave.

The meeting was called to order at 9:00 o'clock by Dr. Meyer who welcomed the guests and briefly outlined the object of forming a society for thoracic surgery. Dr. Meyer felt that it was but natural, with the widening of the medical horizon, that small groups of physicians have banded together here and there to form small private societies for the study of particular specialties. They did so particularly for the opportunity of free discussion of questions of mutual interest, questions which often hardly evoke the attention or interest of the average medical man. It has thus happened that here in New York a great many such special medical societies exist.

To add another one seemed, at first glance, rather burdensome, possibly even superfluous. Why should not this specialty be discussed before the meetings of other societies? However, it requires knowledge and personal experience to enjoy the discussion of such subjects after a hard day's work. One cannot bring up with advantage all the subjects, which might interest us here, before the Surgical Society or the Surgical Section of the Academy of Medicine. These questions could be discussed, as freely as possible, (possibly one subject an evening) among a group of men thinking and working in the same direction, unhampered by time, unrestricted, and with the possibility of continuation, if so desired, at the next meeting.

With these objects in mind, Dr. Meyer ventured to gather a group of men to band together to form a New York Society for Thoracic Surgery. The response to his invitation was unanimous and enthusiastic, and the meeting tonight is the result.

Dr. Meyer then outlined briefly the points which seemed necessary for discussion.

It was the consensus of those present that a society for thoracic surgery be formed and after due consideration the name "The New York Society for Thoracic Surgery" was adopted. Willy Meyer, M.D., was nominated, seconded, and elected permanent Chairman and Kenneth Bulkley, M.D., Secretary-Treasurer.

The founding of the New York Society for Thoracic Surgery led directly to the formation of The American Association for Thoracic Surgery.

Nathan Green, M.D., recorded the proceedings for the historic organization meeting of The American Association for Thoracic Surgery. His minutes read as follows:

> On June 7, 1917, on invitation of the New York Society for Thoracic Surgery, a luncheon was given at the Waldorf Astoria, for the purpose of forming the American Association for Thoracic Surgery. Men of the following specialties—anatomy, physiology, pathology, internal medicine inclusive of pulmonary tuberculosis and gastroenterology, surgery inclusive of experimental workers, roentgenology, broncho- and esophagoscopy, and anaesthesia—were invited.

In calling the meeting to order Dr. Meyer said; Gentlemen: When, on February 20th of this year, the New York Society for Thoracic Surgery was formed for the purpose of a free exchange of views and experiences of such members of our profession as take active interest in the evolution of this chapter of medical science, it was stated that one of the objects in founding the New York Society for Thoracic Surgery was to create a committee for the purpose of selecting names of such colleagues all over our states as are known for their interest and work in the surgery of the thorax, in order to found the American Association for Thoracic Surgery.

This object, it almost seems, will be realized today More than half of those invited declared their willingness to join the Association, and the majority of them are here, gathered in this room. Eight others have sent their regrets, but wish to have their names presented for membership. Three who have accepted, are at the front in England and France. A fourth one, the enthusiastic, splendid secretary of the New York Society for Thoracic Surgery, Kenneth Bulkley, M.D., is in Paris with Jos. A. Blake, M.D., in the midst of hard work. His place is temporarily filled by Nathan W. Green, M.D., who so courteously allowed this burden to be added to his daily duties.

Gentlemen: Thoracic surgery, as you all know, has made rapid advances in America. In many places, hospitals, medical schools, and universities, the interest in it is intense. New and important observations are made almost daily. We must have a place to discuss them.

We need not wonder, if the average medical man often seems bored when the subject of thoracic surgery comes up for discussion at our medical meetings. This matter does not carry particular interest, except as one has made a study of it. Hence, those interested must be among themselves! When founding the New York Society for Thoracic Surgery we were particularly fortunate in having so many men right on the spot who are active in this latest and last branch of operative surgery. Our society, which is a private one, started with a membership of 30. We could easily make it double the number and more, within twenty-four hours.

However, we do not want to exchange our views with New York colleagues only. We want to discuss matters, at least once a year, with you gentlemen from all over the States, with interest and aims similar to our own.

The members of the New York Society are profoundly grateful to you for having answered our call to come to this meeting. We all bid you a hearty welcome!

I make a motion that the American Association for Thoracic Surgery be formed; the motion was moved, seconded, and carried. The Association has been formed.

The scientific session of the Society was held on February 21, 1967, at the Auditorium of the Memorial Hospital for Cancer and Allied Diseases. Abstracts of the reports delivered at the morning session follow:

Susceptibility of Various Levels of Esophagus to Peptic Digestion

WILLIAM A. BARNES, M.D.
New York City
S. FRANK REDO, M.D.
New York City
LOUIS SCHWARTZ, B.S.
New York City

From the Department of Surgery, New York Hospital-Cornell University Medical Center

The effects of an ulcerogenic solution at different levels of the esophagus were studied in anesthetized dogs. In 15 animals the upper, middle, and lower thirds of the esophagus were separately perfused with a 2 per cent pepsin solution adjusted to a pH of less than 2, for periods of from three to seven hours. In 5 additional dogs, the entire esophagus was perfused in a like manner. The results of the triple-drip experiment revealed a similar degree of injury at each of the levels of the esophagus studied. The single-drip preparation showed greatest tissue reaction at the level of the esophagus closest to the site of entry of the perfusion fluid.

The findings indicate that there is no difference in susceptibility of the mucosa of the upper, middle, and lower thirds of the canine esophagus to acid-pepsin digestion and suggest that the predilection of the lower third of the esophagus for peptic esophagitis in human beings is due to the location of this portion of the esophagus nearest the source of gastric juice and not to greater sensitivity of the esophageal mucosa at this level.

Experiences with Carlens Mediastinoscopy

PAUL A. KIRSCHNER, M.D.
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In 1959, Carlens* described a method of direct inspection and biopsy of the superior mediastinum, known as mediastinoscopy. This procedure has been found to yield histologically diagnostic material at least three times as often as scalene biopsies. It has proved valuable in lung cancer, sarcoidosis, lymphomas, tuberculosis, and other conditions. Mediastinoscopy has enjoyed great popularity in Scandinavia and other parts of Europe, but only relatively recently has it been used in the New World.

We have performed 26 mediastinoscopies at The Mount Sinai Hospital since October, 1965. In 17 cases of lung cancer, positive biopsies were obtained 10 times. Other diagnoses included sarcoidosis, Hodgkin's disease, and thymoma. On two occasions, paratracheal cystic masses were totally excised transcervically. Mediastinoscopy was performed uneventfully in 2 patients with superior vena cava syndrome. Morbidity has been slight with no deaths.

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* Carlens, E.: Mediastinoscopy: a method for inspection and tissue biopsy in the superior mediastinum, Dis. Chest. **36:** 343 (1959).

Intraluminal Splinting in Treating Caustic Injury to Esophagus

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The concept of prophylactic esophageal dilatation, initiated shortly after caustic injury as a means of preventing stricture formation, was introduced by Salzer in 1920. It is generally agreed that serial dilatation, combined with antibiotic and steroid therapy, has reduced the incidence of late caustic stricture. However, it is recognized that some patients will develop stricture regardless of therapeutic methods initially employed.

Effectiveness of intraluminal splinting in the prevention of caustic stricture of the esophagus has been demonstrated experimentally in our laboratory and previously reported. After burning the cat esophagus with lye, intraluminal splinting for a period of fifteen days protects against the subsequent development of caustic stricture. We have applied this method in 2 patients with severe lye burns of the esophagus.

Two patients were admitted to Morrisania City Hospital on July 10, 1966, following an accidental ingestion of a large quantity of lye. Because of their deteriorated general condition and subsequent delirium tremens, esophagoscopy was deferred. The patients were treated with intravenous fluids, antibiotics, and steroids. On the twelfth hospital day esophagoscopy in both patients revealed severe burns, extending from midesophagus to the cardioesophageal junction. In addition severe burns of mouth and hypopharynx were present. Both patients underwent insertion of endoesophageal tube and by the method reported previously. Recovery was uneventful and patients were able to swallow liquids and soft food on the second postoperative day. The endoesophageal splints were removed eight weeks later. Both patients developed late stricture, one requiring colon interposition and the other dilatations.

We believe failure is related to the delay in treatment in these cases. Early insertion of the splint, within the first week after caustic injury, and its removal no sooner than six months after insertion is recommended.

New Operation for Severe Reflux Esophagitis and/or Esophageal Stricture*

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Severe reflux esophagitis includes (1) recurrent symptomatic hiatal hernia, (2) association with wide lateral diaphragmatic defects, (3) brachyesophagus, (4) esophagogastromyotomy, (5) organic obstruction caused by reflux, and (6) esophagogastrostomy. Several ingenious procedures have been proposed for prevention or cure of these difficult situations. None has had wide acceptance.

A simple, safe procedure has been evaluated in over 40 dogs. A viable myoneurovascular intercostal pedicle was incorporated in the gastroesophageal junction. Reflux and esophagitis were first created and subsequently treated by the new technic. The results were evaluated by esophagoscopy, movies taken through fiberscope, fluoroscopy and cinefluoroscopy, esophagrams, and histologic examinations.

The new procedure makes unnecessary the reconstruction of the angle of His. A sling action is however created. The abdominal cavity is not entered, and it is not essential to place the lowest portion of the esophagus beneath the diaphragm. The new sphincter is effective at any level, and it may be performed on either side of the chest. Contraction simultaneous with diaphragmatic motion takes place just as manifested by the normal right crus. The risk of failure is not as great as with the leak which might occur in an intestinal interposition. The integrity of the diaphragm is preserved.

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Acute Perforations of Esophagus

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Perforation of the esophagus at any level may result in a devastating necrotizing chemical insult with rapidly superimposed anaerobic and aerobic infection which may quickly, in a matter of hours, jeopardize a patient's life with pleuritis, pyopneumothorax, and gangrenous mediastinitis. Despite modern diagnostic aids, anesthetic and operative technics, antibiotics, and other supportive measures, perforation of the esophagus is still an alarming accident.

The incidence of esophageal perforations appears to be increasing, and since early recognition and management are so important to the welfare and perhaps to the survival of the patient, I should like to emphasize that the single most important requirement in the diagnosis is the physician's awareness of the symptoms and signs it can produce and his suspicion that it may be present.

The various causes of perforation are legion, and in a review of 132 perforations of the esophagus from all causes, 92 or 70 per cent were caused by instrumentation. In the normal esophagus perforations occurred at normal levels of narrowing; the level of the seventh cervical vertebra, the aorta, and where the esophagus crosses the diaphragm. In the abnormal esophagus perforations occurred proximal to obstruction in the normal esophagus.

The incidence and causes, symptoms and

signs, and a comparison of the mortality rate of patients treated conservatively with antibiotics with those patients treated with surgical closure and drainage of perforations of the esophagus at various levels will be presented.

Cologastric Ulcer in Esophagoplasty

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A case is presented of a forty-year-old man who, twenty-seven months following resection of the lower third of esophagus for benign stricture and reconstruction by esophagocologastrostomy, presented radiologic evidence of ulcer of the interposed colon just above the cologastrostomy. In spite of his having undergone distal esophagectomy, a Hollander test result was positive. At reoperation the ulcer was resected with a sleeve of anterior colon, and a new cologastrostomy was constructed. A distal partial gastrectomy, Billroth II, was also performed. A small vagus fiber running from posterior mediastinum to posterior wall of stomach was removed and histologically verified. He is well except for alkaline regurgitation of nuisance value. He has no free acid on either insulin or reinforced histamine stimulation.

Nine additional cases from the world's literature are reviewed in an attempt to find a common denominator of the cause of this rare complication.

Pertinent literature on animal experimentation is cited.

(*For complete article from this meeting see Neville, W. E.: Esophageal carcinoma, p. 649*)

Congenital malformations in offspring of diabetic mothers

The diabetic pregnant woman faces not only a 10 to 25 per cent hazard of fetal loss but also an increase in the chance of producing a child with congenital malformations. This latter is estimated at two to three times that of nondiabetic mothers. E. J. Connor, M.D., writing in a recent issue of *Medical Annals of The District of Columbia*, lists some reasons for the increased tendency to malformations in babies of diabetic women: transfer of genetic traits, abnormal intrauterine environment, hyperglycemia, effect of insulin administration, hypoglycemia, hyperadrenocorticism, placental insufficiency, and pituitary influence.

Records were reviewed from 206 deliveries of diabetic pregnant women, and analyses were made for the type of anomaly; the influence of the severity of the diabetes in the mother on the type and degree of malformation, if any; a comparison of the incidence of congenital malformations in offspring of diabetic women as compared to nondiabetic women; and the possible factors involved.

The defects of 3 infants were lethal. Other defects included complete absence of the left nostril, mongolism, vestigial thyroglossal cysts, asymptomatic horseshoe kidney, bilateral harelip, cleft palate, congenital absence of the right kidney, and an extra digit on the left hand.

Although insulin is known to be teratogenic in animals, it is also a fact that diabetic women who are not on insulin therapy also produce infants with malformations in greater numbers than nondiabetic women. Even though there is no known method of prevention, it appears that rigorous diabetic control is indicated during pregnancy, with frequent visits by the patient to the physician. Blood and urine tests should be frequent to detect possible acidosis quickly; also, hypoglycemia should be avoided, especially in early pregnancy.

Esophageal Carcinoma

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THE FOUNDING FATHERS of this society were the originators of some of the basic concepts of physiology which are paramount in our practice. Recognizing the need for adequate anesthesia in thoracic surgery, they attempted to elucidate and, in fact, did solve many of the problems inherent in open-chest procedures. While the subject of esophageal carcinoma is difficult, I hope you will bear with me while I describe a few of the men who were responsible for the advancements in anesthesia and attempted the first esophageal resections for cancer.

It was fifty-seven years ago that Howard Lilienthal, M.D., performed the first thoracotomy under endotracheal anesthesia. He used a machine which was designed by Elsberg. After considerable experience in the laboratory and some clinical data derived from a patient who had myasthenia gravis, he and his associates did an exploratory thoracotomy with this apparatus. It is interesting that the individual with myasthenia gravis was kept alive for approximately five hours with this machine, and from the data derived from this clinical experiment, the physicians felt secure in operating on the open chest.

At the same time, Willie Meyer, M.D., had his own ideas regarding the manner in which the open thorax should be handled and had separately been investigating a positive and negative type of chamber which had been used by Sauerbruck in Germany. He felt that this method was superior to placing a tube down through the larynx into the trachea. The latter tube had been developed by Matas, Meltzer, and Auer[1] in the early 1900's.

On March 19, 1910, a symposium on anesthesia was held in New York City. The principal speakers were Sam Meltzer, M.D., Charles A. Elsberg, M.D., Willie Meyer, M.D., and Alexis Carrel, M.D. Dr. Meltzer's report dealt with "The Method of Respiration by Intratracheal Insufflation, Its Scientific Principle and Its Practical Availability in Medicine and Surgery." Dr. Elsberg spoke on "The Value of Continuous Intratracheal Insufflation of Air in (Meltzer) Thoracic Surgery." Dr. Meyer talked on "The Avoidance of Apparatus Complicating the Operation: a Paramount Requirement in Thoracic Surgery," and Dr. Carrel's speech dealt with "Experimental Intrathoracic Surgery by the Meltzer and Auer Method of Intratracheal Insufflation." Thus, the deck was stacked against Dr. Willie Meyer by 3 to 1. However, according to the medical record, he rose to the occasion and stoutly defended his method of pulmonary insufflation stating that intratracheal anesthesia was too cumbersome. In 1912, Meyer[2] utilized the positive and negative chamber during operation on 4 patients with carcinoma of the esophagus. None of these patients survived. It is interesting that in the third patient operated on, Carl Eggers, M.D., gave the anesthetic, and in attendance in the chamber was Yandel Henderson, M.D., who came from Yale to supervise the anesthetic.

Sauerbruck in Germany had postulated that the reason the patients died was that the vagus nerve was disturbed. Although Dr. Meyer paid particular attention to avoiding this structure, he stated following the demise of these patients that the cause of death was vagus stimulation. It is interesting that the physicians did notice at the time of surgery that when the lungs were insufflated, the heart seemed to respond more satisfactorily. It was not until much later that the value of oxygenation took precedence over the "vagal death" theory.

In all the cases, Dr. Meyer employed a very generous thoracic incision and reflected the entire scapula upward. The tumor was removed in its entirety, and the upper and lower esophageal stumps were tied and transfixed. A fifth case which was reported by Dr. Meyer was found to have

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a pneumothorax at post mortem. He postulated that regurgitation from the upper esophageal stump caused collapse of the lung. However, the chest in all the patients was drained with a large Penrose tube, and it is significant that the physicians did not realize that positive pressure of the atmosphere caused the pneumothorax.

It remained for Franz Torek, M.D., in 1913[3] to perform the first successful esophagectomy for a carcinoma. Torek reasoned that since one could not dissect the vagus nerve off the esophagus easily through the type of incision which was used, then possibly a long posterolateral incision would permit mobilization of the nerve under direct vision, and the heart would not subsequently be arrested. He also postulated that if leakage from the proximal esophagus accounted for the death of Dr. Meyer's patients, why not exteriorize the esophagus in the neck. Thus, he opened the chest through a posterolateral thoracotomy incision and gently dissected the vagus nerve. He mobilized the middle and upper third of the esophagus from behind the aortic arch and pulled it out into the neck. The lower esophageal stump was closed, and the patient subsequently fed through a gastrostomy. This woman lived fairly comfortably for thirteen years. She was able to swallow by virtue of a tube placed from the esophageal stoma externally down into the gastrostomy opening. Although Dr. Torek wanted to reconstruct her esophagus with antithoracic skin tubes, she was extremely happy with her existence and would not undergo subsequent surgery.

The second successful operation for a carcinoma of the esophagus was performed by Lilienthal of New York City in 1921.[4] He used an extrapleural approach. A flap of skin was dissected but left attached to the chest wall. After exposing the esophagus, the skin was wrapped around the esophagus, thereby walling off the mediastinum. At a second stage, the cancer was resected and the flap of skin was detached from the chest wall, thereby creating a new swallowing tube. Air was present in the newly formed esophagus, and a piece of skin bridged the defect between the proximal and distal ends.

Eggers[5] did the third successful operation on a patient with a carcinoma of the esophagus in 1925. Thus, the first three successful resections for esophageal carcinoma were performed by three of the founding members of this society.

Although Adrian Lambert, Sr., M.D., did not have a first, a second, or even a third in the field of thoracic procedures, he did much to promulgate the various aspects of chest surgery in its fledgling state. He pioneered many of the operations which are commonplace today.

Esophageal replacement

The first method of esophageal reconstruction to enjoy popularity was the reconstruction of antithoracic skin tubes. Bircher[6] in 1894, Beck in 1905,[7] and Esser in 1914,[8] all wrote extensively on this method for reconstituting the swallowing mechanism. As a rule, the patients were operated on for carcinoma, and they died before the skin tubes could be adequately constructed. However, for lye burns and benign esophageal disease, this was an excellent way to restore the swallowing mechanism during a period when thoracotomy was a dangerous procedure. Even as late as 1949, intrathoracic skin tubes were employed by Bricker and Burford.[9] Except in isolated instances, this method has been completely abandoned. The stomach has been used both as a subcutaneous transplant and an intrathoracic esophageal replacement. Jianu in 1914,[10] and in the more modern era, Rienhoff in 1948,[11] and Mes in 1948[12] wrote on the extrathoracic method of esophageal reconstruction. The first intrathoracic successful transplantation was done by Marshall[13] in 1937, and the following year Adams and Phemister[14] reported on their successful case before the American Association for Thoracic Surgery. Garlock[15] and Sweet[16] wrote extensively on this method of esophageal reconstruction.

The jejunum has also been used both as an antithoracic and intrathoracic substitute for the esophagus. As early as 1904, Wullstein[17] employed this method. Roux, 1907,[18] Hergen, 1911,[19] and Yudin in 1944 wrote on a value of using a segment of small bowel to restore the swallowing mechanism.[20] In Russia, the jejunum has enjoyed great popularity and has been used in over 1,000 cases. In addition, the jejunum has been transposed into the neck through a retrosternal tunnel. Robertson and Sarjeant in 1950[21] first reported on this method of reconstituting the swallowing mechanism. Without opening the chest, the abdomen and neck were opened, and a suitable segment of jejunum was transposed through an anterior mediastinal tunnel into the cervical region. The proximal end of the jejunum was then anastomosed to the cut upper end of the esophagus and the other end sutured to the stomach. The main disadvantage of using jejunum is the insecurity in the blood supply because of the anatomic arrangement of the vascular arcades. Although short segments can be attained easily, it is difficult to be assured of a continuing blood supply when a long area of jejunum is isolated and its viability sustained by only a single vascular pedicle.

A prosthesis has enjoyed some popularity in the past. Neuhoff and Ziegler in 1922[22] used granulation tubes, and Berman[23] in the 1950's utilized a plastic prosthesis to reconstruct the esophagus, with some initial success. As a rule the majority of the appliances eroded through the esophageal wall, and the patient subsequently died from empyema. At the present time because of the ready availability of viable segments of stomach, small, or large bowel, it does not seem feasible to employ a plastic prosthesis. Although all types and designs of plastic materials to bridge defects in the esophagus have met with failure, there are occasions when placing a plastic tube through an extensive carcinomatous area will permit the patient to swallow for a period of time.[24]

We became interested in the colon for esophageal substitution in about 1953, and to date this experience has been extended to well over 200 patients. As you are aware, this is not a new operative procedure as is true of most surgical operations. It was employed in 1911 by Kelling.[25] He placed an isolated segment of transverse colon on the anterior chest wall subcutaneously. One end was sutured to the stomach, and the other end served as a stoma. Then an attempt was made to create a swallowing tube from the cervical esophagus to the stomach by antithoracic skin grafts. None of the patients lived long enough to enjoy the benefits of a reconstructed esophagus. The skin grafts were done in stages, and all the patients died before the final stage of skin graft to unite the colon segment to the cervical esophagus. The inexorable progress of malignant esophageal disease accounted for their deaths.

The modern era of intrathoracic transplantation of the colon began in the 1950's. Kergin[26] in 1953 employed a segment of colon to bypass an obstruction in the midesophagus due to a paraffin granuloma. Mahoney and Sherman[27] and our group in Cleveland did a considerable amount of work both experimentally and clinically to popularize the colon as an adequate substitute for the esophagus.[28,29]

There is no question in my mind that the colon is the best substitute for the esophagus where long segments need to be replaced. It is especially adaptable for children who have esophageal atresia and where extensive destruction of the esophagus has occurred from caustic burns. I would not quarrel with anyone who wished to bring the stomach up into the chest and anastomose this to the esophagus during resections for carcinoma of the lower esophagus. However, for benign disease, especially severe obstructive esophagitis, an esophagogastrectomy is a poor operative procedure. In my experience this operation has resulted inevitably in a recurrence of the stricture. In several instances a further operation has been necessary, and the colon has been interposed between the esophagus and the stomach. It would seem feasible to leave the stomach in its normal habitat in the abdominal cavity and use a viable segment of bowel to isolate the susceptible esophphageal mucosa from the gastric contents. Although inflammation of the colonic segment has been reported, the colonic mucosa is fairly resistant to peptic digestion. It is much more so than the jejunum.

Methods

We have employed various methods in colon esophageal replacements. For lower esophageal lesions it is technically easier to employ two teams; one can work in the chest and the other in the abdomen. While the esophageal lesion is resected, the surgeons operating in the abdomen can prepare and isolate the colon segment. This can then be passed through the diaphragmatic hiatus into the chest and the upper anastomosis performed by the thoracic team, while the lower anastomosis is done by the group concerned with the abdomen. Colocolostomy unites the lower bowel, and if a prior gastrostomy has not been done, a tube is inserted into the stomach and brought out through a stab wound in the left upper quadrant. The question of pyloroplasty is always pertinent. In the beginning pyloromyotomy was employed, and this may suffice. However, if the patient has had previous scarring in the duodenum, to facilitate gastric emptying, pyloroplasty should be done. As a rule the vascular pedicle should come up behind the stomach so that the vessels are not attenuated over the first portion of the duodenum. Although two teams shorten the operating time, the surgery can be done very expeditiously through an incision through the left side of the chest. The esophageal lesion can be resected and a segment of splenic flexure, which actually falls into the chest once the diaphragm has been opened, can be isolated. If a segmental artery and vein is left intact, the colon segment can be assured of a suitable blood supply. In 12 patients operated on for a severe stenosing esophagitis, without the availability of two teams, the author has performed the operation quite satisfactorily in the manner just described. For lesions of the middle and upper third of the esophagus, two teams have regularly been employed. The chest is opened through a right thoracotomy and the abdomen through an upper midline incision. Following resection of the esophageal lesion, the cecum with or without a small segment of ileum is transposed into the right thorax anterior to the surface of the liver, and the upper anastomosis is performed anterior to the hilum of the lung. If possible, the esophageal hiatus is enlarged and the colon transposed into the chest in the bed of the resected esophagus. This creates a much more direct route to the upper esophagus than does the previously described technic. The upper anastomosis is done by the thoracic team, while the opposite end of the isolated colonic segment is sutured to the anterior wall of the stomach. An ileocolostomy, a gastrostomy, and a pyloroplasty are performed. If one does not desire to do an intrathoracic anastomosis, an alternate method is to remove the entire intrathoracic esophagus, close the chest, and then reposition the patient. Through a separate cervical incision, exteriorize the esophagus, and then transpose the colonic segment through an anterior mediastinal tunnel into the neck. This may be preferable because in the event of a leak from the suture line, the patient will not develop empyema which could be fatal. However, if an anastomosis is to be performed in the neck, I feel that a segment of ileum should be left attached to the colon. In my experience, the majority of leaks have been due to venous congestion from impingement on the cecum at the narrow thoracic inlet. If a segment of ileum is left attached, then the bulky cecum can remain in the anterior mediastinum and the ileum anastomosed to the cervical esophagus. This method is also feasible for bypassing inoperable lesions of the esophagus. The esophagus was reconstructed in a seventy-seven-year-old woman who had a midesophageal carcinoma which was deemed nonresectable. She had complete obstruction, and because of her age, emphysema, and concomitant heart disease, it was felt that an esophageal resection would be too extensive a procedure. For this reason the abdomen and the neck were opened concomitantly, and an ileocolic segment on a vascular pedicle was placed through an anterior mediastinum tunnel. A rather generous segment of ileum was left attached to the cecum, and the bulky cecum was well down within the anterior mediastinum so that there could be no curtailment of the venous circulation. This woman did extremely well and lived for two and one-half years in a nursing home. She was able to eat satisfactorily and gained a considerable amount of weight.

Results

One of the principal reasons we became interested in using the colon for an esophageal substitute was that a very important study came from New York Hospital and Memorial Hospital for Cancer and Allied Diseases.[30] One hundred specimens were examined post mortem to determine the completeness of excision of esophageal carcinoma. In this very excellent study, 7 patients at post mortem were found to have neoplasm at the proximal end of the esophagus in the cervical region. Three patients had cancer in the upper esophagus, 16 individuals had evidence of neoplasm in the midesophagus at the suture line, and 10 had neoplasia in the lower esophagus. Thus, 45.6 per cent of the patients out of a total of 100 individuals who died as a result of their disease had evidence of carcinoma at the suture line. As a result of this, many individuals reasoned that if an inadequate resection of the neoplasm was present in one half of the individuals undergoing surgery, then the entire esophagus should be removed. In most patients, the stomach is not readily transposed into the neck, although a gastric sleeve, as described by Gavriliu in Roumania and popularized in this country by Henry Heimlich, M.D., would suffice for reconstruction after resection of long esophageal segments. However, it seemed to us that the colon more readily adapted itself for esophageal replacement than any of the other intra-abdominal portions of the alimentary tract.

Ten years ago George Clowes, M.D., and I presented our early results before the American Association for Thoracic Surgery in a modest series of 27 patients operated on for benign and neoplastic esophageal disease.[28] Twelve patients had colon reconstruction for a neoplasm above the arch. Seven of these individuals died in the immediate postoperative period, and 5 were late deaths. The average survival time was 8.2 months with a range of two to eighteen months. At the time of the presentation in 1957, no patients were alive who had a carcinoma above the arch. Eleven individuals had a neoplasm below the arch of the aorta. There were no immediate or late deaths, and all of them were alive from three to thirty-six months following esophageal resection and replacement with the colon. One individual had total reconstruction of the esophagus for a corrosive stricture, and 4 individuals had reconstruction of the esophagus for corrosive stricture, atresia, and esophagitis. All of them were alive from four to twenty-one months after surgery. In the intervening ten years, these statistics have not been changed significantly.

There is no question that colon replacement of the esophagus is ideal for stricture, but I am undecided at the moment as to its value insofar as carcinoma is concerned. However from a critical observation of these patients in a postoperative period, I believe that they can swallow much better and do not have the gastric disturbances that are present in the patients following an esophagogastrectomy.

As far as the mortality rate and the five-year survival is concerned in patients with carcinoma of the esophagus, it is certainly very discouraging. I have outlined the mortality, morbidity, and five-year survival in three sizable groups of patients. Two are from this country and one from Japan. In 1954 Garlock and Klein[31] reported on 457 patients with esophageal cancer who had been observed at The Mount Sinai Hospital. Of these individuals, 277 were inoperable at the time of thoracotomy. There were 180 resections with a mortality rate of 32 per cent. Forty-three resections were for carcinoma above the arch, and 137 esophageal cancers below the arch were removed. In analyzing these patients for five-year survival, 20 per cent were alive beyond five years, but all of these individuals had neoplasms below the arch of the aorta. No patients with a carcinoma above the arch lived five years. These statistics certainly bear out what I have observed at our hospital in the past five years. Nakayama[32] reported from Japan in 1959 on 1,591 patients. The disease may be different in Japan from what it is in this country for he was able to resect 953 esophageal neoplasms with a total mortality rate of only 6 per cent. There were 258 resections above the arch in whom 11 per cent died postoperatively, and 695 individuals had esophageal resection for lesions below the arch with only a 4 per cent mortality rate. It is interesting that only 12 per cent of the Japanese survived five years in contrast to 20 per cent of the patients observed by Garlock and Klein.[31] Sixteen per cent of the Japanese patients in whom a carcinoma had been removed above the arch were alive at the end of five years, and 11 per cent were alive in the group with cancer below the arch. Again, in contrast to The Mount Sinai patients, although no patients were alive in Garlock and Klein's patients who had a neoplasm above the arch, 16 per cent were alive in the Japanese group. Laforet, Strieder, and Lynch[33] reported in 1960 on 643 patients from the Boston City Hospital. There were 269 resections with 240 patients deemed inoperable. The total mortality rate was 39 per cent, again comparable to the mortality rate in The Mount

Sinai group. Cancer above the arch was resected in 70 patients, and 47 per cent died as a result of the operation. In 138 individuals with cancer below the arch, esophageal resection was done with a mortality rate of 33 per cent. Five-year survival in the Boston City group showed that 8 per cent were alive at the end of this time. Three per cent were alive who had neoplasma above the arch, and 10 per cent of those who had cancer below the arch lived five years or longer. In reviewing the statistics of carcinoma of the esophagus at the Veterans Administration Hospital, Hines, Illinois, which I would assume is comparable to the type of lesions in patients seen at the Boston City Hospital, from 1961 to 1965 there were 113 individuals seen with this disease. Only 2 patients out of this group are living and well. One of these individuals was operated on in 1964 and the other in 1965. Regardless of surgery, irradiation, or a combination of the two, in our hospital the over-all outlook for patients with carcinoma of the esophagus is pretty dismal.

Comment

My own ideas regarding esophageal carcinoma as far as inoperability is concerned can be divided into three general categories. First, does the general condition of the patient preclude operative survival? This includes age plus degeneration, uncorrectable inanition, advanced cardiopulmonary disease, and other serious pathologic infirmities. Second, patients with disseminated disease should not be operated on. Third is unequivocal evidence of local nonresectability. This includes tracheal or bronchial invasion demonstrated endoscopically and tracheobronchial fistula. The latter are questionable in my opinion. In our institution, we have resected individuals with carcinoma of the esophagus and bronchial fistula by employing cardiopulmonary bypass. The tracheobronchial tree and the esophagus are dissected prior to perfusion. The patient is placed on total cardiopulmonary bypass during removal of the lesion and reconstruction of the airways. We have employed this technic in 6 individuals to date, and although the long-term results have not been good, the relief of their symptoms has been gratifying. Patients with tracheobronchial fistula due to carcinoma are in desperate straits, and if palliation can be achieved then I believe the operation is worth while. An alternate approach to the problem of tracheoesophageal fistula, which I think is more rewarding, is to perform a cervical esophagostomy with transection of the esophagus. From an abdominal incision either the esophagus is tied or divided at the cardioesophageal junction. A gastrostomy is performed for feeding purposes. A tracheostomy may or may not be necessary. Thus, the entire esophagus is isolated and gastric juice and saliva cannot continually bathe the pulmonary tracheobronchial tree. One individual in our hospital with a tracheoesophageal fistula due to cancer underwent not only this operative procedure, but also he subsequently had a colon bypass through an anterior mediastinal tunnel so that he could swallow normally. He lived comfortably for a year and died from cerebral metastasis.

I have divided operable carcinoma of the esophagus into three categories depending on the level of the lesion. As to the lower end of the esophagus and cardia, I feel that the best operation is a left transthoracic esophagogastrectomy. For carcinoma in the middle third of the esophagus, if the patient has complete esophageal obstruction, then feeding gastrostomy is performed, plus a cervical esophagostomy. The lesion in the esophagus is irradiated and esophagogastric continuity is restored with an anterior mediastinal colon transplant. The question of subsequent resection of the esophagus is always entertained; however, in most instances I believe that the patient will live just as long without surgery if he has been adequately irradiated.

When the patient's condition permits, we employ a primary anterior mediastinal colon transplant. This immediately reestablishes oral gastric continuity. One can evaluate the abdomen as to the presence of metastasis, and a temporary feeding gastrostomy can be performed until the swallowing mechanism is satisfactory. The esophageal lesion can then be irradiated after the patient can eat. In my experience, irradiation has not been detrimental to the colonic segment.

If partial esophageal obstruction exists and the patient has evidence of inanition, either a feeding tube should be passed into the stomach through an esophagoscope or gastrostomy performed. In these particular patients, we have employed a one-stage total esophageal resection with a colon transplant into the neck after the individual is in a proper nutritional state. Upper abdominal, right thoracic, and cervical incisions are made utilizing two operating teams. Although this is a formidable procedure, it is well tolerated by patients who are in a good state of nutrition and do not have concomitant pulmonary or cardiac disease.

Conclusion

In closing, I wish to thank the society for the privilege of making these few remarks on carcinoma of the esophagus. Even though we do not cure many individuals with this disease, I feel as surgeons, our primary concern should be directed toward palliation. I would like to end this discussion by a direct quote from Willy Meyer in 1912.[2]

> It is wrong, therefore, for surgeons to lose courage just because this problem has not been solved as speedily as could have been wished. A great deal has already been learned, much though still remains to be learned. With the combined effort of surgeons all over the world, with the improved methods of general anesthesia, with the possibility of immediate drainage, we have every right to expect that we shall succeed in solving the problem.
>
> Let us therefore continue our efforts to try and solve it. Should we fail, after all, we have at least the satisfaction to have found and learned to understand the many pitfalls, the avoidance of which will enable those who follow us to reach the goal, and to let them also then enjoy the blessings of modern surgery.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

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Cancer of Male Breast*

Part II

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PART I of this article appeared in the February 15, 1968, issue of the NEW YORK STATE JOURNAL OF MEDICINE. It reviewed the history of cancer of the male breast versus female breast according to prognosis and etiology and listed the various symptoms obtained from a review of the records of the Memorial Hospital for Cancer and Allied Diseases.

Pathology

Histologically male breast cancer is indistinguishable from that occurring in the female breast. Wainwright[3] studied 79 cases of breast cancer in the male and doubted that any pathologist would be capable of knowing the sex of the patient.

Primary breast cancers were classified histologically according to the method of Stewart,[44] who noted "the only pathological type (of cancer) seen in the female breast, but not encountered up to the present in the male breast material in this hospital, is that diagnosed as lobular carcinoma, presumably because the male breast does not possess lobules." A review of the pathologic reports in the 198 cases confirms this statement. In addition, there were no cases of malignant cystosarcoma phyllodes which may be related to the fact that true fibroadenoma of the male breast has not been seen at our institution. Two cases showed areas of colloid carcinoma, and one case was described as gelatinous carcinoma.

TABLE V. Pathologic classification in cancer of male breast

Classification	Number of Cases
Papillary carcinoma, noninfiltrating (Pagetoid nipple, 1 case)	12
Infiltrating duct carcinoma (Paget's disease of nipple, 2 cases; inflammatory carcinoma, 3 cases; gelatinous carcinoma, 1 case)	122
Infiltrating papillary carcinoma	7
Infiltrating medullary carcinoma	2
Myxoliposarcoma (low grade)	1
Giant & spindle cell sarcoma	1
Fibrosarcoma	1
"Mammary carcinoma"	52
TOTAL	198

Table V presents an analysis of the major pathologic types. In 52 cases a report of mammary carcinoma or simply carcinoma was obtained without further definition. These included recurrent or primary inoperable cases in which aspiration biopsy or small formal biopsies were taken only for confirmation of the diagnosis of cancer. The remaining reports are based on breasts

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removed at Memorial Hospital or elsewhere and histologic evaluation of the architectural pattern could be made. About 62 per cent of these showed infiltrating duct carcinoma, Grades II and III. The remainder included a few cases of papillary carcinoma (infiltrating or noninfiltrating), medullary carcinoma, and sarcoma. Sarcomas comprise 2 per cent of reported male breast tumors. Geist[45] found 435 cases of breast sarcoma in reviewing the literature from 1885 to 1915. Of these 9 occurred in males. The 2 cases of Paget's disease of the nipple, with underlying infiltrating duct carcinoma, have been reported in detail previously and are among the 13 cases of Paget's disease of the male breast now recorded in the literature.[1,46] Two cases showed areas suggestive of so-called "sweat-gland carcinoma."

Inflammatory carcinoma, a clinicopathologic entity, was found as a primary manifestation in only 2 cases and as a recurrence in another. These have also been reported previously.[47]

The pathologic findings in the 5 cases of bilateral breast cancer are listed in Table VI. No valid statistical conclusions can be drawn from such a small number of cases.

Nipple discharge did not always prove to be due to a noninfiltrating intraductal papillary carcinoma, although this was true in approximately one third of the cases presenting symptoms of serous or bloody discharge from the nipple. In the remaining two thirds, the cancer was infiltrating and most often not papillary but rather the usual infiltrating duct carcinoma, Grades II and III.

TABLE VI. Pathology in 5 cases of bilateral cancer of male breast

Right Breast	Left Breast
Infiltrating duct	Noninfiltrating duct
Noninfiltrating papillary	Noninfiltrating papillary
Operated on elsewhere, no submitted slide of radical mastectomy	Infiltrating duct
Infiltrating duct, inflammatory	Infiltrating duct, inflammatory
Infiltrating duct, inflammatory	Infiltrating duct, inflammatory

Therapy

In the very early years of our study some patients in the primary operable group received preoperative roentgen ray or radium therapy. In 1933 this policy was discontinued in favor of immediate operation. Postoperative radiation therapy was given primarily to those patients in whom axillary lymph-node metastases were demonstrable microscopically.

Unless there were medical contraindications to major surgery, a radical mastectomy was usually performed when cancer was diagnosed. In exceptional instances very elderly patients were treated by wide local excision or by modified radical mastectomy. It is of historical interest to note that radical mastectomy under local anesthesia alone was performed during the early years of the series on 3 patients who were considered poor operative risks. Improvements in general anesthesia have obviated the use of local anesthesia for the past thirty years.

Skin grafting, at the conclusion of radical mastectomy, was frequently performed. The skin graft permits wider excision of the primary tumor and avoids the surgeon's concern about approximation of wound edges. Postoperative morbidity seems to be lessened, since sloughs of skin flaps and chronic granulating areas may be avoided. No attempt is made in this report to relate skin grafting to survival rates.

The primary inoperable patients or those who subsequently developed metastatic disease were treated palliatively by radiation therapy, orchiectomy, adrenalectomy, hypophysectomy, and estrogens, either alone or in combination.

End results

There were 184 patients with male breast cancer admitted to Memorial Hospital from 1924 through 1960. These patients are the basis for calculating the end results, since each had the opportunity to survive for at least five years after admission.

UNSELECTED END RESULTS—TOTAL EXPERIENCE. Of the 184 cases 129 are classified as failures for the following reasons: patient lost to follow-up, with or without cancer, within five years, patient refused

TABLE VII. Survival rate in 117 cases of operable cancer of male breast

Cases	Number of Cases
Indeterminate	
Refused treatment	5
Lost track of without recurrence	9
Died of other causes without recurrence	12
Total indeterminate cases	26
Determinate (Failures)	
Died of cancer or its treatment	35
Living with cancer present	4
Lost track of with cancer present	0
Total failures	39
Five-year survivals free of disease	52 (57.1 per cent)
TOTAL (determinate cases)	91

treatment, patient requested consultation only, patient died as a result of cancer or its treatment, within five years; patient living, with cancer, within five years; and patient had inoperable cancer when first seen. Fifty-five patients were known to survive five years or longer without evidence of cancer (29.8 per cent). This figure is obviously the lowest possible five-year clinical cure rate one can achieve without being selective. It should be noted that 67 patients (34 per cent) of the entire series were automatic failures on admission because they were classified as inoperable.

Selected end results. To determine the effectiveness of treatment when there was a reasonable hope for cure, the operable cases are evaluated separately. One hundred seventeen or 65 per cent of the patients were classified as primary operable, operable after local excision, or recurrent operable. These patients presumably had an opportunity for long-term survival, following potentially curative therapy. Using the same factors for determining failures as those used in determining the unselected end results, the five-year survival rate with patients free of disease for the entire operable group was 42.7 per cent, or 50 cases.

Further statistical breakdown of the operable group is presented in Table VII.

A five-year clinical cure rate of 57.1 per cent is the highest one could claim if only the determinate cases are evaluated statistically. The number of cases in the series does not warrant more detailed analysis. The five-year clinical cure rate apparently lies somewhere between 42.7 and 57.1 per cent for operable cases, depending on the method of interpretation.

This survey also revealed that many patients who survive the five-year postoperative period without recurrent or metastatic cancer continue to do well for longer periods of time. Of the favorable results, over one third of the patients are now more than ten years post-therapy, and a few are more than twenty years. Although the critical period seems to be the first five years after treatment, one of the nineteen-year survivors developed supraclavicular nodal metastases during his sixteenth postoperative year, and one of the twenty-year survivors developed cancer of the opposite breast during his eighteenth postoperative year.

Only an occasional patient with primary inoperable or recurrent breast cancer survived for five years or longer following palliative therapy. One patient developed recurrent cancer six years after radical mastectomy, at which time an orchiectomy was done. Objective regression of disease continued for forty months, but the patient ultimately died of cancer thirteen years after initial therapy. Most patients in the inoperable group were dead of cancer within two years of admission in spite of therapy and supportive measures. There was only one postoperative death in the entire series and this occurred in 1930 secondary to massive atelectasis.

Wainwright[3] reported a 19 per cent five-year survival rate in 163 cases. Somerville[2] noted a five-year survival rate of 19 per cent and a ten-year survival rate of 14.3 per cent. Other five-year survival figures include: Gilbert,[12] 19.2 per cent, and Geschickter,[18] 32 per cent. Four out of 15 patients in Guthorn's[40] series were free of disease five years after radical mastectomy. Moss in 1965[38] reported a series of 507 cases of male breast cancer collected from a variety of sources. He found that 15 per cent of patients had disseminated disease at the time of diagnosis. Forty per cent of cases had disease localized to the breast. The end results in 248 cases suitable for analysis showed that 78 per cent lived one year, 41 per cent lived five years, and 24 per cent lived ten years following

TABLE VIII. Pathology and survival in 91 determinate cases of operable cancer of male breast

Pathology	Number of Cases	Five Years, NED*	Failures
Infiltrating duct carcinoma			
Normal axillary nodes	26	21 (80.7 per cent)	5
Metastatic axillary nodes	45	12 (26.6 per cent)	33
Undetermined axillary nodes	[illegible]	4	1
Papillary carcinoma			
Noninfiltrating			
Normal axillary nodes	6	6	0
Undetermined axillary nodes	1	1	0
Papillary carcinoma			
Infiltrating			
Normal axillary nodes	4	4	0
Metastatic axillary nodes	1	1	0
Myxoliposarcoma			
Undetermined axillary nodes	1	1	0
Mammary carcinoma (see text)			
Undetermined axillary nodes	2	2	0
TOTALS	91	52	39

* No evidence of disease.

TABLE IX. Age and survival in 91 determinate cases of operable cancer of male breast

Age	Number of Patients	Alive Five Years, NED*	Failures
20 to 30	1	0	1
31 to 39	6	4	2
40 to 49	12	7	5
50 to 59	26	16	10
60 to 69	27	13	14
70 to 79	14	10	4
80 to 89	5	2	3
TOTALS	91	52	39

* No evidence of disease.

diagnosis. He concludes that the prognosis is slightly poorer in the male compared with the female.

Survival

RELATED TO PATHOLOGIC FINDINGS. The pathologic findings in 91 determinate cases of the operable group are listed in Table VIII. It is interesting to note that all patients with a diagnosis of papillary carcinoma survived five years or longer free of recurrence of disease and that only one had proved metastasis to the axillary lymph nodes. One patient treated by simple mastectomy, hence without study of nodes for possible metastases, never developed evidence of recurrent or distant metastases. One patient, following a radical mastectomy for infiltrating papillary carcinoma with negative nodes, developed histologically proved bone metastases after a clinically disease-free interval of fourteen years. He was treated by local radiation therapy and bilateral orchiectomy. Four years later the bone lesions were calcified, and the patient was asymptomatic.

The pattern of survival for males with infiltrating duct carcinoma parallels that of females. When the axilla was uninvolved, about 80 per cent (21 cases) were free of cancer at the five-year level. When the axilla contained lymph-node metastases, the five-year clinical cure rate dropped to about 27 per cent (12 cases).

Two cases were limited in pathologic evaluation. One patient who was too feeble for major surgery was diagnosed only by aspiration biopsy. The second patient refused surgery and was diagnosed by aspiration biopsy and treated by radiation therapy. He remained well for eight years only to develop distant metastases in the ninth year and die of breast cancer.

RELATED TO AGE. Table IX records the data relating to age and survival in 91 determinate patients in the operable group. No statistical conclusions can be drawn. It is interesting to note that 4 of the 7 patients less than forty years of age survived, free of recurrence of disease, five years after surgery. This would suggest that young male patients with breast cancer may not do as poorly as once thought. The good prognosis holds true even when the cases of papillary carcinoma are excluded.

Equally good results were obtained in patients more than seventy years of age, 12 out of 19 patients surviving five years. However, the small number of cases in each group precludes evaluation of the possible significance of age. The prognosis appears to be predominantly dependent on the histologic type of cancer and the status of the axillary lymph nodes at the time of radical mastectomy.

Palliative Therapy

The testes are the source of both androgenic and estrogenic hormones. Androgens originate in the interstitial cells of Leydig and estrogens are produced in the Sertoli cells. Treves[48] believed that the growth of male breast cancer was dependent on both hormones. The adrenal glands provide an extragonadal source of steroid hormones in both males and females. The trophic hormones from the pituitary exert control over the testes and adrenals. This knowledge has been used in recommending such ablative procedures as orchiectomy and more recently adrenalectomy and hypophysectomy in the palliation of advanced male breast cancer.[49,50]

In 1942 Farrow and Adair[51] were the first to advocate bilateral orchiectomy in the treatment of inoperable male breast cancer. They noted striking clinical improvement in a seventy-two-year-old male with osteolytic bone metastases. The primary lesion regressed, there was recalcification of metastatic deposits in bone, and the patient experienced complete relief of pain. Treves in 1959[52] presented 42 cases of palliative orchiectomy for male breast cancer. More than two thirds of the patients were said to show objective improvement, but criteria concerning duration of regression were not rigidly established. Orchiectomy in this group promoted regression of metastases, most notably in bone. The average survival from the time of the first visit to the hospital was thirty-one months in the orchiectomized group as opposed to ten months in the nonorchiectomized group with inoperable male breast cancer. Treves[53] noted that the acquiescence of a male to castration was "a triumph of medical persuasion." The studies of Farrow and Woodard[54] (1940) indicate that androgen as well as estrogen therapy in these inoperable patients may be followed by hypercalcemia and progression of bony metastases. Geller[55] in 1961 reported palliation in a male patient with breast cancer by the administration of hydroxyprogesterone caproate (Delalutin), and there was a measured decrease in pituitary gonadotropins. He postulated that the beneficial effect was probably related to inhibition of testicular hormone secretion as a result of pituitary gonadotropin inhibition.

To date, there is no statistically significant series of adrenalectomies performed on patients with advanced male breast cancer. Huggins and Bergenstal[56] (1951) performed bilateral adrenalectomy, postorchiectomy, on 2 male patients with breast cancer and noted objective remissions in both. Dao[57] added 2 cases in 1955 observing a six-months objective remission in one and a three-year remission in the other. Huggins and Taylor[36] reported marked improvement in 1 of 2 patients, and Kolodziejska[58] observed a five-year survival after adrenalectomy in a patient with widespread metastases. A recent report of McLaughlin *et al.* (1965)[59] reviewed 2 male patients with advanced metastatic breast cancer who had a twenty-one month and a three-year remission, respectively. In these patients osteolytic lesions recalcified, pulmonary metastases diminished in size, and pleural effusions were absorbed. It should be noted, however, that each case of adrenalectomy was preceded at a variable time interval by castration. Dao[57] has proposed that combined castration and bilateral adrenalectomy be employed in selected male patients.

In 1957, Luft and Olivecrona[60] performed hypophysectomy on 2 male patients with metastatic mammary cancer. One, a sixty-four-year-old male with lymph node and pulmonary metastases, died three years later of heart failure, and the second, a fifty-nine-year-old male with skeletal metastases, was still in remission after thirty-one months at the time of the report.

In the light of present sparse data, the value of bilateral adrenalectomy and hypophysectomy cannot be fully established with any degree of certainty. While initial results seem encouraging, final evaluation must await a sufficiently large series.

In cases seen during the early years of study, it is difficult to evaluate response to specific modalities of therapy. Often an orchiectomy was performed and followed immediately by some form of hormone therapy without allowing sufficient time to determine the effectiveness of the orchiectomy. Even in recent years, one occasionally finds patients who have been treated with estrogens prior to a recommendation for orchiectomy and other patients who have had orchiectomy performed followed immediately by radiation therapy to the only area of metastasis available for evaluation. Such "shotgun" therapy accounts for the unreliability of some data said to apply to orchiectomy alone.

From 1950 through 1964, fifteen years, 38 bilateral orchiectomies were performed at Memorial Hospital for primary inoperable and recurrent inoperable cancer of the male breast.

Objective regression is defined as diminution in size of soft-tissue disease, healing of osteolytic metastases, or radiographic evidence of reduction in the size of pulmonary metastases which lasts for at least three months without the appearance of new metastases.

Of the 38 cases in which bilateral orchiectomy was performed, 17 patients, 45 per cent, can be classified as having shown objective regression as defined here. Only a few of these satisfactory responses lasted for only three months, most were at least of six months duration, and the longest remission was for forty months. Nine of the 17 patients had remissions lasting one year or longer. This would indicate that when orchiectomy produces a favorable effect one can anticipate a response of reasonably long duration.

Patients who were lost to follow-up shortly after orchiectomy and those who could not be evaluated because of simultaneous multiple modalities of therapy were classified as failures thereby producing a minimum rate of objective regression following orchiectomy.

It is interesting to note that almost all patients who did not show objective regression of disease also did not have palliation of symptoms. Only an occasional case demonstrated palliation without objective regression.

In other words, when orchiectomy is effective one can expect both subjective and objective improvement. When orchiectomy is not effective, one should not expect any type of palliation.

One patient had combined orchiectomy and bilateral adrenalectomy without benefit. Two patients had bilateral adrenalectomy following two years of regression secondary to orchiectomy. One of these patients showed no additional response, and the other was promptly lost to follow-up and could not be evaluated.

Four patients received hypophysectomy. All 4 patients had failed to respond to earlier orchiectomy. Two of these patients died in the immediate postoperative period. The remaining 2 patients showed no evidence of objective regression. Unfortunately, this small group of patients is weighted by orchiectomy failures. It would be of greater benefit to evaluate hypophysectomy and adrenalectomy in a controlled study with patients at random. It is hoped that such a series will be developed in the future.

Additive Therapy

The most disappointing results were obtained in those patients treated by one or more of the estrogenic compounds. Patients with uncontrolled cancer of the male breast were treated with estrogens at one time or another during the course of their disease. Occasionally one found an instance of palliation of symptoms. It was virtually impossible to document an example of long-term objective regression in patients whose additive therapy consisted of estrogens. Three patients had orchiectomy immediately followed by estrogen administration and did not show any helpful synergistic effect from the combined type of therapy. Because of the disappointing results, estrogens are seldom used to palliate inoperable male breast cancer.

More recently corticosteroids, usually prednisone, have been given in an attempt to control metastases from cancer of the male breast. Subjective improvement was noted in a few instances, but one could not be sure that the palliation was secondary to regression of disease or represented a side-effect of "well being" often noted with the administration of prednisone. Here again it was difficult to prove significant long-term regression of disease following the use of corticosteroids.

The administration of testosterone for palliation or objective regression was met with consistent failure.

One patient was treated with chlorambucil and showed temporary regression of soft-tissue metastases for several months only to develop recrudescence of disease which was refractory to all other forms of systemic therapy.

Summary

A review of 198 histologically confirmed cases of cancer of the male breast is presented.

Cancer of the male breast accounts for less than 1 per cent of cancer of the breast seen in patients of both sexes at Memorial Hospital, New York City.

The patient's average age in this series was fifty-six years. The range extended from twenty-four years to eighty-five years.

White patients made up 96 per cent of the group; the remainder were Negroes.

European-born Jews, the majority being Russian, predominated.

The left breast was involved more frequently than the right. Bilateral breast cancer was found in 2.5 per cent of the cases.

An associated significant primary cancer of another anatomic site occurred in 7.5 per cent of the group.

No relationship could be established between the development of breast cancer and trauma or a pre-existing benign breast lesion.

There was also no significant relationship between cancer of the male breast and Klinefelter's syndrome or with simple gynecomastia.

In most cases the first symptom noted by the patient was the presence of a breast mass and nothing more. True nipple discharge was a surprisingly frequent symptom and should be considered as an important early manifestation of breast cancer in the male. The median duration of symptoms before the first medical consultation was sought was seven months. This would suggest that most male patients and many physicians are not aware of the significance of a breast mass or tend to minimize breast symptoms in the male.

About two thirds of the patients seen were classified as operable and presented a reasonable hope for cure.

The disclosure of a mass in the adult male breast warrants suspicion of a malignant tumor. When the mass is associated with a nipple abnormality, the diagnosis of cancer should be seriously considered. In either case immediate biopsy is indicated.

The great majority of the cases were infiltrating duct carcinoma. With the exception of lobular carcinoma and cystosarcoma phyllodes, all of the pathologic types found in the female breast are encountered in the male. Nipple discharge was often associated with infiltrating duct carcinoma than with papillary carcinoma.

Radical mastectomy was performed on all patients whose medical status permitted major surgery. There was one postoperative death.

A review of total experience shows that if one classifies as successful results only those patients who were observed to be clinically free of cancer five years after treatment and if all others (inoperable, lost to follow-up, died of other causes, died of cancer, refused treatment, and so on) are classified as failures, a minimum survival rate of 29.8 per cent is achieved.

If only the operable cases are considered and the same failure factors are used, the five-year survival rate is 42.7 per cent. When the "determinate" cases (see text) within the primary operable group are evaluated, the five-year survival rate rises to a maximum of 57.1 per cent.

The number of operable patients treated ten years ago or more is too small to be statistically significant. Evidence indicates that the critical period is the first five years after therapy and that many patients will continue to do well once they have passed the five-year mark.

Almost all the patients in the inoperable category died within two years of admission to the hospital.

Papillary breast cancer in the male seems to offer an excellent prognosis.

The five-year survival pattern of the more common infiltrating duct carcinoma parallels breast cancer in the female. When the homolateral axillary lymph nodes are invaded by cancer, the five-year clinical cure rate dropped to 27 per cent as opposed to 80 per cent when the tumor was confined to the breast. This hiatus should lend added significance to the importance of early diagnosis and prompt therapy.

The age of the patient does not seem to influence the end result. The prognosis for all ages is more dependent on the histologic type of the cancer and the presence or absence of metastases in the axillary lymph nodes.

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Stress incontinence: treatment by electric stimulation

Urinary stress incontinence in females is usually caused by loss of tone of the pelvic floor muscles with consequent shortening of the urethra. In the erect posture, the urethra should be at least 3 cm. in length. Because of an observation made earlier in one of several incontinent women given faradic stimulation, it was decided by T. Moore, M.D., and P.F. Schofield, M.D., writing in a recent issue of *British Medical Journal*, to carry out a controlled study. In this woman the anesthesia was not sufficiently deep, and introduction of the electrodes produced a maximal contraction of the pelvic floor muscles, after which the patient improved.

Of 18 patients so treated, 33 per cent were completely relieved, and 22 per cent were much improved. It is thought that a trial of this method should always be made before surgery is advised, especially when investigation shows that in the erect posture the urethra is less than 3 cm. long.

Treated were 18 females with marked stress incontinence. Used as controls were 10 similar patients who, however, only underwent cystoscopy and measurement for urethral length. Ten patients with urinary incontinence not classified as stress incontinence were treated the same as the first group. The 28 treated patients in the first and third groups had cystoscopy and measurement of urethral length as did the second group, but they also, in addition, had maximal perineal faradism under general anesthesia. This was administered by electrodes. The faradic surge consisted of pulses of 1 millisecond, the whole surge lasting two to three seconds. Before another surge was given, there was a pause of two to three seconds. The intensity was increased until voluntary muscles were given maximal contractions, 4 to 6 per patient.

A patient was considered improved if she felt the treatment to be worth while and if there was definite improvement in the urethra. The types of incontinence represented by the third group did not improve. It appears that in the successful cases, the maximal perineal stimulation restored the postural tone of the pelvic floor muscles so that increases in intra-abdominal pressure are once more accompanied by normal pelvic floor contraction and lengthening of the urethra. It is possible that one maximal contraction is more effective than repeated submaximal contractions, the more usual method.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

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Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by LOUIS J. VORHAUS, II, M.D.
and THEODORE H. KIM, M.D.

Fever of Unknown Origin, Changing Clinical Course, and Pleural Effusion

Case history

Stephen Carter, M.D.: This fifty-seven-year-old white male hairdresser entered the hospital because of continued fever of one month duration.

The patient had always enjoyed good health until June, 1966, when he developed a perirectal abscess that may have been related to a bout of diverticulitis. He was hospitalized for three weeks at a nearby institution and was successfully treated with antibiotics, incision, and drainage. He remained entirely well after discharge until three months later when he first noted the onset of fever. This usually began in the late afternoon, ranged between 100 to 102 F., and was associated with anorexia and sweating but not with chills, vomiting, diarrhea, or abdominal pain. He lost 12 to 15 pounds in weight over a two-month period. An assortment of antibiotics were prescribed by a local physician without much improvement in symptoms or fever. He denied pruritis, arthritis, dark urine, and recent or past foreign travel. He admitted to a mildly productive cough without any hemoptysis or pleuritic pain but noticed that he was more short of breath.

There was no past history of allergies, diabetes mellitus, tuberculosis, hypertension, asthma, or rheumatic fever. During his June hospitalization, an abnormality in his chest x-ray film was noted but was thought to be of no clinical importance. The patient had pleurisy as a child and had malaria at the age of six in Italy. There was no family history of any diabetes mellitus, tuberculosis, asthma, hypertension, or rheumatic fever. The patient smoked 5 cigarets a day and was an infrequent social drinker. The only therapy he had received was a variety of broad-spectrum antibiotics given orally.

Physical examination revealed the patient to be an alert, well-developed, well-nourished, thin, white male in no distress who appeared chronically ill, looked older than his stated age, and showed evidence of weight loss.

The blood pressure was 110 systolic and 70 diastolic. The pulse rate was 74 per minute and regular, the respirations 16 per minute, and the rectal temperature was 100 F. Examination of the head revealed bilateral prominent eyes without any scleral icterus or petechiae. The conjunctivas were pink, and the fundi were normal. The neck was supple without any adenopathy. The chest had an increased anterior-posterior diameter with a few fine inspiratory rales at the lower base of the left lung and ronchi at the base of the right lung. The heart was not clinically enlarged, the rhythm was regular, and there were no significant murmurs. The abdomen was soft and thin. The lower pole of the liver was palpated 2 to 3 cm. below the right costal margin; the organ was smooth, soft, and nontender. The kidneys and spleen were not palpated; bowel sounds were normal, and there was no costovertebral angle tenderness. The genitalia were normal, and the rectal examination revealed no ampullary masses or tenderness. The skin revealed no abnormal pigmentation, rash, ecchymoses, or petechiae. There was no clubbing, cyanosis, or edema, and the peripheral pulses were

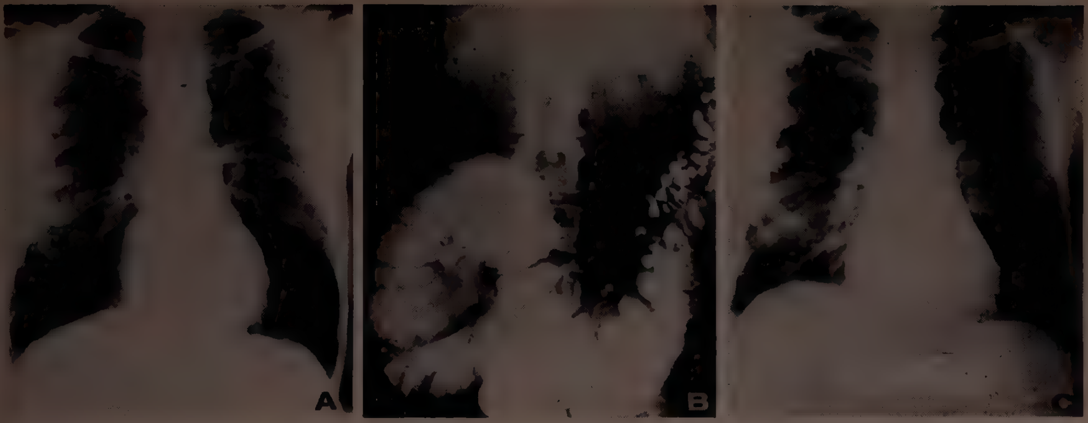

FIGURE 1. (A) Admission chest x-ray film showing stringy infiltration in left lung extending from left hilum. (B) Barium enema radiograph demonstrating numerous diverticula of colon. (C) X-ray film taken on thirteenth hospital day showing slight elevation of right hemidiaphragm.

all normal. The neurologic examination showed entirely normal findings. There were no peripheral lymph nodes palpated except for a few shotty nodes in the inguinal areas.

The hemoglobin was 13.5 Gm. and hematocrit 39. The white blood cell count was 10,876 with 46 neutrophils, 48 lymphocytes, 5 monocytes, and 1 eosinophil. The sedimentation rate was 82 mm. in one hour. The urinalysis showed normal results, and the serologic test for syphilis gave negative results. An intermediate strength purified protein derivative tuberculin skin test resulted in a 20-mm. area of induration. The fasting blood sugar was 97 mg., blood urea nitrogen 10 mg., creatinine 0.9 mg., and the uric acid 5.6 mg. per 100 ml. The sodium was 139 mEq., potassium 4.9 mEq., chlorides 98 mEq., and bicarbonate 30 mEq. per liter. The heterophil antibody titer, febrile agglutination tests, histoplasmosis latex test, and lupus erythematosus preparations all showed negative results. A liver profile revealed a prothrombin time of fourteen seconds with a control of twelve seconds. The serum glutamic oxaloacetic transaminase was 15 units and lactic acid dehydrogenase 190 units. The total cholesterol was 167 mg. with 54 mg. free (representing 32.4 per cent) and esters 113 mg. The cephalin flocculation test gave negative results, and thymol turbidity was 2 units. The total protein was 7.2 Gm. per 100 ml., with 3.4 Gm. of albumin and 3.8 Gm. of globulin. Protein paper electrophoresis revealed an albumin of 48.8 per cent, alpha 1 globulin of 8.9 per cent, alpha 2 globulin of 13.8 per cent, beta globulin of 10.6 per cent, and gamma globulin of 17.9 per cent. A sputum culture revealed normal flora, and a twenty-four-hour sputum smear gave negative results for acid-fast bacilli. Stool examination gave negative results for occult blood, ova, and parasites. Serial malaria smears showed negative results, and the Coombs' test gave negative results. A urine culture showed negative findings, and many blood specimens cultured aerobically, anaerobically, and on fungal media revealed no growth.

Chest roentgenogram demonstrated a stringy infiltration, extending from the left hilum to the middle field of the left lung (Fig. 1A). There was some hyperaeration at both bases, and the aorta was mildly dilated and tortuous. A flat x-ray film of the abdomen revealed the lower border of the liver to be low. The intravenous pyelogram showed negative findings except for a urinary bladder that was trabeculated with minimal elevation of its floor by an enlarged prostate. An area of juxta-articular sclerosis of the right sacroiliac joint was seen. A barium enema x-ray examination revealed the presence of numerous diverticula in the transverse, descending, and sigmoid portions of the colon; the hepatic flexure was low due to an enlarged liver (Fig. 1B). An upper gastrointestinal x-ray study and the oral cholecystogram showed normal findings.

The patient's clinical course during his hospital stay was characterized by a low-

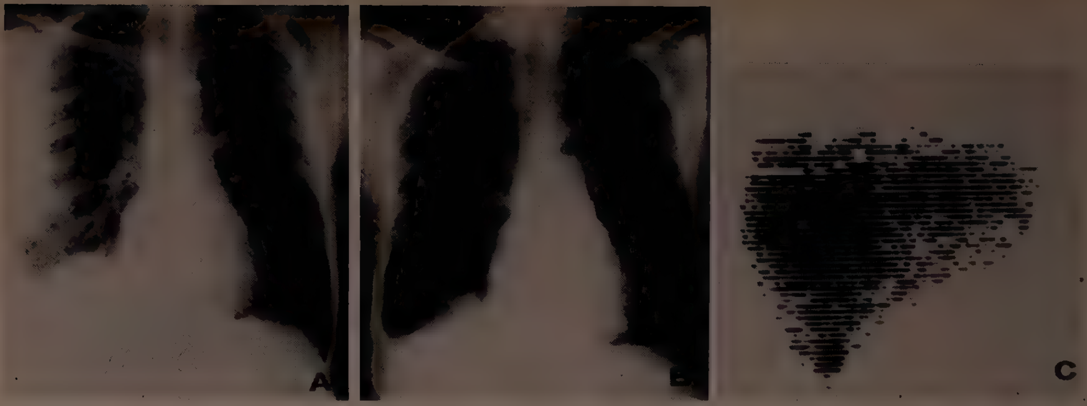

FIGURE 2. (A) X-ray film taken on twenty-fourth hospital day showing further elevation of right side of the diaphragm with infiltration and effusion. (B) Post-thoracentesis x-ray film showing smooth lobulation of medial aspect of right side of the diaphragm and clearing of infiltrate. (C) I^{131} rose bengal liver scan showing slight mottling of no diagnostic significance and somewhat uneven distribution of radioactivity.

grade fever for the first eight days with daily spikes thereafter once or twice a day to 103 or 104 F. His weight remained stable at approximately 147 pounds, and his appetite was good during the afebrile periods. Serial white blood cell counts during this interval showed an increase to 20,800 with 93 per cent neutrophils of which 14 were nonsegmented. There were 4 lymphocytes and 3 monocytes with toxic granules seen in many of the neutrophils. The erythrocyte sedimentation rate rose to 103 mm. per hour and the alkaline phosphatase to 20.5 King-Armstrong units. Results of physical examinations during the first seven days, with the patient receiving no treatment, remained unchanged except for some clearing of his chest on auscultation. A repeat chest x-ray film taken seven days after admission showed moderate clearing of the left hilar infiltrate; re-examination four days later showed no further clearing, and the bronchovascular markings remained prominent.

On the thirteenth hospital day slight elevation of the right diaphragm was noted by chest x-ray film, and the patient was started on 600,000 units aqueous penicillin intramuscularly every four hours (Fig. 1C). Over the next eleven days, his temperature curve gradually returned to the 100 F. level. The white blood cell count also returned to normal, but his sedimentation rate remained elevated at 46 mm. per hour. At that time, the patient complained of right upper shoulder pain especially on inspiration; physical examination revealed dullness with diminished breath sounds at the base of the right lung. A chest x-ray film taken on the twenty-fourth hospital day showed further elevation of the right hemidiaphragm and a moderate amount of fluid in the right pleural cavity which was not present ten days previously (Fig. 2A). The area of infiltration opposite the left hilum showed no further clearing. An upright abdominal flat x-ray film revealed no free air under the diaphragm or air-fluid levels.

On the twenty-seventh hospital day, a thoracentesis was performed with the removal of several hundred centimeters of straw-colored fluid. The protein content of this fluid was 5.6 Gm. There were 1,250 red blood cells and 5,520 white blood cells per cubic millimeter with 32 neutrophils, 55 lymphocytes, 12 monocytes, and 1 plasma cell. Clusters of atypical cells were also seen, but the result of the Papanicolaou test was class I. Routine culture of the thoracentesis fluid showed negative results as did the results of the acid-fast smears and cultures. The post-thoracentesis chest x-ray film showed a slight decrease in the amount of fluid at the posterior of the right lung base (Fig. 2B). A well-marginated, lobulated density was visualized arising from the right diaphragm which was present on the film three days earlier but not on the film ten days previously. Repeat chest x-ray films, including a right lateral decubitus film taken six days later, showed further decrease in fluid in the right costophrenic sulcus which extended into the interlobar fissure. The well-demarcated density arising from the midportion of the right diaphragm was again seen and was unchanged in size.

At this point it was noted that the lower pole of the liver was palpable 6 to 8 cm. below the right costal margin. The liver was smooth in outline and somewhat tender to direct palpation and percussion impact. The spleen was not palpable, and there was no peripheral lymphadenopathy. A rose bengal I^{131} liver scan performed on the thirty-fourth hospital day demonstrated a somewhat uneven distribution of radioactivity in a liver of normal size and configuration (Fig. 2C). An ill-defined zone of decreased radioactivity was seen in the lower portion of the left lobe.

Tomograms of the right lung base taken on his thirty-seventh hospital day revealed a slight decrease in size of the density previously noted and a decrease in the amount of fluid in the right costophrenic sulcus. The lobulated density at the base could not be separated from the diaphragm. A surgical procedure was performed on the forty-first hospital day.

Discussion

Louis J. Vorhaus, II, M.D.*: This problem involved a fifty-seven-year-old white male hairdresser who was hospitalized for a fever of unknown origin.

I always wonder in a clinicopathologic conference whether the occupation of the patient is put in to add color or to give information. When I hear of a hairdresser, I think in terms of the possibility of pulmonary disease caused by hairspray, and when I hear that he is male, I am disposed to consider the possibility of homosexuality and, therefore, venereal disease. In this instance, the subsequent course of events gives us no reason to seriously consider either of these possibilities.

The significant historical facts begin in June, 1966, when he was admitted to another hospital for a perirectal abscess associated with what was referred to as diverticulitis. Apparently this was treated with antimicrobial agents, incision, and drainage. Since the hospitalization consumed a total of three weeks, we can assume that this was more than just a minor illness. It would be nice to have some more details about that diverticulitis, but lacking them, I am going to let my imagination fill in. I am going to assume that if he was sufficiently ill to require a three-week hospitalization and treatment with antimicrobial agents as well as surgery, he may well have had suppurative intraperitoneal disease. If the basic problem was diverticulitis, a local perforation and a secondary perirectal abscess might have occurred.

We are told that he was subsequently well for about a period of three months and then developed an illness characterized by fever, anorexia, sweating, and loss of 15 pounds. As one might expect with a history such as this, he was treated with several antibiotics without any significant improvement. Continued fever occasioned his admission to this hospital.

His past history reveals a couple of interesting bits for information, namely, he had had pleurisy as a child and somewhat more recently had been told of chronic bronchitis on the basis of an x-ray examination of his chest. The history of pleurisy in childhood obtained from questioning a fifty-seven-year-old patient is bound to be vague in its details. We do not know whether or not this was a prolonged or brief illness, whether or not it was associated with pneumonia, whether or not he was febrile, and whether the pleurisy was accompanied by an effusion or whether it was dry. We also are not told whether or not any specific diagnosis was established that might have caused the pleurisy. Nevertheless, lacking further information the suspicion of tuberculous pleuritis inevitably arises, and this is something we must bear in mind. The other point of interest in his past history is that he was reported to have had malaria at the age of six in Italy. This presumably would have been vivax malaria, and since that illness was more than half a century prior to his present hospitalization, I find it difficult to dignify it by giving it any further consideration. If, indeed, this case turns out to be one of malaria, it certainly deserves wider dissemination than just the mimeographed sheets with which we were presented.

The physical examination was notable primarily for the sparsity of positive findings. The patient, indeed, appeared chronically ill, had a temperature of 100 F., and normal vital signs. The skin was clear and free of petechiae. There is no mention of splinter hemorrhages or Osler's nodes. The fundi were normal and showed no exudates or small white spots that might have been suggestive of miliary tuberculosis. There was no peripheral lymphadenopathy. The neck was supple. The chest was clear except for a few rales at the lower base of the left lung and ronchi at the base of the right lung. The heart was unremarkable and evidenced no murmurs. The abdomen was soft, and the lower border of the liver was felt 2 to 3 cm. below the right costal margin. There was no spleen, no costovertebral angle tenderness, and no clubbing or edema. All peripheral pulses were present, and the neurologic examination showed normal findings.

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Turning to the laboratory findings, we are told of a very mild anemia, a slight elevation in white blood cell count with no left shift, in fact 48 per cent of the cells were reported as lymphocytes. The sedimentation rate was impressively accelerated to 82 mm. per hour. The urine showed normal findings throughout. The serology test showed negative results. The second strength purified protein derivative test for tuberculosis showed a positive result, and all the blood chemical determinations, of which a great many were performed including a series of liver function tests and an alkaline phosphatase, showed normal findings. Serum proteins showed a low normal albumin and a slightly elevated globulin. Lupus erythematosus preparations gave negative results, and a thorough bacteriologic work-up, including studies for fungi and acid-fast bacilli, showed negative findings. The appropriate serologic studies were also nonrevealing.

Turning to the radiographic studies, the admission chest x-ray film revealed a stringy infiltration, extending from hilum to the middle of the left lung peripherally with some hyperaeration of both lung bases. A flat x-ray film of the abdomen revealed the inferior border of the liver to be low. This is a bit interesting when one considers that the chest x-ray film showed evidence of some elevation of the right diaphragm. An intravenous pyelogram showed essentially normal results. An area of what is described as juxta-articular sclerosis was noted involving the right sacroiliac joint. The barium enema roentgenogram aids us in showing many diverticula and helping thereby to confirm his illness in June, 1966, at least to the extent of establishing that diverticula existed. Certainly their absence would make a diagnosis of diverticulitis somewhat more difficult to defend. The upper gastrointestinal x-ray film series and gallbladder study showed normal findings. Subsequent radiographic studies demonstrated the appearance of a right pleural effusion to which we will return subsequently. Further radiographic studies demonstrated the appearance of a rounded density arising from the right diaphragm. This was clearly visualized by tomography. I would like to ask Dr. Pezzulli to review the films with us at this point.

Fred Pezzulli, M.D.: The initial radiographs of interest are those of a barium enema which document the presence of numerous diverticula of the transverse, descending, and sigmoid colon (Fig. 1B).

The remaining radiographs of interest are related to the chest. The admitting chest x-ray film shows a slightly globular heart, bilateral emphysema which was predominantly at the lung bases, and a dense fibrotic-appearing infiltrate extending from the left hilum toward the periphery (Fig. 1A). A subsequent x-ray film taken on the fourteenth hospital day shows slight elevation of the right hemidiaphragm. No other interval change is present (Fig. 1C). An x-ray film taken on the twenty-fourth hospital day shows further elevation of the right hemidiaphragm, as well as an infiltration and effusion at the base of the right lung (Fig. 2A). An x-ray film following thoracentesis shows the contour of the diaphragm somewhat better and demonstrates a smooth lobulation of the medial portion of the diaphragm (Fig. 2B). There has been clearing of the infiltrate.

An I^{131} rose bengal liver scan on the thirty-fourth hospital day shows some mottled areas of decreased radioactivity but no findings of specific diagnostic significance (Fig. 2C).

Dr. Vorhaus: Thank you, Dr. Pezzulli. Returning now to the patient's course, this was characterized by persistent fever which after the first week became somewhat more spiking, rising to 103 or

104 F. daily. His white blood cell count revealed leukocytosis with a marked left shift. The sedimentation rate remained high, and his alkaline phosphatase rose to 20.5 King-Armstrong units. He was treated with penicillin in a dose of 3.6 million units a day and coincidently showed clinical and laboratory improvement. A few weeks after this therapy was initiated, the patient developed a right pleural effusion. Thoracentesis was performed revealing the fluid to be straw-colored, rich in protein, sterile bacteriologically, with a class I Papanicolaou test result. Concurrently, it was noted that the liver had become more prominent and somewhat tender. A liver scan showed no significant abnormality and to my untutored eye did not show any evidence of hepatic enlargement.

Finally, more in wisdom I am sure than desperation, it was decided to operate on this patient hopefully to cure him of his disease.

Turning to the differential diagnosis, we must now consider those conditions characterized by the presence of fever in a fifty-seven-year-old man associated with a leukocytosis, a right pleural effusion, and a mass under the right diaphragm. This problem apparently began three months after treatment for a perirectal abscess. Fevers of unknown origin always provide an interesting exercise in differential diagnostic acumen. A classic article reviewing this problem, written by Petersdorf and Beeson,[1] surveyed 100 such cases. Their statistics correlate with the clinical impression of any seasoned physician. That is to say, the vast majority of patients with fever of unknown origin that are diagnosed fall into 1 of 3 major groups: collagen disease, neoplastic disease, and infectious disease. Petersdorf and Beeson additionally listed a host of other conditions which made an occasional appearance in their series, none of them with sufficient frequency to warrant serious consideration here. Of interest, incidentally, is that of his 100 cases, 4 turned out to be instances of fictitious fever—which I think we can readily dismiss in this case. Other classifications of fevers of unknown origin have added a fourth major group, granulomatous conditions, such as, sarcoidosis, granulomatous hepatitis, brucellosis, tularemia, systemic fungus infections, and so forth. In his article, Dr. Beeson chose to list these conditions separately.

What about the collagen diseases? In our case lupus and polyarteritis would be the most pertinent. Clearly there is nothing to indicate that this man had rheumatic fever or rheumatoid arthritis, scleroderma, or dermatomyositis. Against lupus are the negative results obtained from lupus erythematosus preparations, the lack of evidence of a rash, the absence of leukopenia, the normal urinary findings, and the lack of any significant degree of anemia or thrombocytopenia. Furthermore, lupus as we all know is uncommon in elderly males, and I think we can safely exclude it.

Polyarteritis deserves mention only because it produces a fever of unknown origin. We really have no evidence of multisystem disease here as well as hypertension, eosinophilia, abnormal peripheral pulses, renal disease, evidence of coronary insufficiency, or skin lesions. I think the best that can be said for collagen diseases as a group is that their compatibility with this man's problem extends only to the existence of a fever of unknown origin associated with an elevated sedimentation rate. I am willing to discard this group of diseases now from further consideration.

What about the possibility of neoplastic disease? These frequently are associated with a fever that is often unexplained. Among this group, the lymphomas should first be considered. They would include lymphosarcoma, Hodgkin's disease, the leukemias, and giant follicular lymphoblastoma. A point against this group as a diagnostic possibility is the lack of any evidence of lymphadenopathy, either peripherally or septicemic. In fact we have no radiographic evidence of any localized lesion anywhere or any evidence of organ involvement or displacement, except for the findings in the right lower-chest and diaphragm which does not suggest a lymphoma. In addition, if this patient had had a malignant disease, he would have shown more wasting, he might have had some abnormal cells in his chest fluid, and we would not have anticipated improvement from penicillin therapy. As far as leukemia is concerned, there is nothing in the hematologic picture to support the diagnosis.

The next category of neoplastic diseases that warrants consideration is a localized malignant disease. Here, of course, the kidney should be given first consideration in any patient with fever of unknown origin. Against the diagnosis of a hypernephroma is the absence of any palpable enlargement of either kidney in a man whose abdomen was thin and easily felt, whose urine showed negative findings, and an intravenous pyelogram which showed normal findings. Furthermore, if he had a hypernephroma, this would not explain the mass under the right diaphragm and the right pleural effusion. There was no evidence of the cannonball-type metastasis that characterizes pulmonary dissemination of hypernephroma, and I see no basis for further considering this diagnosis. Other more common fever-producing malignant diseases include primary tumors of the lung and pancreas. Neither possibility is supported by the data presented. Similarly, there is no evidence of any other localized disease process with the possible exception of the liver. How about carcinoma of the liver? We do have a rising alkaline phosphatase in this patient along with the appearance of a mass under the diaphragm which could be a malignant nodule, as well as hepatomegaly and slight tenderness of the liver. However, we have no reason to believe this patient had antecedent cirrhosis, and carcinoma of the liver arising de novo is a rarity indeed. In addition, the liver was free of palpable nodules and did not have the consistency usually associated with primary malignant disease. Additionally, the results from the liver scan would be a strong point against this diagnosis.

What about the possibility of a granulomatous disease? The only one that deserves mention is sarcoidosis, which should be considered in any patient who has a fever of unknown origin associated with hepatomegaly, increased alkaline phosphatase, and pulmonary abnormalities. There are, however, many points against sarcoid as a diagnosis in this case. The disease is relatively uncommon in white men, the tuberculin skin test showed positive results, and the globulin elevation was not of the magnitude that we might expect in sarcoid. We see no evidence of eggshell calcifications or hilar adenopathy, and the liver function tests all showed normal findings. All of these, plus the appearance of the pleural effusion, the mass under the diaphragm, and the clinical improvement made with penicillin therapy make me reluctant to entertain sarcoid seriously as the diagnosis.

Finally we come to the infectious diseases. The first that we must always consider is tuberculosis. In Beeson's[1] series this disease was the largest group encountered. A total of 11 of the 100 cases reported were due to tuberculosis which was almost one third of the thirty-six patients who had an infection as the cause of fever of unknown origin. There are a number of facts presented in our protocol which make tuberculosis a real possibility: the positive result shown in the tuberculin test, the history of pleurisy as a child, a high sedimentation rate, a somewhat increased globulin, and a pleural effusion. But that is about as far as it goes. All bacteriologic studies for acid-fast bacilli gave negative results, and there is really no evidence of pulmonary tuberculosis on his x-ray film studies. In addition, the patient was somewhat old to develop an active tuberculous infection initially or to develop miliary tuberculosis. Last I cannot help but be impressed with his high white blood cell count and his apparent improvement with penicillin.

How about subacute bacterial endocarditis? This always has to be considered in someone with a chronic illness characterized by fever, and we know occasionally that this can occur even without murmurs. However, we have a host of blood cultures showing negative findings and no evidence of hematuria, progressive anemia, clubbing, splinter hemorrhages, petechiae, splenomegaly, or characteristic signs of endocarditis. Additionally there was, of course, no evidence of underlying heart disease which is commonly present. Finally, it would be difficult to explain his pulmonary and right diaphragmatic findings on the basis of subacute bacterial endocarditis.

Pylonephritis is another sleeper which can sometimes be very difficult to pinpoint. Here, however, we have no evidence of disease of either kidney, no costovertebral angle tenderness, pyuria or hypertension, and an intravenous pyelogram which showed normal findings.

This leads us to the possibility of a hidden abscess somewhere, presumably intraperitoneal in location. Now we start getting onto firmer clinical ground. We have nothing in our history, physical examination, or radiographic findings to lead us to suspect an intra-abdominal abscess. Chronic infection in the biliary tract is ruled out by the normal results shown on the gallbladder x-ray film series. The findings in the right upper quadrant and right chest do direct our attention to two very significant possibilities: an hepatic abscess or subphrenic abscess. Both of these disorders characteristically begin after suppurative intra-abdominal disease. If we assume that this man's diverticulitis three months before was accompanied by a perforation, we have the fertile ground in which hepatic abscess or subphrenic abscess can develop. What about the possibility of an hepatic abscess? In a report of 10 proved cases, Berke and Pecora[2] noted that in only 4 was the liver enlarged and tender. A liver scan showed abnormal results in 4 of 7 cases where it was done. The experience with scans at the New York Hospital indicates a somewhat higher percentage of positive findings in patients with hepatic abscess. Nevertheless, it is certainly possible to have an hepatic abscess with normal results shown on a scan, without much enlargement or tenderness of the liver, and with few abnormal results shown in the liver function tests. To me, the primary evidence against the possibility of an hepatic abscess is the development of the pleural effusion, unless we hypothesize that the abscess was lying close under the diaphragmatic surface. This would be a relatively uncommon location. If this abscess had ruptured through the diaphragm, the pleural fluid would have been purulent. How about a subphrenic abscess? This subject was reviewed recently by Carter and Brewer[3] in a report on 125 cases. They noted that all but 1.6 per cent of their cases occurred as a complication of intra-abdominal disease. A total of 86.4 per cent of their patients showed significant thoracic and/or abdominal symptoms. Of the thoracic symptoms, pleurisy with or without effusion, basal pneumonitis, and compression atelectasis were the most common, 86.9 per cent of their patients had fever and 77.6 per cent had leukocytosis. All of this sounds very much like the patient we are now considering. They pointed out that antibiotic therapy early in this disease often obscured the clinical picture and frequently led to the development of subacute or chronic illness. Here we have a patient who had a history of what we can assume was an intra-abdominal suppurative process, then a latent period was followed by a febrile interval during which he was treated with a variety of antimicrobial agents, probably none in a large dose or for a long enough period. The febrile interval was characterized by temperature spikes, sweating, and was generally hectic. The patient also developed a leukocytosis. His liver was felt to be low in position, and evidence of elevation of the right side of the diaphragm became apparent. This sequence of events could be explained by the development of a subdiaphragmatic abscess. The subsequent appearance of a right pleural effusion would be anticipated. There was partial response with some clinical improvement on penicillin therapy. Ultimately, operative intervention was deemed warranted for what I take to be drainage and resolution of the mass under the diaphragm. All of this, to me, most closely fits the picture of a subphrenic abscess, and with this diagnosis, I will rest my case. My second choice is that of an intrahepatic abscess.

Michael S. Bruno, M.D.: I wonder what Dr. Vorhaus considers was the mechanism for the subdiaphragmatic formation?

Dr. Vorhaus: I suppose his episode of diverticulitis with local perforation and seeding from that source three months before could explain this.

Dr. Bruno: I would have expected the perforated diverticulum to either wall off locally or to spread in retrograde fashion via lymphatics or veins to involve the liver. An intrahepatic abscess could then have been the problem.

Sidney I. Kreps, M.D.: The differential diagnosis in a patient with a mass in the right upper quadrant and pleural effusion should also include amebiasis and actinomycosis.

Dr. Vorhaus: There is nothing in the protocol suggesting acute colitis or amebiasis even though it is well known that amebiasis can occur in the United States without colonic symptoms, and liver abscess may develop secondary to this.

Dr. Bruno: Are there any other comments?

Herbert A. Dann, M.D.: I would have expected an eosinophilia if indeed he had amebiasis.

Dr. Bruno: Eosinophilia is not always found with amebiasis unless complicated by other parasitic infestations at the same time. I wonder if Dr. Cahill would like to comment about the possibility of an amebic abscess of the liver in this case.

Kevin M. Cahill, M.D.: Thank you, Dr. Bruno, for asking me to comment. Although I do not personally believe that this patient had amebiasis, the history and physical findings demand that a hepatic abscess be considered and an amebic origin is certainly tenable. The patient has a history of previous diarrhea, developed a spiking fever, weight loss, an enlarged tender liver with elevation of the right portion of the diaphragm, and leukocytosis. The fact that his stool showed negative results for ova and parasites is not very significant in considering a diagnosis of hepatic abscess secondary to amebiasis. Over 50 per cent of patients with amebic abscess of the liver do not have concurrent cysts or trophozoites of Entamoeba histolytica in their stools.

More than 75 per cent of amebic abscesses of the liver are in the right lobe, the area involved in this patient. This localization has been attributed to streamlining of the portal circulation draining an infected intestine. Left lobe abscesses do occur but are more difficult to detect, both clinically and radiologically. A single abscess in the liver is the rule in hepatic amebiasis but multiple abscesses can occur. The prognosis is in inverse proportion to the number and duration of abscesses.

Joseph Kessler, M.D.: About 90 per cent of amebic abscesses give some pleural reaction with pleurisy and if on the left side pericarditis. Was the diagnosis of echinococcus granulosus entertained?

Dr. Carter: It was, but the Casoni skin test showed negative results.

Dr. Cahill: Pulmonary involvement in amebiasis is usually related to direct rupture of an hepatic abscess of the liver through the right leaf of the diaphragm and into the lower lobe of the right lung. Bronchopleural fistulas may occur and E. histolytica trophozoites are then detectable in purulent sputum. Hematogenous dissemination of ameba to the lung without involvement of the liver occurs in less than 5 per cent of those with pulmonary amebiasis.

The major advance in diagnosis in the past decade has been in the development of specific, sensitive serologic tests. The hemagglutination and complement fixation tests are excellent diagnostic tools in systemic amebiasis. In large series of collected cases of hepatic and pulmonary amebiasis, 100 per cent showed positive serologic reactions, and in those with only intestinal amebiasis less than 50 per cent showed positive serologic reaction tests. The mainstays of therapy for systemic amebiasis remain emetine, or the less toxic dehydroemetine if it is available, and chloroquine. The response of the fever to penicillin will not rule out amebiasis since even after World War II penicillin was still used on many amebiasis cases with defervescence.

Dr. Bruno: This patient was under Dr. Claps' care, and I wonder if he has any comments.

Francis X. Claps, M.D.: The case as presented was indeed a confusing problem until the pleural fluid appeared. It is interesting to note that he had had an ischiorectal abscess drained at another hospital with minimal antibiotic coverage used there. The hemorrhoidal vessels then may have been the route through which he developed a hematogenous spread into the hepatic circulation.

Dr. Bruno: Dr. Fischer was the surgeon of record, and I would like him to tell us what he found and did at operation.

Walter W. Fischer, M.D.: We felt the patient had an infectious process, most likely either above or below the diaphragm. A neoplasm, such as an anaplastic pleural tumor, also had to be considered. With the administration of antibiotics, we anticipated that any abscess material encountered would probably be sterile. The operation consisted of a right transthoracic, transdiaphragmatic exploration and drainage of a liver abscess. On opening the patient's chest, the lung and diaphragm were adherent where the dome of the liver protrudes into the inferior portion of the diaphragm. After separating the lung from the diaphragm, the diaphragm was opened and an abscess cavity within the liver was entered. The usual subdiaphragmatic abscess is discoid and saucer shaped and not rounded as was this patient's intrahepatic abscess. An analogous problem of abscess localization often exists with an empyema and lung abscess. They are hard to differentiate by operation alone and may coexist. However, when we opened this abscess and debrided its base, there was no doubt that it was intrahepatic. The abscess drained extraperitoneally through the lateral abdominal wall. Subsequently, his fever abated, but the drain remained in situ for four weeks.

After the drain was removed, his fever spiked for one or two days but then returned to normal, and the patient has been well since.

Dr. Bruno: The surgical diagnosis then is an intrahepatic abscess with subdiaphragmatic extension and secondary pleural exudation. The patient's previous ischiorectal abscess was probably the initiating event of the entire clinical problem. He undoubtedly seeded bacteria at that time to form one abscess cavity or multiple small liver abscesses that later coalesced and enlarged. Even at the time of surgery, it is often difficult to differentiate single from multiple abscesses, and repeated trocar insertions into the liver may be needed to delineate the extent of the disease process. Is this true in your experience, Dr. Fischer?

Dr. Fischer: That is perfectly possible, Dr. Bruno.

Dr. Bruno: The other point I would like to clarify is the use of antibiotics after drainage of abscesses, that is, perirectal or ischiorectal. Even with the administration of antibiotics in adequate dosage, dissemination via the portal vein can occur particularly with resistant organisms such as Pseudomonas, Proteus, or with mixed infections.

Dr. Dann: Diverticuli usually do not involve the rectum and are more common in the sigmoid area. I wonder how often a sigmoid diverticulitis occurs with a perirectal abscess.

Dr. Bruno: Would Dr. Donaldson like to answer that question?

James R. Donaldson, M.D.: I would estimate this complication occurs in about 1 per cent of cases. The most common complication is the peridiverticula abscess.

Dr. Bruno: How common is a pelvic abscess complicating diverticulitis?

Dr. Donaldson: Not too common in my experience.

Dr. Claps: I would think that his ischiorectal abscess was not related to diverticulitis but that his hepatic abscess was related to the ischiorectal abscess.

Dr. Bruno: I would agree with that concept.

Dr. Fischer: Would a celiac arteriogram have helped here?

Dr. Pezzulli: The finding of an avascular mass lesion with a hyperemic capsule is the classical finding in a liver abscess, but with the lack of a liner scan showing positive results I do not know if the selective arteriogram would show positive findings.

Dr. Kessler: The statement is often made that with a liver scan lesions of 2 cm. or more in size can be seen, but with selective celiac arteriography 1 cm. lesions can be visualized.

Dr. Bruno: Would Dr. Paley speculate as to why the liver scan showed negative results?

Karl R. Paley, M.D.: First, I would like to know how large the abscess was.

Dr. Fischer: The abscess was the size of a small grapefruit.

Dr. Paley: Since it is located in the largest and thickest part of the liver, this abscess could have escaped notice using scanning technic.

Dr. Bruno: Would you not agree that liquefaction and central breakdown in a neoplasm could also not be ruled out by a liver scan, Dr. Paley?

Dr. Paley: Yes, but I feel a liver scan has more to offer than the arteriogram in this type of situation.

Clinical diagnosis

Fever of unknown origin, ? occult infection

Dr. Vorhaus' diagnoses

1. *Subphrenic abscess*
2. *? Hepatic abscess*

Dr. Bruno: Would Dr. Kim please discuss the pathologic findings?

Theodore H. Kim, M.D.*: The specimen consisted of a wedge-shaped, hemor-

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* Adjunct in Pathology, Lenox Hill Hospital.

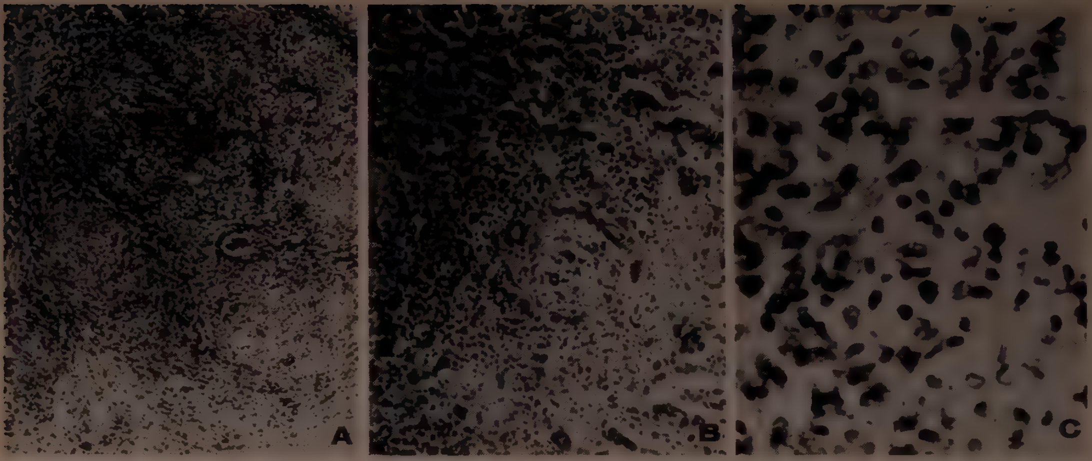

FIGURE 3. (A) Low-power view of liver biopsy tissue showing multiple granulomata. (B) High-power view of lesion showing mostly foamy macrophages and chronic inflammatory cells. (C) Section showing border of granuloma with acute and chronic inflammation surrounded by focally necrotic liver tissue.

rhagic, and friable piece of liver tissue measuring 2 by 2 by 1 cm. Sections revealed multiple conglomerated granulomata which were composed of aggregates of foamy macrophages, neutrophils, lymphocytes, and interspersed plasma cells (Fig. 3A). There were a few large mononuclear histiocytes, but atypical giant cells were not observed (Fig. 3B). The lesion was surrounded by fibrous tissue which contain diffusely scattered acute and chronic inflammatory cells. The sections also contained a portion of relatively well-preserved liver tissue showing small focal necrotic areas surrounded by an extensive acute inflammatory zone (Fig. 3C). Histochemical staining did not reveal acid-fast bacilli, fungi, or bacteria. The lesion was consistent with a liver abscess.

Dr. Waller: Perhaps different combinations of antibiotics for a longer period of time and in larger doses should have been used.

Dr. Bruno: I doubt that these would have been curative. The abscess was sterile at the time of surgery. However, the infection had taken its toll with resultant necrosis, liquefaction, and abscess formation which required mechanical drainage.

Dr. Claps: From the patient's history and from the proctologist I spoke to, it seems the patient's abscess was just drained and that minimal antibiotic coverage was administered. The wound apparently healed and closed early; his prolonged hospital stay was one of convalescence.

Dr. Bruno: I would suspect that this closed area was not really rendered sterile and served as the focus for hematogenous dissemination. His subsequent problems very likely resulted from this circumstance. At the time of operation here, a culture from the abscess was reported as negative, and no cysts were seen in the fluid. I would like to ask Dr. Kim if the pathologic report is consistent with the usual bacteriologic infections that are treated with antibiotics for a time with resulting sterilization of the abscess.

Dr. Kim: Yes, I believe this is most likely. We did not demonstrate any bacteria by culture or by special stains of the liver specimen. From our point of view, the abscess had been rendered sterile preoperatively. An attempt was made to obtain the culture report from the other hospital where his initial perirectal abscess was drained. This was reported as containing Escherichia coli and Bacillus proteus.

Anatomic diagnosis

Liver abscess

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Electrocardiograms of the Month

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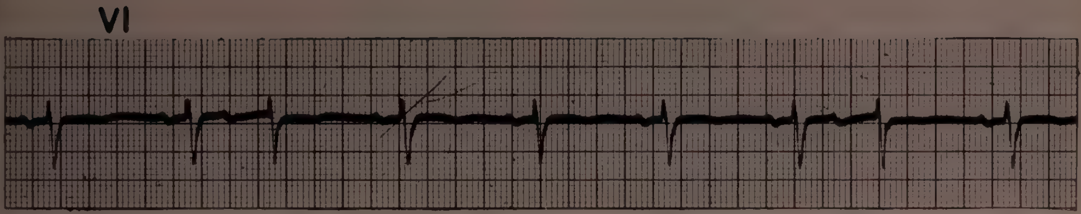
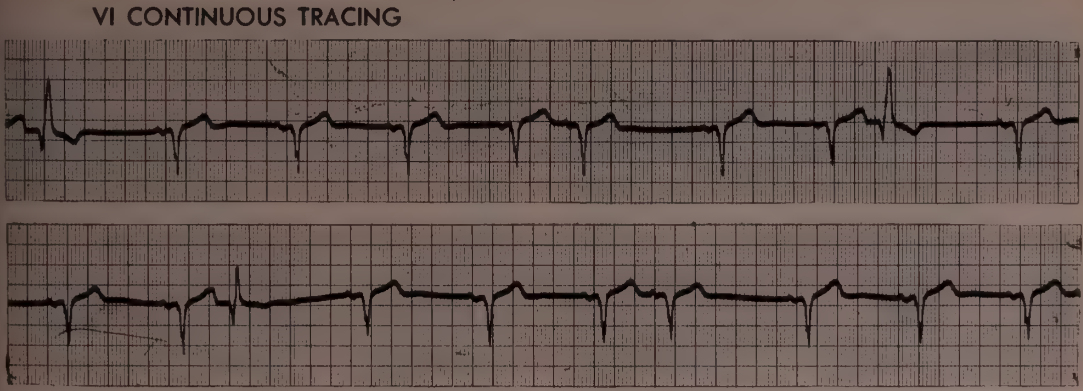


QUESTION 15. Routine electrocardiogram obtained on a sixty-year-old man; what is the rhythm?



QUESTION 16. Continuous lead V_1 obtained postoperatively in a patient with history of angina; what is the rhythm?

Electrocardiograms of Month

ELUCIDATION

Question 15. The rhythm is regular sinus rhythm. The third and eighth beats are premature but have a normal QRS configuration. They are preceded by a P wave which is superimposed on the preceding T wave. The P-R interval of these premature beats is prolonged to 0.3 second. The normal P-R interval of this patient is 0.2 second.

Prolongation of the P-R interval in atrial premature beats is not uncommon, particularly when the atrial premature beat falls on the preceding T wave. In such a situation, the P-R interval prolongation is due to relative refractoriness of atrioventricular junctional tissue. Atrial premature beats with prolongation of the P-R interval may occur in normal subjects.

Question 16. There is a sinus bradycardia and arrhythmia. The sixth beat is a premature beat preceded by a P wave and is normally conducted. The ninth beat is also premature and is preceded by a P wave which can be seen deforming the preceding T wave. The P-R interval of this atrial premature beat is slightly prolonged. The QRS is prolonged to 0.16 second, and there is a broad Q wave of 0.04 second. This beat, although an atrial premature beat, is aberrantly conducted through the ventricles. Such beats may be confused with ventricular premature beats if careful search is not made for a preceding P wave.

The Q wave of the aberrantly conducted beat suggests the possibility of an old anterior wall infarct.

Blood alcohol levels at autopsy

Over a period of two years, the alcoholic levels in autopsy blood taken from various sites have been estimated for 209 consecutive deaths which came under the coroner's jurisdiction. Based on this experience, V. D. Plueckhahn, M.D., writing in a recent issue of the *Medical Journal of Australia*, puts forth certain conclusions: (1) Blood alcohol levels at autopsy are valid up to forty-eight hours following death when certain principles relating to conditions of collection are observed; (2) samples taken from the intact heart are as significant as samples taken from femoral vessels; (3) false blood alcohol levels greater than 0.2 per cent can be generated in improperly stored samples; (4) high blood alcohol levels may develop during putrefaction: levels up to 0.2 per cent do not necessarily mean that the victim took alcohol before death; (5) significant false blood alcohol levels do not develop during incineration in the absence of putrefaction; and (6) various accepted methods of analysis for "alcohol" measure alcohol levels other than ethyl. This is not significant in the analysis of blood from living persons or in autopsy samples taken within forty-eight hours following death. In the putrefying body, however, the other alcohols may be significant. Gas chromatology should be available for the satisfactory analysis of blood in these cases.

The deceased were 161 males and 48 females. Vehicular accidents were responsible for 92 deaths and "natural" causes, 81. Drowning was next (14), and the rest were divided among incineration, hanging, barbiturate poisoning, carbon monoxide poisoning, and acute alcoholism. Data were analyzed for comparative alcohol levels in the blood by site of collection, levels in putrefying bodies, incineration and blood alcohol levels, and effects of storage. All samples were collected in specially prepared 20-ml. glass syringes fitted with 14-gauge needles. They were immediately transferred to special 15-ml. screw-top bottles containing sodium fluoride and potassium oxalate. All initial alcoholic levels were estimated within twenty-four hours of the autopsy. All analyses were performed in duplicate, and an accuracy of ±0.005 per cent alcohol was maintained. Some blood samples were subjected to further analysis by gas liquid partition chromatography with the use of *n*-propyl alcohol as an internal standard and standard ethyl alcohol as a control.

Cerebral Edema from Blood-Brain Glucose Differences Complicating Peritoneal Dialysis

Second Membrane Syndrome

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PERITONEAL LAVAGE and hemodialysis are now accepted modes of therapy for uremia, toxic states, and refractory congestive heart failure. Patients who cannot be treated by conventional means can benefit from the sophisticated electrolyte and fluid transfers possible when a semipermeable membrane is used rather than simple replacement therapy.

The purpose of this communication is to underscore the hazard of a hyperosmotic-hyperglycemic state secondary to peritoneal dialysis and to illustrate means of prevention of this very serious complication.

Both hemodialysis and peritoneal lavage are based on the simple principle of placing blood and a dialyzing fluid on opposite sides of a semipermeable membrane. The membrane will allow the passage of solute, ions, and most small organic molecules but will exclude polypeptides and other substances of high molecular weight or bulky configuration.

TABLE I. Comparison of electrolyte, glucose, and protein content between normal blood and a 1.5 per cent glucose dialyzing solution

Type	Blood	1.5 Per Cent Glucose Dialyzing Solution
Sodium (mEq. per liter)	140	140
Potassium (mEq. per liter)	5	5
Chloride (mEq. per liter)	95	95
Carbon dioxide (mEq. per liter)	20	20
Calcium (mEq. per liter)	5	5
Magnesium (mEq. per liter)	2	2
Protein (Gm. per 100 ml.)	7.5	0
Glucose (mg. per 100 ml.)	100	1,500

In peritoneal lavage the dialyzing fluid is approximated to the membrane (peritoneum) by instilling it into the peritoneal cavity via a catheter. The fluid is allowed to remain in the peritoneal cavity for a fixed time period and is then withdrawn. Assuming that the hydrostatic pressure gradient between capillary blood in the peritoneal membrane and the instilled lavage fluid is negligible, the transfer of any solvent or solute across the membrane must be based on one of two factors: (1) the concentration gradient between solutes in blood and in fluid which can cross the membrane, and (2) the osmotic pressure exerted by substances which cannot cross the membrane or cross it very slowly.

The relationship between normal blood and a typical dialyzing solution is seen in Table I. In this instance, the "tonicity" of the dialysis fluid is preserved by the excess glucose. This is achieved because glucose crosses the peritoneal membrane much more slowly than other molecules and thus exerts an osmotic pressure which attracts solvent (water) from the blood. It is incompletely opposed in this action by the oncotic pressure of the serum proteins.

A 1.5 per cent glucose solution is the most dilute dialyzing fluid commonly employed and is slightly hypertonic to most plasmas. Fluid containing 4.25 per cent and 7 per cent glucose is increasingly hypertonic and thus extracts more solvent from the blood.

However, the peritoneal membrane is not impermeable to glucose. Boen[1] has found, as we have, that of the glucose in 2 L. of 1.5 per cent glucose solution (30 Gm.), about 50 per cent or 15 Gm. will be absorbed in the course of a one-hour dialyzing period. Thus, in the course of a thirty-hour dialysis using 2 L. of 1.5 per cent glucose solution per hour, the average patient will absorb 450 Gm. of glucose. If the 7 per cent glucose solution is used, this figure rises to 2,100 Gm. or 70 Gm. of glucose per hour (Table II).

TABLE II. Approximate glucose absorption per hour from standard dialyzing solutions (grams)

Fluid, 2 L.	Glucose Absorbed in One Hour	Glucose Absorbed in Thirty-Hour Dialysis
1.5 per cent glucose	15.0	450
4.25 per cent glucose	42.5	1,275
7.0 per cent glucose	70.0	2,100

A patient with a normal carbohydrate metabolism can tolerate this flood of glucose and keep his blood sugar within reasonable limits, just as he does with intravenous glucose infusions. A diabetic patient usually cannot tolerate it, especially since he is usually being dialyzed because of oliguria, congestive heart failure, electrolyte imbalances, and so on, all of which further handicap his limited ability to cope with a carbohydrate load.

Thus, it is possible to elevate the blood sugar of a diabetic or latent diabetic patient dramatically in the course of a peritoneal lavage. In the case presented, we found ourselves confronted suddenly with an 1,100 mg. per 100 ml. blood sugar which responded only too well to control with regular insulin.

Case report

This patient was a sixty-three-year-old man who was admitted to The Long Island College Hospital in a semistuporous condition. The patient was hypertensive by history and had had four previous episodes of congestive heart failure. He had been treated with digitalis, diuretics, and reserpine for many years. The patient also had an uncomplicated diabetic history and had been controlled by diet alone for ten years. Five days prior to admission, the patient began to have repeated bouts of emesis and became progressively weaker and more lethargic.

On admission his blood pressure was 150/70, the pulse was 100 and regular, the temperature 98 F., and the respirations 24 per minute. He was lethargic and responded sluggishly to commands. Funduscopic examination, physical examination, and neurologic examination gave essentially negative results except for a 2 plus pretibial edema.

The patient's blood sugar was 280 mg. per 100 ml. on admission. Serum acetone was negative. Blood urea nitrogen was 150 mg. per 100 ml., creatinine 8.2 mg. per 100 ml., and hemoglobin 9.6 Gm. per 100 ml. The urine contained 4 plus sugar, and the specific gravity was 1.010. Lumbar puncture at the time of admission revealed clear fluid at an opening pressure of 100 mm. of water. The spinal fluid sugar was 190 mg. per 100 ml. The electrocardiogram revealed left ventricular hypertrophy. Serum sodium was 120, potassium 4.1, chlorides 89, and carbon dioxide 23 mEq. per liter.

Peritoneal dialysis was begun with a 1.5 per cent glucose dialyzing solution. During the dialysis the patient's blood sugar rose to 1,100 mg. per 100 ml. A glucose done on the dialysate after removal from the peritoneum was 770 mg. per 100 ml., which represented approximately half of the concentration which was instilled. The patient was then given 250 units of regular insulin over the next few hours, and his blood glucose dropped precipitously to the 134- to 150-mg. per 100 ml. range.

At this time the patient's blood pressure began to fall, and his urinary output fell from its already oliguric levels. He developed muscle fasciculations. Papilledema was noted at this time. The patient's temperature rose to 104 F., and coma deepened. A lumbar puncture was cautiously performed. The opening pressure was now 290 mm. of water. The spinal fluid glucose was 600 mg. per 100 ml., concomitant with a blood sugar of 150 mg. per 100 ml.

The patient died shortly thereafter. Chemistries one hour before death included: blood urea nitrogen 119 mg. per 100 ml.; and sodium 140, potassium 4, chloride 103, and carbon dioxide 24 mEq. per liter.

An autopsy revealed Kimmelstiel-Wilson disease. The brain weighed 1,500 Gm.; it was edematous, and the tonsils were swollen. In addition, the brain was congested, and there was widening of the gyri. Histology confirmed the edema.

Comment

Hyperglycemia has been reported as a cause of death in the nonketo-acidotic diabetic patient as well as in the hemodialyzed patient. Our analysis of the chain of events in this case would tend to implicate the sudden drop of glucose rather than the hyperglycemia per se as the cause of cerebral edema.

At this point the second membrane must be considered. Just as the peritoneal membrane is semipermeable, so is the blood-brain barrier. The vagaries of fluid and solute transport across this finicky membrane are well known and frustrating to both internist and neurosurgeon. Out of the welter of contradictory facts and hypotheses concerning the cerebrospinal fluid and its membrane, one concept is fairly well documented: Glucose crosses it, but slowly. There is a lag of several hours in equilibrating glucose across the blood-brain barrier compared with the thirty-minute equilibration time across the peritoneum.

Thus, in the case presented, an 1,100 mg. per 100 ml. glucose in the blood produced a 600 mg. per 100 ml. cerebrospinal fluid glucose in several hours. The sudden lowering of the blood glucose to 150 mg. per 100 ml. by insulin would create no immediate concomitant drop in the cerebrospinal fluid glucose. Thus, the cerebrospinal fluid glucose exerted an osmotic pressure which was not counterbalanced by an equally high blood glucose and caused a rapid uptake of fluid into the cerebrospinal fluid and central nervous system. The latter caused a sudden rise in intracranial pressure which could be implicated in the appearance of central nervous system signs.

TABLE III. Seventy-three-year-old maturity-onset diabetic patient undergoing peritoneal dialysis and treated at frequent intervals with insulin

Dialysis Time (Hours)	Urine Sugar*	Blood Glucose (mg. per 100 ml.)	Regular Insulin Dose (Units)
0	2+	210	Start dialysis
1	4+	430	10
2	4+		
3	4+	390	10
4	4+		
5	4+	395	10
6	4+		
7	3+	280	10
8	2+		10
9	2+	256	10
10	2+		10
11	2+	270	10
12	Negative	176 to 230 every two hours	10 each hour
32	Negative	176 to 230 every two hours	10 each hour

* Acetone findings in urine were negative.

The effect may be mediated via ischemia due to extravascular hydrostatic pressure, intracellular edema, or extracellular edema. These points have been elucidated by Bakay and Lee.[2]

That central nervous system fluid shifts can occur during hyperglycemia and during hemodialysis has been reported by Iyengar,[3] Lucas *et al.*,[4] Kennedy *et al.*,[5,6] Scribner,[7] and Potter.[8]

The obvious way to avoid this glucose dysequilibrium across the second and usually forgotten membrane, the blood-brain barrier, is to prevent the hyperglycemia from occurring in patients undergoing peritoneal dialysis.

Until dialyzing solutions with nonabsorbable or easily metabolized osmotic substitutes for glucose are available, the following is suggested: Monitor the blood sugar very frequently in patients being dialyzed with glucose solutions, and give small, frequent doses of regular insulin as soon as the blood sugar begins to elevate.

We have treated a patient in this fashion. The patient was a seventy-three-year-old maturity-onset diabetic patient who was controlled with chlorpropamide (Diabinese). He had congestive heart failure which was refractory to all conventional modalities of therapy. This patient underwent a thirty-two-hour peritoneal dialysis and had frequent blood glucose determinations. He received regular insulin at almost hourly intervals, and we were able to keep his blood glucose at reasonable levels, even though 7 per cent plus 4.25 per cent glucose dialyzing fluid was used in an attempt to extract as much fluid as possible. There were no problems during the dialysis, and the therapy was successful. Table III documents his course during the dialysis.

Conclusion

Severe hyperglycemia may be an immediate consequence of peritoneal dialysis in both the known and unsuspected diabetic patient. We have found that the individual hyperglycemic response to glucose-containing dialyzing fluid varies from patient to patient.

At this writing, close observation of the blood sugar and frequent small doses of insulin have prevented the marked hyperglycemia and subsequent glucose dysequilibrium across the "second membrane," the blood-brain barrier. The dose and frequency of administration of insulin must be individualized for each patient.

Summary

A report is presented of a patient with adult-onset diabetes mellitus in renal failure treated by peritoneal dialysis. The treatment caused marked hyperglycemia, and the patient developed signs of cerebral edema with increased intracranial pressure and, finally, died as the blood sugar was rapidly reduced by insulin.

Pertinent literature is reviewed, and pathophysiologic mechanisms are discussed.

The authors suggest that the syndrome can be prevented by careful monitoring of the blood sugar with the administration of small insulin doses as frequently as necessary when the blood glucose level begins to rise.

The authors also suggest that thought be given to preparing dialyzing solutions with osmotic substitutes for glucose.

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Acute Massive Pulmonary Embolism Seen as Organic Brain Syndrome

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PULMONARY EMBOLIZATION, a relatively frequent cause of death, remains an often missed antemortem diagnosis. With presently available therapy, rapid diagnosis and treatment have been lifesaving.[1] An unsuspected but not so uncommon presentation of massive pulmonary embolism is that of an acute organic brain syndrome. The following 2 cases are examples.

Case reports

CASE 1. A forty-six-year-old Negro man was admitted to Bellevue Hospital in a delirious and combative state. The history was obtained from his family. A few hours prior to admission, he had arrived in New York City from the British West Indies by airplane. During the latter part of the trip he acted strangely. At the airport in New York, he was unable to recognize his family. He was taken to his relative's home in a wheel chair. Because his behavior worsened, he was brought to Bellevue Hospital.

On examination he was found to be dehydrated, delirious, tachypneic, and required restraints to keep him from jumping out of bed. His blood pressure was 160/80; his pulse was 110 and regular. His respirations were 50 per minute and shallow, and his temperature was 105 F. There were no signs of head or body trauma, and there were no injection sites on his extremities. The fundi were not well visualized, but papilledema was not present. The pupils were round and equal; they reacted to light singly and consensually. The corneal reflexes were present. The patient's neck was supple; the trachea was midline. The lungs were clear to percussion, but fine crepitant rales were audible at the right base posteriorly. The pulmonic second sound was indistinguishable from the aortic second sound, and no gallops, thrills, rubs, or murmurs were heard. The liver and spleen were not felt. There was no clubbing, cyanosis, edema, or any evidence of thrombophlebitis of the extremities. On neurologic examination there were no focal or lateralizing signs, but vertical and horizontal nystagmus was present. Sensation to pain was intact, plantar reflexes were normal, and the deep-tendon reflexes were absent.

Laboratory data included a hematocrit of 51 and a white blood count of 8,600 per cubic millimeter with a normal differential count. No sickle cells were seen, and a sickle cell preparation gave negative findings. The blood urea nitrogen was 24 mg. per 100 ml. and blood sugar 300 mg. per 100 ml.; carbon dioxide 20, serum sodium 160, chlorides 130, and potassium 3 mEq. per liter. The spinal fluid was clear, the protein was 78 mg. per 100 ml., the sugar 250 mg. per 100 ml., and the opening pressure 90 mm. of water; no cells were seen. Stool guaiac test gave negative findings. An electrocardiogram demonstrated a sinus tachycardia at 145 with right axis deviation, an S wave in lead I, Q waves in leads III and aVf, and clockwise rotation of the heart. Bedside chest film showed no pulmonary infiltrates or pleural effusion. Urinalysis revealed 4 plus glucose, no acetone, a trace of protein, and no cells in the sediment.

On arrival at the emergency ward, the patient was treated for diabetes mellitus and pneumonia. Within three hours he became hypotensive and died. The clinical diagnosis on admission was a brain stem infarct with concurrent pneumonia. However, when hypotension appeared, the possibility of pulmonary embolus was considered for the first time.

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Autopsy was performed by the New York County medical examiner. The significant findings included an enlarged heart with atherosclerosis throughout the coronary arteries. No recent myocardial infarction was present. There was no obstruction to the aorta or brachiocephalic vessels. The lungs weighed 960 Gm. A fresh embolus completely occluded the right main pulmonary artery and extended into the medium and smaller branches. The left pulmonary artery was not occluded at its origin, but the moderate-sized vessels showed fresh emboli. There was no evidence of pulmonary infarction, bronchopneumonia, or pleural reaction. The liver was congested but without bile stasis or cirrhosis. There were thrombi in the left and right deep tibial veins. The scalp, meninges, and central nervous system were normal. The vessels at the base of the brain showed moderate atherosclerosis. The cerebellum, brain stem, and pons were free from lesions. The cerebral cortex was injected in the white matter but was otherwise normal. There were no fractures of the skull cap or base of the brain. The cause of death was massive bilateral pulmonary emboli.

CASE 2. A sixty-seven-year-old Hungarian-born architect was admitted to Bellevue Hospital for the first time after having collapsed in the street. Although he did not lose consciousness, he noted transient blindness and vertigo. His complaint at the time of admission was that of a diffuse, gnawing abdominal ache. Except for chronic bronchitis he had no other medical illnesses; there was no history of cardiac, renal, or cerebral vascular disease, hypertension, diabetes mellitus, or gastrointestinal problems. A truck had run over his right leg during World War II, but there were no known sequelae to this injury. The day before admission to the hospital he had arrived in New York from Chicago in completion of a five-day bus trip from Los Angeles, and he was en route to London when he collapsed in front of an airline terminal.

On examination he was found to be well-developed, well-nourished, pale, ashen colored, and anxious. His blood pressure was 54 systolic, pulse 120 and regular, respirations 26 per minute, and temperature 97.8 F. Significant physical findings included round, equal pupils which reacted to light and accommodation. The optic disks were flat, arterial nicking was present, but no hemorrhages or exudates were seen. There was no evidence of head trauma. His neck was supple, the trachea was midline, and there was no abnormal distention of the cervical veins. Examination of the lungs, heart, abdomen, and extremities gave normal results. All pulses were palpable, and no bruits were heard. Neurologic examination gave normal findings.

Initial laboratory data included a normal hemogram. There was 2 plus proteinuria and glycosuria, but no acetone or bile in a urine specimen collected while the patient was receiving an intravenous infusion of glucose and water. Urobilinogen was present in a 1:32 dilution. One to 3 red blood cells and 20 white blood cells per high-power field were seen in the same specimen. The blood urea nitrogen was 19 mg. per 100 ml. and the electrolytes were normal, as were the alkaline phosphatase, calcium, amylase, and serologic test for syphilis. The serum glutamic oxalopyruvic transaminase was 72, serum glutamic pyruvic transaminase 45. Four days later the glutamic oxaloacetic transaminase was 151. Stool for guaiac gave negative results. Lumbar puncture, although traumatic, contained no white blood cells and had a protein of 22 mg. per 100 ml. Blood glucose and bilirubin were normal. Electrocardiogram on admission demonstrated a sinus tachycardia with ventricular premature contractions. There was an S wave in lead I, a Q in lead III, and a normal axis deviation. Chest x-ray revealed prominent hilar markings, slight blunting of the right costal angle, but no pulmonary infiltrates.

On admission to the emergency ward, pressor amines were administered to correct the hypotension. During the midafternoon of the day of admission, three episodes of sinus bradycardia, hypotension, fixed dilated pupils, and fecal incontinence were observed. Twelve hours later, the patient had a respiratory arrest and demonstrated decerebrate posturing. Resuscitation was successful in so far as neither assisted respiration nor vasopressors were required, but the patient remained in coma for the rest of the hospital course.

An electroencephalogram was interpreted as suggesting bilateral hemispheric destruction. No vascular abnormality was demonstrated in bilateral retrograde brachial arteriography.

Upper gastrointestinal bleeding and staphylococcal septicemia complicated the rest of the hospital course. Despite transfusions, antibiotics, and tracheostomy, the patient died on the tenth hospital day.

Autopsy was performed by the New York County medical examiner. Pertinent findings included normal peritoneal, pleural, and pericardial surfaces. The heart was of normal size, and the coronary arteries were free from atherosclerosis. The valves and chordae tendineae were normal. In the membranous ventricular septum, a probe-patent defect was present. There was no evidence of recent or past myocardial infarction. Both lungs weighed 1,200 Gm. The main pulmonary artery was free from embolus, but the proximal right and left pulmonary arteries were filled with recent and organizing thrombotic material. On section of the lung, there were numerous infarcts of various durations and sizes. Considerable purulent material was present at the tracheostomy site both externally and internally.

The meninges and brain weighed 1,470 Gm. and were normal externally and on section. There was no subdural or subarachnoid hemorrhage. An organizing thrombus was adherent to the femoral veins. No thrombi were noted in the interior vena cava.

There were superficial ulcers in the stomach, and the liver was acutely congested.

The cause of death was a result of massive bilateral pulmonary emboli with pulmonary infarcts secondary to phlebothrombosis of the deep femoral veins.

Comment

Cerebral hypoxia in each of these 2 patients apparently accounted for the delirium and fever in the first case and for the confusion, hypotension, and incontinence in the second case. It is of interest that these patients were seated in either an airplane or a bus for a period of time. Stasis of blood during the period of immobilization may have initiated the process of venous thrombosis. Subsequently, embolization occurred. The history of a recent trip should serve as a signal for the diagnosis of phlebothrombosis and pulmonary emboli. In each of these cases the electrocardiogram demonstrated changes compatible with acute cor pulmonale secondary to pulmonary emboli; nevertheless, the absence of chest pain, hemoptysis, an accentuated pulmonic second sound, gallop rhythm, neck vein engorgement, and thrombophlebitis obscured the true diagnosis.

In an Israel and Goldstein's[2] series of pulmonary emboli, 4.4 per cent of patients were seen with syncope, convulsive phenomena, and hemiplegia. Of 100 patients with pulmonary emboli described by Gorham,[3-5] 5 per cent were seen with symptoms that simulated an acute cerebral vascular accident. With cardiopulmonary bypass and newer surgical technics, diagnosis of massive pulmonary emboli is more than an academic exercise. It may be lifesaving.

Summary

Two patients with massive pulmonary embolism who were seen with an acute organic brain syndrome are reported. This mode of presentation may obscure the diagnosis and delay effective definitive therapy.

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History of Medicine

Lewis Stephen Pilcher

Editor and Surgeon

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Lewis Stephen Pilcher did much to upgrade the practice and science of surgery. He was one of the founding physicians of the Methodist Hospital of Brooklyn and guided its surgical department for twenty-five years. In 1878, together with several other local surgeons, he organized the Brooklyn Anatomical and Surgical Society, later to become the Brooklyn Surgical Society. Its transactions, first published in the *Proceedings of the Kings County Medical Society*, led to the founding of the present day *Annals of Surgery*, a publication which Pilcher edited from its inception in 1884 until his death in 1935 at the age of ninety.

Early years

Pilcher, the son of a Methodist minister, was born in Michigan in 1845. His father had received his medical degree when he was forty-nine, and this undoubtedly contributed to Pilcher's interest in medicine. Pilcher was something of a prodigy, entering the University of Michigan when he was only thirteen years old and receiving his B. A. degree at seventeen and his Master's degree in June of 1863, one month before his eighteenth birthday. In July he attempted to join the Union Army, but when his request was refused, began his formal medical school training at the University of Michigan in September. Three months later, learning of the need for hospital stewards, he volunteered again. This time he was offered, and accepted, an appointment as hospital steward of a regiment of Negro troops which was about to embark on an active campaign in Virginia. After several months, he was assigned to a Missouri institution as a hospital steward (Fig. 1). During that tumultuous period, he became familiar with medical, surgical, and administrative work and, during a smallpox epidemic, gained the experience which he was to use as data for his graduating thesis as a Doctor of Medicine.

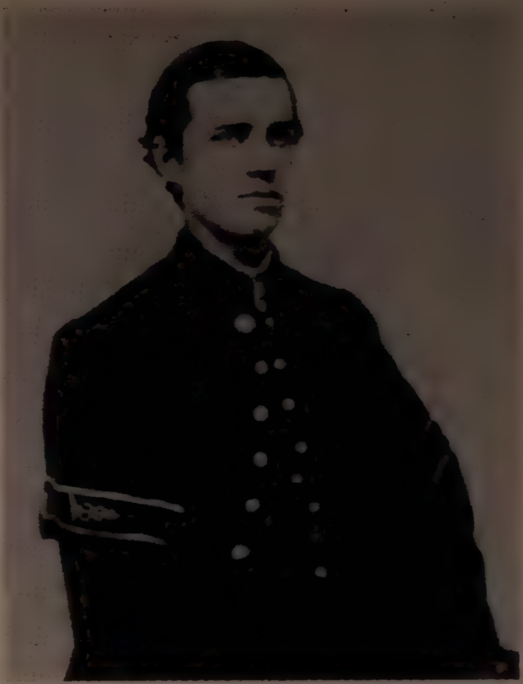

FIGURE 1. Pilcher as hospital steward in Missouri at age nineteen.

In September, 1865, three weeks after he was out of uniform, he returned to the University of Michigan. The extra credits received from his army service, together with those accumulated in the University, made it possible for him to graduate in March, 1866, a few months before he was twenty-one.

Pilcher entered rural practice in Michigan, and, to supplement his meager in-

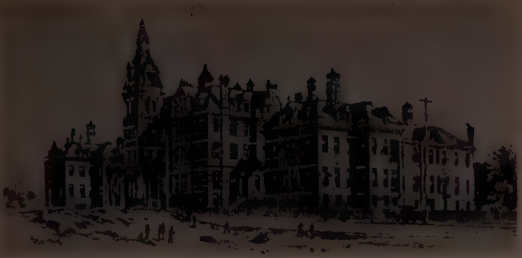

FIGURE 2. Methodist Hospital in Brooklyn in 1897.

come, taught part time in a local school. This life offered little challenge to the dynamic young physician, and he went to Detroit to become house surgeon in the Harper Hospital and then on to Bellevue Hospital in New York.

However, Pilcher was still attracted to life in the armed services and by 1867 had accepted an appointment as assistant surgeon in the U.S. Navy, becoming a ship's surgeon two years later. On the return voyage from Havana to New York, Dr. Pilcher and 37 crew members contracted yellow fever. Seventeen men died, but Pilcher survived. During his lengthy convalescence at the Brooklyn Naval Hospital, he met Miss Martha S. Phillips, and they were married in 1870. When their son was born, Pilcher resigned from the Navy and started the private practice of surgery in Brooklyn in 1872.

Private practice and Methodist Hospital

He organized a dissecting room in his own house as well as a museum of anatomic abnormalities. In addition, he started the collection of rare books that formed the basis for the Pilcher Library at 28 Madison Street in Brooklyn, which he later donated to the University of Michigan.

For some years he was an adjunct professor of anatomy at Long Island College Hospital and served as surgeon to their dispensary.

In 1881 George Seney, a prominent New York banker, donated $200,000 to build a hospital which would be guided by the Methodist Episcopal Church. The Rev. James M. Buckley, editor of the *Christian Advocate,* was chosen as its director. The thirty-six-year-old Pilcher was asked to be one of the founders of this institution, the first Methodist hospital in the United States. His own background of Methodism as well as his wide experience in many aspects of hospital life fitted him admirably for such a role. The Methodist Hospital became his prime professional interest for the next twenty-five years (Fig. 2).[1]

So that he might effectively guide the organization of the hospital, he visited many of the famous clinics of Germany, England, Scotland, and Ireland to learn what he could of medical development abroad. However, when he returned from this trip in 1884, there was a depression in the United States, and there were no funds available to complete the hospital buildings.

Dr. Pilcher worked to keep interest in the Hospital from waning, and he gave his considerable energies to fund-raising activities. One building was slowly completed, and on December 15, 1887, the "Seney Methodist Episcopal Hospital" opened to receive its first patients. With George Ryerson Fowler, M.D., Pilcher organized and ran the surgical service, then consisting of 16 surgical beds.

At the same time Pilcher continued his work in the Brooklyn Anatomical and Surgical Society. The transactions of the Society's first year were published some years later as volume 1 of the *Annals of the Anatomical and Surgical Society*, now considered a rare volume. In 1880 Pilcher initiated a separate monthly journal, *The Annals of the Anatomical and Surgical Society*. The first 12 issues became volume II of the *Annals*. Pilcher and Fowler took complete charge of the journal, once more altering its name to *Annals of Anatomy and Surgery*. Then in December, 1884, with Pilcher as editor, there was a final renaming to *Annals of Surgery*.

In January, 1885, when the first *Annals of Surgery* was published by the James H. Chambers Co. of St. Louis, it was the only English-language journal devoted entirely to surgery. In 1892 publication was taken over by the University of Pennsylvania Press of Philadelphia, and in 1897 the J. B. Lippincott Company of Philadelphia assumed its present-day role as publisher. Pilcher edited the journal over a fifty-one-year period, the longest time that anyone has held such a position.

Throughout his career, Pilcher was a prolific writer, publishing many articles in the *Annals of Surgery*. Today it is

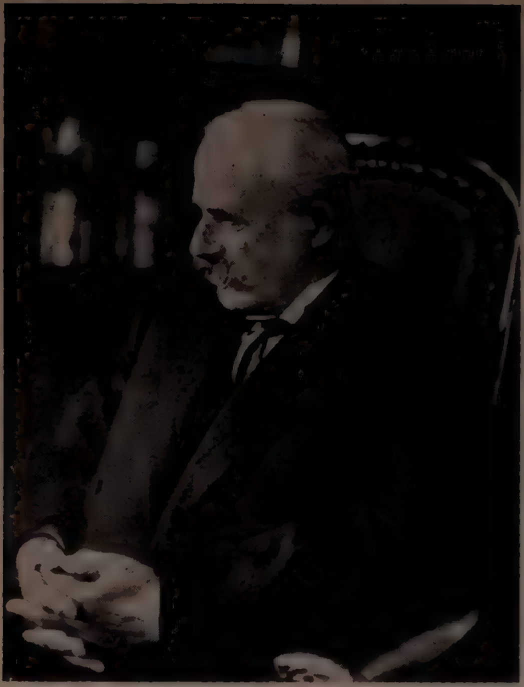

FIGURE 3. Pilcher in his own library in 1925, eighty years old.

interesting to read his detailed description of a "new" method of intestinal anastomosis, presented at a meeting of the New York Surgical Society and later published in *Annals.*[2] Pilcher described a patient with a malignant condition of the splenic flexure which was resected with an end-to-end anastomosis done over a stent of raw potato. This was a modification of a successful procedure described by Ullmann, in which a raw carrot was used as the stent! Pilcher's patient did well initially but died of tetanus on the tenth postoperative day.

Such setbacks did not lessen Pilcher's enthusiasm. It is clear that he considered general surgery to be a broad-based specialty. This becomes apparent in his autobiography, when he states that

> . . . these (gynecological) affections are in a very large proportion of cases surgical in their nature and best treated by operative measures . . . their diagnosis and treatment are dependent upon the same principles and methods which are employed by surgeons in dealing with the affections of other parts of the upper body.

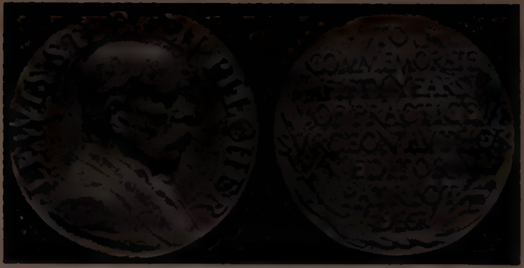

FIGURE 4. Medal awarded to Pilcher for meritorious accomplishments in many areas.

This statement served as an introduction to an 85-page review of the gynecologic surgery carried on at Methodist Hospital from 1887 to 1897, published in the *Annals of Surgery.*[3] These cases were entirely handled by Dr. Pilcher and Dr. Fowler on the general surgical service.

Pilcher was a man of strong opinions, and in 1907, after several years of disagreement with a new hospital superintendent, he resigned from Methodist Hospital. Together with his two sons, Paul and James, he opened a private hospital, but after the untimely death of Paul in 1917, he completely withdrew from hospital work.

Last years

Although he retained an active interest in the practice of surgery until his death, his later years were mainly spent in writing and in travel (Fig. 3). His controversial attitudes had gained him many opponents over the years, but these were far outnumbered by his friends and admirers (Fig. 4). He received many honorary degrees for his work, including an LL.D. from the University of Michigan.

He completed his autobiography at the age of eighty, still a vital man with a sense of his own destiny.[4] In his words, ". . . in the children and childrens' children which remain to me, I see a tangible assured immortality that fills my desires as to the future."

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Special Article

Academic Surgery

Some Thoughts on Its Past and Future

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FROM HALSTED'S INITIATION of the surgical residency program until the establishment of surgical specialty examinations (boards), a surgeon established his reputation among the general public as well as his peers by his clinical abilities.

Surgical quality and quantity converged so as to elevate a few individuals well above their surgical contemporaries. Such men as Halsted, Cushing, the Mayos, Lahey, Cutler, Graham, Blalock, and others seem to merit this position. All were aware of the importance of communication, had extensive bibliographies, and were in demand as lecturers. In general, their contributions were in the area of clinical research. They reported on operative technics, summarized unusual or pertinent case histories and their own therapeutic efforts, and collected and reviewed their wide clinical experiences. Basic information was certainly part of their contribution but to a much lesser extent. The need for clinical data was great during their careers. Their ability to meet this need also enhanced their reputations. It should be noted that a few such men exist today and probably are the last of their breed. Their uniqueness and clinical superiority is no longer so obvious. This has come about principally as a result of the great watershed in American surgery, the establishment of the surgical board.

Great watershed

In the *Directory of Medical Specialists*, it is stated that "The primary objective of approved specialty boards is to provide comprehensive qualifying examinations for physicians who fulfill requirements and to certify those who are successful. In this manner an attempt is made to ensure the public, both lay and medical, that physicians professing to be specialists possess proper capabilities. It is the aim of approved specialty boards to aid in improvement of general standards of graduate medical education and facilities for specialty training."*

Beginning in the latter part of the nineteenth century, young men realized the value of postgraduate surgical training. In many respects this was a sophisticated extension of the apprentice system combined with work toward a nonexistent Doctor of Philosophy degree in surgery. As more hospitals and medical centers grasped this principle of postgraduate training, more men entered practice with greater skills. Because these men recognized their superiority and therefore wished to protect the general public, specialty boards came about during the 1930's and 1940's. Until then any institution could organize a training program. Many institutions made this period a real educational experience. Many, however, discovered that service could be obtained from these embryo surgeons without significant educational compensation. Eligibility to take the board examination was based on recognition of a residency program as an adequate training experience. Gradually training programs were screened, and those found wanting were penalized by excluding their graduates from the opportunity of taking the specialty examination. The immediate result was to improve the quality of postgraduate specialty education. The boards became an informal degree which opened doors with greater ease for those with them. The significance of this fact was understood by young men in medical schools where they were constantly exposed to the certified specialists.

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* Directory of Medical Specialists, Chicago, Marquis—Who's Who, 1946, 1951, 1955, 1963, 1965.

The long-range result of specialization has been the disappearance of the family physician and probably the overpopulation of physicians trained in surgery. This growth can be mirrored by the listing in the *Directory of Medical Specialists* of those certified by the American Board of General Surgery. In 1946 approximately 3,800 men were listed as certified specialists in the field of general surgery. In 1951 there were 4,200, in 1955 6,300, 11,500 in 1963, and 12,500 in 1965. From 1946 to 1955 an average of about 380 surgeons were certified. From 1955 to 1965, 620 per year were certified. It is known that a large number of physicians limit their practice to surgery but do not have their boards. These numbers are inaccurately known. As of 1965 the *American Medical Association Directory of Approved Residencies* listed 366 programs offering a total of 5,678 residency positions in general surgery. If we assume that the average resident spends four years in his training, a potential production of about 1,400 trained surgeons per year exists. It would appear, therefore, that about one half sucessfully pass their boards examinations. By extrapolation those practicing surgery in the United States in 1965 after specialized training may have numbered upwards of 25,000 to 30,000. This would be a sixfold increase over the past twenty years. These figures are approximate but, I believe, give an excellent idea of the dilution effect which has occurred and is directly related to the importance placed on specialization.

Prior to the general acceptance of the specialty boards, a young surgeon developed and matured simply on the basis of patient contact. If he was located in a community with a medical school, his value as an educator closely paralleled his increasing surgical practice. His earning capacity, his medical faculty appointment, and the volume of his practice with its importance to the hospital tended to make him a powerful figure in his community and in the medical center. Medical students excited by these individuals selected surgery as their medical field of paramount interest. The professor of surgery in many medical schools became the dominant figure. His national and international stature in lay and professional circles aided this status. His economic value to private medical institutions was unequaled. Grateful patients could be induced to contribute funds to the hospital and/or medical school. His control of large segments of the hospitalized patient population permitted him a strong voice in hospital policies. It was not unusual for him to exclude other surgeons from the hospital staff since they might threaten and/or weaken his position. The height of this power and privilege extended from the 1920's into the 1950's.

Second watershed

An increase in the number of full-time salaried surgeons and the infusion of research funds from the Federal government have produced major changes in academic surgery since the mid 1950's. Both have occurred simultaneously and probably are interdependent.

A small number of the recently produced surgical specialists have opted to stay in academic medicine chiefly because they found that a combination of practice and teaching offered more than either alone. It was also an easy decision to make because a basic salary was guaranteed and reduced some of the need to compete for private patients. As the well-trained surgical specialist moved into the peripheral regions adjacent to the medical centers, it became obvious to many that very little clinical difference existed between the product (the surgeon in private practice) and the educators. The full-time salaried surgeons soon learned, as a result, that it was difficult to compete for patients with his colleague in private practice. His referral feed lines were poorly established simply because the general practitioner or internist outside the walls of ivy preferred to support the man without the guaranteed income. This was especially so when, as a result of the excellence of postgraduate training, both men were equal in their clinical abilities.

The academic surgeon during the past ten years has been exposed to a massive increase in research opportunities, principally for basic studies. This has increased his enjoyment of the economically sheltered academic post since the grants have usually been awarded to individuals permitting a high degree of freedom from institutional interference. Thus, at the moment in time that the patient population controlled by the full-time academician diminished, his time was adequately and profitably filled by research interests. It became possible through research to establish a reputation which made his contribution to medicine in general different and possibly slightly more important than his colleague in practice. The research-oriented surgeon became increasingly less important to the hospital, on the basis of bed occupancy by his patients, but made up for it by his acquisition of research funds. These frequently helped pay for other faculty personnel and in some instances permitted highly specialized surgical technics such as heart surgery to be developed. In some instances, his value to the medical schools and hospitals was not greatly different from that of medical specialists divorced completely from patient care.

As his clinical contribution was diluted, his exposure to medical students diminished. In fact, in some institutions, the chairman of the department of surgery might never be seen in the operating room. It became apparent to students that some surgeons outside the operating room indulged more in research than in teaching. The abundant supply of surgeons probably began to bring about the "supply and demand" effect. The surgeon concerned about reproduction of himself and his art noted a gradual loss of student enthusiasm for his area. Simultaneously this change in student interest coincided with the surgeon's loss of a power base within the administration of the medical school. At least to his bruised ego the diminishing importance of teaching the subject of surgery was demonstrated by a decrease in surgical teaching time. It has now become necessary to even consider that the teaching of surgery is principally a postgraduate program.

It appears then that as the academic surgeon has decreased in his clinical importance, he has lost power and prestige. This problem will only be aggravated in my view as more government resources are placed at the disposal of the public allowing them to "select" their private physician. In fact, rather than destroying private medicine, government medicine has made it possible for a larger number of people to have the medical care they think is best which means the selection of their own physician and hospital when needed. The difference between socialization of medicine in the United States and Great Britain may well be based on a temporal factor. British medicine lacked the extensive specialty base after World War II that we have today in this country. As a result, specialty centers were organized, and the specialist became so important that he could assure himself of unquestioned prominence even today. Patients were required to move to these centers on the basis of disease rather than selection of physician or location. It would appear, therefore, that even if total medical care were enacted today in the United States, private physicians would reap great advantages and medical centers might well suffer.

Problem and possible correction

It may now be recognized that many men now occupying at least on the basis of title those positions made famous by past surgical greats are not in the same league when measured by their clinical activities. This dilemma, I believe, is at the heart of the concern which surgical organizations have manifested over the past few years. In today's medical environment how can surgeons return to the glory of the past?

Of course, it cannot be done, and the question is not that simple. But there are avenues which could be followed that might improve the present difficulties. Medical schools may be required to take on the task of furnishing medical care to large groups such as large industrial firms located nearby, implementation of private insurance programs to be handled exclusively by the full-time medical educator. In other words, to have a semblance of teaching clinical medicine, it will be necessary for the educators to offer a service to the general public; either that or resort once again to the use of private practitioners as the heads of the major clinical departments.

A more practical development would be a private diagnostic clinic to which all people would be encouraged to come. This would, of course, require a heavy representation of internists and generalists in addition to surgeons.

BUFFALO, NEW YORK 14203

Blood pressure in systemic hypotension

Casual blood pressure readings may be misleading because of anxiety or other stimuli at the time of examination, but, on the other hand, the readings are usually taken with the patient at rest. For an accurate picture, blood pressure during exercise should also be taken into consideration. In 17 patients with systemic hypertension, the effect of walking on the arterial pressure and cardiac output was investigated. Results showed that the systolic blood pressure becomes higher on exercise, but this rise is not progressive as the work load increases. The systemic resistance, abnormally high at rest, falls on exercise, but in most patients values remain greater than normal.

This test, conducted by J. Fleming, M.B., and E. Shinebourne, M.B., was reported in a recent issue of the *Lancet.* The 4 females and 13 males in the group, aged twenty-two to sixty-four years, all had significant degrees of hypertension with diastolic pressures of 100 mm. Hg or more. They were placed in three groups, according to the severity of the hypertension. Six were classed as severe and the rest as moderate.

The exercises were carried out in the fasting subject without premedication. After a preliminary walk on a treadmill, small polyethylene catheters were inserted percutaneously in the left basilic vein to the axilla and right brachial artery for 5 to 10 cm. Measurements were obtained after twenty minutes of rest in the supine position, after two minutes in the erect position, and between the fourth and sixth minutes on the treadmill. Measurements of blood pressure were made at 2 and 3 mph on the level and 3 mph on slopes of 3 and 6 degrees.

The average systolic pressure in subjects with severe blood pressure were as follows: supine, 205 (±18); erect, 195 (±19); on the level at 2 mph, 250 (±20); level, 3 mph, 230 (±18); incline 3 degrees, 3 mph, 255 (±26); and 6 degrees, 250 (±21). The parenthetic figure is the standard deviation. In labile subjects, the systolic pressure was 155 (±21) supine and 195 (±38) at a work load of 3 mph on a 3-degree incline.

BILLSBORD

Chaff From the Bedside Table of an Insomniac. IX

If Noah's Ark had been unseaworthy
And leaking, foundered in the rising sea
With no surviving members of the chosen family,
Think, what a wonderful world this would be:
With no human being to destroy a tree,
Nor pollute the air, nor despoil fishery;
No famine, no sin, and no misery.
No worry about that problem—poverty;
No atom bomb from which to flee;
No prejudice twixt me and he;
No war, nor other human deviltry.
It could be a wonderful world, you see,
If something called man was yet to be.

* * *

Ole Doc's outrageous but graphic description of a somewhat effeminate gentleman: "He is the kind of a guy who would run a kissing booth at a stag party."

The exasperated declaratory summation with which my wife closed her account of her problems with a difficult patient: "The trouble with her is that she just don't know how to be sick."

* * *

You will never find a worm that enjoys fishing.

I don't know whether they still trumpet the "Charge" at Dodger Stadium, but I can report that at Yankee Stadium they are sounding "Taps."

* * *

Have you noticed that regardless of specialty when a physician passes age sixty-five, he tends to become an "I" man.

A "good" soldier may lose many a skirmish and even an occasional battle but always wins the last battle. No matter how "good" a doctor might be he may win many a skirmish and even an occasional battle but always loses the last battle.

* * *

On Saturday, October 21, 1967, the Pentagon entertained the Ho Chi Minh Fan Club, at Washington, D.C.

* * *

The illusion of "something for nothing" is a gimmick that never becomes outmoded and always has been and probably always will remain appealing and effective. For centuries it has been the standard "come-on" tool of the confidence man used first to attract the attention and then to stimulate the cupidity of the gullible, and once these objectives were attained the bird was ready for plucking.

There was a time when legitimate business and responsible authority attempted to expose the fallacy of the something-for-nothing concept indicating it to be an obvious impossibility and proving that something must be paid for in one way or the other and usually by the man at the end of the line, namely, the consumer and the taxpayer. Today, however, not only have such appeals to reason and logic been abandoned but also both legitimate business and responsible authority have appropriated and even embellished the something-for-nothing concept to suit their own purposes and gain their own ends.

As a result, one finds every gas station striving to become a little Monte Carlo, selling gasoline but advertising free money and fabulous prizes; every supermarket dispensing trading stamps and sponsoring easy-to-win games for free cash, vacations, or whatever; the mail is cluttered with free gifts or promises of the same to lure the unwary toward buying or subscribing; and the air is contaminated with promises of enhancement of sex appeal, success in love, and the attainment of happiness to users of this or that product.

But it is the politician who has really mastered the technic of the something-for-nothing come-on. First of all, he manages to get political and at times personal financial support from the something-for-something sources, and this gives him the wherewithal to reach the ordinary citizen with his promise of something for nothing. Also, in many cases, he has learned to combine the confidence man's come-on technic with the demagogue's whipping-boy technic, so he not only inveigles the voter with "pie-in-the-sky" promises but blames another group separated from his listeners by such things as race, wealth, political faith, or place of residence for withholding in the past the impossible gifts he promises for the future.

Believe me, alongside this present day Pied Piper of political promises the old-fashioned ward boss with his Christmas baskets, an occasional supply of winter coal, a few beers the night before election, and a $5.00 per vote payoff was a piker.

* * *

While the "In" group seems always ready and in fact eager to participate in a "teach in," a "love in," or a "sit in"; for some obscure reason they seem curiously averse to any suggestion of "fall in."

* * * *

There once was a time when POT was a something one planted with flowers.

WRC

Necrology

Charles Lawrence Allers, M.D., of Staten Island, died on January 11 at the age of eighty-seven. Dr. Allers graduated in 1905 from Columbia University College of Physicians and Surgeons. Retired, he was a consulting surgeon in ear, nose, and throat at Staten Island Hospital. Dr. Allers was a member of the Richmond County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Paul H. Bernstein, M.D., of The Bronx, died on January 9 at the age of eighty-five. Dr. Bernstein graduated in 1922 from New York Homeopathic Medical College and Flower Hospital. He was a clinical assistant physician at Bronx-Lebanon Hospital Center. Dr. Bernstein was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Raphael Breakstone, M.D., of The Bronx, died on January 16 at the age of seventy-three. Dr. Breakstone graduated in 1919 from Columbia University College of Physicians and Surgeons. He was a senior clinical assistant dermatologist (off service) at The Mount Sinai Hospital and an attending physician (off service) at Bronx-Lebanon Hospital Center. Dr. Breakstone was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alexander A. D'Angelo, M.D., of Binghamton, died on January 6 at his office at the age of fifty-three. Dr. D'Angelo graduated in 1942 from Georgetown University School of Medicine. He was an attending physician in general practice at Binghamton General and Our Lady of Lourdes Memorial Hospitals. Dr. D'Angelo was a member of the American Academy of General Practice, the Industrial Medical Association, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Victor Croce De Cecca, M.D., of White Plains, died on January 7 at the age of seventy-seven. Dr. De Cecca graduated in 1927 from St. Louis University Medical Department. He was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Salvatore D'Esopo, M.D., of The Bronx, died on January 11 at the age of sixty-four. Dr. D'Esopo graduated in 1931 from University and Bellevue Hospital Medical College. He was an associate attending obstetrician and gynecologist at Morrisania City Hospital and an attending obstetrician at Union Hospital of The Bronx. Dr. D'Esopo was a Fellow of the American College of Obstetricians and Gynecologists and a member of the New York Academy of Medicine, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Heinrich Louis Fink, M.D., of The Bronx, died on October 20, 1967, at the age of seventy. Dr. Fink received his medical degree from the University of Breslau in 1923. He was a member of the American Geriatrics Society, the American Academy of General Practice, the New York Cardiological Society, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

D. Jeremiah Foglia, M.D., of Westbury, died on January 4 at the age of sixty-five. Dr. Foglia graduated in 1931 from the Medical College of Virginia. He was an attending physician in general practice at Nassau Hospital. Dr. Foglia was a member of the American Academy of General Practice, the Nassau Academy of Medicine, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John V. Gazzola, M.D., of The Bronx, died on December 26, 1967, at the age of fifty-five. Dr. Gazzola graduated in 1933 from Columbia University College of Physicians and Surgeons. He was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

H. Peter Gossman, M.D., of Mount Vernon, died on January 1 at his home at the age of sixty-six. Dr. Gossman received his medical degree from the University of Berlin in 1924. He was a member of the American School Health Association, the Westchester Academy of Medicine, the Westchester County Medical Society the Medical Society of the State of New York, and the American Medical Association.

Jacob Leibowitz, M.D., of The Bronx, died on November 25, 1967, at the age of fifty-seven. Dr. Leibowitz graduated in 1933 from Long Island College of Medicine. He was an assistant attending physician at Knickerbocker Hospital. Dr. Leibowitz was a member of the Bronx County Medical Society, the Medical Society, of the State of New York, and the American Medical Association.

David Arthur Lubarsky, M.D., of White Plains, died on January 13 at White Plains Hospital Association at the age of seventy-seven. Dr. Lubarsky graduated in 1914 from Columbia University College of Physicians and Surgeons. He was director of physical medicine and rehabilitation at White Plains Hospital Association and an honorary member of the medical staff at Grasslands Hospital. Dr. Lubarsky was a Diplomate of the American Board of Physical Medicine and Rehabilitation and a member of the American Academy of Physical Medicine and Rehabilitation, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Vladimir Markovich, M.D., of Yonkers, died on December 30, 1967, at the age of sixty-eight. Dr. Markovich received his medical degree from the University of Prague in 1926. He was an attending physician at Yonkers General Hospital and an attending physician and cardiologist at Yonkers General Hospital Outpatient Department. Dr. Markovich was a member of the Westchester Academy of Medicine, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alexander Tertius Martin, M.D., of The Bronx, died on January 15 at Roosevelt Hospital at the age of eighty-one. Dr. Martin graduated in 1913 from the University of Pennsylvania School of Medicine. He was an attending pediatrician at Manhattan Eye, Ear and Throat Hospital and a consulting pediatrician at Roosevelt Hospital where he had served as head of the Pediatrics Department from 1938 to 1952. In 1966 Roosevelt Hospital dedicated the Dr. Alexander T. Martin Conference Library in his honor. Dr. Martin was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the New York Academy of Medicine (president from 1953 to 1954), the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

James Edward McCambridge, M.D., of Pine Plains, died on December 29, 1967, at the age of eighty-six. Dr. McCambridge graduated in 1903 from Queens University Faculty of Medicine, Kingston, Ontario. He was an honorary member of the ophthalmology and otolaryngology staff at St. Francis Hospital (Poughkeepsie) and one of the founders of St. Francis Hospital. Dr. McCambridge was a member of the Dutchess County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harold William McNitt, M.D., of Pompano Beach, Florida, formerly of Binghamton, died on January 8 at the age of seventy-nine. Dr. McNitt graduated in 1912 from Syracuse University College of Medicine. Retired, he was a member of the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arnold Palm, M.D., of The Bronx, died on January 9 at the age of seventy-one. Dr. Palm received his medical degree from the University of Dusseldorf in 1922. He was a clinical assistant physician at Harlem Hospital Outpatient Department. Dr. Palm was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Albert Adolphe Plentl, M.D., of New York City, died on January 11 at Neurological Institute at the age of fifty-four. Dr. Plentl graduated in 1948 from Cornell University Medical College. He was an associate attending obstetrician and gynecologist at Presbyterian Hospital and an associate professor of obstetrics and gynecology at Columbia University College of Physicians and Surgeons. Dr. Plentl was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Surgeons, and a member of the Society for Experimental Biology and Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harry Ephraim Plummer, M.D., of Wayne, Pennsylvania, formerly of New York City, died on January 18 at the age of ninety-two. Dr. Plummer graduated in 1901 from Iowa College of Physicians and Surgeons. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Gerhard Schauer, M.D., of Floral Park, died on December 13, 1967, at the age of fifty-nine. Dr. Schauer received his medical degree from the University of Heidelberg in 1932. He was a clinical assistant psychiatrist at City Hospital at Elmhurst and an assistant attending psychiatrist at North Shore Hospital (Manhasset). Dr. Schauer was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the American Psychiatric Association, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Oscar Julius Schwoerer, M.D., of Katonah, died on January 10 at the age of sixty-nine. Dr. Schwoerer received his medical degree from the University of Freiburg in 1930. He was a member of the American Psychiatric Association, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph Michael Silagy, M.D., of New York City, died on January 18 at The Mount Sinai Hospital at the age of fifty-six. Dr. Silagy graduated in 1935 from New York University College of Medicine. He was clinical professor of urology at Mount Sinai School of Medicine, an associate attending urologist at The Mount Sinai Hospital and Bronx Municipal Hospital Center, and an attending urologist at Trafalgar Hospital. Dr. Silagy was a Diplomate of the American Board of Urology and a member of the American Urological Association, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ramsay Spillman, M.D., of Scarsdale, formerly of New York City, died on January 19 at the age of seventy-seven. Dr. Spillman graduated in 1917 from Cornell University Medical College. He was a consulting radiologist at Beekman-Downtown Hospital. Dr. Spillman was a Diplomate of the American Board of Radiology (Diagnostic Roentgenology), a Fellow of the American College of Radiology, and a member of the American Roentgen Ray Society, the New York Academy of Medicine, the New York Roentgen Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charlotte Westcott Stupp, M.D., of Brewster, died on October 23, 1967, at the age of seventy-five. Dr. Stupp graduated in 1917 from New York Medical College and Hospital for Women. She was an honorary member of the medical staff at Lawrence Hospital (Bronxville).

Mortality rates in United States

In 1967 mortality rates in the U.S. were about 3 per cent lower than in the preceding year, according to the Metropolitan Life Insurance Company.

The national death rate for 1967 is close to 9.2 per 1,000 population. This will be the twentieth year in succession in which a death rate below 10 per 1,000 was registered in this country. In the year just ending, the mortality rate from influenza, pneumonia, and respiratory diseases, including emphysema, declined by about 14 per cent over that of 1966. It was, in fact, at the lowest level in the previous twelve years—at about 27 per 100,000.

A slight decline was recorded in the death rate from diseases of the heart and arteries which currently account for a little more than half of all deaths in this country. Arteriosclerotic heart disease decreased by nearly 4 per cent.

Cancer, which ranks second to only heart diseases as a cause of death, showed a small increase in 1967 as compared with the previous year mainly because lung cancer continued on an upward trend. Death rates for diabetes decreased by about 5 per cent, but cirrhosis of the liver showed an increase of about $4^{1}/_{2}$ per cent.

Data available at this time indicate that the number of motor vehicle accident fatalities this year was virtually the same as in 1966. The mortality rate from all types of accidents is likely to be about 2 per cent lower than in 1966.

The infant mortality rate which had set an all-time low of 23.4 per 1,000 live births in 1966 declined to a new low of about 22 in 1967.

Books Received

*The following books were received during the month of December, 1967.**

Cancer of the Head and Neck. By William S. MacComb, M.D., and Gilbert H. Fletcher, M.D. Quarto of 598 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $28.50.

Microbiology. By Bernard D. Davis, M.D., Renato Dulbecco, M.D., Herman N. Eisen, M.D., Harold S. Ginsberg, M.D., and W. Barry Wood, Jr., M.D. Quarto of 1,464 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. $23.50.

Palliative Care of the Cancer Patient. Edited by Robert C. Hickey, M.D. Quarto of 621 pages, illustrated. Boston, Little, Brown and Company, 1967. $23.50.

Diagnostic Cell Pathology in Tissue and Smears. By Herbert E. Nieburgs, M.D. Quarto of 310 pages, illustrated. New York, Grune & Stratton, 1967. $17.50.

Current Concepts in Breast Cancer. Edited by Albert Segaloff, M.D., Kenneth K. Meyer, M.D., and Selma DeBakey, B.A. Octavo of 377 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $16.50.

Insulin, Membranes, and Metabolism. By Peter Rieser, Ph.D. Octavo of 156 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $8.50.

Outline of Orthopaedics. By John Crawford Adams, M.D. Sixth edition. Octavo of 467 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $9.75.

Infectious Mononucleosis. By Robert J. Hoagland, M.D. Octavo of 132 pages, illustrated. New York, Grune & Stratton, 1967. $7.50.

The Prevention of Highway Injury. Edited by Melvin L. Selzer, M.D., Paul W. Gikas, M.D., and Donald F. Huelke, Ph.D. Octavo of 293 pages, illustrated. Ann Arbor, Mich., Highway Safety Research Institute, The University of Michigan, 1967. $6.50.

Medical Department, United States Army. Neuropsychiatry in World War II. Volume I. Zone of Interior. Editor in Chief, Colonel Robert S. Anderson, MC, USA. Editors for Neuropsychiatry, Colonel Albert J. Glass, MC, USA (Ret.), and Lieutenant Colonel Robert J. Bernucci, MC, USA (Ret.). Quarto of 898 pages, illustrated. Washington, D.C., Office of the Surgeon General, Department of the Army, 1966. $7.50.

Directory. Maternity Homes and Residential Facilities for Unmarried Mothers. Octavo of 206 pages. New York, National Council on Illegitimacy, 1966. Paper, $4.50.

Research Report 1965–1966. Medicine, Pharmacy, Dental Medicine. Volume II. Quarto of 792 pages, illustrated. Jerusalem, Israel, Israel Program for Scientific Translations, 1967.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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Contraindications: Infants, patients with history of convulsive disorders, glaucoma or known hypersensitivity to drug.

Warning: Not of value in the treatment of psychotic patients, and should not be employed in lieu of appropriate treatment.

Precautions: Limit dosage to smallest effective amount in elderly or debilitated patients (not more than 1 mg, one or two times daily initially) to preclude ataxia or oversedation, increasing gradually as needed or tolerated. As is true of all CNS-acting drugs, until correct maintenance dosage is established, advise patients against possibly hazardous procedures requiring complete mental alertness or physical coordination. Driving during therapy not recommended. In general, concurrent use with other psychotropic agents is not recommended. If such combination therapy is used, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium (diazepam), such as phenothiazines, barbiturates, MAO inhibitors and other antidepressants. Advise patients against simultaneous ingestion of alcohol or other CNS depressants. Safe use in pregnancy not established. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Periodic blood counts and liver function tests advisable in long-term use. Cease therapy gradually.

Side Effects: Side effects (usually dose-related) are fatigue, drowsiness and ataxia. Also reported: mild nausea, dizziness, blurred vision, diplopia, headache, incontinence, slurred speech, tremor and skin rash; paradoxical reactions (excitement, depression, stimulation, sleep disturbances, acute hyperexcited states, hallucinations); changes in EEG patterns during and after drug treatment. Abrupt cessation after prolonged overdosage may produce withdrawal symptoms (convulsions, tremor, abdominal and muscle cramps, vomiting, sweating) similar to those seen with barbiturates, meprobamate and chlordiazepoxide HCl.

Dosage—Adults: Mild to moderate psychoneurotic reactions, 2 to 5 mg b.i.d. or t.i.d.; severe psychoneurotic reactions, 5 to 10 mg t.i.d. or q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; muscle spasm with cerebral palsy or athetosis, 2 to 10 mg t.i.d. or q.i.d. Geriatric patients: 1 or 2 mg/day initially, increase gradually as needed and tolerated. (See Precautions.)

Supplied: Valium® (diazepam) Tablets, 2 mg, 5 mg and 10 mg; bottles of 50 and 500.

Helps relieve psychic tension and its somatic expressions

Valium®
(diazepam)

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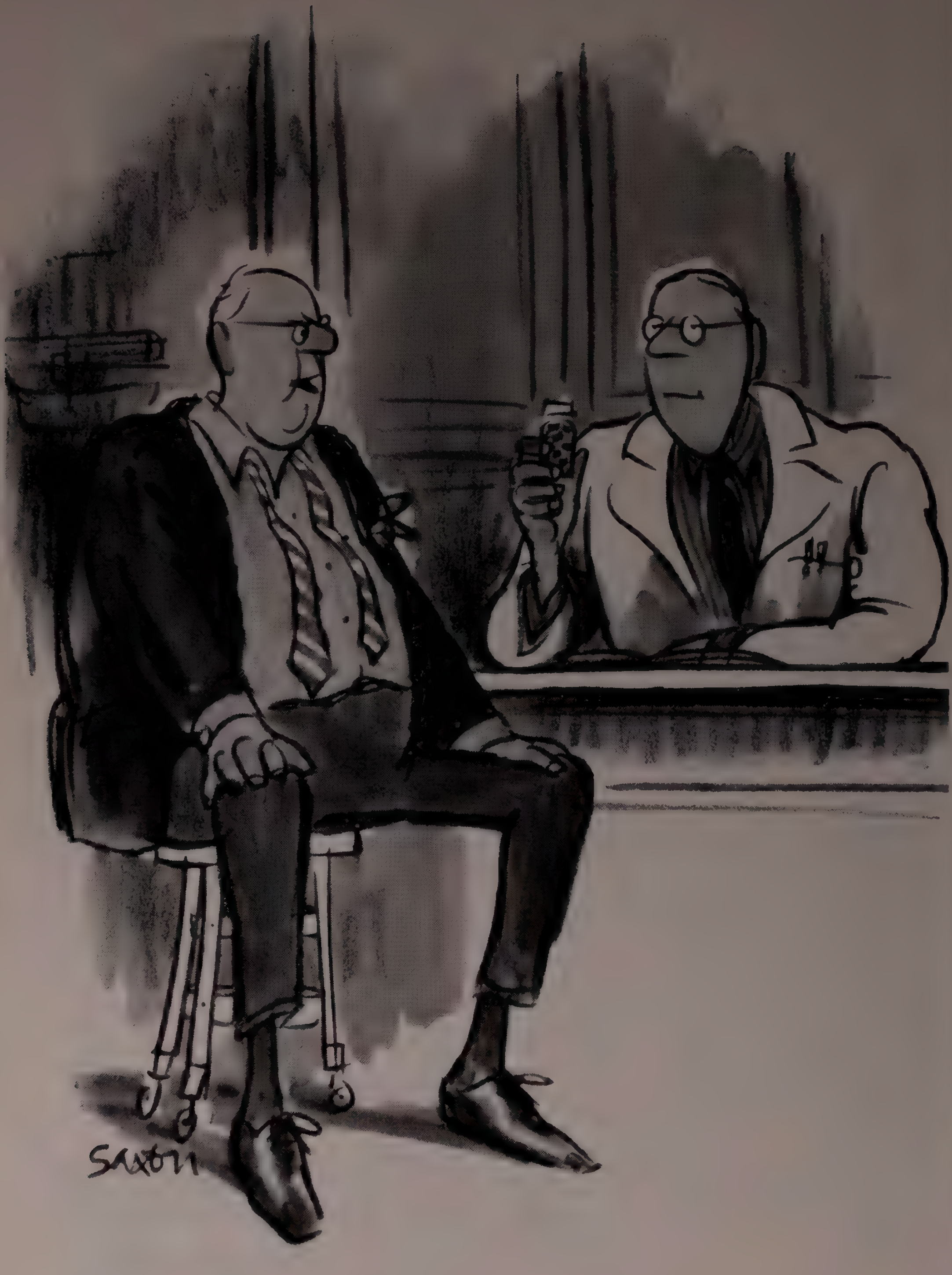

"Upper respiratory infection! I thought everything was a 'virus' these days?"

Some U.R.I. patients are more miserable than others.

That's why we make Novahistine® in two different tablet formulations.

And let you control the dosage.

With Novahistine LP tablets and Novahistine Singlet™ tablets you have the range and flexibility of decongestant dosage that lets you prescribe for the needs of the individual patient.

Novahistine LP tablets are most useful for relief of nasal congestion in patients without pain or fever.

Novahistine Singlet tablets, which provide analgesic-antipyretic effect, as well as decongestant action, are indicated for upper respiratory infections accompanied by pain, aches and fever.

Whether you prescribe Novahistine LP or Novahistine Singlet, a total daily dose of 3 or 4 tablets will usually provide effective, continuous relief.

Use cautiously in patients with severe hypertension, diabetes mellitus, hyperthyroidism or urinary retention. Caution ambulatory patients that drowsiness may result.

Each Novahistine LP tablet contains phenylephrine hydrochloride, 25 mg.; and chlorpheniramine maleate, 4 mg.

Each Novahistine Singlet tablet contains phenylephrine hydrochloride, 40 mg.; chlorpheniramine maleate, 8 mg.; and acetaminophen, 500 mg.

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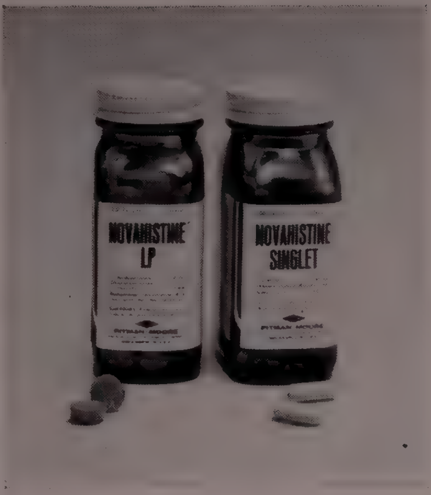

New York State Journal of Medicine

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If hypothyroidism leaves your patient feeling like this...

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Synthetic Thyroid Replacement Therapy

Letter® provides all the advantages of the synthetically pure chemical sodium levothyroxine. Dosage is precise and potency is consistently uniform.

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Indications: Hypothyroid conditions. **Contraindications:** Thyrotoxicosis, acute myocardial infarctions unless associated with hypothyroidism. In hypothyroidism with hypoadrenalism coadministration of corticoids with LETTER® is recommended. **Precautions and Side Effects:** Excessive dosage may result in diarrhea, cramps, palpitation, nervousness, rapid pulse, sweating. If symptoms appear, discontinue medication for several days, then reinstitute at a lower level. Since myxedema patients with heart disease may suffer seriously from abrupt increases in dosage, caution should be exercised in adjusting dosage. **Dosage:** Generally, the initial adult dosage is 0.1 mg. daily. This may be increased in small increments every one to three weeks until proper metabolic balance is achieved. **Available:** Bottles of 100 tablets, in six potencies: 0.025 mg. (violet), 0.05 mg. (peach), 0.1 mg. (pink), 0.2 mg. (green), 0.3 mg. (yellow), and 0.5 mg. (white).

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pHisoHex® **helps control acne**

antibacterial skin detergent with 3% hexachlorophene

"Acne occurs so commonly in the adolescent that it may almost be regarded as part of the physiological process of growing up."* Washing with pHisoHex three or four times a day helps the teen-ager control his acne.

Exclusive use of antibacterial pHisoHex builds and maintains a film of hexachlorophene on the skin. (pHisoHex contains powerful hexachlorophene in an optimal concentration—3 per cent.) pHisoHex helps protect acne skin against surface infection, especially by Staph, even *between* washes.

pHisoHex rapidly detaches and disperses soil and oils into the suds and thoroughly cleanses the orifices of the sebaceous glands, sweat glands and hair follicles. pHisoHex is nonalkaline (pH 5.5—same as skin), hypoallergenic and "kind" to skin.

pHisoAc®, a keratolytic skin-toned cream, is recommended for use with pHisoHex for local treatment of acne. pHisoAc helps dry, peel and mask lesions. It contains colloidal sulfur 6 per cent, resorcinol 1.5 per cent and hexachlorophene 0.3 per cent. Odorless, nongreasy.

pHisoHex is supplied in squeeze bottles of 5 oz. and 1 pint and in unbreakable bottles of 1 gal. pHisoAc in tubes of 1½ oz., also in a combination package with a 5-oz. bottle of pHisoHex.

*Medovy, Harry: *Canad. M.A.J.* 90:1354, June 13, 1964.

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Winthrop

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Medical News

Medical bibliography available

A selected bibliography of more than 2,700 titles has just been published by the Medical Library Association, Chicago. This international list, compiled by John B. Blake, M.D., and Charles Roos of the National Library of Medicine, has annotated entries, and includes more than 50 medical specialties and related fields, dentistry, nursing, pharmacy, and a detailed index. Titles for the small library are starred. The price is $10. For information contact: Medical Library Association, 919 N. Michigan Avenue, Chicago, Illinois 60611.

New air pollution rule in effect

A new State air pollution rule, effective February 6, prohibits the idling of bus and truck diesel engines for more than three minutes unless the vehicle is stopped in traffic or unless the engine must be running to keep passengers warm.

The idling restriction amends an air pollution rule enacted August 10, 1967, which prohibits the operation for more than five seconds of a diesel engine emitting smoke which "will reduce transmission of light by more than 20 per cent."

Information on patients in coma solicited

The ability of physicians to maintain life for very long periods in the unconscious patient raises the question as to how long such skills should be deployed especially since physicians are eager to promote the recovery of everyone who can do so. To insure that no one is deprived of his chances on this score, it is relevant to know the longest periods of coma which resulted in useful survival of the patient.

A committee of the Massachusetts General Hospital is studying its records and the world literature to compile pertinent information on all patients, who, despite coma for over five weeks, have made a useful recovery. The committee, therefore, is anxious to receive any well-documented case reports of patients who survived after prolonged coma which have not been published in the literature.

All information is to be sent to William H. Sweet, M.D., chief, neurosurgical service, Massachusetts General Hospital, Boston, Massachusetts 02114.

WNYC to broadcast daily medical meeting schedule

The Associated Medical Schools of Greater New York and The New York Metropolitan Regional Medical Program for Heart Disease, Cancer, Stroke, Diabetes, and Renal Disease have arranged with radio station WNYC (830 on the dial) to broadcast at 7:45 A.M., Monday through Friday daily schedules of medical meetings to be held in New York City.

Pamphlet on vital statistics of N.Y. State available

The New York State Department of Health recently has published *Basic Vital Statistics (exclusive of New York City), 1900–1966*, and it is available to anyone who is interested, without charge. Copies may be obtained by writing to: Sandra H. Kinch, director, office of biostatistics, New York State Department of Health, 84 Holland Avenue, Albany, New York 12208.

College of Gastroenterology and Rorer announce awards contest

The American College of Gastroenterology, in cooperation with William H. Rorer, Inc., are sponsoring the 1968 Rorer Awards Contest for the best unpublished papers in gastroenterology or an allied subject.

There will be two classes of awards as follows: (1) the best unpublished papers in gastroenterology or an allied subject, and (2) the best paper published in the *American Journal of Gastroenterology*, during the twelve months ending June 30, 1968. First prize is $500 and a three-year subscription to the *American Journal of Gastroenterology*, official publication of the American College of Gastroenterology; second prize is $300 and a two-year subscription; and third prize is $200 and a one-year subscription.

All entries must be received no later than June 15, 1968, and should be sent to Research and Scientific Investigation Committee, American College of Gastroenterology, 33 West 60th Street, New York, New York 10023.

Personalities

Awarded. To Arthur M. Master, M.D., consulting cardiologist at The Mount Sinai Hospital, the *Modern Medicine* 1968 Award for Distinguished Achievement. . .Alex Norman, M.D., New York City; Ralph E. Alexander, M.D., Rochester; F. Mitchell Cummins, M.D., New York City; Perry R. Mandel, M.D., Glen Cove; and Theodore Kamholtz, M.D., Brooklyn, the fellowship degrees of the American College of Radiology.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

When the talk turns to oral contraceptives, it makes medical sense to remember low-dose Norinyl®-1.

(norethindrone 1mg. c̄ mestranol 0.05mg.)

Turn page for contraindications, precautions and side effects

Reduction of oral contraceptive dosage to the lowest effective levels is a well-accepted principle of conservative medical practice. In keeping with this view, Norinyl is now also available as Norinyl-1, containing exactly one half the previous dosage of norethindrone and mestranol. Clinical experience has established that effective fertility control can be achieved with the same degree of reliability and safety with new Norinyl-1 when taken as directed.

What about switching patients from higher dosage forms?

In transferring patients to low-dose Norinyl-1 from higher-dosage oral contraceptives, some breakthrough bleeding may occur in the early cycles. In the majority of cases the bleeding episode is mild and self-limited. The long-term advantages of the lower dosage form should be weighed against the inconvenience of possible breakthrough bleeding in the individual patient.

Contraindications: 1. Patients with thrombophlebitis or with a history of thrombophlebitis or pulmonary embolism. 2. Liver dysfunction or disease. 3. Patients with known or suspected carcinoma of the breast or genital organs. 4. Undiagnosed vaginal bleeding.

Warnings: 1. Discontinue medication pending examination if there is sudden partial or complete loss of vision or if there is a sudden onset of proptosis, diplopia or migraine. If examination reveals papilledema or retinal vascular lesions, medication should be withdrawn. 2. Since the safety of NORINYL-1 (norethindrone 1 mg. with mestranol 0.05 mg.) in pregnancy has not been demonstrated, it is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. 3. Detectable amounts of the active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this dose to the infant has not been determined.

Precautions: 1. The pretreatment physical examination should include special reference to breast and pelvic organs, as well as a Papanicolaou smear. 2. Endocrine and possibly liver function tests may be affected by treatment with NORINYL-1. Therefore, if such tests are abnormal in a patient taking NORINYL-1 it is recommended that they be repeated after the drug has been withdrawn for two months. 3. Under the influence of estrogen-progestogen preparations, preexisting uterine fibromyomata may increase in size. 4. Because these agents may cause some degree of fluid retention, conditions that may be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation. 5. NORINYL-1 should be used with caution in patients with a history of cerebrovascular accident. 6. In relation to breakthrough bleeding, and as in all cases of irregular bleeding *per vaginam*, nonfunctional causes should be borne in mind. In cases of undiagnosed vaginal bleeding, adequate diagnostic measures are indicated. 7. Patients with a history of psychic depression should be carefully observed and the drug discontinued if the depression recurs to a serious degree. 8. Any possible influence of prolonged NORINYL-1 therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. 9. A decrease in glucose tolerance has been observed in a small percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be carefully observed while receiving NORINYL-1 therapy. 10. Because of the occasional occurrence of thrombophlebitis and pulmonary embolism in patients taking oral contraceptives, the physician should be alert to the earliest manifestations of the disease. 11. Because of the effects of estrogens on epiphyseal closure, NORINYL-1 should be used judiciously in young patients in whom bone growth is not complete. 12. The age of the patient constitutes no absolute limiting factor, although treatment with NORINYL-1 may mask the onset of the climacteric. 13. The pathologist should be advised of NORINYL-1 therapy when relevant specimens are submitted.

Side effects observed in patients receiving oral contraceptives: The following adverse reactions have been observed in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement and secretion), change in weigh (increase or decrease), changes in cervical erosion and cervical secretio suppression of lactation when given immediately postpartum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals, mental depression.

Although the following side effects have been reported in users of oral contraceptives, no cause and effect relationship has been established: anovulation post-treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousnes dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption, itching.

The following occurrences have been observed in users of oral contraceptives (a cause and effect relationship has been neither established nor disproved): thrombophlebitis, pulmonar embolism, neuro-ocular lesions.

The following laboratory results may be altered by the use of oral contraceptives: increased sulfobromophthalein and other hepatic function tests, coagulation tests (increase in prothrombin, Factors VII, VIII, IX and X), thyroid function (increase in PBI and butanol extractable protein-bound iodine and decrease in T^3 values), metyrapone test, pregnanediol determination.

norethindrone — an original steroid from

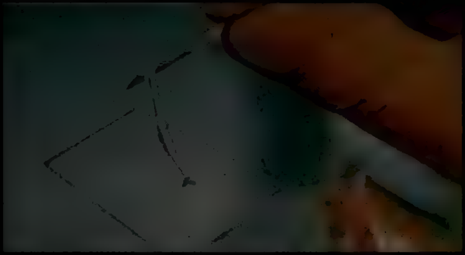
SYNTEX

LABORATORIES INC., PALO ALTO, CALIF.

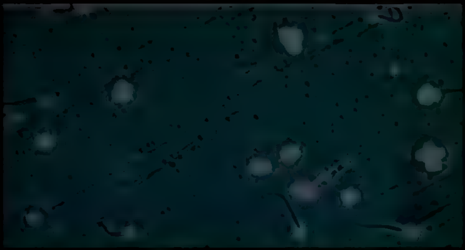
Here's why Norinyl-1 makes medical sense.

The effectiveness of Norinyl-1 as a low-dose oral contraceptive may be explained by its possible multiple action. In addition to its primary action of suppression of ovulation, Norinyl-1 may offer additional protective mechanisms... (1) creation of a cervical mucus that may be hostile to sperm penetration, and (2) development of an endometrium that may be out of phase with nidation. These effects are illustrated below.

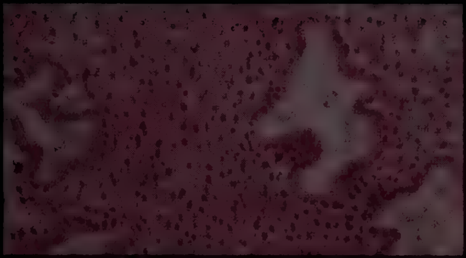
Untreated Patient



Cervical mucus at midcycle is usually thin and watery, with Spinnbarkeit (stretchability) of 15 to 20 cm.

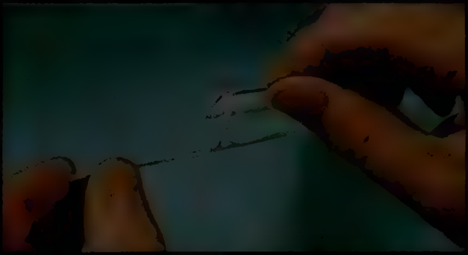


Spermatozoa appear healthy, active, freemoving.

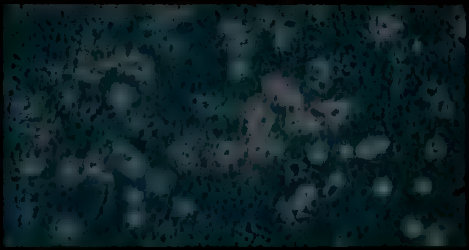


Endometrium of untreated patient is receptive to the fertilized ovum during secretory phase.

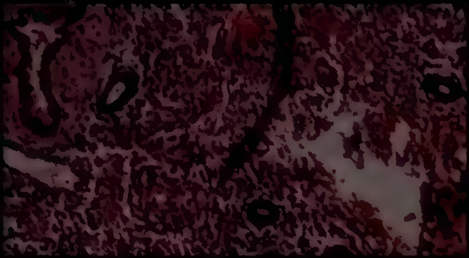
Norinyl-1 Patient



Cervical mucus at midcycle is scanty, viscous—with Spinnbarkeit of 1 cm. or less.



Immobile spermatozoa as they appear in cervical mucus taken from patient treated with Norinyl-1.



Norethindrone in Norinyl-1 accelerates secretory phase, suppresses glandular and vascular development.

Norinyl®-1 tablets
(norethindrone 1mg. c̄ mestranol 0.05mg.)

- new low dose of time-proved ingredients
- established norethindrone/mestranol ratio
- lower patient cost

An uncommon steroid for common inflammatory dermatoses

In everyday topical steroid therapy, Synalar produces rapid resolution of inflammation and itching in steroid-responsive dermatoses—and at relatively low cost to the patient.

Advanced molecular design enhances potency

Synalar combines the advantage of earlier corticosteroid compounds with unique structural innovations. As a result, preparations of Synalar 0.01% and Synalar 0.025% have been reported to be more potent topically and significantly more effective than hydrocortisone 1.0%. The unique fluocinolone acetonide molecule provides one of the most useful topical corticosteroids for everyday practice.

Impressive clinical results in a wide range of dermatologic problems

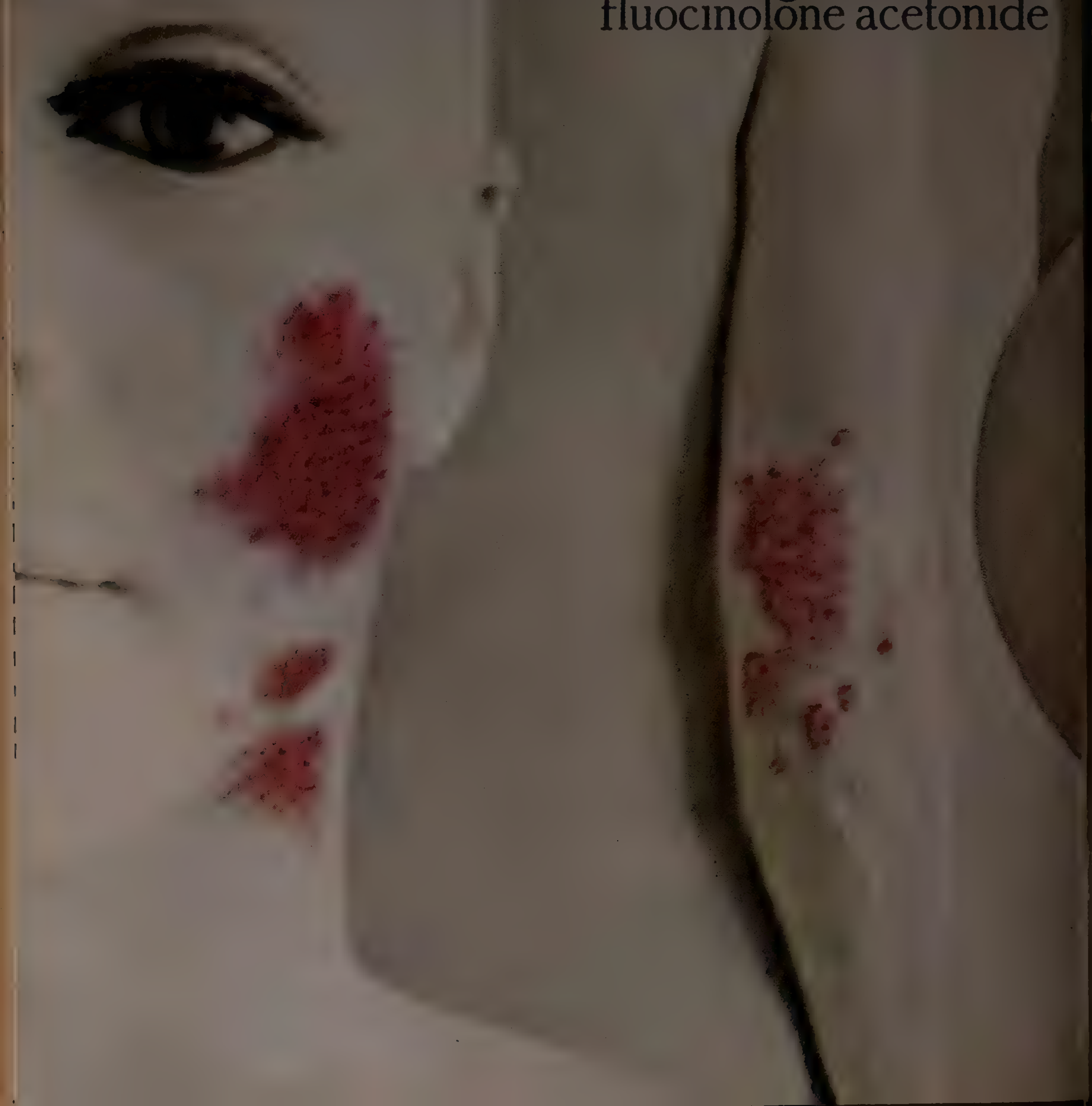
The clinical efficacy of Synalar has been extensively documented in the world literature. Commonly encountered diseases such as allergic and contact dermatitis, eczematous and seborrheic dermatitis, and neurodermatitis respond rapidly to Synalar, often where previous therapy with other topical corticosteroids has failed.

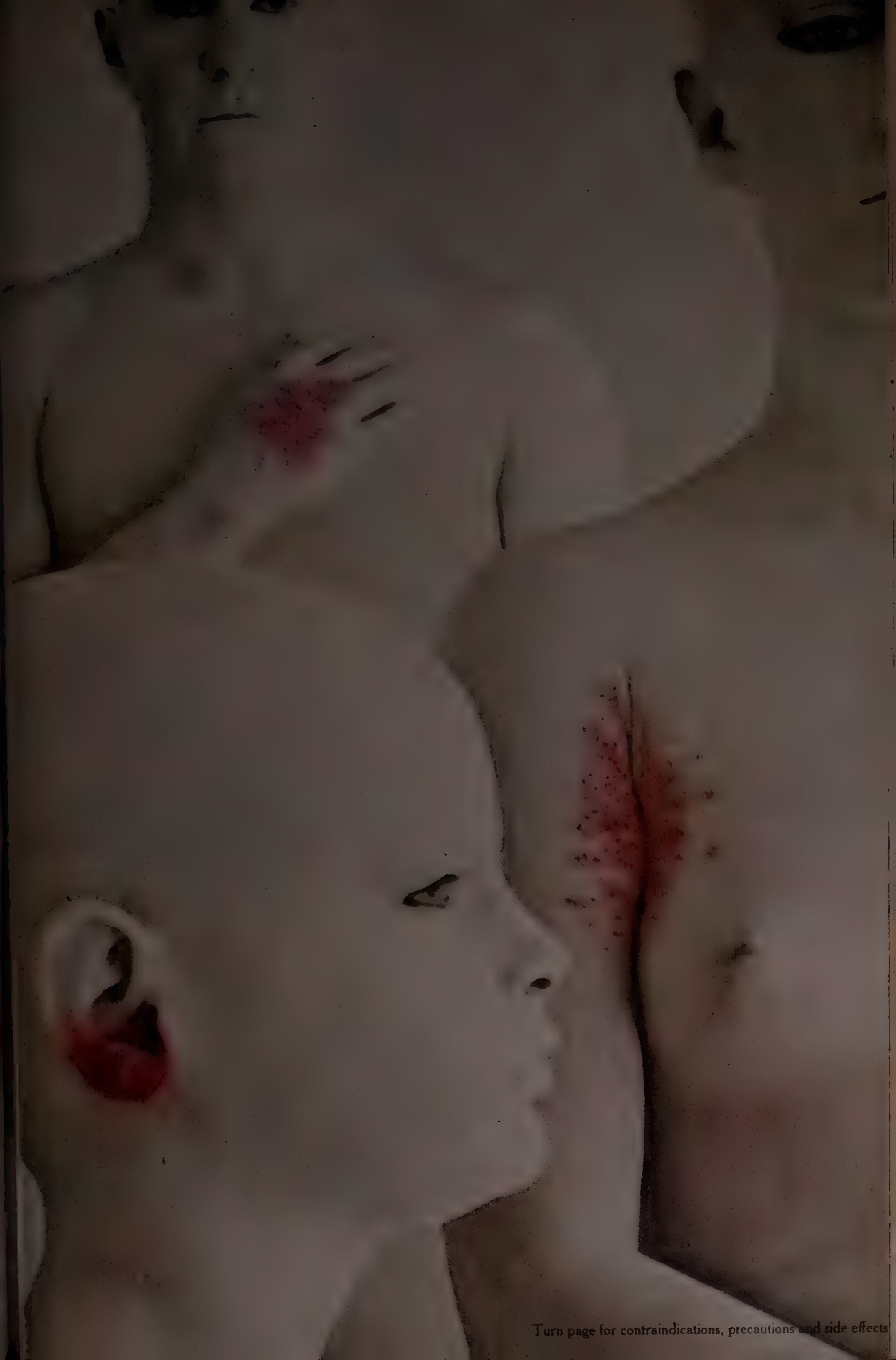
Low patient cost for wider usefulness

With Synalar, a high degree of efficacy does not mean high price. And—a small quantity goes a long way. Thus, your patients can often obtain the "economy" of a hydrocortisone preparation with the proved efficacy of a potent, truly advanced steroid.

Synalar®

fluocinolone acetonide





Turn page for contraindications, precautions and side effects

For everyday topical steroid therapy

Synalar® 0.01%

fluocinolone acetonide

provides economy in two practical dosage forms

For general use, the most economical and widely applicable concentration of Synalar is 0.01% Cream in a water-washable, vanishing cream base. Synalar Solution 0.01% is especially valuable in dermatoses involving moist, intertriginous areas or hairy sites where creams and ointments do not spread or penetrate readily. Synalar Solution is a unique dosage form—clear, nongreasy, cosmetically elegant.

Product Information

Contraindications: Tuberculous, fungal, and most viral lesions of the skin (including herpes simplex, vaccinia, and varicella). Not for ophthalmic use. Contraindicated in individuals with a history of hypersensitivity to any of the components. *Precautions:* Synalar preparations are virtually nonsensitizing and nonirritating. However, the solution may produce burning or stinging when applied to denuded or fissured areas. In some patients with dry lesions, the solution may increase dryness, scaling or itching. Where severe local infection or systemic infection exists, the use of systemic antibiotics should be considered, based on susceptibility testing. While topical steroids have not been reported to have an adverse effect on pregnancy, the safety of their use on pregnant females has not absolutely been established. Therefore, they should not be used extensively on pregnant patients, in large amounts, or for prolonged periods of time. *Side Effects:* Side effects are uncommon with topical corticosteroids. As with all drugs, however, a few patients may react unfavorably to Synalar under certain conditions. In such cases the agent should be discontinued and appropriate measures taken. *Availability:* Synalar (fluocinolone acetonide) Cream 0.025%—5, 15 and 60 Gm. tubes and 425 Gm. jars. Cream 0.01%—15, 45 and 60 Gm. tubes and 120 Gm. jars. Solution 0.01%—20 and 60 cc. plastic squeeze bottles. Ointment 0.025%—15 and 60 Gm. tubes. Neo-Synalar® (neomycin sulfate 0.5% [0.35% neomycin base], fluocinolone acetonide 0.025%) Cream—5, 15 and 60 Gm. tubes.

fluocinolone acetonide — an original steroid from

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FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
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Palo Alto,
U.S.A.
15 Gm.
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
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CREAM
SYNTEX
60 cc
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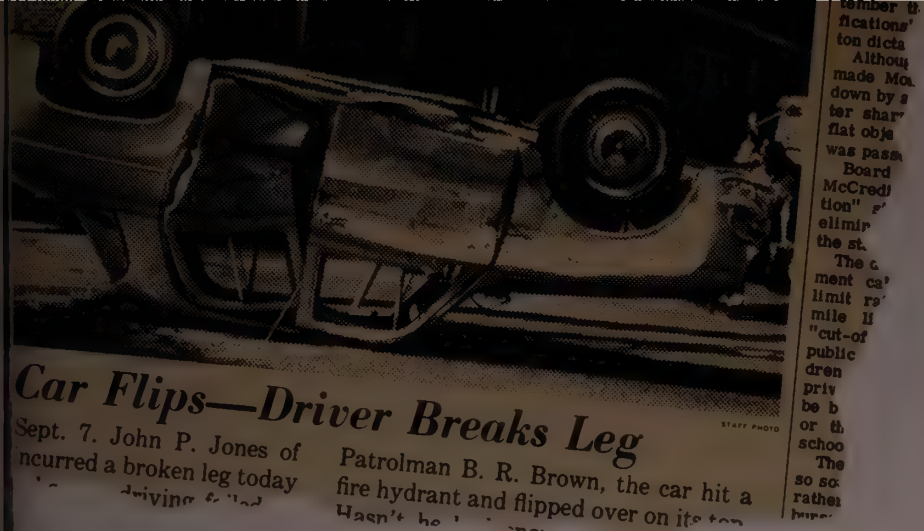
SYNALAR®
[FLUOCINOLONE ACETONIDE]
SOLUTION
0.01%
SYNTEX
LABORATORIES, INC., PALO ALTO, CALIF., U.S.A.
20 cc
FOR TOPICAL USE ONLY
SYNALAR®
[FLUOCINOLONE ACETONIDE]
SOLUTION
0.01%
SYNTEX



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STAFF PHOTO

Car Flips—Driver Breaks Leg

Sept. 7. John P. Jones of
ncurred a broken leg today

Patrolman B. R. Brown, the car hit a
fire hydrant and flipped over on its

He's had enough excitement for one day.

For the patient who has been through an accident, the worry and anxiety following the experience may actually heighten the perception of pain. This is why there's a classic ¼ grain *sedative* dose of phenobarbital in Phenaphen with Codeine—*to take the nervous "edge" off,* so the rest of the formula can control the pain more effectively.

Phenaphen® with Codeine

Phenaphen® with Codeine No. 2, No. 3, or No. 4 contains: *Phenobarbital* (¼ gr.), 16.2 mg. (Warning: may be habit forming); Aspirin (2½ gr.), 162.0 mg.; Phenacetin (3 gr.), 194.0 mg.; Hyoscyamine sulfate, 0.031 mg.; Codeine Phosphate, ¼ gr. (No. 2), ½ gr. (No. 3), or 1 gr. (No. 4). (Warning: may be habit forming).

The compound analgesic that calms instead of caffeinates

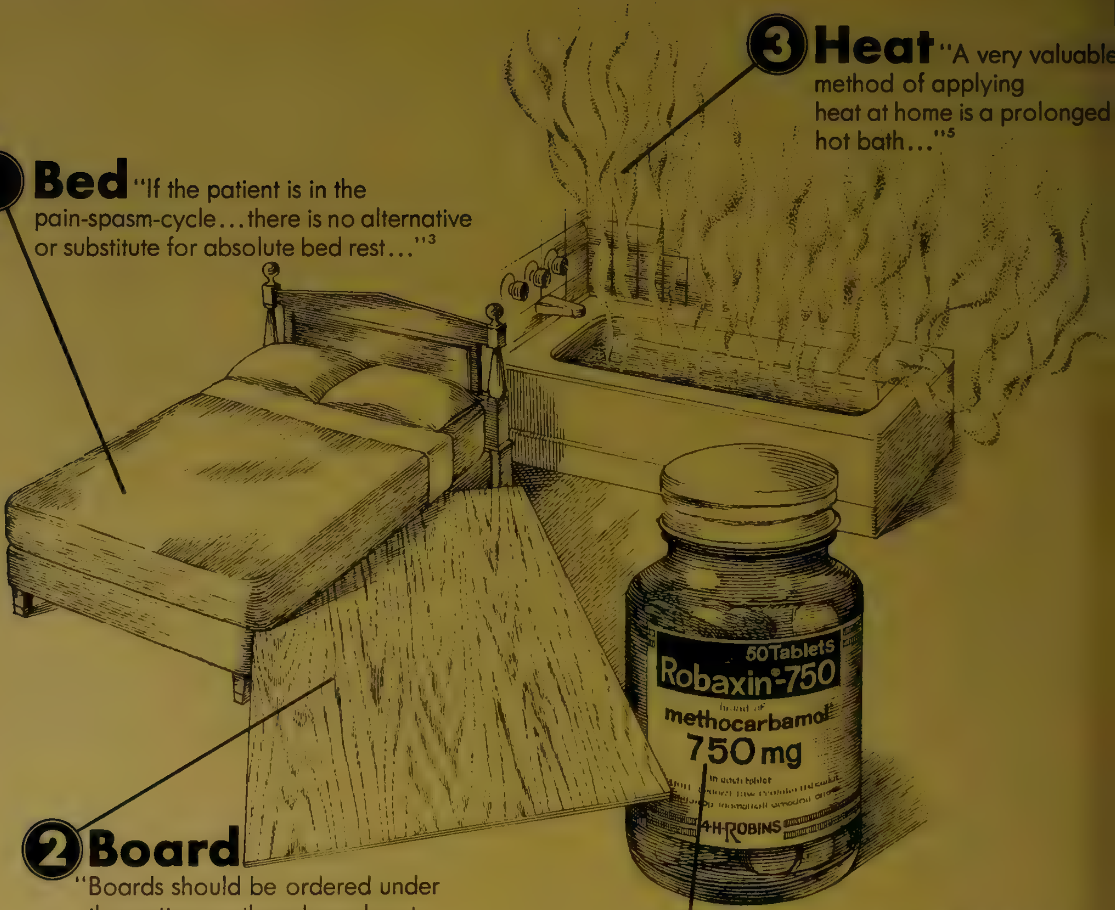
Indications: Phenaphen with Codeine provides relief in severer grades of pain, on low codeine dosage, with minimal possibility of side effects. Its use frequently makes unnecessary the use of addicting narcotics. **Contraindications:** Hypersensitivity to any of the components. **Precautions:** As with all phenacetin-containing products excessive or prolonged use should be avoided. **Side effects:** Side effects are uncommon, although nausea, constipation and drowsiness may occur. **Dosage:** 1 or 2 capsules at 2 to 4 hour intervals, or as directed by physician. For further details see product literature.
A. H. ROBINS COMPANY, RICHMOND, VA. 23220

A-H-ROBINS

LOW-BACK PAIN

A CONSERVATIVE, FOUR-POINT PROGRAM

The low back pain that is most frequently seen in general practice is mechanical in nature, i.e., postural back pain, joint dysfunction and acute back strain.[1,2] For this type of discomfort, a conservative regimen is usually sufficient to relieve aches and pains, and to help keep the patient functioning. Components of this basic program include:



① **Bed** "If the patient is in the pain-spasm-cycle…there is no alternative or substitute for absolute bed rest…"[3]

② **Board** "Boards should be ordered under the mattress…these boards act by immobilizing the spine…"[4]

③ **Heat** "A very valuabl method of applying heat at home is a prolonged hot bath…"[5]

④ **Robaxin®-750** (methocarbamol, 750 mg. capsule-shaped tablets) A well-tolerated[6] skeletal muscle relaxant, methocarbamol helps relieve spasm "…without interfering with normal tone and movement."[7] And there is little likelihood of sedation.[6]

Indicated for relief of skeletal muscle spasm. **Contraindicated** in hypersensitive patients. **Side Effects** (lightheadedness, dizziness, drowsiness, nausea) may occur rarely, but usually disappear on reduced dosage. Hypersensitivity reactions develop infrequently. See product literature for further details. **Also available:** Robaxin® Tablets (methocarbamol, 500 mg.) Robaxin Injectable (methocarbamol, 1 Gm./10 cc.)

References: (1). Godfrey, C.M.: Applied Therap. *8*:950, 1966. (2). Gottschalk, L.A.: GP *33*:91, 1966. (3). Rowe, M.L.: J. Occup. Med. *2*:219, 1960. (4). Cozen, L.: South Dakota J. Med. *18*:26, 1965. (5). Soto-Hall, R.: Med. Sc. *14*:23, 1963. (6). Weiss, M. and Weiss, S.: J. Am. Osteopath. A. *62*:142, 1962. (7). Feuer, S.G., *et al.*: New York J. Med. *62*:1985, 1962.

A-H-ROBINS A. H. ROBINS COMPANY
RICHMOND, VIRGINIA 23220

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension

SERPIDINE
PARGYLINE
METHYCLOTHIAZIDE
DESERPIDINE
SERPIDINE
PARGYLINE
DESERPIDINE
DESERPIDINE
METHYCLOTHIAZIDE
PARGYLINE
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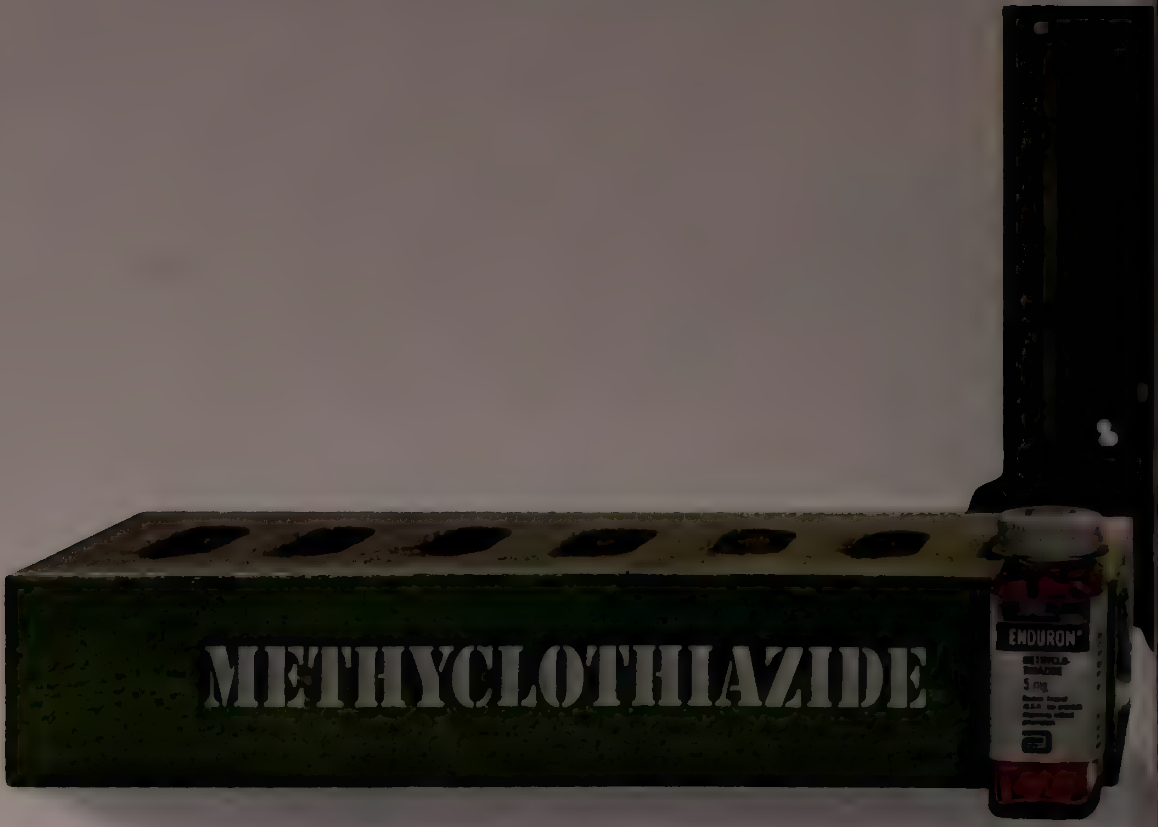
DESERPIDINE
PARGYLINE

Enduron: (methyclothiazide) A basic building block for mild hypertensives



Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

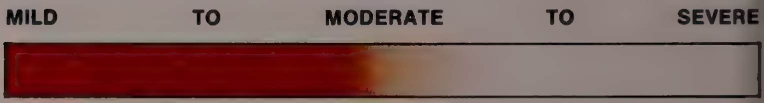
Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

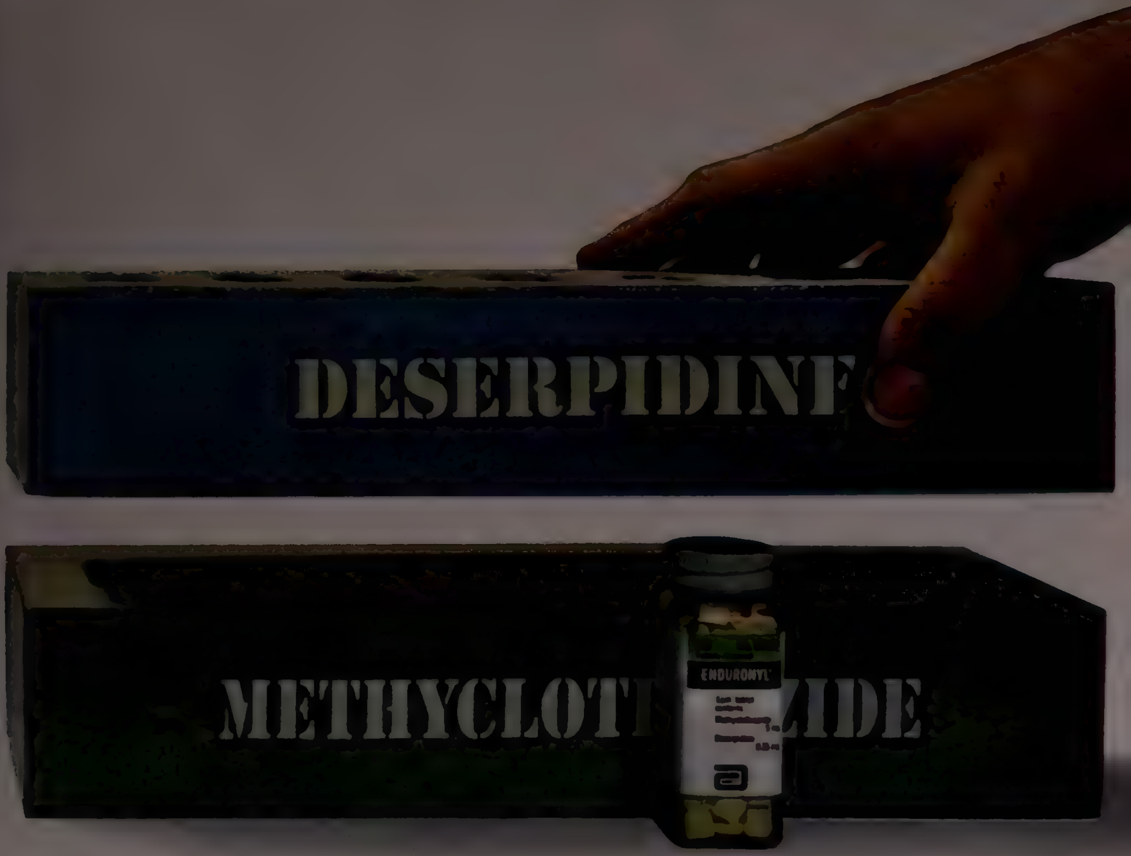
ENDURON®

METHYCLOTHIAZIDE



See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension



Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

Once a day, every day

ENDURONYL®

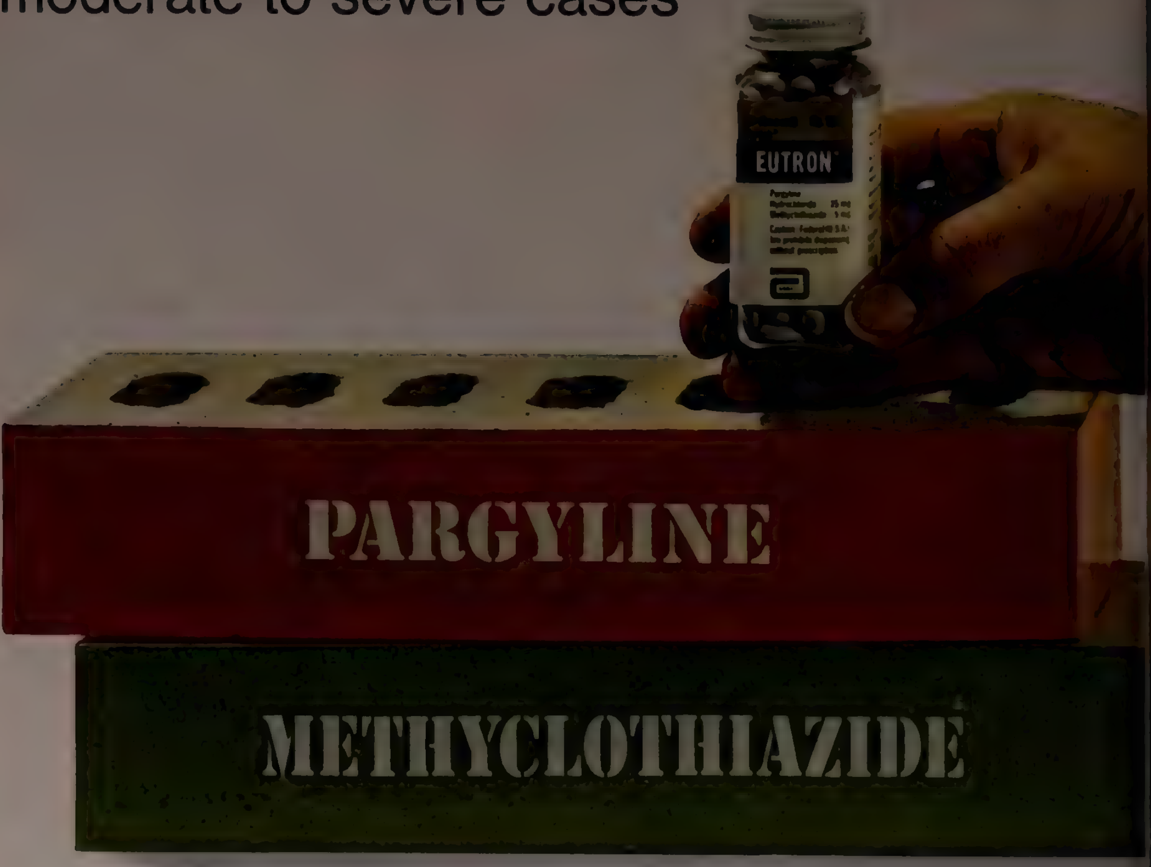
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

ENDURON® | ENDURONYL®

METHYCLOTHIAZIDE

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications: For treatment of patients with moderate to severe hypertension, especially those with severe diastolic hypertension. Not recommended for patients with mild or labile hypertension amendable to therapy with sedatives and/or thiazide diuretics alone. It is desirable to establish the dosage of Eutron by administering component drugs separately.

TM-TRADEMARK

Contraindications: Pheochromocytoma, advanced renal disease, increasing renal dysfunction, paranoid schizophrenia and hyperthyroidism. Hepatic coma has been reported as consequence of hypokalemia with thiazide therapy. Until further experience is gained not recommended for patients with malignant hypertension, children under 12, or pregnant patients.

Concomitant use of the following is contraindicated: other monoamine oxidase inhibitors; parenteral forms of reserpine or guanethidine; sympathomimetic drugs; foods high in tyramine such as cheese; imipramine and amitriptyline, or similar antidepressants; methyldopa. 2 week interval should separate therapy and use of these agents.

Methyclothiazide is contraindicated in patients with known sensitivity to thiazides.

Warnings: Pargyline hydrochloride is a monoamine oxidase inhibitor. Warn patients against eating cheese, and using alcohol, proprietary drugs or other medication without the knowledge of the physician. When indicated, alcohol, narcotics (meperidine should be avoided), antihistamines, barbiturates, chloral hydrate, and other hypnotics, sedatives, tranquilizers, or caffeine, may be used cautiously in reduced dosage. In emergency surgery ¼ to ⅕ the usual dose of narcotics, analgesics, and other premedications should be used avoiding parenteral administration where possible. Carefully adjust dose of anesthetics to response of patient. Withdraw pargyline two weeks before elective surgery.

Warn patients about the possibility of postural hypotension. Those with angina or coronary artery disease should not increase physical activity with an improvement in well being. Pargyline may lower blood sugar.

Avoid use of enteric-coated potassium tablets, as these may induce serious or fatal small-bowel lesions consisting of stenosis with or without ulceration. These small-bowel lesions have caused obstruction, hemorrhage and perforation frequently requiring surgery. Medication should be discontinued immediately if abdominal pain, distension, nausea, vomiting or GI bleeding occurs. These products contain no added potassium salts and if added potassium intake is desired, dietary supplementation is recommended. Coated potassium tablets should be reserved for cautious use when adequate dietary supplementation is impractical. In patients with a history of allergy or asthma the possibility of sensitivity reactions should be considered.

Precautions: Measure blood pressure while patient is standing to determine antihypertensive effect. Use with caution in hyperactive or hyperexcitable persons. Such persons may show increased restlessness and agitation. Withdraw drug during acute febrile illness. Watch patients with impaired renal function for increasing drug effects or elevation of BUN and other evidence of progressive renal failure; withdraw drug if such alterations persist and progress. Use with caution in patients with liver disease. As with all new drugs, complete blood counts, urinalyses, and liver function tests should be performed periodically. With prolonged therapy, examine patients for change in color perception, visual fields and fundi. Also reported have been: blood dyscrasias including thrombocytopenia with purpura, agranulocytosis and aplastic anemia; elevations of BUN, serum uric acid, or blood sugar. Symptomatic gout may be induced. In surgical patients thiazides may reduce response to vasopressors and increase response to tubocurarine.

Adverse Reactions: Pargyline may be associated with orthostatic hypotension. Mild constipation, slight edema, dry mouth, sweating, increased appetite, arthralgia, nausea and vomiting, headache, insomnia, difficulty in micturition, nightmares, impotence, delayed ejaculation, rash, and purpura have been encountered with pargyline. Hyperexcitability, increased neuromuscular activity (muscle twitching) and other extrapyramidal symptoms have been reported in a few patients with reduced cardiac reserve.

During intensive or prolonged therapy, guard against hypochloremic alkalosis and hypokalemia (especially the latter if patient is on digitalis). Observe all patients for signs of hyponatremia ("low salt" syndrome).

Reported thiazide reactions also include anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, and pancreatitis. Nocturia has been observed with the combination.

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ABBOTT

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Talwin®— brand of pentazocine (as lactate)

Contraindications: *Increased Intracranial Pressure, Head Injury, or Pathologic Brain Conditions in which clouding of sensorium is undesirable.* Talwin (brand of pentazocine) should not be administered in these cases, since drug-induced sedation, dizziness, nausea, or respiratory depression could be misleading.

Precautions: *Pregnancy.* No teratogenic or embryotoxic effects attributable to the use of Talwin have been seen in extensive reproductive studies in animals; however, like all new drugs, Talwin should be given with caution to pregnant women. A large number of patients in labor have received the drug with no adverse reactions other than those that occur with commonly used strong analgesics. However, as with other strong analgesics, Talwin should be used with caution in women delivering premature infants.

Ambulatory Patients. Since sedation, dizziness, and occasional euphoria have been noted, ambulatory patients should be warned not to operate machinery, drive cars, or unnecessarily expose themselves to hazards.

Certain Respiratory Conditions. The possibility that Talwin (brand of pentazocine) may cause respiratory depression should be considered in treatment of patients with bronchial asthma. Talwin (brand of pentazocine) should be administered only with caution and in low dosage to patients with respiratory depression (e.g., from other medication, uremia, or severe infection), obstructive respiratory conditions, or cyanosis.

Patients Dependent on Narcotics. Because Talwin is a narcotic-antagonist, patients dependent on narcotics and receiving Talwin may occasionally experience certain withdrawal symptoms. Talwin should be given with special caution to such patients. It has been observed that some patients previously given narcotic-analgesics for one month or longer had mild withdrawal symptoms when the drug was replaced with the analgesic, Talwin. After a short period of adjustment the subjects were usually able and willing to continue taking Talwin, and relief of pain was satisfactory.

Nonaddicted Patients Receiving Narcotics. Symptoms believed to be indicative of antagonism to the opiate may be observed ra
with administration of Talwin to patients receiving opiates f
short time. Intolerance or untoward reactions are seldom obse
after administration of Talwin to patients who have received si
doses or who have had limited exposure to narcotics.

Impaired Renal or Hepatic Function. Although laboratory tests
not indicated that Talwin causes or increases renal or hepatic
pairment, the drug should be administered with caution to pati
with such impairment. Extensive liver disease appears to predisp
to greater side effects (e.g., marked apprehension, anxiety, dizzin
sleepiness) from the usual clinical dose, and may be the resul
decreased metabolism of the drug by the liver.

Myocardial Infarction. As with all drugs, Talwin (brand of pe
zocine) should be used with caution in patients with myocar
infarction who have nausea or vomiting.

Biliary Surgery. Until further experience is gained with the eff
of Talwin on the sphincter of Oddi, the drug should be used
caution in patients about to undergo surgery of the biliary tr

Adverse Effects: Talwin is relatively free from the undesirable
effects associated with morphine, such as constipation, urinary
tention, or severe respiratory depression. Furthermore, Talwin
duces less nausea, vomiting, and diaphoresis than meperidine

In over 12,000 patients who received Talwin intramuscularly, sut
taneously, or intravenously, nausea, the most frequent adverse
fect, occurred in approximately 5.0 per cent. In decreasing orde
occurrence were vertigo, dizziness or lightheadedness; vomit
and euphoria. Respiratory depression was reported as an adv
reaction in 1.0 per cent.

The incidence of each of the other adverse effects was well be
1.0 per cent: constipation, circulatory depression, diaphoresis,
nary retention, alteration in mood (nervousness, apprehens
depression, floating feeling), hypertension, sting on injection,
ache, dry mouth, flushed skin including plethora, altered ut

n-narcotic

Talwin®

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pentazocine

(as lactate)

ATEVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

n should not be used for patients with
sed intracranial pressure,
njury or pathologic brain conditions.
sufficient experience is gained, it should not
inistered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

Talwin acts as rapidly as morphine; its duration of action may sometimes be less. Relief of pain with Talwin usually lasts three hours or longer.

Less constipation than with morphine
Less urinary retention than with morphine
Less risk of severe respiratory depression than with morphine
Less nausea than with meperidine
Less vomiting than with meperidine
Less diaphoresis than with meperidine

With Talwin—no narcotic controls

Talwin does not require a narcotic prescription or narcotic records. The World Health Organization Expert Committee on Dependence-Producing Drugs concluded that "...there was no need at this time for narcotics control of pentazocine [Talwin] internationally or nationally." (*WHO Tech. Rep. Ser.*, no. 343, 1966, p. 6.)

Talwin relieves pain of all types and all degrees—mild, moderate, and severe—in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ions during labor, dermatitis including pruritus, dreams, esia, and dyspnea occurred rarely after administration of Furthermore, each of the following adverse reactions oc- in less than 0.1 per cent: tachycardia, visual disturbance vision, diplopia and nystagmus), hallucinations, disorienta- akness or faintness, muscle tremor, chills, allergic reactions g edema of the face, taste alteration, insomnia, diarrhea, and miosis; laryngospasm in one patient.

brand of pentazocine) has not produced severe respiratory ssment in adults (never apnea), even with large amounts. A umber of newborn infants whose mothers received Talwin abor had transient apnea. The incidence of temporary dim- in the rate or strength of uterine contractions is low after ration of Talwin, similar to that following meperidine hydro- . (In reporting no interference with normal labor in patients g Talwin, one investigator further stated that the drug may uterine activity.) Generally, no significant fetal heart rate occurs.

ry tests of blood and of liver and kidney functions have no significant abnormalities. A minimum and probably cant increase in the per cent of eosinophils in peripheral ounts and bone marrow occurred occasionally.

s well tolerated by patients with diabetes mellitus, and no in insulin requirements have been observed.

and Administration: *Adults, Excluding Patients in Labor.* recommended single parenteral dose is 30 mg., by intra- , subcutaneous, or intravenous route; may be repeated ee to four hours. Pain has been relieved in most patients more than three doses daily. Infrequently, selected patients eived single doses as high as 60 mg.

in Labor. A single, intramuscular 30 mg. dose has been most y administered. An intravenous 20 mg. dose has given adequate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

Duration of Therapy. Patients with chronic pain who received Talwin for prolonged periods (e.g., over 300 days) experienced no withdrawal symptoms even when administration was stopped abruptly; furthermore, there was no tolerance to the analgesic effect.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Talwin has not produced apnea or severe respiratory embarrassment in adults, even in large doses. Occasionally, however, moderate respiratory depression may occur. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

Winthrop

Winthrop Laboratories
New York, N.Y. 10016

Medical Meetings

Psychiatry course planned for internists

A five-day postgraduate course on "Psychiatry and the Internist," sponsored by the American College of Physicians, is to be held March 18 through 22 at the Albany Medical College of Union University. Irving S. Dribben, M.D., associate clinical professor of psychiatry, is director of the course.

The course has been designed to help the internist to increase his ability to recognize, evaluate, and manage psychiatric problems commonly seen in the practice of medicine. It will consist of small, closely supervised sessions with patients from the wards and clinics of Albany Medical Center. Diagnostic and therapeutic technics appropriate for the internist and the use of drugs in psychiatric management of the patient will be studied.

For registrations and applications contact: Edward C. Rosenow, Jr., M.D., executive director, The American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104.

Leg ulcers topic of lecture

A lecture sponsored by the division of dermatology of the Department of Medicine, State University of New York, Downstate Medical Center, on the "Diagnosis and Management of Leg Ulcers" by Frances Pascher, M.D., professor of dermatology, New York University Medical Center, is to be held April 5, at 9:30 A.M., in the "F" building classroom, Kings County Hospital, 451 Clarkson Avenue, Brooklyn.

Physicians and hospital facilities topic of lecture

The Society of Internal Medicine of the County of New York is sponsoring a panel discussion on the "Availability of Hospital Beds to the Physician in Practice" which is to be held April 10 at 8:15 P.M., in the main auditorium of Cornell Medical College, 1300 York Avenue, New York City. Panelists on the program are: Jack C. Haldeman, M.D., president, Health and Hospital Planning Council of Southern New York; Martin R. Steinberg, M.D., director, The Mount Sinai Hospital; and Joseph Terenzio, Commissioner of Hospitals, City of New York.

Fluid and electrolytes topic of symposium

The Springfield Academy of Medicine and the Lederle Laboratories are sponsoring a symposium on "Fluid and Electrolytes" on April 20, at the White House Inn, Chicopee, Massachusetts.

The program features the following topics and speakers: "Parenteral Fluid in Children," C. Harrison Snyder, M.D., Ochsner Clinic, New Orleans; "Parenteral Fluid in Adults," Robert G. Muth, M.D., associate professor of medicine and director, renal division, Kansas City General Hospital; "New Tools in Treatment of Shock," L. R. N. Del Guercio, M.D., Department of Surgery, Albert Einstein College of Medicine; and "Disorders of Fluids and Electrolytes," Louis G. Welt, M.D., Department of Medicine, University of North Carolina.

Reservations may be made by writing to: James D. Fisher, M.D., president, Springfield Academy of Medicine, 1400 State Street, Springfield, Massachusetts 01109.

Refresher course in pediatrics offered at Buffalo School of Medicine

An intensive refresher course in pediatrics, designed especially to meet the needs of general practitioners, is being offered at the State University of New York at Buffalo School of Medicine and sponsored by the Bureau of Maternal and Child Health of the New York State Department of Health, will be held May 20 through 24.

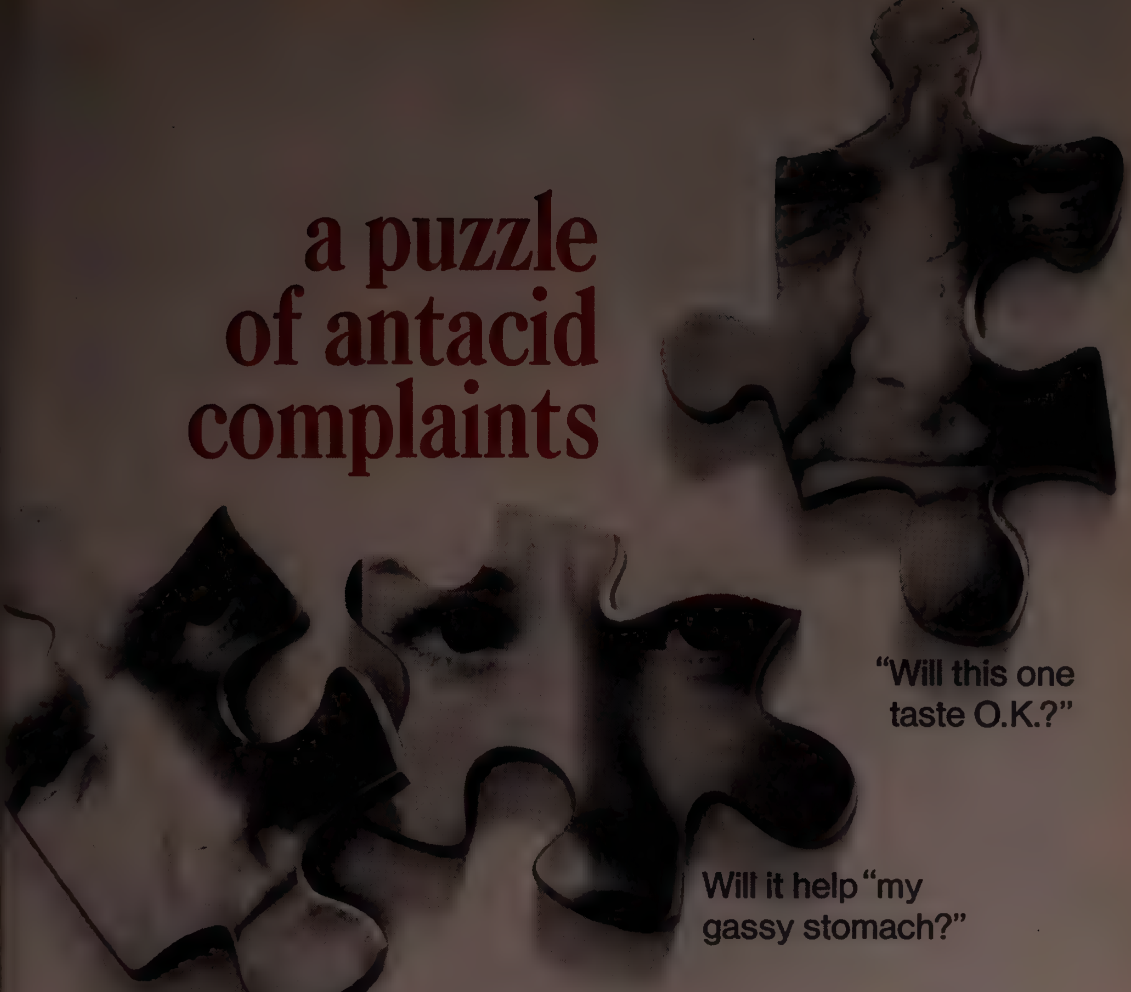
This course will be a review of principles and recent developments in diagnosis and treatment of pediatric disorders and in the care of the well child. All teaching will be done by the faculty of the School of Medicine, under the immediate supervision of Jean A. Cortner, M.D., head of the Department of Pediatrics. Lectures, informal discussion, and ward rounds are conducted daily.

Registration fee is $5.00 check to be made payable to the State University of New York at Buffalo. Tuition for each physician enrolled in the course is paid by the New York State Department of Health. In addition, a stipend is provided to physicians conducting child health conferences or public health clinics or employed as school physicians conducting child health conferences or public health clinics or employed as school physicians by boards of education or departments of health who live more than 25 miles from the Buffalo Children's Hospital.

Application for enrollment must be made before April 15 through the offices of county or city departments of health or the district health officers. The registration fee must accompany the application.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

a puzzle
of antacid
complaints


"Will this one
taste O.K.?"
Will it help "my
gassy stomach?"
"Will it stop the pain?"

Mylanta®
aluminum and magnesium hydroxide *plus* simethicone

a solution
to peptic ulcer
distress

Effective neutralization—
with the two most widely prescribed antacids: aluminum and magnesium hydroxides.

Concomitant relief of G.I. gas distress—
with the proven[1] defoaming action of simethicone.

Prolonged acceptance confirmed—
in 87.5% of 104 patients after a total of 20,459 documented days of therapy.[2]

Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. Dosage: One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

Stuart
Division/Pasadena, Calif.
ATLAS CHEMICAL INDUSTRIES, INC.

One by one the family's downed Because the G.I. bug's around

Parepectolin for quick relief of acute diarrhea
...soothes colicky pain with paregoric*
...consolidates fluid stools with pectin
...adsorbs irritants with kaolin,
and protects intestinal mucosa

Whether it's a 24-hour "bug", a food problem, or simply nervousness and anxiety, Parepectolin will bring the diarrhea under control until etiology can be determined. In some cases, Parepectolin may be all the therapy necessary.

Parepectolin®

Each fluid ounce of creamy white suspension contains:
*Paregoric (equivalent) .... (1.0 dram) 3.7 ml.
Contains opium (¼ grain) 15 mg. per fluid ounce.
warning: may be habit forming
Pectin .... (2½ grains) 162 mg.
Kaolin (specially purified) .... (85 grains) 5.5 Gm.
(alcohol 0.69%)
Usual Adult Dose: One or two tablespoonfuls three times daily.
Usual Children's Dose: One or two teaspoonfuls three times daily.

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WILLIAM H. RORER, INC.
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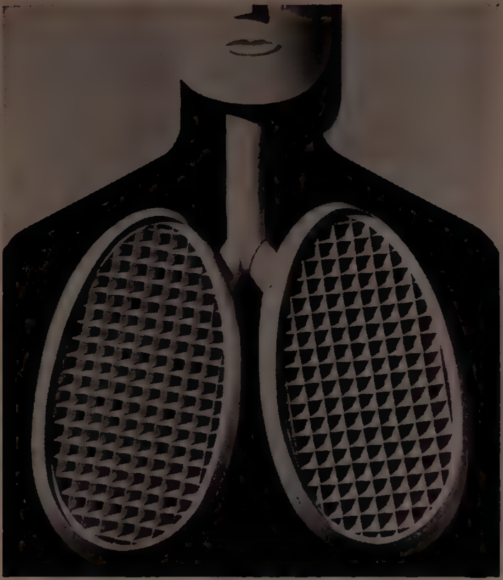
The ventilator pill



Dainite KI **bronchodilator/expectorant**

Each tablet contains: Aminophylline 3.00 gr, Phenobarbital 0.25 gr, (WARNING: May be habit forming), Ephedrine HCl 0.25 gr, Potassium iodide 5.00 gr, Dried Aluminum Hydroxide Gel 2.50 gr, Benzocaine 0.25 gr.

Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

It helps reduce frequency and severity of asthma attacks, too. And, because it's systemic, you know you get action where you want it . . . in the system.

You might say The Ventilator Pill is a good name for DAINITE KI. Your patients will probably say the same thing.

Indications: For the treatment of mild or severe bronchial asthma, and in pulmonary emphysema, in chronic asthma, in chronic bronchitis and in those patients who consistently develop a thick, viscous, tenacious sputum and thus have difficulty in expectorating accumulated secretions from the bronchial tree during and following an asthmatic attack. DAINITE® KI has been specifically formulated to provide extensive therapeutic action in the asthmatic patient. Anti-nauseant factors afford the administration of a therapeutic dose of aminophylline without the high frequency of gastric intolerance usually associated with this drug. *Contraindications:* Should not be administered to patients sensitive to aminophylline or sympathomimetic drugs and should be used with caution in patients with cardiovascular disease and hypertension. Also contraindicated in those patients who have had a severe reaction or are sensitive to or have an idiosyncrasy to potassium iodide. *Precautions:* See contraindications. In some elderly patients, barbiturates may cause excitement rather than depression. *Side Effects:* Occasionally nausea, vomiting and gastric irritation occurs. In addition, side effects attributable to potassium iodide may occur, acne, rhinorrhea, metallic taste and parotitis. Prolonged use of iodides may rarely lead to hypothyroidism. Skin rash may be observed in patients hypersensitive to barbiturates. *Dosage:* Adults—1 tablet on arising, 1 tablet at 4 P.M., and 1 or 2 tablets at bedtime.

Neisler Laboratories, Inc., Decatur, Ill.
Subsidiary of Union Carbide Corporation. NEISLER UNION CARBIDE

Month in Washington

Dwight L. Wilbur, M.D., president-elect of the American Medical Association, warned that physicians will resist any effort to establish national medical standards under the Regional Medical Programs. But he predicted that the medical profession would cooperate enthusiastically if the programs are carried out on a voluntary cooperative basis. Dr. Wilbur spoke at a conference on Regional Medical Programs sponsored by the Department of Health, Education, and Welfare.

"If the program in fact is clearly one designed to catalyze and to facilitate the development of better programs than now exist to serve patients and their physicians, it will undoubtedly receive enthusiastic cooperation from the medical profession and related groups," Dr. Wilbur said. "We know that the law and its legislative history stress the voluntary cooperative nature of the program and that interference with existing patterns is specifically prohibited. . . .

"Unlike many other countries, our nation has reached its preeminence in many areas of activity because of this unique combination of multiple independent focal points of activity cooperating on a voluntary basis to achieve a commonly desired goal. . . .

"If RMP maintains its current emphasis on the working together of regional groups, it will fulfill its purpose of improving the quality, accessibility and availability of health care, physician and institutional performance, and consumer satisfaction.

"On the other hand, if RMP becomes an instrument for the establishment of national standards with the coercive compliance compelled by such standards, it will arouse nationwide resistance from physicians, institutions, and allied health professionals. What can be gained by cooperation and meaningful participation will surely be lost if the use of coercive power, which for the moment lies dormant in Public Law 89-239, becomes its dominant characteristic. . . .

"RMP is in a strategic position to bring about changes acceptable both to physicians and their patients that will improve performance and patient satisfaction without undermining patterns of behavior that are traditional, and, more significant, considered by the medical profession essential to the preservation of high quality care."

* * *

The American Medical Association told Congress that weight reduction is a leading health area for quackery. The AMA position on weight reduction, particularly as so-called diet pills are involved, was outlined by Theodore B. Van Itallie, M.D., of New York, N.Y., a member of the Council on Foods and Nutrition, and Harry C. Shirkey of Birmingham, Ala., vice-chairman of the Council on Drugs, in testimony before the Senate Antitrust and Monopoly Subcommittee.

The subcommittee was investigating reports that some osteopaths and physicians were making large incomes from assembly-line administration of multi-colored "diet" pills containing such drugs as barbiturates, thyroid extract, amphetamines, thiazine, diuretics, laxatives, and various hormones. Officials of Illinois and Oregon testified that such pills were involved in at least 20 deaths in their states.

"Perhaps in no other area of health and medical problems do we encounter as much food faddism and quackery," Dr. Van Itallie testified. "The obese are extremely gullible, forever willing to believe that someday a gadget, a diet, a pill, or a book will lead to the miracle of easy and painless reduction of weight. While most of the quackery originates with health hucksters who have no scientific background, training, or qualifications in the medical or nutritional fields, unfortunately a physician is occasionally involved.

"The AMA long has utilized its various publications to bring to the profession and the public up-to-date information on the latest scientific advances in the area of obesity control. It frequently focuses attention upon those irregular practitioners and faddists who prey upon the unsuspecting public. As the national voice of Medicine, we believe that it is incumbent upon us to help protect the public from those practices which have the potential of adversely affecting the public health. . . .

"A physician who assumes the responsibility for treating obesity takes on a difficult role. Few other medical disorders require the same disciplined and prolonged cooperation of the patient in their treatment. Even under the best of circumstances, the results of treatment become apparent slowly. The inherent handicaps may strain the busy physician's patience and tempt him to resort to unsound methods of treatment. He must have a clear understanding of the physiological and psychological problems of obesity in order to treat it wisely."

Dr. Shirkey broke down weight drugs into seven general classifications: (1) cardiac glycosides; (2) hormones, chiefly thyroid; (3) diuretics; (4) anorexiants (appetite suppressants); (5) laxatives; (6) sedatives; and (7) antispasmodics. Of them he said:

Cardiac glycosides: "Their use for obesity is reprehensible and may well have attributed to

continued on page 734

Prepared by the Washington, D.C., Office of the American Medical Association.

Night Leg Cramps . . . Unwelcome Bedfellow
In Diabetes,[1] Arthritis,[2] and Peripheral Vascular Disorders[2]

now . . . specific therapy for night leg cramps

Walker
QUINAMM™

Consistently effective, QUINAMM provided complete relief in 94% of 200 patients studied, many of whom were severe cases refractory to other medication.[3] Your prescription for one tablet at bedtime often controls painful night cramps with the initial dose . . . helps restore restful sleep.

THE NATIONAL DRUG COMPANY
DIVISION OF RICHARDSON-MERRELL INC
PHILADELPHIA, PENNSYLVANIA 19144

Prescribing Information: Composition: Each white, beveled, compressed tablet contains: Quinine Sulfate 260 mg. and Aminophylline 195 mg. **Contraindication:** QUINAMM is contraindicated in pregnancy because of its quinine content. **Precautions:** Aminophylline may produce intestinal cramps in some instances, and quinine may produce symptoms of cinchonism, such as tinnitus, dizziness, and gastrointestinal disturbance. Discontinue use if ringing in the ears, deafness, skin rash, or visual disturbances occur. **Dosage:** One tablet upon retiring. Where necessary, dosage may be increased to one tablet following the evening meal and one tablet upon retiring. **Supplied:** Bottles of 100 and 500 tablets. **References:** 1. Shuman, C.: Am. J. Med. Sci., 225:54, 1953. 2. Perchuk, E., et al.: Angiology, 12:102, 1961. 3. Rawls, W., et al.: Med. Times, 87:818, 1959. 6/67 Q-706A

Indications: Tofrānil is recommended for the treatment of depressive states of diverse psychopathology.
Contraindications: The concomitant use of Tofrānil and monoamine oxidase inhibiting (M.A.O.I.) compounds is contraindicated. Hyperpyretic crises or severe convulsive seizures may occur. Potentiation of adverse effects can be serious or even fatal. An interval of at least 7 days after M.A.O.I. therapy has been discontinued should be allowed before Tofrānil may be substituted. Initial Tofrānil dosage should be low, increases should be gradual, and the patient's progress should be carefully observed.
Warning: Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician, the potential benefits outweigh the possible risks, Tofrānil should not be used during the first trimester of pregnancy.
Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.
Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment with Tofrānil. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy.
Because of its anticholinergic effect, caution should be observed in prescribing Tofrānil for patients with increased intraocular pressure.
In rare instances, transient cardiac arrhythmias have occurred in hyperthyroid patients and in patients receiving thyroid medication when Tofrānil was added to the regimen.
Imipramine may block the pharmacologic activity of guanethidine and other related adrenergic neuron-blocking agents.
The drug is not recommended at the present time in patients under 12 years of age.
Adverse Reactions: Dryness of the mouth, tachycardia, constipation, disturbances of accommodation, sweating, dizziness, weight gain, urinary frequency or retention, nausea and vomiting, peripheral neuritis, mild parkinson-like syndrome, tremors, rare cases of falling in elderly patients, confusional states (with such symptoms as hallucinations and disorientation), activation of psychosis in schizophrenics and agitation (includ-

When
a milestone in life
is marred
by depression...

Often in the mind of the lonely, widowed, depression-prone individual, she's not gaining a daughter... she's losing a son. The occasion may be marred by such symptoms of depression as feelings of sadness, incapacity, helplessness and hopelessness.

In about 3 out of 4 cases, Tofrānil relieves symptoms of primary depression.

As maintenance therapy in primary depressive illness, it helps prevent relapse.

Although toxic reactions severe enough to require discontinuation of Tofrānil are uncommon, in patients with cardiovascular disease, thyroid disorders, increased intraocular pressure, or in those receiving anticholinergics (including antiparkinsonism agents), the special precautions listed in the Prescribing Information should be carefully observed. The use of Tofrānil in patients receiving M.A.O.I.'s is contraindicated.

ing hypomanic and manic episodes) which may require dosage reduction and/or addition of a tranquilizer or temporary discontinuation of the drug, epileptiform seizures, orthostatic hypotension and substantial blood pressure fall in hypertensive patients, purpura, transient jaundice, bone marrow depression including agranulocytosis, sensitization and skin rash including photosensitization, eosinophilia, and mild withdrawal symptoms on sudden discontinuation after prolonged treatment with high doses. Occasional hormonal effects (impotence, decreased libido, and estrogenic effects) may be observed. Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those using anticholinergic agents (including antiparkinsonism drugs).

Outpatient Adult Dosage: **Initially, 75 mg. daily, increased, if necessary, to 150 or 200 mg. Maintenance dosage may be lower, 50 to 150 mg. daily, if possible.**

Geriatric and Adolescent Dosage: **Initially, 30 or 40 mg. daily, which may be increased according to response and tolerance. It is usually unnecessary to exceed 100 mg. daily.**

A lag in therapeutic response, lasting from a few days to a few weeks, should be expected. When dosage recommendations are already being followed, increasing the dosage does not normally shorten this latency period and may increase the incidence of adverse reactions.

Availability: **Tofrānil: Round tablets of 25 and 50 mg.; triangular tablets of 10 mg. for geriatric and adolescent use; and ampuls, each containing 25 mg. in 2 cc. for I.M. administration.**
(B)46-850-C

For complete details, please refer to the full Prescribing Information.

Tofrānil®
imipramine hydrochloride
Geigy

Geigy Pharmaceuticals
Division of Geigy Chemical Corporation
Ardsley, New York 10502

continued from page 730

the few reported deaths of patients receiving such treatment."

Hormones—Thyroid: "There are at least three irrationalities. . .in this hormonal approach to the treatment of obesity."

Diuretics: "There is no rational basis for the use of diuretic drugs in the treatment of simple obesity."

Anorexiants: "Amphetamines are useful as a crutch to help the patient become accustomed to a rigorous reducing diet. But long-term administration is not justified because they tend to become less effective and, in addition, can lead ultimately to habituation."

Laxatives: "There is little rational basis for the use of laxatives in the treatment of obesity."

* * *

President Johnson said the administration would take additional steps to abate the increases in health care costs and to increase the numbers of health personnel. In his economic message to Congress, he said:

"The supply of qualified health personnel has lagged behind the expanding demand. I will shortly propose new measures to increase this supply.

"Last year, medical care prices rose 7 per cent, more than twice as fast as other prices. I shall propose new measures to slow down the spiraling cost of health care."

In his State of the Union message, the President included in a list of "absolutely intolerable" conditions which he said had existed for many years: "Hospital and medical costs are high, and they are rising." He did not amplify the brief statements in either of these two messages, leaving the details for a later health message to Congress.

Chairman Abraham A. Ribicoff (D., Conn.) said the Senate Government Operations Committee would conduct a two-year investigation into the rise in hospital and other health care costs. He said the subcommittee's study also would be concerned with the numbers of physicians and other health personnel.

Mr. Johnson said he also would propose a child health program and stricter penalties for those who traffic in LSD and other dangerous drugs. The child health program would provide poor families over the next five years with health service from prenatal care of the mother through the child's first year.

The budget for the Department of Health, Education, and Welfare allotted $66 million for medical education in fiscal 1969, for the year beginning next July 1, an increase of more than $16 million. Federal aid for allied health training was increased from $19 million to $17.2 million. Medicare expenditures for fiscal 1969 were estimated at $6.3 billion, compared with $5.7 billion for the current fiscal year. Family planning programs of the Federal government would be greatly expanded. The goal is to provide birth control information to one million women by quadrupling the size of the family planning services budget from $6 million to $24 million.

Abstracts

Smith, B. H., Leslie, E. V., and Alker, G.: Radioisotope encephalography, NEW YORK STATE J. MED. **68:** 769 (Mar. 15) 1968.

In the detection and diagnosis of brain tumors, cerebrovascular lesions, intracranial infection, and complications of head injuries, brain scanning complements such neurologic diagnostic methods as history and physical findings, radiography, electroencephalography, and echoencephalography. Brain scan indicates the site, since the lesion concentrates the isotope, and the findings may also give pointers to the nature of the lesion. As compared with angiography and pneumography, scanning is a preferable initial test, particularly when there is increased intracranial pressure, the patient is frail, or vascular disease adds to the hazards of angiography.

Ravin, M. B., and Feinberg, G.: Anesthetic management of hypophysectomy, NEW YORK STATE J. MED. **68:** 776 (Mar. 15) 1968.

Hypophysectomy was performed in 15 patients for advanced carcinoma of the breast with metastasis, in 11 patients for chromophobe adenoma of the pituitary, and in 6 patients for craniopharyngioma. The pituitary was approached via a frontotemporal craniotomy in 17 cases and via a transnasal route in 15. Anesthetic management is discussed as well as hormonal replacement in the postoperative period. The advantages gained by such difficult surgery can be lost unless extreme care is paid to postoperative medical management.

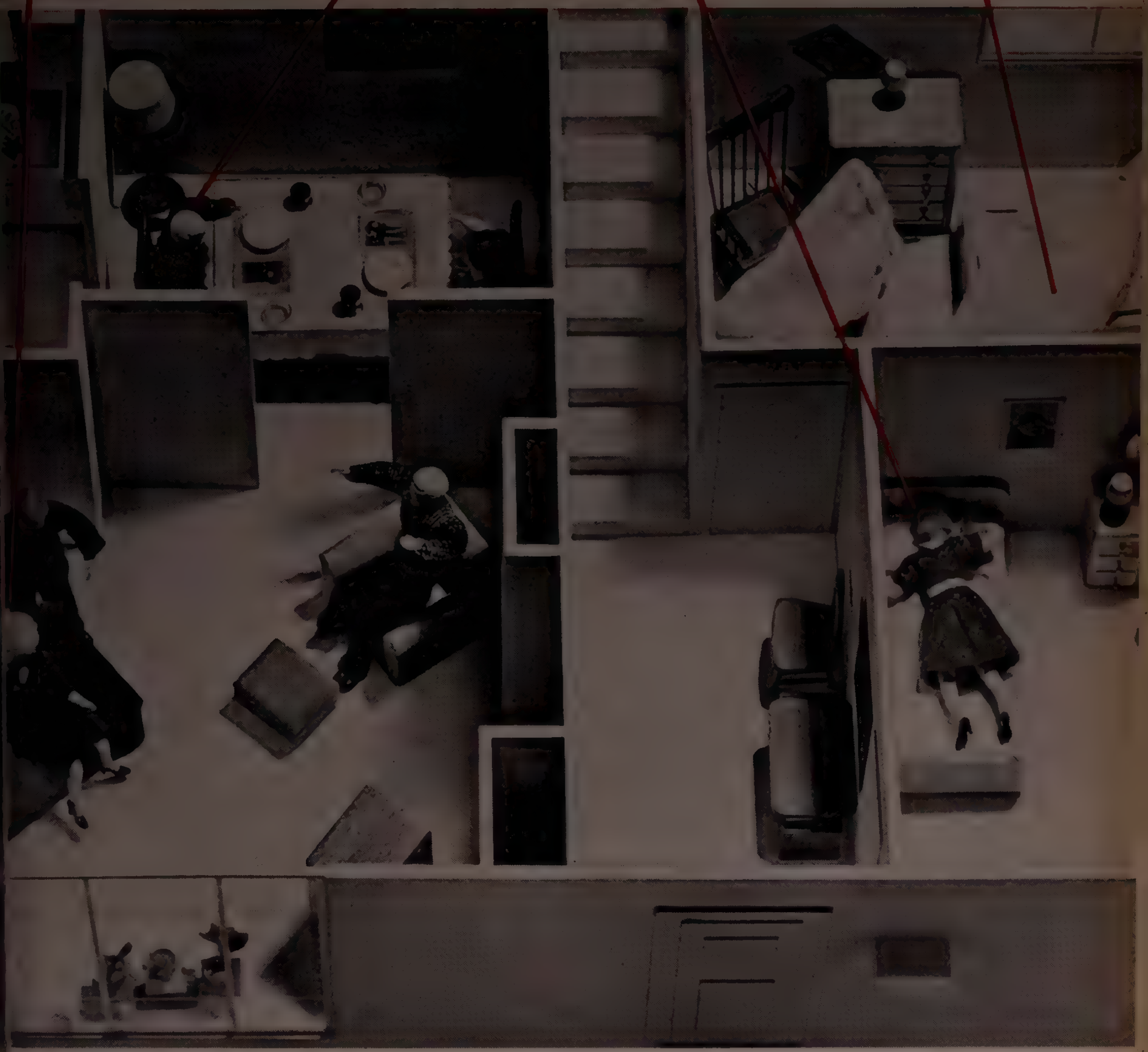
When the agitated geriatric disrupts the home…

His daughter can't please him. There is "just no living with him."

His disturbances at the table make every meal a nightmare.

His teen-age granddaughter won't invite friends home because of his outbursts.

His slovenly room and habits create more tension.



In moderate to severe anxiety…

- Mellaril helps control the most frequent symptoms: marked tension, agitation, apprehension, restlessness, hypermotility
- Mellaril often alleviates anxiety-induced somatic complaints
- Mellaril frequently helps strengthen emotional resources
- Mellaril helps the patient maintain realistic contact with environment, closer harmony with family

Contraindications: Severely depressed or comatose states from any cause, and in association with or following MAO inhibitors; severe hypertensive or hypotensive heart disease.

Precautions: Hypersensitivity reactions (e.g., leukopenia, agranulocytosis) and convulsive seizures are infrequent. Pigmentary retinopathy has been observed where doses in excess of those recommended were used for long periods of time. May potentiate central nervous system depressants, atropine, and phosphorus insecticides. Where complete mental alertness is required, administer the drug cautiously and increase dosage gradually. In addition, orthostatic hypotension (especially in female patients) has been observed. Epinephrine should be avoided in treatment of drug-induced hypotension.

Side Effects: Pseudoparkinsonism and other extrapyramidal disorders are infrequent; drowsiness, especially in high doses early in treatment, may occur; nocturnal confusion, dryness of the mouth, nasal stuffiness, headache, peripheral edema, lactation, galactorrhea, and inhibition of ejaculation are noted on occasion; photosensitivity and other allergic skin reactions may occur but are extremely rare.

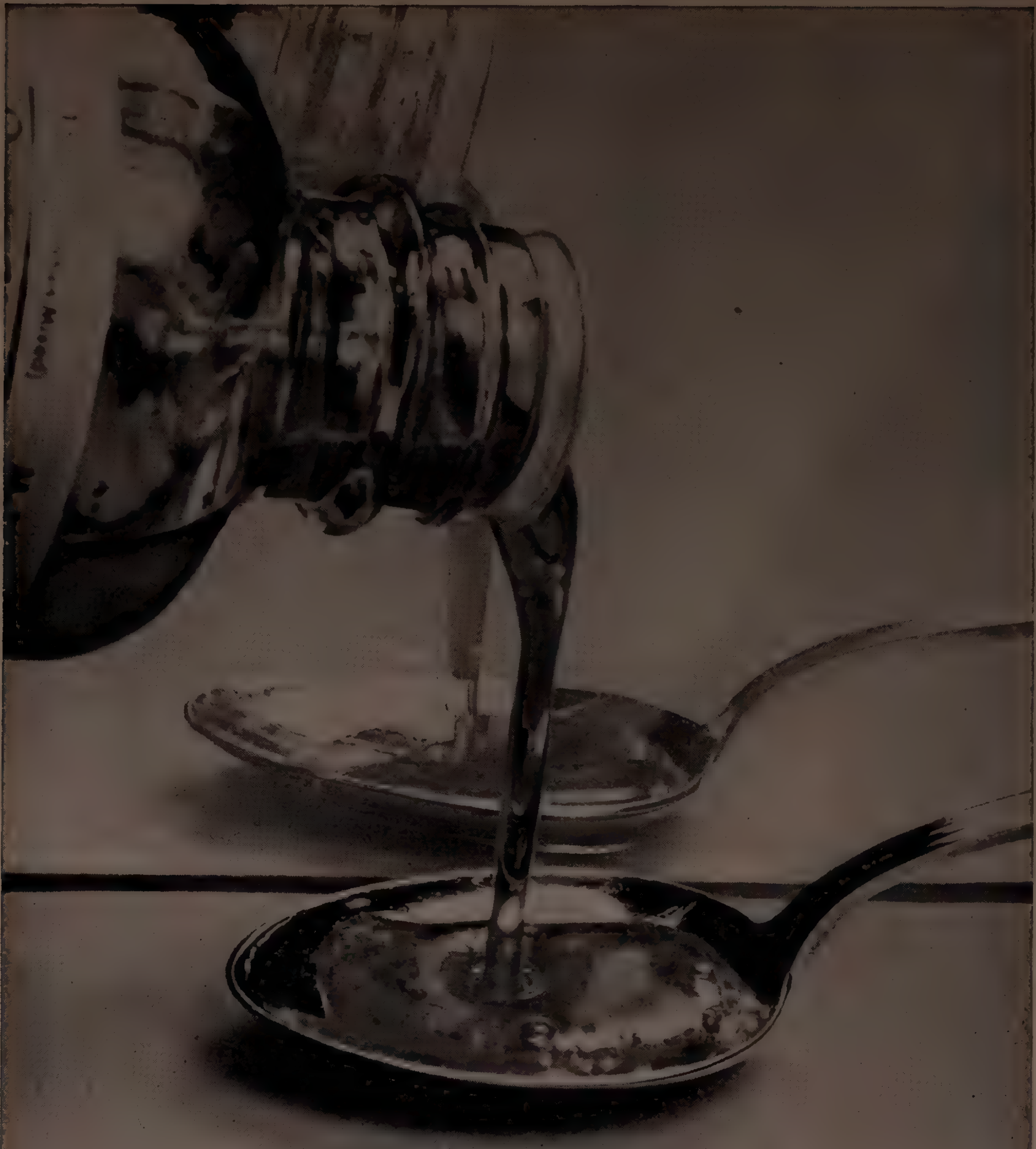
for moderate to severe anxiety

Mellaril®
(thioridazine)
25 mg. t.i.d.

SANDOZ

Before prescribing, see package insert for full product information.

63-114



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400,000 units of potassium penicillin V per teaspoonful

New . . . V-Cillin K®, Pediatric, 250 mg.

Potassium Phenoxymethyl Penicillin

Lilly

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"Dedicated to the continuing education of the physician"

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Editorials

Voicing a golden anniversary

The Speech Rehabilitation Institute of New York City recently celebrated its fiftieth anniversary of service to those in need of speech therapy.

Founded a half century ago by the late Dr. James Sonnett Greene as the New York Clinic for Speech Defects, this voluntary organization has treated over 100,000 persons with speech handicaps.

Now established in an ample building at 61 Irving Place, the Institute is equipped with the most modern diagnostic equipment and highly trained personnel to serve a monthly case load of 350 patients of all ages.

In addition to the challenging problems in childhood of stuttering, delayed speech development, and articulation disorders, the Institute deals with the aphasic problems resulting from cerebrovascular accident and training in the use of the artificial voice apparatus to replace the vocal cords following laryngectomy.

Anyone who was privileged to know that master of medicine of our time, the late Perrin Long, M.D., in his later years will remember his skillful use of his artificial larynx.

His contributions to discussion in medical meetings, clear and penetrating as always, were easily understandable to all.

The case load in the Post-Laryngectomy Clinic of the Institute averages 65 per month, the largest in the world.

There is no darkness so black but that the light of one candle will illuminate it. The Speech Rehabilitation Institute is one such candle and an exceedingly bright one!

Medical judgment—The master computer

In a recent address at a conference on "The University in a Changing Society" celebrating the Centennial of Howard University, Dr. Glenn T. Seaborg, chairman of the U.S. Atomic Energy Commission forecast a hypothetical situation which might develop in the practice of medicine as a result of computerization.

The situation set forth was this:

> For several days you have not been feeling well and you call your local health center for an appointment. You can remember when you used to call your doctor, but it's been many years since he's bothered with initial diagnoses and he would be the first to admit he could not be as thorough or accurate as the health center.
>
> At the center you give all the necessary information to a medical secretary whose typewriter feeds it into a computer system. First comes your identification number which automatically supplies the system with your previous medical history, then all your new complaints and symptoms. On the basis of the information given so far and a comparison with your previous history the computer may venture an immediate diagnosis, but if it has any doubts—and it is a highly conservative computer—it recommends one or several diagnostic tests. The tests are conducted simply and efficiently with the aid of one or two capable medical technicians and a battery of equipment. The technicians would be capable of conducting routine

eye, ear, nose and throat examinations. Tests beyond that might involve rapid chemical analysis of body fluids, accurate electronic tests of various reflexes, the heart or metabolism. The functions of several organs might be checked out with the use of radioisotope tracers and scanning and counting equipment. The digestive system might be examined by the swallowing of a tiny capsule containing a radiotransmitter which, as it travels the length of your digestive tract, broadcasts its "inside information" to an attentive analyzer.

The battery of diagnostic equipment programs its findings into the central computer which already has your previous medical history and your current complaints. In a matter of seconds, after the tests are completed, the system presents its full diagnosis. At the same time it also makes recommendation for treatment, perhaps printing out a prescription which can be filled before you leave the center.

Fortunately, in your case only medication was recommended, and you go home not only with the proper medication but confident that your case was given the best medical attention, even though you never saw a doctor during the entire visit. The health center efficiently adds the day's information to your medical history and sends your doctor a copy just for the record. By the way, you do get to see your doctor—on the weekend when you play bridge with him.

Does your doctor ever see any patients? The computer recommends a few cases to him because of their unusual interest. The high level of medicine he practices now enables him to help these patients. Their cases also help him in his work with engineers to design newer and better diagnostic and treatment systems and to train the many medical technicians who are needed to handle the increased population.

Certainly many benefits can accrue from a system such as this tabulation of past history and present symptoms, a rational order of laboratory tests, and a good deal of routine observation that can be done impersonally. We agree that a good deal of chaff can be winnowed this way. We maintain, however, that at the end point of all the information gathering, the doctor should see and examine the patient. His experience is the essential ingredient and cannot be replaced by the finest machine or the most experienced battery of technicians.

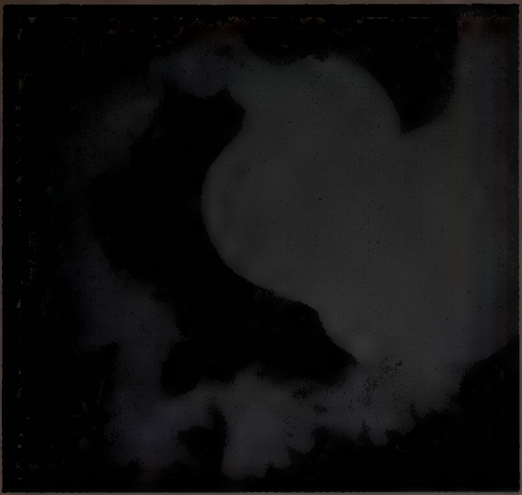
A mechanical prescription of therapy in the present state of our knowledge would be extremely hazardous.

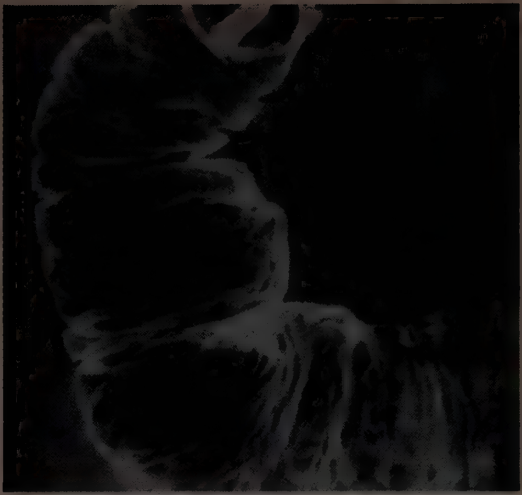
The Registry on Adverse Reactions of the Council on Drugs of the American Medical Association lists 179 drugs and types of drugs which may cause adverse effects and it might be well to call the roll of the possibilities: Acute renal failure, anuria and oliguria, proteinuria, nephritis, hematuria, tubular necrosis, nephrotic syndrome, dysuria, decreased glomerular filtration, hyperuricemia, azotemia, anaphylactic reactions, serum sickness, allergic purpura, hemolytic anemia, leukopenia, agranulocytosis, aplastic anemia, thrombocytopenia, hypotension, pulmonary edema, hepatitis, stomatitis, gastrointestinal tract bleeding, exanthematic rash, urticaria, exfoliative dermatitis, photosensitivity neuropathy, eighth nerve dysfunction.

As physicians we are all aware of these dangers and must weigh them in the balance. We see no clear way to program the computer to do this.

The crystal ball shows some promise of streamlining but the ultimate responsibility rests not with the machine but with the the master, the responsible physician.

Perhaps Dr. Seaborg was pulling our leg. If so—touché.





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calms the gastrointestinal tract

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How the X-rays were taken
In the hypotonic duodenograph[1,2] reproduced above, the gastrointestinal tract was relaxed with Pro-Banthīne. The duodenum was intubated. Pro-Banthīne in a dose of 60 mg. intramuscularly was used to assure prompt aperistalsis and double-contrast visualization was achieved with ordinary barium and air.

The same pharmacologic efficiency has proved of pronounced value in such conditions as: *peptic ulcer, pylorospasm, biliary dyskinesia, functional hypermotility and irritable colon.*

Contraindications: Glaucoma; severe cardiac disease.

Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most *adult* patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthīne (brand of propantheline bromide) is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology. 89:438-443 (Sept.) 1967.

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STRESSCAPS

Two-Year Study of Infections on Urologic Service

Origins, Prevention, and Control*

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Since Semmelweis in Vienna in 1846 demonstrated that the incidence of puerperal fever in his obstetric ward could be drastically reduced simply by having the staff wash their hands with soap and water, unceasing efforts have been made over the years to eliminate nosocomial infections. The increasing resistance of bacteria to antimicrobial drugs has added another dimension to the already serious problem of hospital-acquired infections.[1, 2]

The purpose of this study is to report the results of a two-year survey of hospital-acquired urinary, wound, and blood infections at the Squier Urological Clinic of the Columbia-Presbyterian Medical Center and to describe the results of an aseptic unit that was instituted in an attempt to reduce the service's infection rate. An explanation of the possible origins and causes of these nosocomial infections is also presented.

Procedures

Patient selection. All of the patients admitted to one 67-bed unit of the Squier Urological Clinic during a one-year period, from whom urine, wound, and blood cultures were obtained, were included in the study. This unit consisted of three 12-bed wards and ten semiprivate rooms.

Bacteriologic technics. Colony counts on urine cultures were not done. Any growth on a blood or eosin-methylene blue plate was reported. The reason for this is explained in the Comment.

The disk method of determining sensitivities was used. The following drugs were routinely tested: penicillin, streptomycin sulfate, novobiocin sodium, neomycin, kanamycin sulfate, polymyxin, sulfonamide, nitrofurantoin, erythromycin, chloramphenicol, and tetracycline. An organism was called "resistant" if there was no inhibition of growth by the antibiotics which would ordinarily have been used in treating the infection.

Definition of infection. In view of the considerable difference of opinion and controversy over what constitutes a urinary tract infection,[3–5] as well as our own policy as stated, we considered all positive cultures of pathogenic organisms as possible infections.

A urinary tract infection was considered to have developed in the hospital if the admission culture did not report the organism, if the patient's chart had no previous record of the organism, and if a subsequent culture in the hospital or immediately after discharge showed the organism in the urine.

A wound was considered infected if there was a discharge of purulent material.

Blood cultures that were positive on admission were not included in the study.

Data tabulation. Edge punch Uni-

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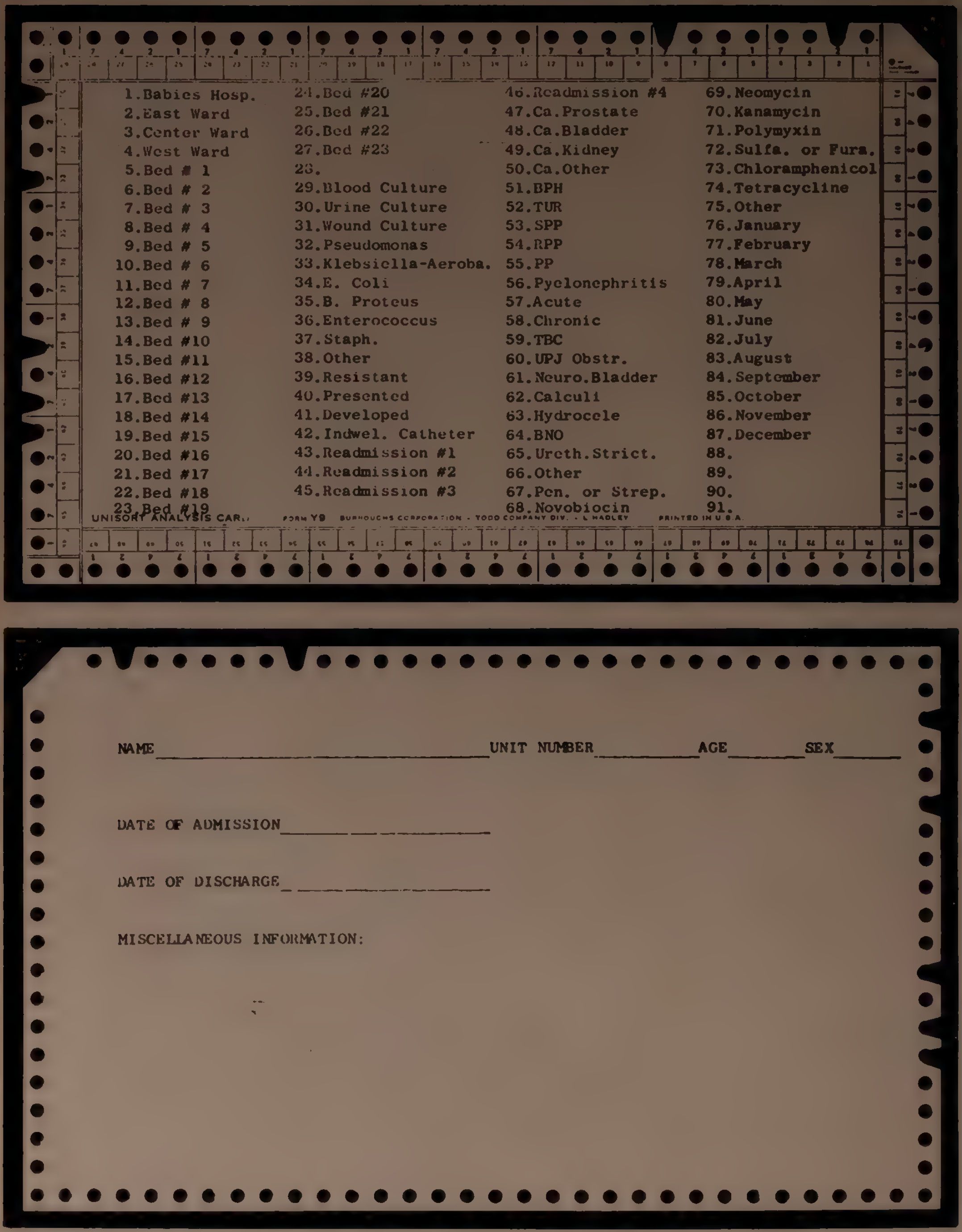
* Supported by U.S. Public Health Service Grant AM04546.



1.Babies Hosp.
2.East Ward
3.Center Ward
4.West Ward
5.Bed # 1
6.Bed # 2
7.Bed # 3
8.Bed # 4
9.Bed # 5
10.Bed # 6
11.Bed # 7
12.Bed # 8
13.Bed # 9
14.Bed #10
15.Bed #11
16.Bed #12
17.Bed #13
18.Bed #14
19.Bed #15
20.Bed #16
21.Bed #17
22.Bed #18
23.Bed #19
24.Bed #20
25.Bed #21
26.Bed #22
27.Bed #23
28.
29.Blood Culture
30.Urine Culture
31.Wound Culture
32.Pseudomonas
33.Klebsiella-Aeroba.
34.E. Coli
35.B. Proteus
36.Enterococcus
37.Staph.
38.Other
39.Resistant
40.Presented
41.Developed
42.Indwel. Catheter
43.Readmission #1
44.Readmission #2
45.Readmission #3
46.Readmission #4
47.Ca.Prostate
48.Ca.Bladder
49.Ca.Kidney
50.Ca.Other
51.BPH
52.TUR
53.SPP
54.RPP
55.PP
56.Pyelonephritis
57.Acute
58.Chronic
59.TBC
60.UPJ Obstr.
61.Neuro.Bladder
62.Calculi
63.Hydrocele
64.BNO
65.Ureth.Strict.
66.Other
67.Pen. or Strep.
68.Novobiocin
69.Neomycin
70.Kanamycin
71.Polymyxin
72.Sulfa. or Fura.
73.Chloramphenicol
74.Tetracycline
75.Other
76.January
77.February
78.March
79.April
80.May
81.June
82.July
83.August
84.September
85.October
86.November
87.December
88.
89.
90.
91.

UNISORT ANALYSIS CARD FORM Y9 BURROUGHS CORPORATION - TODD COMPANY DIV. - L HADLEY PRINTED IN U.S.A.

NAME ______ UNIT NUMBER ______ AGE ______ SEX ______

DATE OF ADMISSION ______

DATE OF DISCHARGE ______

MISCELLANEOUS INFORMATION:

FIGURE 1. Edge punch Unisort analysis cards.

sort analysis cards* were used to store and tabulate the data. The sample card in Figure 1 shows the data that were abstracted from the patients' charts. Punches were made on the edges of the card to correspond with the information noted on the face.

Each stack of cards was sorted by inserting a narrow rod through the number desired on the card's edge. The punched

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* Manufactured by Burroughs Corporation, Detroit, Michigan.

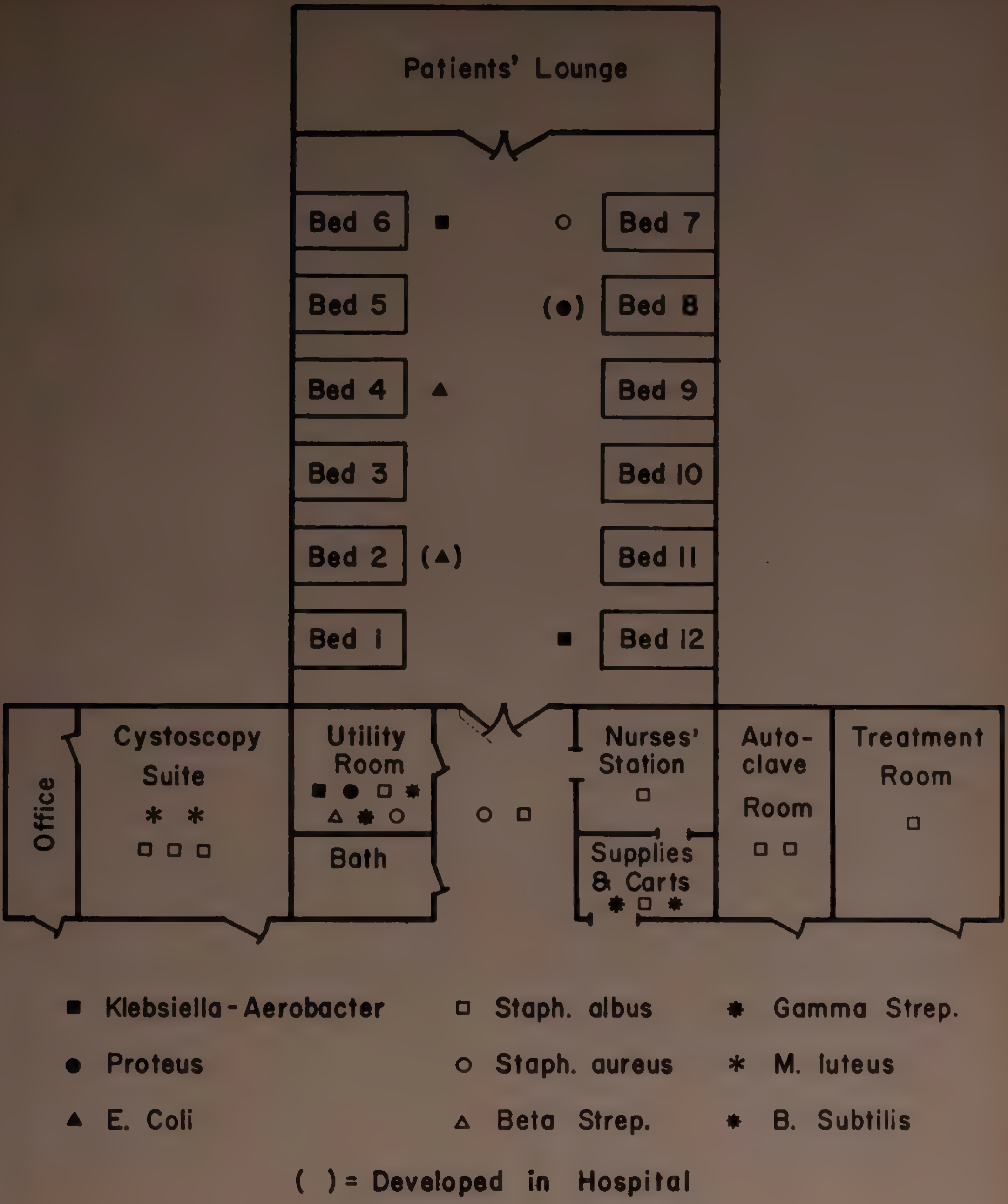

Patients' Lounge
Bed 6
Bed 7
Bed 5
(●)
Bed 8
Bed 4
Bed 9
Bed 3
Bed 10
Bed 2
(▲)
Bed 11
Bed 1
Bed 12
Office
Cystoscopy Suite
Utility Room
Bath
Nurses' Station
Supplies & Carts
Auto-clave Room
Treatment Room
■ Klebsiella-Aerobacter
● Proteus
▲ E. Coli
□ Staph. albus
○ Staph. aureus
△ Beta Strep.
✸ Gamma Strep.
∗ M. luteus
✸ B. Subtilis
( ) = Developed in Hospital

FIGURE 2. Typical ward bacterial distribution.

cards containing this information would then drop out when the stack was picked up by the rod. By using two rods simultaneously, cross tabulations were possible in one run. Other pertinent points of information, such as the date of each culture, type of operation, complications, and so on, were entered by hand on the other side of the card under Miscellaneous Information.

INFECTION REPORTS. Weekly reports of all new infections that developed in the hospital were submitted to the director of service, the chief resident, and the service's representative on the hospital infection committee. Maps of the wards were also made each week, showing the exact location of each new infection in an attempt to detect any apparent cross infections (Fig. 2).

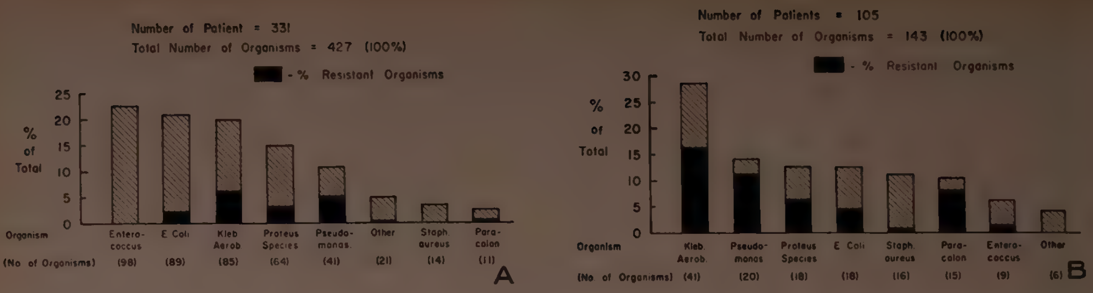


FIGURE 3. Organisms of urinary infections. (A) Present on admission. (B) Developed in hospital.

Environmental survey. At the conclusion of the one-year census, cultures were taken of the service's equipment and personnel. The noses and throats of the staff were cultured, as were the floors, sinks, cystoscopes, carts, sterile supplies, and so on, from each ward, the treatment room, and the cystoscopy suite. In all, 107 cultures were obtained in this sampling of the environment.

Aseptic unit. After all of the tabulations were completed, a revised protocol for inpatient care was instituted in an effort to reduce the service's hospital-acquired infections. The aseptic unit, as we called it, lasted for a trial period of eight weeks. It consisted of the following changes:

1. The standard two-way Foley catheter was replaced by a three-way Foley catheter, previously soaked in hexetidine (Sterisil) for four hours.

2. A prepackaged sterile catheterization tray* was used in place of our own tray.

3. A closed instead of an open drainage system was employed. Irrigation with normal saline was intermittent preoperatively and continuous postoperatively.

4. Drainage bottles were emptied only once every twenty-four hours, where possible.

5. Closed metal containers for contaminated instruments and bladder irrigation sets were used to transport these items directly to the utility room for immediate washing and storage prior to autoclaving.

6. Meatal care was done by the patient twice a day with an individual tube of bacitracin-neomycin ointment and an individual bottle of hexetidine and prepackaged sterile gauze pads.

7. All dressing changes were executed at the same time every day by a two-man team, one to handle the soiled dressings, the other the clean dressings.

8. Each wound was cleaned with the patient's own bottle of hexetidine. Every patient also had an individual bottle of tincture of benzalkonium chloride and a roll of adhesive tape for dressing changes.

9. Soiled dressings were immediately placed in a wax bag which was then disposed of in the trash pail in the utility room. The trash pail was emptied three times a day.

10. Under no circumstances were contaminated dressings, instruments, and so on ever to appear on clean surfaces outside the patient's unit.

11. Handwashing with hexachlorophene (G_{11}) soap immediately after each patient contact was strictly enforced.

12. Only clean and sterile equipment was kept in the dressing room which was considered an aseptic area. The utility room was considered a contaminated area.

Results

Patients with urinary tract infections. Patients with urinary tract infections were divided into two groups: those who were admitted already infected and those who developed an infection in the hospital. The organisms cultured from these patients are shown in Figure 3.

These graphs show that not only do the organisms in each group differ in their frequency of isolation but also in their degree of resistance.

The three most common organisms found in the group that had positive cultures on admission were, in order of frequency, enterococcus, Escherichia coli, and Klebsiella-Aerobacter.

The three most common organisms found

---

* Bard-Parker Co., Inc., Danbury, Connecticut.

TABLE I. Incidence of resistant organisms in patients admitted with urinary infections and in patients who developed infections

Type	Number of Patients	Number of Organisms	Number of Resistant Organisms	Per Cent Resistant Organisms
Admitted with infection	331	427	76	17.8
Developed infection	105	143	66	46.2

TABLE II. Previous hospitalizations and resistant urinary infections in 331 patients infected on admission

Type	Number of Patients	Number Admitted with Resistant Infections	Per Cent Admitted with Resistant Infections
Had at least one previous hospital admission	50	22	44.0
Had no previous hospital admissions	281	33	11.7

in the group that developed infection in the hospital were, in order of frequency, Klebsiella-Aerobacter, Pseudomonas, and Proteus.

It is interesting to note that in both groups the distribution of Pseudomonas, 10.7 per cent and 14.1 per cent, was approximately the same. This was also true in the case of Proteus with 14.9 per cent and 12.6 per cent respectively.

Table I summarizes the incidence of resistant infections in both groups. It shows that resistant infections were more than twice as frequent in patients who developed an infection while in a hospital as in those who already had an infection on admission.

It can be seen in Table II that resistant infections on admission were almost four times more frequent in patients who had had at least one previous hospital admission.

TABLE III. Frequency of mixed infections in patients admitted with urinary infections and in patients who developed infections

Type	Number of Patients	Number of Organisms	Number of Organisms Per Patient
Admitted with infection	331	427	1.29
Developed infection	105	143	1.36

The development of mixed infections was found to be more common in patients in a hospital than in outpatients (Table III).

A patient with a positive culture on admission was just as likely to develop an infection in the hospital as a patient with a negative admission culture (Table IV).

Table V shows that almost all of the patients who developed infection in the hospital had had an instrument passed into the urethra in some fashion, for instance, had an indwelling catheter, cystoscopy, and so on.

This is, however, less than 3 per cent of the total number of patients who were treated by instrumentation via the urethra in any given year.

The incidence of urinary infection in patients in a hospital according to the primary diagnosis is given in Figure 4. Our over-all inpatient infection rate was 48.5 per cent. Of these, approximately one quarter, 12.8 per cent, developed in the hospital.

EPIDEMIOLOGY OF ALL HOSPITAL INFECTIONS. Two wards are male wards; one is a female ward. The ten semiprivate rooms are located between the wards and are served by the nursing staff of the nearest ward.

All of the urinary, wound, and blood infections that developed in the hospital were compared as to their origin in each of the

TABLE IV. Development of infection in hospital by admission culture

Type	Number of Patients	Per Cent	Developed Infection in Hospital	Per Cent	Developed Resistant Infection in Hospital	Per Cent
Negative culture on admission	490	59.7	67	13.7	27	5.5
Positive culture on admission	331	40.3	38*	11.5	18	5.4
TOTALS	821	100.0	105	12.8	45	5.4

* For example, developed another organism in hospital.

TABLE V. Relationship between development of infection and instrumentation

Number of Patients who Developed Infection	Number Instrumented per Urethram	Per Cent Instrumented per Urethram
105	98	93.3

three wards (Fig. 5). It was apparent that more urinary and blood infections developed in the center ward than in either end ward, while wound infections were more frequent in the west end ward. In general, the center ward had the highest infection rate.

The organisms responsible for all three types of infections are listed in Table VI. Klebsiella-Aerobacter was clearly our biggest over-all problem mainly because of the large number of urinary tract infections and septicemias it caused.

Most of the Klebsiella-Aerobacter infections developed in one ward, the central one (Fig. 6).

As was to be expected, the most common single organism in wound infection was Staphylococcus aureus, with 30.8 per cent of the total.

However, the majority, 59 per cent, of wound infections were caused by gram-negative bacilli (Table VI).

Our over-all wound infection rate was 1.6 per cent (Table VII).

Environmental survey. The organisms isolated from the noses and throats of the service's personnel are shown in Figure 7. Over half of the urologic staff were found to be carriers of Staph. aureus. Klebsiella-Aerobacter was cultured from the throat of one physician, E. coli from another, and paracolon from a third.

The cultures of the service's equipment revealed Staph. aureus and Klebsiella-Aerobacter in some locations on all three wards. Proteus was cultured once on the center ward (Fig. 8). Pseudomonas was the only common gram-negative pathogen that was not isolated in the survey of the personnel and equipment. All of the cultures of our sterile supplies, namely, cystoscopes, catheters, dressings, and so on were negative.

Infection reports. The weekly infection reports and maps consistently showed no demonstrable evidence of cross infection from one patient to another or epidemics of infection with a particular organism.

Aseptic unit. Table VIII shows that the total number of positive urine cultures reported each week during the eight-week trial dropped by 44, a decrease of 18.2 per cent. In the fifty-two-week period, just prior to the unit, only 105 urinary infections developed in the hospital, an average of only 2 new infections a week. In view of such a small number, we decided to include

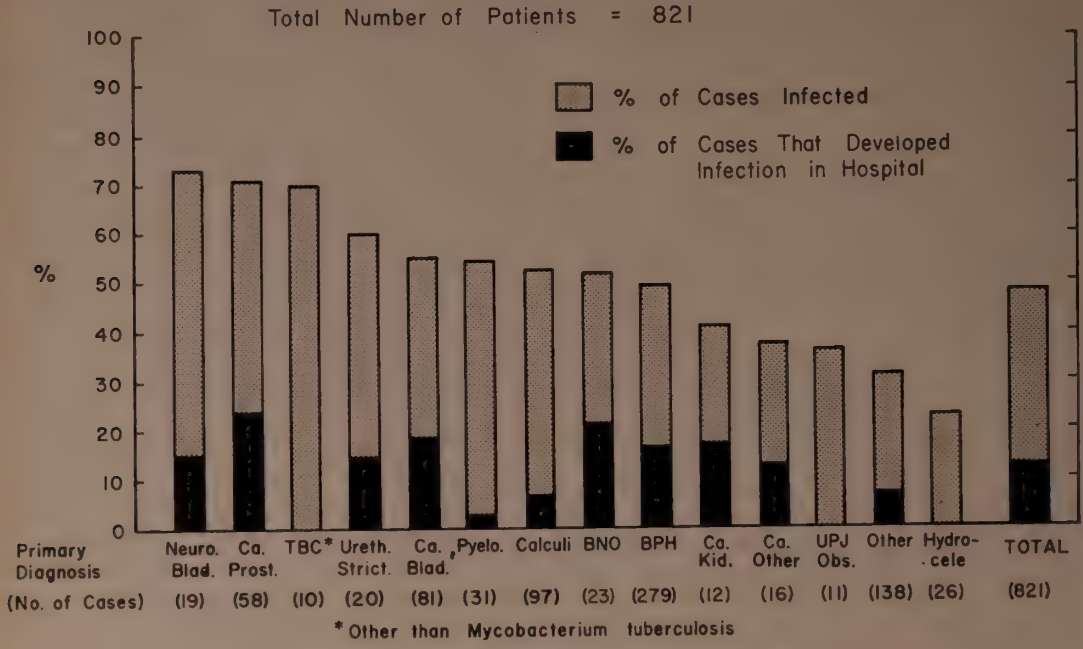


FIGURE 4. Urinary infection by primary diagnosis.

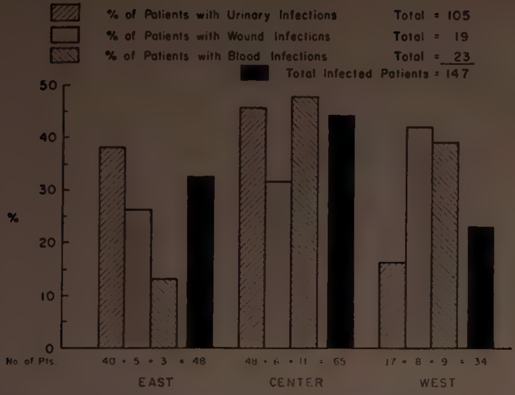


FIGURE 5. Percentage of all infections that developed in hospital by ward.

in our calculations the total number of infections present on the ward each week, that is, those that developed in the hospital as well as those that were present on admission. In attempting to evaluate the effectiveness of the unit, we feel it was justified to combine the two types of infections because the number of new infections was so small and because the additional precautions did result in a number of positive cultures becoming negative. There was no change in the usual chemotherapeutic regimen, and no new drugs were used during the trial. The most dramatic change occurred in the case of Pseudomonas (Fig. 9).

There was no reduction in either wound infections or septicemias as a result of the aseptic unit.

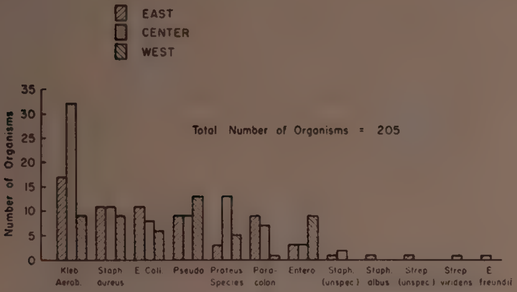


FIGURE 6. Distribution of all infections developed in each ward by organism.

TABLE VI. Organisms from all infections that developed in hospital

Organism	Urinary (105 Patients) Number	Urinary (105 Patients) Per Cent	Wound (19 Patients) Number	Wound (19 Patients) Per Cent	Blood (23 Patients) Number	Blood (23 Patients) Per Cent	Total (147 Patients) Number	Total (147 Patients) Per Cent
Klebsiella-Aerobacter	41	28.6	6	15.4	11	47.8	58	28.3
Staph. aureus	16	11.2	12	30.8	3	13.0	31	15.2
E. coli	18	12.6	10	25.6	3	13.0	31	15.2
Pseudomonas	20	14.1	3	7.7	2	8.7	25	12.2
Proteus species	18	12.6	3	7.7	0	0.0	21	10.2
Paracolon	15	10.4	1	2.6	1	4.4	17	8.2
Enterococcus	9	6.3	4	10.2	2	8.7	15	7.3
Staphylococcus (unspecified)	3	2.1	0	0.0	0	0.0	3	1.4
Staph. albus	1	0.7	0	0.0	0	0.0	1	0.5
Streptococcus (unspecified)	1	0.7	0	0.0	0	0.0	1	0.5
Streptococcus viridans	0	0.0	0	0.0	1	4.4	1	0.5
E. freundii	1	0.7	0	0.0	0	0.0	1	0.5
TOTALS	143	100.0	39	100.0	23	100.0	205	100.0

Comment

DEFINITION OF URINARY TRACT INFECTION. The diagnosis of urinary tract infection has always been a problem for the physician. In recent years there has been

TABLE VII. Percentage of wound infection by type of operation

Operation	Total Number of Procedures	Number Infected	Per Cent Infected
Suprapubic prostatectomy	142	3	2.1
Retropubic prostatectomy	120	4	3.3
Nephrectomy	52	2	3.8
Cystectomy	21	1	4.8
Orchiopexy	13	1	7.7
Cystolithectomy	9	1	11.1
Bilateral nephrostomies	7	1	14.3
Ileal conduit	5	1	20.0
All others	852	5	0.6
TOTALS	1,221	19	1.6

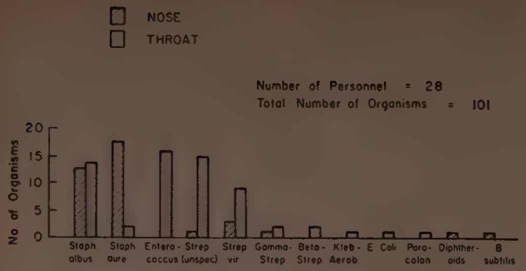
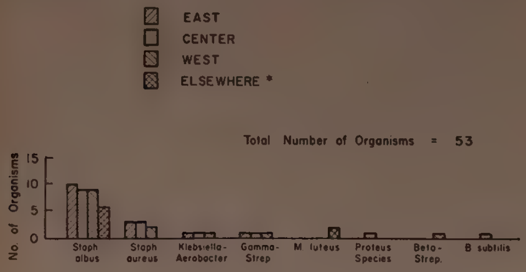


FIGURE 7. Organisms cultured from noses and throats of personnel.



* Cytoscopy Suite, Autoclave Room, Treatment Room

FIGURE 8. Distribution of organisms cultured from urologic equipment.

considerable difference of opinion over the significance of asymptomatic bacteriuria and what really constitutes urinary tract infection. In an attempt to differentiate between true infection and simple contamination of the urine, recourse has been made to counting the colonies of positive cultures. Sanford *et al.*[3] consider a minimum of 1,000 organisms per milliliter of urine to be indicative of infection. Gillespie *et al.*[4] put this figure at 3,000 per milliliter. It has been placed as high as 100,000 organisms per milliliter by Kass.[5]

In our present study, 14 patients with the confirmed diagnosis of either acute or chronic pyelonephritis had negative cultures during the period of their hospitalization (Fig. 4). We feel that this confirms our serious doubts as to the validity of using colony counts as a criterion for the diagnosis of urinary tract infection. We believe a more realistic and accurate approach is to consider any growth of the common urinary pathogens as a possible or even a probable infection. Seneca and Peer,[6] of the Squier Urological Clinic laboratories, have previously discussed the rationale for this policy more fully.

A study of negative cultures in the presence of symptoms and positive cultures in the absence of symptoms is presently being conducted by us. We have already found that plating urine cultures in less than thirty minutes after collection led to 40 per cent more positive cultures.[7]

TABLE VIII. Results of aseptic unit trial in terms of number of positive urine cultures present each week

Organism	Total Four Weeks Before and Four Weeks After Unit	Total Eight Weeks During Unit	Change	Per Cent Change
E. coli	61	50	−11	−18.0
Klebsiella-Aerobacter	46	41	− 5	−10.8
Enterococcus	47	37	−10	−21.3
Proteus species	35	37	+2	+5.7
Pseudomonas	34	13	−21	−61.7
Staph. aureus	14	16	+2	+14.3
Paracolon	5	4	−1	−20.0
Totals	242	198	−44	−18.2

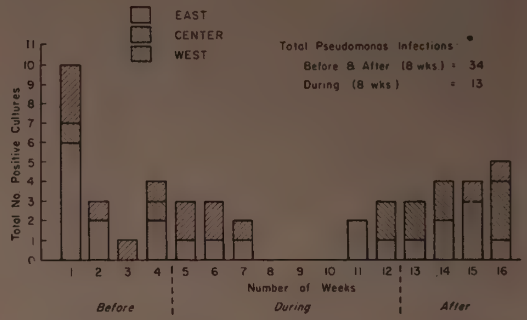


FIGURE 9. Incidence of Pseudomonas infections before, during, and after aspetic unit.

Origin of urinary tract infections. In this study, we divided patients with urinary tract infections into two groups: those who were admitted already infected and those who developed infection while in the hospital. The source of infection in each group will be discussed separately.

Patients with an infection present on admission. The majority of patients in our study developed infection prior to admission (Table I). Only a small number of these had a record of previous hospitalization (Table II). According to our policy, outpatients are not usually treated with instruments. Clearly, these infections must have come from some other source.

We believe that the infections that were present on admission were almost entirely auto-infections. This is shown by the extremely large number of normal intestinal flora, especially enterococcus and E. coli cultured from the urinary tract (Fig. 3A). We feel that this establishes the bowel as the principal source of urinary tract infection in the absence of instrumentation and hospitalization. Vosti, Monto, and Rantz[8] reported that out of 51 patients with urinary tract infections caused by E. coli, 41 had the same serologic group of E. coli in the feces.

PATIENTS WHO DEVELOPED INFECTION IN THE HOSPITAL. The cases of patients who developed infection in the hospital were much more difficult to evaluate. We feel it is important to point out that the development of a urinary tract infection in the hospital does not necessarily mean that the infection was hospital-acquired or nosocomial in origin. Unless the intestinal tract is completely sterilized, the patient in a hospital is still subject to infection from the same source as the outpatient. Auto-infection cannot be ignored in this group of patients.

The problem now is to determine which cases are the result of auto-infection and which the result of cross infection. The fact that we have not had an epidemic of hospital-acquired infections caused by a particular organism, as has been reported by others,[9–12] or any obvious cases of cross infections between patients, made our task that much more difficult.

The following evidence favored auto-infection:

In our epidemiologic survey, all of our catheters, cystoscopes, and irrigating fluids were found to be sterile.

All of our patients received broad-spectrum prophylactic chemotherapy during their periods of hospitalization. This caused some gram-negative bacilli to mutate to more resistant strains or caused an overgrowth of nonsusceptible strains from the immense flora of the intestine.[13,14] We have shown that the latter most likely occurs in the case of E. coli.[14] We have also demonstrated experimentally that Aerobacter aerogenes can mutate to very resistant strains.[1] This could be a possible explanation for the high percentage of resistant Klebsiella-Aerobacter organisms isolated in patients placed in a hospital (Fig. 3B). E. coli was easily eradicated by chemotherapy[14] as was enterococcus.[15]

In the group that was admitted with infection and in the group that developed infection, the percentage of cases infected with Pseudomonas and Proteus was approximately the same (Fig. 3). The resistance patterns of the two organisms did not differ as much as we expected. Two species of Proteus, morgani and rettgeri,[16] and Pseudomonas pyocyanea[17] were occasionally found in the intestinal tract.

The high incidence of resistant organisms in patients who were on prophylactic chemotherapy (Fig. 3B) might be explained by an infectious resistance among the flora in the intestine, for instance, a mechanism for the rapid dissemination of inherited antibiotic resistance between organisms of the same or different genera.[2]

The small reduction in the infection rate following our aseptic unit trial suggests that cross infection was not very frequent (Table VIII).

Goldie[18] states that it may be possible for organisms to pass directly from the rectum to the prostatic bed as a result of operative trauma and the establishment of new vascular channels.

The following evidence favors cross infection:

Almost all of the infections that developed in the hospital occurred in cases that were treated with instruments (Table V). Similar results have been reported by others.[4,15,19–24]

Gillespie[23] reports that the majority of his patients became infected one or two days after surgery and the insertion of an indwelling catheter. He felt it was unlikely the infecting organisms could have gone from the intestine and established themselves in the urinary tract in such a short period of time.

The large percentage of resistant organisms found in infections that developed in the hospital is suggestive of infection by the hospital flora (Fig. 3B).[19,20,24,25]

The fact that the majority, 59 per cent, of infected wounds were infected by resistant gram-negative bacilli (Table VI) points to contamination from gram-negative hospital flora.

Three physicians carried gram-negative organisms in their throats (Fig. 7). Our epidemiologic survey revealed three common urinary pathogens on the ward equipment. Klebsiella-Aerobacter was cultured from the utility room sinks of each ward, Proteus from the utility room sink of center, and Staph. aureus from the utility room floors of all three wards (Fig. 8).

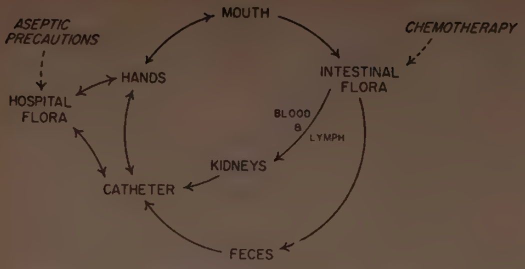


FIGURE 10. Pathogenesis of urinary tract infections in hospital.

Klebsiella,[21] Proteus,[20] and Pseudomonas[11,17] have been widely encountered by others in the hospital's air, equipment, and personnel.

Aerobacter cloacae is not easily removed from the hands of ward personnel.[26] This organism will also grow in aqueous benzalkonium chloride on gauze sponges.[27] The complete elimination of gram-negative organisms in a few minutes is not easily attained with any antiseptic.[17]

Most authors feel that the majority of infections that develop in the hospital are hospital-acquired or cross infections in which organisms from other patients or from the resident hospital flora gain access to the urinary tract through an indwelling catheter or as a result of instrumentation.[4,5,9,19–23,25,28]

It should be pointed out that each hospital has its own aseptic technics, chemotherapeutic regimens, policies on instrumentation, and hospital flora. The development of infection on a urologic service depends on all of these variables. Merely to say it is the result of cross infection per se, we feel, is to oversimplify the problem.

We believe the most likely explanation for the infections that developed on our service can be found in the diagram in Figure 10.

Not only do attendants handle a patient's indwelling catheter, but also the patient himself will inevitably hold his catheter, especially when ambulatory. The bacteria from his hands can then ascend into the bladder, either through urethral secretions or, if it is an open system of drainage, through the air bubbles in the tube. The mucous membranes of the nose and urethra are particularly susceptible to bacterial invasion when traumatized.[29] The indwelling catheter is also sometimes contaminated by the patient's own fecal stream.

The already infected ambulatory patient with an indwelling catheter is doubtless one of the principal vectors in the spread of infection in the wards. As he moves about, he sheds organisms on the floor, air, door knobs, tables, and chairs and even passes them directly to other patients.[29]

We feel that the high infection rate on our center ward (Fig. 5) can be explained by the fact that this ward is directly across from the elevators in the main entrance hall where most of the traffic is. The role that visitors play in the spread of infection has been ignored by other authors.

The development of mixed infections was found to be more common in patients treated in a hospital than outpatients (Table III). We believe that the obvious explanation is that these patients were exposed to the hospital flora in addition to the flora in the intestine.

A patient with a positive culture on admission was just as likely to develop an infection in the hospital as one with a negative culture (Table IV). We, therefore, conclude that the presence of one pathogen in the urinary tract does not prevent the acquisition of another.

The role of the nasopharyngeal flora of the hospital personnel and the patient himself in the pathogenesis of urinary and wound infections is still not clear.[12,28–32] We feel it is safer to assume the nasopharynx is a source of contamination and, therefore, recommend masks for dressing changes and catheterizations.

Gillespie *et al.*[4] have pointed out that one of the major reasons why the incidence of nosocomial infections should be reduced is that a lower infection rate should diminish the consumption of antimicrobials and, hence, the spread of antibiotic-resistant strains.

Martin and Bookrajian[33] and Martin *et al.*[34] have already discussed the merits of the three-way catheter versus the two-way Foley catheter. It has been our experience that the two-way catheter was not nearly as dangerous as it has been claimed.

Summary

The high incidence of enteric organisms found in the urine of patients without pre-

vious hospitalization or instrumentation points to the intestinal tract as the source of infection and the circulation as route of infection in most cases.

The development of a urinary infection in the hospital does not necessarily mean that the infection is hospital-acquired. We believe both auto-infection and cross infection occur. An explanation of how this happens has been presented.

Less than 3 per cent of the patients who had urethral instruments passed developed a urinary infection.

Mixed infections were more common in patients treated in a hospital than in outpatients, presumably because the patient in a hospital was exposed to infection from the hospital flora as well as from the flora of the intestinal tract.

Since patients with a positive admission culture were just as likely to develop a urinary infection in the hospital as patients with a negative admission culture, the presence of one pathogen does not prevent the acquisition of another.

An attempt to reduce our infection rate was only partly successful which led us to conclude that in an already "infection conscious" urologic service, the infection rate cannot readily be reduced below a certain point.

By keeping weekly infection reports and ward maps, an increase in the infection rate and any possible cross infections became apparent immediately.

We recommend that all dressing changes be done by a two-man team with gloves and masks.

The indwelling two-way Foley catheter was not as dangerous as we had suspected it would be.

We do not believe the quantitative colony counting of bacteria is of value in the study of the epidemiology of urinary tract infections.

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Mass in neck

Based on etiology, most neck masses can be placed in one of seven categories: (1) inflammatory, (2) developmental, (3) neoplastic, (4) thyroid gland, (5) major salivary gland, (6) constitutional, and (7) traumatic. R. Boles, M.D., writing in a recent issue of the *Journal of the Arkansas Medical Association*, feels that any neck mass should be studied relative to the history of onset, the patient's age, location and physical characteristics of the mass, and any associated regional or generalized lesions or disease. In most cases biopsy should be deferred until after thorough local and systemic study, which may prove the biopsy to be unnecessary or contraindicated.

Inflammatory cervical lymph nodes are probably the most common neck masses seen in children. They are usually preceded by an upper respiratory infection or tonsillitis. Antibiotics are usually effective, but if the nodes break down and suppurate, surgical incision and drainage become necessary. Deep fascial space infections have become rare with the advent of antibiotics, but where such lesions persist, they must be drained surgically. In actinomycosis, the organism invades the neck through a dental operative site, with formation of fistulas and draining sinuses. Treatment is long-term penicillin and surgical drainage.

Brachial cleft cysts, sinuses, and fistulas are caused by embryonic fetal remnants of the fetal branchial cleft apparatus which fail to regress during intrauterine development. The treatment is surgical incision. Lymphangiomas and hemangiomas constitute some of the most common masses of the head and neck in children. They frequently disappear simultaneously and are probably managed best with no treatment. Thyroglossal duct cysts are embryonic rests which may appear at any site. Treatment is by surgical excision and antibiotic therapy. Dermoid cysts and teratomas are rare embryonic nests appearing anywhere in the neck and often containing teeth and hair. Treatment is by surgical excision.

The benign neoplasms causing masses in the neck include lipomas, neuromas, myomas, and carotid body tumors. Surgical incision is often necessary to make sure that these are nonmalignant or large enough to impede food and air passages. Most malignant neoplasms in the neck region are carcinoma metastatic to the cervical lymph nodes. This should not be biopsied until after a thorough search has been made for the primary lesion.

The thyroid gland is a frequent source of neck masses, and its palpation should always be included in a check-up.

The parotid, submaxillary, and sublingual salivary glands may be afflicted with a wide variety of diseases: metabolic, inflammatory, and neoplastic.

Generalized disorders which may appear as neck masses include lymphomas, sarcoidosis, collagen-vascular diseases, and reticuloendotheliosis.

Hematomas, subcutaneous emphysema, foreign bodies, blood vessel injury, and others are the most common neck masses caused by trauma.

Ambulatory Medical Care for Urban Adolescents*

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ABOUT HALF OF the total population of the United States is under twenty-five years of age, and boys and girls aged twelve through twenty years constitute a numerically important segment.[1] These young people, neither children nor adults, hold an ambiguous position in society, reflecting the uncertainties of their rapidly changing physical, emotional, mental, social, and legal status. Doubts about the needs of this critical period of development and how to meet them are shared alike by adolescents, their families, and the communities in which they live. This is particularly evident in the area of health and medical care.

Information about what kinds of difficulties cause young people to seek treatment and where they go for medical care is scarce and poorly documented.[2] Hospital records, generally considered to be a primary source of morbidity and utilization data, are particularly limited in usefulness when applied to adolescents. Traditional pediatric services no longer accept these young people as patients after the age of twelve or thirteen years, and they are lost to identification as a group in adult-oriented clinics. Furthermore, economic criteria largely determine which elements of a population are treated in hospital ambulatory facilities and which can afford private care. Information on young people in the latter group is relatively inaccessible for study. To date, research conducted in public high schools has provided the best documentation on the health of adolescents, although the data lack specificity in relation to medical treatment.[3-5] Findings of the National Health Survey, which is currently examining a cross section of the entire adolescent population in the United States, can be expected to give an over-all perspective on health needs and practices of young people but will miss details of medical care patterns within local communities.

In New York City, general figures from hospital inpatient[6] and outpatient[7] services indicate that older children and youths have relatively low utilization rates as compared with other age groups. It is possible that these young people do not require much medical care, although there is some evidence to dispute this point, especially among disadvantaged youth.[8,9] Perhaps, however, a lack of easily available services, specifically designed to bridge this age span and provide a continuum of attention, deters many adolescents from seeking advice and treatment. No systematically focused attempt has been made to study these issues or to gather even basic social and health information about those young patients who must rely on public facilities for medical care. As a result, very little is known about how adolescents in New York City use the public ambulatory care system that is available or how well existing services are meeting the medical needs of urban youth.

In the spring of 1966, a series of studies was conducted to gather basic information on adolescents who use established health and medical institutions in New York City.[10] The purpose was to arrive at a

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clearer understanding of demographic, medical, and attitudinal factors involved in the adolescent's choice of care and to gain insight into how well the prevailing medical services suit the needs of young people in the city. This has particular pertinence in view of current efforts to reshape ambulatory care programs in the metropolitan area. Although specific to New York City, the findings may also have relevance for physicians and health planners in other urban communities who, because of recent health legislation, have been similarly prompted into a reassessment of patterns of delivery of medical care.

Method of approach

Because of the diversity of public ambulatory services available in New York City and because of the dispersion of adolescent patients during puberty to a variety of medical facilities, three different approaches in data gathering were used. The focus of observation in each, however, was on young people who were attending general ambulatory medical care facilities.

One approach involved analysis of interviews and medical record data on a random sample of more than 300 young people, twelve through twenty years of age, who visited the outpatient departments of all 15 New York City municipal hospitals during the year-long period of 1964 to 1965.[7] Psychiatric and social hygiene clinics were not sampled because some hospitals did not provide these services.

Another approach consisted of a secondary analysis of interview data gathered on about 350 young people who, in 1964, visited the emergency rooms of three voluntary hospitals and one municipal hospital.[11] This was supplemented by information on approximately 475 adolescents on the outpatient clinic rosters of the same institutions.

A third approach involved a survey in all seven adolescent clinics established in New York City since 1956 to provide general medical care specifically for adolescents. Visits and mailed questionnaires were utilized to collect factual and interpretive data.

It was recognized that each of these approaches dealt with a different adolescent population and that the perspective gained was imperfect because not all health parameters or all groups of adolescents could be included. Missing, for example, was health information on young people who were under treatment for certain special problems such as mental illness and venereal disease, adolescents in the community who were nonpatients, and those whose primary source of medical care was a private physician. Nevertheless, the scope of these studies permits the drawing of health profiles for a sizable proportion of New York City's young people, particularly those who depend on public services for their general medical needs. With the continuing movement of low socioeconomic groups into the city, there is every reason to believe that the numbers of adolescents who will need to rely on public resources for care will increase.

Details of the three study designs, including sampling methods and research instruments, have been presented elsewhere.[10] This report pulls together the major findings and discusses their implications. In summarizing the results, special interest is focused on the municipal hospital outpatient survey because the sample selected had city-wide representation, making possible a broad picture of youthful health practices with which to compare other ambulatory care patterns.

Utilization patterns in municipal hospital outpatient clinics

Adolescents aged twelve through twenty years constitute about 12 per cent of the entire New York City population.[12,13] The proportion of this group who turned up in the course of one year as patients in the adult municipal hospital clinics surveyed was 14 per cent. This figure, of course, indicates but a small part of the true demand made by young people in the city for ambulatory services, but it does represent a large group of patients, over 128,000, who for social, financial, and medical reasons sought care during a twelve-month period in the largest municipal hospital system in the United States.

A representative city-wide sample of this cohort of adolescents were found to have a relatively low family socioeconomic level, with a median income after taxes of

TABLE I. Adolescent patients in municipal hospital outpatient departments by ethnic group

Ethnic Group	Adolescent Outpatients (1964 to 1965) Ages Twelve Through Twenty (Per Cent)	New York City Adolescent Population, 1964, Ages Ten Through Nineteen (Per Cent)[13]
White	18.4	65.8
Negro	43.1	22.0
Puerto Rican	36.5	12.2
Other	0.1	...
Not obtained	1.8	...
TOTALS	99.9 (128,742)	100.0 (1,096,500)

TABLE II. Adolescent patients in municipal hospital outpatient departments by place of birth

Place of Birth	Adolescent Outpatients (Per Cent)
United States	67.0
New York City	50.4
Other	16.6
Puerto Rico	25.3
North and South America (Cuba, West Indies, South America)	3.1
Europe, Africa, Asia, other	2.5
Not obtained	2.2
TOTALS	100.1 (128,742)

\$4,103 as compared with the city's figure of \$6,130. Salaries earned by nonwhite and Puerto Rican families in New York City are considerably lower than the over-all city, and it was, therefore, not surprising, that 80 per cent of the young patients were of Puerto Rican or Negro backgrounds. They appeared at the municipal clinics in numbers double and triple their respective proportions in the city-wide population, whereas white youth underutilized the municipal services (Table I). Half of these adolescent outpatients had been born outside New York City, one fourth being native to Puerto Rico (Table II). Still, 80 per cent had resided in the metropolitan area for at least five years.

About 14 per cent of the total municipal hospital outpatient case load consisted of young people twelve through twenty years of age, but they made only 12 per cent of the total number of annual visits to the clinics, averaging 2.6 visits per adolescent as compared with 3 visits for all municipal hospital clinic patients. On the other hand, about 30 per cent of the adolescents had been to another hospital within the previous twelve-month period and about 38 per cent to a private physician. All of this suggests that young people have a substantial number of health problems for which they seek help from a variety of resources, although the over-all level of severity appears to be relatively low.

TABLE III. Adolescent patients in municipal hospital outpatient departments by type of clinic, age, and sex

Type of Clinic	Adolescent Outpatients (Per Cent)	Adolescent Visits (Per Cent)	Visits Per Patient Per Year	Per Cent Distribution of Patients			
				Twelve Through Sixteen Years		Seventeen Through Twenty Years	
				Male	Female	Male	Female
Pre- and postnatal	19.2	25.0	3.35	...	8.3	...	47.9
Medicine	17.1	16.2	2.43	23.8	26.4	12.4	7.8
Surgery	15.8	12.3	2.00	15.2	13.0	46.9	6.5
Dental	15.6	12.7	2.08	20.0	16.7	10.9	13.4
Screening	9.5	6.8	1.85	15.0	14.2	1.9	5.0
Ear, eye, nose, and throat	6.3	6.8	2.77	11.4	5.2	10.2	1.7
Dermatology	5.6	3.9	1.80	3.1	7.6	6.1	5.8
Orthopedics	4.4	5.8	3.42	7.2	4.5	5.1	1.9
Gynecologic and endocrine	4.1	5.2	3.28	...	2.6	...	9.6
Allergy	2.4	5.2	5.42	4.2	1.4	6.5	0.4
TOTALS	100.0 (128,742)	99.9 (330,176)	2.56	99.9 (35,091)	99.9 (30,202)	100.0 (17,247)	100.0 (46,202)

TABLE IV. Adolescent patients and visits in municipal hospital outpatient departments by medical problem, age, and sex

Primary Current Medical Problem[14]	Adolescent Outpatients (Per Cent)	Visits Per Patient Per Year	—Per Cent Distribution of Patients—			
			Twelve Through Sixteen Years		Seventeen Through Twenty Years	
			Male	Female	Male	Female
Pre- and postnatal	20.3	3.28	...	...	...	...
Deliveries and complications of pregnancy, childbirth, and puerperium	0.5	5.16	...	...	...	...
Dental	13.5	1.91	22.5	16.4	6.8	26.1
Injuries and adverse effects of external causes	12.9	1.81	18.6	10.4	25.7	8.9
Skin and cellular tissue	4.9	2.06	8.2	8.4	1.4	5.0
Eye diseases	4.9	2.22	12.0	2.8	7.8	2.7
Allergic, endocrine, metabolic, and nutritional	4.5	3.91	7.4	2.4	5.1	6.1
Respiratory system	3.9	3.17	8.9	2.7	...	4.5
Genitourinary system	3.3	2.55	1.3	0.7	...	15.4
Infective and parasitic	3.1	1.36	2.1	7.2	...	4.5
Circulatory system	2.2	2.71	1.8	1.8	5.4	1.0
Bones and organs of movement	2.1	2.75	0.3	7.5	2.6	...
Nervous system	1.8	2.83	0.3	6.3	...	1.8
Neoplasms	1.5	2.72	...	4.3	...	3.6
Ear diseases	1.1	1.53	...	4.0	...	1.3
Digestive system	0.7	3.72	2.1	...	...	0.3
Congenital malformations	0.4	3.83	...	1.7	0.3	...
Blood and blood-forming organs	0.3	5.81	...	0.7	...	0.8
Mental and psychoneurotic	0.2	3.86	...	...	...	1.3
Special conditions and examinations without sickness*	7.2	2.76	4.0	10.7	23.3	5.4
Symptoms and ill-defined conditions	5.9	2.81	6.3	7.8	7.7	5.4
Not ascertainable	1.6	2.10	1.0	2.1	8.6	...
Not obtained	3.2	1.79	3.0	2.0	5.3	6.0
TOTALS	100.0 (128,742)	2.56	99.8 (35,091)	99.9 (27,600)	100.0 (17,247)	100.1 (21,997)

* Includes follow-up examinations after disease, injury, and operation.

Adolescents were found to be attending a wide range of general and special clinics in the municipal hospitals (Table III). Pre- and postnatal clinics cared for the largest single group, accounting for about one fifth of all the young patients and about one third of the girls. This resulted in a 3:2 predominance of girls over boys in the outpatient departments studied, whereas the adolescent sex ratio in the total city census is about equal. These young pre- and postnatal clinic patients not only consumed the greatest proportion of the total number of adolescent outpatient visits, but also they returned for follow-up and treatment far more frequently than most of the other young patients. Of these girls, 35 per cent were unmarried, a finding which is reflected in the high rate of out-of-wedlock births registered in New York City, particularly in depressed areas and among certain ethnic groups.[15] General medical, surgical, and dental clinics were the second most frequently utilized, each attended by more than 15 per cent of the young people but requiring fewer visits per patient than the annual average. For the younger adolescents, twelve to sixteen years, medical clinics were the primary resources, caring for about one fourth of all the young boys and girls. In contrast, almost half of the older boys, seventeen to twenty years, were seen in surgical clinics, while almost half of the older girls were attending pre- and postnatal clinics.

When pre- and postnatal conditions were excluded from consideration, the influence of age and sex on other types of adolescent health problems was revealed (Table IV). For example, among the young adolescents, more boys and girls were seen for dental conditions than for any other disorders; injuries were the most common cause of surgical problems, especially among the boys; among the medical conditions treated, allergies, respiratory difficulties, and acute infective and parasitic disease were the most frequent. For the older adolescents, particularly the boys, care for surgical problems such as injuries, postoperative check-ups, and other special examinations held first place; dental problems predominated for the girls. A disproportionate number of the seventeen- to twenty-year-old girls suffered from genitourinary disorders, possibly related to pregnancy experiences. In terms of specific conditions, a close correlation was found between the adolescent's perception of his medical problem and the physician's primary current diagnosis, giving credence to the suggestion that at least the older adolescents may be better informed about their health than is commonly believed.[16]

When queried about their reasons for attending a particular municipal hospital, 44 per cent of the unaccompanied adolescents, most of whom were over sixteen years of age, said they had chosen it for its geographic convenience, while financial considerations, family tradition, and advice of others followed in fairly equal distribution. Only one half of these young people would have preferred visiting a private physician if money were of no consideration; most of the others were apparently satisfied to remain under care in the hospital clinic. Over two-thirds favored having all of their medical treatment carried out in a central place such as one hospital, as opposed to several different places.

Other sources of adolescent medical care

Voluntary hospital outpatient clinics. Adolescents who attended the voluntary hospital outpatient clinics appeared to have similar medical problems to those who were treated in the municipal system. Differences in the two patient populations were chiefly demographic. The adolescent in the voluntary hospital outpatient department was somewhat younger than his municipal hospital counterpart, the median age being 14.5 years compared with 16.5. He was more likely to be white than Negro or Puerto Rican, with an annual family income more often over $5,000 than below; it was almost certain that he would have sought some dental care during the previous year. Use of this latter preventive service is considered a fairly good indicator of income level.[17] Furthermore, this dental care was likely to have been under private auspices almost three times as often among voluntary clinic users as among adolescents attending municipal hospital outpatient facilities. These socioeconomic differences are hardly surprising. Application of a means test discourages low-income families from using clinics in the private system, and voluntary hospitals have done little to project a receptive image to disadvantaged families.

Emergency rooms. Adolescents who utilized hospital emergency room services tended to be more affluent, on the average, than their outpatient counterparts in the same hospitals. Not only did emergency room users have generally higher annual family incomes, but they sought care from private physicians and dentists more frequently. More males than females used these facilities, and the median age of the emergency room adolescent was comparable to his voluntary hospital outpatient counterpart. Aside from trauma which accounted for over one third of the emergency room visits, the most common complaints related to ear, nose, and throat disorders; allergic reactions; and skin problems, all requiring fewer subsequent returns for treatment or consultation than the same conditions when seen in the outpatient clinics. The perceived and actual general health status of the young people who came to the emergency room appeared to be better than that of the outpatient population. Ready accessibility, lack of red tape, absence of a means test, a degree of anonymity, and, most important, a twenty-four-hour service, all contributed to the enormous appeal of the hospital emergency unit as a medical resource. Young people of all social levels seem particularly attracted by this service pattern. Within the same hospital, the frequency of adolescent visits to the emergency room was higher than to the outpatient department,

TABLE V. Adolescent clinics in New York City, 1966

Location	Numbers of Two and a Half- to Three-Hour Sessions Per Week	Number of Clinic Visits Per Month	Fee	Diagnoses Ranked by Frequency
Voluntary hospital	1	150	None	Acne, obesity, allergy, emotional
Voluntary hospital	3	90 to 100	None	Emotional; dental, obesity, allergy, and infectious diseases; optometric, menstrual disorders
Voluntary hospital	3	90	Sliding fee, $5.00 initial, $5.00 lab test	Obesity, allergy, acne, emotional
Voluntary hospital	1	50	Sliding fee	Emotional; infectious and dental diseases; menstrual disorders
Voluntary hospital	1	100	Sliding fee	Obesity, acne, emotional and menstrual disorders
Health center	2	135	None	Dental, optometric, and emotional; obesity and acne; menstrual disorders
Health center	1	28	None	Not given

and a large number of adolescents used the emergency unit on a drop-in basis for nonurgent problems.

Adolescent clinics. Adolescent clinics provided still another pattern of ambulatory medical care, offering to limited numbers of young people in New York City a person-oriented health maintenance program as opposed to the condition-focused approach found in traditional outpatient and emergency room services. Here, where personal attention was a major effort, adolescents became willing participants not only in treatment but also in preventive care. Acute and traumatic conditions, however, were rarely seen in these units partly because of the restricted number of hours available for sessions in most of the centers (Table V). Furthermore, young people with certain serious health difficulties such as psychiatric disorders and crippling conditions or those who were pregnant were more often than not referred elsewhere for treatment of their special problems. As a consequence, the medical diagnoses most often mentioned tended to be those common or recurrent conditions frequently associated with adolescence, such as emotional, dental, optometric, nutritional, dermatologic, and gynecologic complaints. Although these highly specialized adolescent clinics help fill existing gaps in medical care services for certain young people, there are far too few of them for the demand, and their case loads tend to be small. Use of a means test in some clinics, especially those located in voluntary hospitals, and preadmission referral and screening procedures in others, reduce free accessibility, restricting both the number and kinds of patients who are registered to manageable proportions in relation to personnel, space, and time available for clinic sessions.

Comment

From the exploratory survey of general ambulatory services in New York City, it appears that urban adolescents, especially those with poor socioeconomic backgrounds, have a wide range of health problems. Most of the problems are acute, short-term, and not serious, but their occurrence is widespread and of sufficient concern to the young people themselves that remedies are sought. The kind of medical care adolescents look for and use tends to be problem-focused and therefore episodic in character. Health maintenance on a continuous basis is not generally practiced by these young people, nor is it offered to them in the disease- and specialty-oriented hospital clinics where most of them are treated. Medical supervision provided in the small number of special adolescent units reaches but a few. Ready accessibility of services, geographic proximity, and confidence in the care rendered all contribute toward the choice and acceptability of a particular facility for bouts of illness.

How does the existing medical care system in New York City answer the needs and expectations of urban youth? The generally positive attitude of the adolescents who attended municipal hospital clinics seems to attest to the adequacy of such care, at least for those who accepted it. However, the questions remain: Is this type of crisis-oriented ambulatory treatment really sufficient? What about the health of those who do not attend these clinics and do not seek medical advice? How useful is periodic health supervision in adolescence, and under what circumstances should it be provided? What arrangements should be made for meeting ambulatory medical care requirements of an expanding low-income adolescent population?

Adolescent clinics operate on the premise that annual health examinations are important, not only for case finding but also as a method of improving health habits and attitudes. These specialized units have, furthermore, contributed substantially in (1) stimulating an awareness and interest among the medical profession to the particular needs of this age group, (2) demonstrating by the provision of well-utilized services that a gap in medical care has existed, (3) showing the importance of a personal approach in delivery of medical services, and (4) promoting the concept of comprehensive medical care. Yet, such units provide an environment which is almost unrealistically insular, representing still another form of medical care fragmentation. It is conceivable that were the same range of services and disciplines offered in a family treatment setting, the adolescent would do just as well in finding an identity not only for himself but with his family and the community in which he lives.

It appears that current medical care practices of a significant proportion of New York City adolescents are determined to a great extent by the type of community services available rather than by specific adolescent needs or preferences. Despite the large number of established health offerings, medical problems of many young people may go unrecognized or unsolved either because ambulatory care based on traditional or obsolete methods of delivery does little to motivate the preventive approach or because the existing facilities fail to provide a satisfactory range of services, a satisfying milieu, or an appropriate method of delivery. The large number of adolescents who use emergency rooms for nonurgent problems presents just one of many arguments for restructuring the method of providing medical care to these young people. In so doing, cognizance now needs to be taken of the expanded role of voluntary hospitals and practicing physicians in providing services to the medically indigent under the State Medicaid law.

Whether medical care and supervision of adolescent health is conducted in age-specific facilities, emergency room ambulatory care units, municipal or voluntary adult outpatient clinics, or private offices is of less importance than making sure that the unique needs of urban young people are recognized and that a full complement of suitable services is offered to them. Physicians and health planners would do well to familiarize themselves with the dynamics of adolescence as well as with the dynamics of the community to assure provision of programs and services appropriate to the demands and requirements of this significant and hitherto medically neglected part of the population.

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Changing concepts of nature of cancer

The traditional concept of cancer, which is difficult to get rid of, includes the notions that it is uniformly progressive in growth, early treatment is essential for cure, its behavior is predictable on the basis of histologic findings, surgery is definitive and there is no hope after recurrence, and metastases mean no hope for successful treatment. J. E. Dunphy, M.D., writing in a recent issue of the *Bulletin of the Mason Clinic*, questions these notions and presents evidence to support his doubts. Future investigation, as well as future therapy, can benefit from the intelligent application of the biologic approach to cancer, which takes into account responses of the host to his neoplasm and the response of the neoplasm to its host. For the future, cancer may come to be regarded as a systemic lesion requiring, for control, more knowledge than is now available.

When cancer recurs as a solitary lesion and whenever the recurrence appears eighteen months or more after the original tumor, there is evidence of host resistance, and a vigorous attack on the solitary lesion is in order.

While it cannot be positively stated that there are spontaneous cures, it appears that there are spontaneous regressions and arrests of carcinoma, even though the tumor eventually recurs. When carcinoma disseminates, it doesn't do it at the same rate. In chemotherapy, long-term improvement is probably caused more by the natural behavior of cancer than the effect of the chemicals. One benefit of chemotherapy, however, has been the necessity of critically following patients for extended periods, revealing more and more of the normal behavior of cancer. It grows in cycles, with periods of expansion, regression, and long-term arrest. The current view is that there is some sort of immune factor; perhaps we all get cancers but build up our own immunity with regression of the tumor before it becomes clinically evident. If this were true, then there would be an optimum time for removing a given tumor when specific antigenic barriers to its spread have been established.

Space Medicine in Education

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There is no darkness but ignorance
—SHAKESPEARE

NOW THAT MAN has proved himself no longer earthbound, indoctrination and enlightenment of all people, young and old, into the spirit of the exploration of the cosmos, is essential. A great deal of groundwork in this direction has already been laid by the printed word in general articles and a plethora of specialized publications since World War II, often effectively spiced with radio and television programs.

At no time since Aristotle's pronouncement, "If human beings could be shaped by their environment, they could change themselves in equal measure by their efforts," have so many people found themselves reexamining their beliefs and re-evaluating their personal lives and ties with their fellow men, individually and collectively. It therefore becomes apparent that some kind of organized teaching program is indicated at all levels of education, beginning with the first school year. And I would like to emphasize at the outset of this presentation the necessity of integrating the basic science courses at the earliest possible school level.

The scientific method is the best system we have to gain unencumbered knowledge of all matters pertaining to man, to the universe, and his relationship to that universe.

As a practicing physician, having an active interest in space medicine since 1931, I would like at this point to underline the importance of medicine and its close relationship to the basic sciences by noting historically several physician scientists with paramedical interests: Pythagoras (mathematics); Empedocles and Democritus (natural philosophy); Avicenna (astronomy, philosophy, and mathematics); Averroës (astronomy, philosophy, and law); Copernicus and Galileo (astronomy); William Gilbert (magnetism); van Helmont (chemistry); Robert Boyle (chemistry, physics, and physiology); Niels Stensen (geology); Thomas Young (optics); John Jeffries (aeronautics); and Boris Yegorov (cosmonautics).

The birth of space medicine, or cosmic medicine, as a composite science of many disciplines, was inevitable.[1] Space medicine might be best defined as "The art and science of the care of life in health and illness beyond the earth." Just as extension of knowledge requires that the geologist become interested in the moon and the planets; the physicist, in the study of the properties and behavior of matter wherever it may be; and the biologist, in the search and study of life anywhere in the universe; the engineer is encountering almost insurmountable problems; the mathematician delights in symbols and equations, and the physician usually waits for progress in the basic physical and natural sciences before he is called on to give his final say. This is understandable because, after all, his is the responsibility for man's health. Wherever man will venture into the universe, near or far, the physician is literally behind him.

In the course of attempting to arouse interest in space medicine, efforts have sometimes been made to present to physicians the benefits to clinical medicine accrued from space-oriented programs. Ordinarily this impresses a lay audience.

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However, the general practitioner and specialist, as for example the New York State group of more than 27,000 physicians who repeatedly have had the opportunity over the last eight years to attend lectures and exhibits conducted by the Medical Society of the State of New York through its Section on Space Medicine, would interpret this approach as bringing owls to Athens or coals to Newcastle. The proper and most successful approach is the presentation of selected areas relevant to the issues of man's health in an alien environment.

Instrumentation

One of the chief attractions in the area of education in astronautics is the field of instrumentation created by science and technology and its appeal to medicine as observed during lectures and exhibits. I do not intend to give a list of medical and biomedical tools used in practice or in the research laboratory, but I would like to draw attention to some of the lesser-known scientific devices that could be incorporated into the making of better and more desirable instruments by heuristic individuals. We have today measuring instruments whose sensitivities are superbly remarkable, to say the least. I would like to mention a few. Commercially available are the following: a chemical balance that registers the difference in weight of two objects when placed one on top of the other and side by side; an instrument that can detect a drop in pressure of a confined gas at the rate of 1 ounce in a hundred years; an ammeter with an accuracy of 10^{-18} watts which, as is claimed, "is less than the power of moonlight on the surface of a virus on a cloudy night;" and a bolometer that can detect infrared rays, equivalent to the heat emitted by a burning candle 5,000 miles distant in space; an instrument that can accurately record switching time variations of a light inch. Vacuum of 10^{-18} Torr, possibly equaling, if not surpassing, by a factor of 100, that which is believed to exist in interstellar space, has been achieved in the laboratory. The wireless transmission of electricity, even though somewhat lacking in efficiency, is already of practical importance. In biochemistry the first man-made protein has been successfully synthesized (Katsoyannis),[2] while the intertransplanting of chicken brains at the embryonic level has been going on for several years (Pavlovic).[3] An electronic microscope is being constructed at Cornell University that will operate at the ultimate level of theoretical resolution, permitting direct observation of atoms within proteins, viruses, enzymes, and other important biologic specimens.

Historic discoveries

A backbone to education is the history of science. It is therefore pertinent to give a few examples of little-known scientific discoveries. The first wireless transmission of body functions (heart) was achieved by a Berlin physician, L. Jacobsohn, M.D., in 1923.[4] A forerunner in the radiographic development technic was Daguerre who patented and ceded to the French Academy of Sciences the photographic process utilizing a silver halide in 1839. However, it was discovered some twenty-four years later that Fabricius had already in 1566 recorded the properties of chloride of silver in relation to light and its photographic action in his *De Rebus Metallicus*. As late as 1873 it was disclosed to the world that a magnifying lens had been uncovered in Nineveh! How would that knowledge have warmed old Aristotle's heart and advanced Leeuwenhoekian observations by some thousand years! While the unaided auditory acuity of the whispered voice has been recorded back to back (Mabaans of Africa) at a distance of 300 feet, a normal phenomenon, man's range of observation of the macrocosm has increased by a factor of ten thousand during the last forty years.[5] It is obvious that the inclusion of all such discoveries into integrated education would have a great stimulating effect.

Future education

Where is education going to lead us, or conversely, how are we to plan for effective liberal education of a comprehensive nature that is needed in medicine or in any other field of endeavor for that matter? The length of the shelves in the British Museum Library in London has been increasing yearly, and the rows of books surpassed 6 miles in 1964. There are 2 million bits of information accumulating at an accelerating pace every second, and these can be easily stored in an existing memory device 6 cubic feet, which is capable of handling all information gathered by man during the last ten thousand years. Complicating the medicosocial problems in education of future generations is the reasonable prediction that at a time, as far ahead as back to Columbus and coinciding with the earth's depletion of the world's supply of fossil fuels, our terrestrial planet will have acquired a density of 6 to 8 million people per square mile with standing room only, all wanting to live, enjoy life, and, above all, be well. A great deal of the burden of maintaining good health will depend on applied medical advances and knowledge. And as a matter of comparison, there is the population problem of Hong Kong, already surpassing 1 million souls per square mile. All this sounds quite absurd to us today. However, man has and will continue to adapt himself to accelerating revolutions since he has no desire to perish. His entry into cosmic space has already been achieved.

Training

Formal training in the medical profession is long and tedious in any country. In fact, it is the longest and most tedious of all professions. In the United States preparation for a medical career usually requires ten to fifteen years after high school to the beginning of a general or specialty practice. Besides, the physician is constantly studying man with his tools, making observations, and always learning from him. By virtue of its own nature, the practice of medicine has been leaning on the physical and natural sciences from pre-Hippocratic times.

The National Aeronautics and Space Administration is supporting a large number of universities with research life science programs besides its own space bioscience activities. Furthermore, there are 8 institutions, 5 civilian and 3 military, offering courses in aerospace medicine ranging from a total of fifteen to forty hours per academic year. These are the University of California School of Medicine, San Francisco, California; Georgetown University School of Medicine, Washington, D.C.; University of Kansas School of Medicine, Kansas City, Kansas; Ohio State University College of Medicine, Columbus, Ohio; Jefferson Medical College, Philadelphia, Pennsylvania; Armed Forces Institute of Pathology, Washington, D.C.; Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas; and United States Air Force School of Aerospace Medicine, San Antonio, Texas.

Aside from these, there is an increasing number of universities that have embraced the spirit of the exploration of the cosmos seriously enough to do something about it within their built-in curriculums.

The Association of American Medical Colleges is encouraging universities to adopt programs in medicine that require medical training outside the traditional boundaries of classical physician education.

Thus, at the University of California (Berkeley), a biochemical engineering program is being set up at the College of Engineering to qualify undergraduate students for direct admission to medical schools.

The University of Michigan has, in effect, a department of aerospace offering bioengineering courses in conjunction with the School of Medicine leading in three years to a Master's degree in bioengineering. Astronauts McDivitt and White received honorary degrees in astronautics at the University of Michigan following their successful GT-4 flight.

An encouraging arrangement has recently been initiated at Albany Medical College of Union University in conjunction with nearby Rensselaer Polytechnic Institute, whereby, after graduation from high school, a qualifying student is able to enter the biomedical program promising a Bachelor of Science degree after two years at the technical school and a Doctor of Medicine degree following the next four years at the medical college. During the summer months, courses in humanities, mathematics, and a research project are programmed. Thus, not only is the traditional split in the United States between premedical and medical school training eliminated and the classical eight-year college and medical school training shortened by two years, but also more vital training is acquired through a continuum of courses in biology, chemistry, physics, genetics, mathematics, physical and organic chemistry, the humanities, and a foreign language. Without interruption, studies in these basic

TABLE I. New medical schools, starting date, and enrollment[3]

School	Years of School	Starting Date	Maximum Enrollment
University of Arizona School of Medicine, Tucson, Arizona	4	Fall, 1967	64
Brown University, Program in Medical Science, Providence, Rhode Island	2	Fall, 1963	50
University of California School of Medicine, Davis, California	2	To be announced	To be announced
University of Connecticut School of Medicine, Hartford, Connecticut	4	Fall, 1968	64
University of California School of Medicine, San Diego, California	4	Fall, 1968	96
University of Hawaii School of Biomedical Sciences, Honolulu, Hawaii	2	To be announced	50
Pennsylvania State University, Milton S. Hershey Medical School, Hershey, Pennsylvania	4	Fall, 1967	64
University of Massachusetts School of Medicine, Amherst, Massachusetts	4	To be announced	100
Michigan State University College of Human Medicine, East Lansing, Michigan	2	To be announced	50
Mount Sinai School of Medicine, New York City, New York	4	Fall, 1969	100
University of New Mexico School of Medicine, Albuquerque, New Mexico	2	Fall, 1964	48
Rutgers University, Rutgers Medical School, New Brunswick, New Jersey	2	Fall, 1966	64
University of Texas South Texas Medical School, San Antonio, Texas	4	Fall, 1967	100
University of Toledo College of Medicine, Toledo, Ohio	7	To be announced	96

courses flow over into the beginning of the medical training in the third year while the fourth and fifth summers are utilized by participation in the research project. A history of science course is also included in lieu of astronomy.

A course which might be called bioastronomy and cosmology could be properly blended in a new medical curriculum, for the budding physician is soon to learn that he is made up of the same material as the stars. In my opinion both courses are necessary and should be mandatory in any preparation for an all-round career of the future. Dictated by the inter- and multidisciplinary needs of today's medical education, the marriage of a technical institute and a medical school appears very promising.

Additional institutions with biomedical engineering courses are: *[6]

Johns Hopkins University
Marquette University of Medicine
Baylor University
Rose Polytechnic Institute
University of Minnesota
University of Michigan
Syracuse University
University of Vermont
Polytechnic Institute of Brooklyn
Northeastern University
University of Toronto
University of Saskatchewan
University of Western Ontario
Boston University
Vanderbuilt University
University of Wyoming
University of Nebraska
University of Oklahoma
University of Wisconsin
University of Virginia
University of California at San Francisco
University of California at Berkeley
Clemson Agricultural College
Chicago Medical School
State University of Iowa
Purdue University
University of Florida

Additional schools offering these courses are listed in Table I, giving number of years of schooling, starting date, and maximum enrollment.

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* As this article goes to press, there has been a continued permeation of space medicine, in forms of biomedicine, biotechnology, bioengineering, and so on, in old as well as in newly established institutions of learning—universities, medical schools, colleges, and technical institutions in every state of the Union and in about 50 countries throughout the world. Even high schools and schools down to the grammar school level are reflecting some of the recently acquired knowledge of the exploration of space. A detailed statistical breakdown is not available at this time.

Educational programs

There is a military training program in aerospace medicine to certify specialists in this field by the American Board of Preventive Medicine. This is open to those interested in schools of public health, United States military service, or other government agencies and is certain to have great appeal among career officers. It thus appears that for those physicians who are to be deployed in military service and government agencies, training in aerospace medicine is adequately provided. Most important is the training of the civilian medical profession that forms the bulk of a nation's Hippocratic body.

New York State has been considered the "cradle of learning" in the United States if not in the entire Western Hemisphere. Since 1948 the State University of New York has created a vast assemblage of higher educational institutions and was the first in the country to introduce a state-supported system of higher education. This system consists of some 60 units including 18 four-year State colleges, 6 two-year colleges, 28 locally sponsored community colleges, and 4 university centers, three absorbed from existing institutions, namely, Buffalo, Albany, and Harpur into the State system. The fourth is Stony Brook. Stony Brook is a brand new university center starting from scratch. The intensified efforts that have been exerted thus far promise a "crowning jewel" in the American system of education for the next generation. Along with the vast medical complex already under way to include a medical school and associated hospitals, there are, in addition, planned such innovations as a two-stage Van de Graff particle accelerator to produce 15-mev. protons and 22.5-mev. alpha particles. Chairs, Albert Einstein for science and Schweitzer for humanities, with commitments of acceptance to the faculty of such scholars as Yang (physics), Kazan (English), Dirac (mathematics), and many others, will undoubtedly increase the present enrollment of 1,789 students to an estimated 10,000 by the end of this decade.[7] In addition, an ambitious marine biology program and a costly fine arts complex are under consideration. Special attention is being given to the earth and space science departments which alone will occupy a $4.8 million building. The State University of New York at Stony Brook will not depend on, but will complement, both existing and planned nuclear laboratories at Brookhaven National Laboratory. As a result of this integrated academic life on the campus, the student is exposed to continuous contact with various departments. "Otherwise," quoting Dr. John S. Toll, President of the State University of New York at Stony Brook, "they go off into their own specialties and lose sight of each other."

A positive indication of the growing awareness for the necessity of the integration of medicine and the sciences was the publication of three separate articles in a 1965 issue of the *Journal of the American Medical Association*, each on a different phase of this very subject.[8-11]

Admittedly, it is difficult now to present an ideal over-all blueprint for medical education under the impact of space exploration on society. For so much depends on the social structure of a nation, its economic status, its geographic location and the favorable proximity of its schools to research installations and facilities, private versus government funding, political trends, density of surrounding population, selfless dedication in leadership, long periods of peace, and so on.

In a general and specific sense, the preparatory integration of the subject matter covering medicine, science, technology, and the humanities leading to professional careers is necessary in the formative years so that such professions better understand each other. Above all, for the student the most inspiring teacher is the "integrated" teacher. The past president of the British Association for the Advancement of Science, Lord Brain, has re-emphasized the great need throughout the world for the generalist. The Space Age offers just that opportunity.

Conclusion

Knowledge is accumulating at such a rapid pace that its compilation into school textbooks suffers great delays. Thus there is no satisfactory textbook in physics, biology, or physiology printed in the United States covering weightlessness or the behavior of matter in high vacuum, recognizing, of course, the fact that studies in these fields are in their embryonic state of development. The misapplication of basic rules or laws has led to misinformation of the public. For example, it has come to my attention that three dictionaries in the English language with wide circulation illustrating man high jumping on the planets furnish erroneous figures on clearing the bar. It is also astounding that the great majority of high school as well as college students and many a scientist, to my surprise, are not aware that a lit cigaret, when placed on an ash tray, becomes extinguished even in an environment of 100 per cent oxygen under conditions of weightlessness. This principle has great implications for man who is an open thermodynamic system giving off as well as receiving energy.

The time has arrived when the philosophy that the future of man includes realms beyond the earth is no longer considered fantastic. It is now everyone's concern. There is even a Lusaka Astronautical Society in Zambia!

As principles of today become prejudices of tomorrow, man will face a thousand self-appointed guardians who will defend the past. Dogma is rampant, truth elusive. Bold investigators and free thinkers, usually the heretics of the present time, often become the heroes of tomorrow, who in turn may be regarded with skepticism or even superstition by the more enlightened progeny of generations in the after-tomorrow.

In the light of our evolutionary development, then, the need of the indoctrination of the medical student and the physician in the exploration of the cosmos is gaining increasing recognition. It still needs encouragement. This attitude will affect the present current of the space sciences and in turn be influenced by them and together with the humanities will fulfill a primary need in general education of future generations for the benefit of the human race, thereby affirming the trust of Protagoras: Man is the measure of all things.

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Long-term "cold" and coffee drinking

A patient in Chicago, complaining about a chronic six-month cold, suffered from low-grade fever, chills, lack of sleep, irritability, and a 20-pound weight loss. After examination, the trouble was traced to too much coffee—15 to 18 cups per day.

H. A. Reimann, M.D., writing of this case in a recent issue of *J.A.M.A.*, stated that in addition to coffee, other items such as tea, dentifrices, and peanuts contain chemicals called xanthine alkaloids which, if ingested excessively, cause symptoms which mimic the common cold.

A cup of coffee contains about one-tenth gram of caffeine. A single 1-Gm. dose of caffeine causes mental confusion, shivering, tremors, vomiting, and diarrhea. Ten grams of caffeine are said to be fatal. The patient also smoked more than a pack of cigarets per day and took sleeping pills regularly. The nicotine and drugs also may have affected her reactions to the caffeine.

It was further stated that often the cause of an illness is overlooked unless a patient's habits are discovered. Reactions to caffeine are influenced by a person's age, emotional state, or other idiosyncrasies. Its effect is variable, often being opposite in different types of people.

Caffeinism is prevalent among night workers, actresses, long-distance drivers, and others. The removal of the cause is the only cure.

Radioisotope Encephalography

IN THE DETECTION *and diagnosis of brain tumors cerebrovascular lesions, intracranial infection and complications of head injuries, brain scanning complements such neurologic diagnostic methods as history and physical findings, radiography, electroencephalography, and echoencephalography. Brain scan indicates the site since the lesion concentrates the isotope, and the findings may also give pointers to the nature of the lesion. As compared with angiography and pneumography, scanning is ■ preferable initial test, particularly when there is increased intracranial pressure, the patient is frail, or vascular disease adds to the hazards of angiography.*

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BRAIN SCANNING HAD its inception twenty years ago with the demonstration by Moore[1] that certain brain tumors were capable of selectively taking up radioactive fluorescein and of being detected by this means by extracranial instruments. The introduction of a moving detector in 1950[2] and of a photoscanner in 1957[3] greatly facilitated and improved the procedure. Since then many technical difficulties have been resolved, and brain scanning has become a largely automated procedure capable of being carried out by a trained technician. Its use in large numbers of patients has permitted its evaluation in the diagnosis of a variety of intracranial lesions, and it is now accepted as a simple, painless, and (within limits) safe diagnostic procedure of value in its own right and with complementary value to longer-established diagnostic studies.

Various isotopes have been employed such as radioactive iodine, mercury, technetium, gallium, copper, and arsenic. The merit of a given radiopharmaceutical relates to its capacity, among other things, for differential concentration between normal and abnormal tissue. The interpretation of brain scanning is, however, still hampered by our ignorance of the physicochemical processes involved. These, indeed, may be various and differ for healthy and abnormal brain tissue and for different pharmaceuticals. Areas of greater uptake may represent tissue of greater metabolic turnover, reflect changes in the blood-brain barrier, or be related to tissue vascularity.

Isotopes commonly used

A number of isotopes are in common current use in brain scanning (Table I). The intravenous dose, half-life, and radiation dosage to whole body and the organ showing maximum concentration, the so-called critical organ, are tabulated. Because of its physical characteristics, short half-life, low gamma energy emission, and absence of beta radiation, Tc^{99m} can be administered in a very large dose, permitting marked shortening of the scanning time and a very low radiation dosage to the patient. Similarly, Hg^{197} gives a lower radiation dosage to the patient, and the kidneys in particular, than Hg^{203}. In our hands, Hg^{203} chlormerodrin has proved to be the most accurate and practical radioisotope in brain scanning.

Technic

The basic technic consists in the intravenous administration of the isotope and

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TABLE I. Radioisotopes—usual adult dosage and calculated radiation hazards

Agent	Half-Life	Intravenous Dose	—Radiation Dose (Rads)— Total Body	Critical Organ
Iodine-131 albumin	8 days	375 microcuries	0.4	2 (blood)
Mercury-203 chlormerodrin	48 days	700 microcuries	0.18	165 (kidney)
Mercury-197 chlormerodrin	65 hours	700 microcuries	0.08	13 (kidney)
Technetium-99_m pertechnetate	6 hours	10 millicuries	0.13	2 to 1 (large bowel)

subsequent anterior, posterior, and lateral scanning of the head. The premedication and interval between injection and scanning varies with the isotope employed. With I^{131} and Tc^{99m}, the thyroid gland must be saturated with stable iodine, for instance, Lugol's solution, 10 drops three times a day, the day before and two to seven days after injection of the isotope to avoid excessive accumulation of the radioactive material within the thyroid gland. With radiomercury, the kidneys are "blocked" the day before injection with stable mercury in the form of nonradioactive meralluride (Mercuhydrin) in a dose of 1 ml. intramuscularly. With radioiodinated human serum albumin, scanning is carried out twenty-four, forty-eight, and seventy-two hours after injection. With radiomercury, a single scan is done three to five hours after injection. With Tc^{99m} the interval can be reduced to an hour or less.

Scanners

The rectilinear photoscanner in common use at present is essentially a scintillation detector which records the radioactive gamma emissions on an x-ray film as a dot of light whose intensity varies with that of the local radioactivity. Instrumental refinements such as focusing collimators allow improved resolution.

Scanning time can be shortened by a higher dose of isotope, permissible when short-lived isotopes are used, by increasing the crystal size of the detector, and by use of so-called scintillation cameras which view a large area at one time.

Contraindications

The only absolute contraindication to a brain scan is sensitivity on the part of the patient to the isotope. Radiation dosage must be kept to a minimum, particularly in childhood, pregnancy, and in the case of repeated scans. If a photoscanner is used, a good scan is not feasible in a patient who cannot or will not remain still for the thirty to forty-five minutes required for each of the views; in an emergency the clinician may be unwilling to wait the five hours

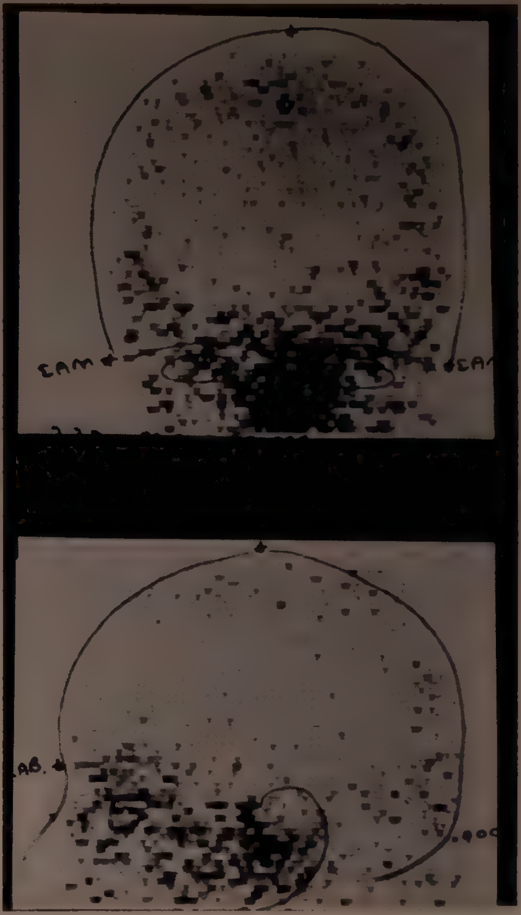

FIGURE 1. Normal Hg^{203} chlormerodrin anterior (upper) and left lateral (lower) brain scan of fifty-seven-year-old man. Note peripheral "halo" of radioactivity in scalp, cranial vault, and meningeal and cortical blood vessels. Muscles and other tissues of face and neck show homogeneous activity.

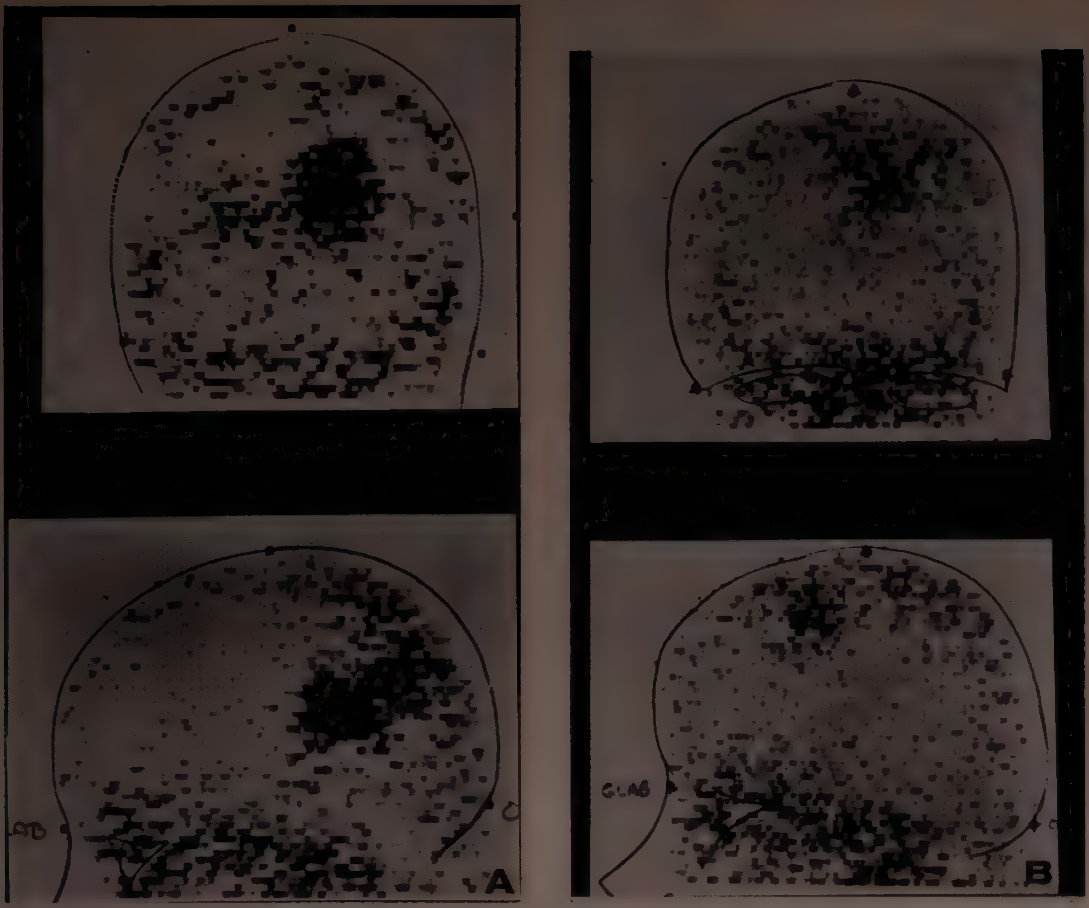

FIGURE 2. (A) Left posterior parietal glioblastoma with extension to opposite side by infiltration through corpus callosum in fifty-three-year-old man. Six months earlier, tumor much smaller and limited to left side. (B) Left posterior frontal parasagittal meningioma in fifty-six-year-old woman with recent onset of right-sided focal seizures. (Hg^{203} chlormerodrin)

necessary to complete the study: three hours waiting after the injection and two hours to scan.

Indications

Although originally developed for the diagnosis and localization of brain tumors, brain scanning has been found to have value in a large number of nonneoplastic intracranial lesions.

Normal scan

In the normal scan there is a circumferential rim of increased radioactivity related to scalp, calvaria, and vascular channels such as the superior longitudinal and lateral sinuses and the confluence of sinuses; the eyes and the mucosa of the nose and of the nasal and mastoid sinuses; and the temporal and suboccipital muscles (Fig. 1). The localizing landmarks in brain scanning are the convexity dura, falx, tentorium, and corpus callosum.[4]

Abnormal scan

External scanning of the head has proved of chief value in the diagnosis of brain tumors and of vascular, traumatic, and inflammatory lesions.

Areas of abnormal uptake must be studied as to their site, shape, size, relative density in relation to surrounding brain, homogeneity, and, in certain instances, rate of evolution both as regards appearance and fading

A "positive" brain scan has a high degree of pathologic reliability; a negative scan does not exclude organic intracranial disease.

In brain scanning, it is the foci of increased uptake that usually have pathologic significance; occasionally, however, areas of impaired isotope concentration may have significance and indicate, for instance, the enlarged ventricles of hydrocephalus.

From a technical viewpoint, the lesion must be of a certain size, roughly 2 cm., to be detected on the ordinary scan. Lesions at the base of the skull or in the posterior fossa, unless they accept the isotope avidly, may be obscured by the radioactive concentration in the nasal passages, mastoid cells, and overlying muscles.

Tumors. Brain scanning finds its chief usefulness in the detection of intracranial tumors. Certain tumor types are more readily demonstrable by brain scanning than others: glioblastoma multiforme, meningioma, and metastasis, provided they meet the criterion of size. The slow-growing meningiomas, except those in the parasellar region which tend to produce signs early, have usually achieved considerable size before producing clinical disturbances and are, for that reason, almost invariably obvious.

Slow-growing astrocytomas often show poor uptake. Other tumors not readily detectable by means of scanning, either because of small size or morphology, are pituitary adenomas, colloid cyst of the third ventricle, acoustic neuromas, pinealomas, and epidermoid cysts. Certain cystic tumors may, contrary to expectation, be demonstrable.

The diagnosis of tumors on or near the base of the skull is especially difficult because of their lack of separation from normal areas of increased uptake. Tomographic scanning, described by Kuhl and Edwards,[5] can help overcome this problem.

Refinement may also be added by serial studies demonstrating the rate of evolution of the radioactive uptake. Thus Planiol[6] has found that meningiomas take up isotope faster than astrocytomas and these in turn faster than metastases. Similarly, Schlesinger, Deboves, and Taveras[7] found that meningiomas are more apparent up to twenty-four hours after intravenous radioiodine-labeled human serum albumin, and glioblastomas are best seen between twenty-four and forty-eight hours.

The site may afford a clue as to the type of tumor. Thus a lesion involving the frontoparietal region on the lateral scan and showing a butterfly shape on anterior scan with involvement of the region of the corpus callosum is likely to be the highly malignant glioblastoma multiforme (Fig. 2A). Meningiomas, on the other hand, are likely to involve the convexity dura, falx, tentorium, or the region of the dural sinuses; some may transgress the midline. Thus a far frontal tumor, where the cerebral hemispheres are separate, straddling the midline, is likely to be a meningioma (Fig. 2B). With evidence on the chest radiograph indicating or suggesting a bronchial carcinoma, a single lesion in the brain is likely to be metastatic; even in the absence of chest findings, multiple intracranial lesions are likely to represent metastases, although on occasion other tumors such as meningiomas may be multiple.

Vascular lesions. Brain scans may show abnormalities related both to infarcts and hematomas. The scan will not, however, differentiate thrombosis, embolism, and hemorrhage.

After a vascular accident, the scan tends to become positive in three to six days, to reach its maximum in ten to fourteen days, and to revert to normal in from forty to eighty days.[8] Hence, roughly speaking, it is best to do the scan after the fifth and before the twenty-fifth day of the illness. The intensity of the uptake is proportional to the severity of the symptoms and also correlates with the degree of residual disability. A negative scan with infarct may be due to the smallness of the lesion, or, what may be the same thing, to its affecting the brain stem or internal capsule, or to the clinical disturbance being the result of vascular insufficiency rather than infarction. Aneurysms and arteriovenous abnormalities may occasionally be detected if large. Subdural hematomas will be discussed later.

The salient differential points between infarct and tumor relate to the position and shape of the area of uptake (Fig. 3). Characteristically, the infarct is triangular and falls in the supply area of a single artery, the middle cerebral artery being the one most commonly affected, whereas tumors tend to be in the sites and of the shapes already discussed. Focal hyperactivity caused by infarct is said to be less

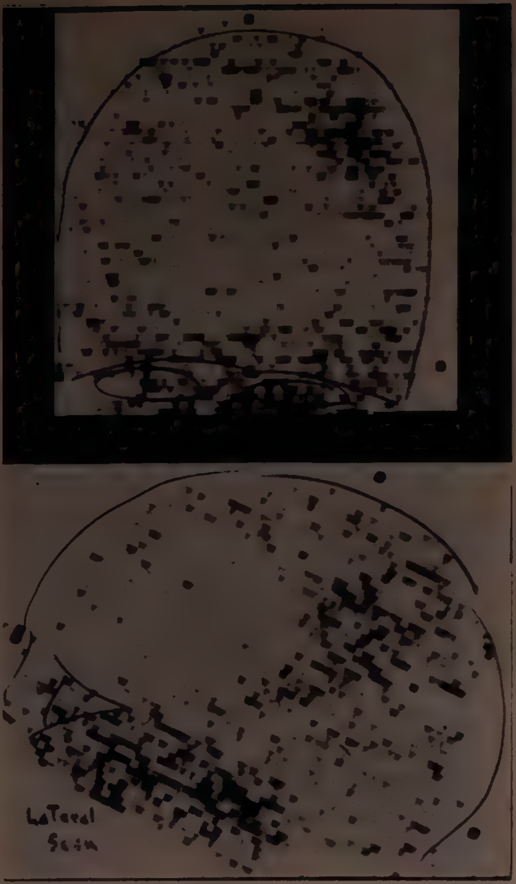

FIGURE 3. Left parietal infarct in sixty-two-year-old man with onset of right hemiparesis and aphasia few days earlier. Carotid arteriogram showed occlusion of left middle cerebral artery just distal to origin of its ascending frontoparietal branch. This is classical "pie-shaped" infarct, peripherally located on anterior (upper) scan, corresponding to size and shape of area of brain supplied by occluded vessel (Hg^{203} chlormerodrin).

intense and less homogeneous than in glioma,[9] but such findings are not specific and must be interpreted in relation to the clinical history and the results of other special tests.

Traumatic lesions. Lesions of traumatic origin which lend themselves to diagnosis by brain scanning include intracerebral hematoma, cerebral contusion, and subdural hematoma. Intracerebral hematoma and contusion may be indistinguishable from tumor on the basis of the scan alone.

Subdural hematoma often produces a characteristic pattern, a unilateral or bilateral crescentic uptake adjacent to the vault in the anterior scan and what may appear to be a normal lateral scan. But a similar picture on one or both sides may be found from scalp laceration or contusion, osteitis deformans or metastasis affecting the calvaria, meningeal inflammation, and occasional cerebral infarct. Generally speaking, in anterior brain scanning any asymmetry of uptake on the two sides is usually recognized; corollary-wise, with bilateral subdural hematomas, the more symmetrical the abnormalities, the less obvious may be their recognition. In an old enfeebled patient, brain scanning may be the simplest and safest means of diagnosing a subdural hematoma (Fig. 4).

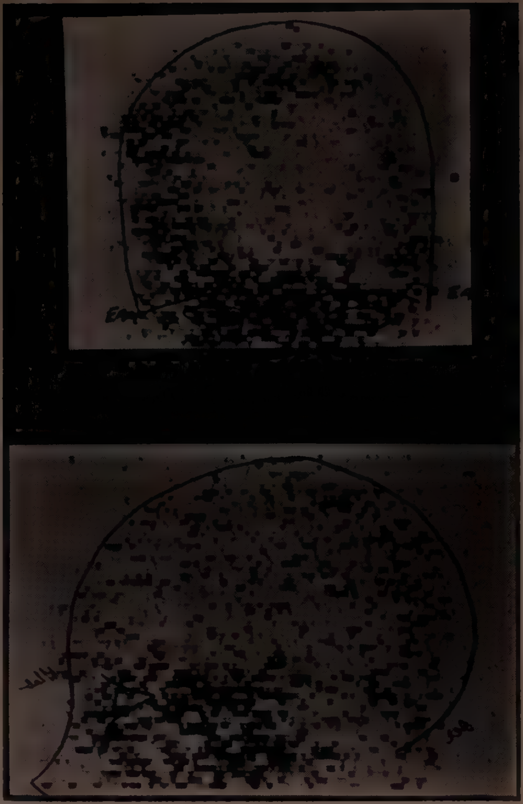

FIGURE 4. Hg^{203} chlormerodrin brain scan, showing chronic subdural hematoma on right side in eighty-three-year-old man who was seen with recent onset of confusion and lethargy. No history of injury available. Diagnosis by brain scan obviated necessity for cerebral angiography in this instance.

Inflammatory lesions. The now uncommon brain abscess is readily evident on scanning, but it may be two or three weeks after the onset of the infection before the scan shows positive findings. These may remain positive for a long time, for example, six months after excision of an encapsulated abscess. Intracranial granulomas may also be detected.[10] With encephalitis, meningitis, mastoiditis, and sinusitis, the scan results tend to be negative or equivocal.

False positive and negative results

With technics in current routine use, brain scans are not rarely "equivocal" and involve more than the usual subjectivity in their appraisal, with the inevitable result that misinterpretations occur in both directions.

The subject of false negative findings has already been alluded to: A lesion may be so small or of such a nature or in such a site as not to be demonstrable. Time factors may play a role in whether or not vascular and inflammatory lesions are revealed. In the differential diagnosis of vascular accident and tumor, a scan done soon after the illness declares itself is more likely to show negative findings that become positive on repeat after ten days or so with a vascular lesion than with a tumor. Similarly, a scan initially positive is more likely to become negative after an interval with a vascular lesion than with a tumor.

False positive findings are difficult to explain. When the abnormal uptake appears definite, "undiagnosed positive" would be a preferable term, since the attribution "false" tends merely to indicate that other special tests have failed to reveal the lesion. In such circumstances it must be remembered that the scan had been requested because of clinical suspicion of an intracranial lesion, and for certain types of lesions scanning may be more sensitive than, for instance, angiography or pneumography. In such cases, time may prove the scan in question to have been "true positive."

Comparison with other tests

The time-honored approach to neurologic diagnosis is to gain what information is possible from the history and physical findings and to proceed thereafter to such simple and safe tests as can be done in the outpatient department or at the bedside: plain radiography of the skull and, particularly in cases of suspected brain tumor, of the chest; electroencephalography; and echoencephalography. These various tests are not alternatives but complement each other. Plain x-ray films of the skull may demonstrate such intracranial lesions as are associated with bony or calcific changes. Echoencephalography has its main value in the diagnosis of tumors and depends on shifts of structures, such as those of the midline, from which ultrasound is reflected. Electroencephalography yields for the most part, with the notable exception of epileptic lesions, nonspecific information: It may lateralize or localize a destructive lesion and provide evidence of diffuse brain destruction. Brain scan can also be done if need be on an outpatient basis. It may complement these other tests when they give positive findings and yield independently valuable information when the results are negative. It has been claimed that electroencephalography together with plain skull radiography and brain scanning fails to show an abnormality in only 5 per cent of cases proved to have an intracranial tumor.[11]

Brain scanning has also value in relation to the major neurologic studies of pneumography and angiography. In principle, pneumography and angiography depend respectively on the ventricular and subarachnoid space and the intracranial arteries and veins, having a "normal" pattern, departure from which spells disease. Such departures have, for the most part, localizing value, but the findings may also give pointers to the nature of the lesion. Thus pneumography may permit the diagnosis of colloid cyst of the third ventricle; and angiography, because of the nature of abnormal blood vessels, permits a diagnosis of glioblastoma multiforme or metastatic tumor.

Whereas in pneumography and angiography the indication of the site and size of a lesion is commonly indirect, from shift of normal structures, the evidence from brain scan is direct in that the lesion itself concentrates the isotope. A positive brain scan result in, for instance, a case of suspected tumor, is an excellent pointer to the surgeon of the best site for bur holes.

In the case of malignant gliomas which infiltrate the brain tissue, both pneumography and angiography may be negative in the early stages, whereas a scan may be positive, and, as already mentioned, the position and shape of the lesion may strongly suggest the tumor type. In cases of glioblastoma multiforme, brain biopsy may lead to rapid deterioration in the patient, a sequence which may be averted if the findings on scan point unequivocally to the diagnosis.

In brief, angiography, pneumography, and scanning have all their merits and shortcomings. Angiography carries a small but definite risk; pneumoencephalography entails much discomfort, disadvantages which are not found with scanning. Scanning is obviously the preferable initial test of the three, particularly so when there is increased intracranial pressure, the patient is frail, or vascular disease adds to the hazards of angiography.

Summary

Brain scanning has proved useful in the detection and diagnosis of brain tumors, cerebrovascular lesions, intracranial infection, and the complications of head injuries. Indications for its use and its merits and shortcomings are outlined. It complements and supplements longer-established diagnostic methods rather than replacing them.

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Longevity of Presidents

A study by the Metropolitan Life Insurance Company sheds some interesting light on the question of the longevity of our Presidents by comparing it with that of their running mates and the unsuccessful Presidential candidates for office.

Our Presidents, coming mainly from the more favored segments of our society, usually have been vigorous. Nevertheless, their average duration of life after taking office has been shorter than might have been expected from mortality conditions prevailing at the time of their inaugurations.

Firm conclusions on this score are not possible inasmuch as our deceased Presidents number only 32.

The 28 deceased Presidents who died natural deaths, excluding those who were assassinated, lived an average of 70.7 years, or about three tenths of a year longer than the average years lived by the 24 deceased vice-presidents, and about six tenths of a year longer than the 40 deceased unsuccessful candidates.

The Presidents who died natural deaths lived about 1.5 years less than expected. In this respect, they fared somewhat better than the vice-presidents or the unsuccessful candidates, who fell short of their life expectations by about 2.6 and 2.2 years, respectively.

When the four assassinated Presidents are included, however, the average length of life of all our 32 deceased Presidents turns out to be 68.5 years, which is approximately 3.6 years below their average expectation of life at inauguration.

Our longest-lived Presidents so far have been John Adams and Herbert Hoover, each of whom died at ninety. Adams, sixty-one when he took office, lived about sixteen years beyond his expectation of life at that time. Hoover took office at fifty-four and lived about seventeen years beyond such expectation of life. Our shortest-lived Presidents were John F. Kennedy who died at age forty-six and James A. Garfield, at forty-nine, both men at the hands of assassins.

Anesthetic Management of Hypophysectomy*

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HYPOPHYSECTOMY HAS BEEN performed on patients suffering from advanced breast cancer with metastases,[1-3] diabetic retinopathy,[4,5] hypertension,[6] prostatic carcinoma,[6] chorio-epithelioma,[6] and malignant exophthalmos[7] as well as those with pituitary tumors. The surgical technic involves either a craniotomy[8]; a transsphenoidal,[5] transantral, or transethmoidal[1] approach; or trocar implantation of yttrium-90.[9,10]

Following hypophysectomy, endocrine function is greatly disrupted and unless strict attention is paid to the careful immediate and long-range postoperative medical management, the advantage gained by difficult surgery can suddenly be lost.

The first part of this report is a review of the anesthetic management of all patients who underwent hypophysectomy at the Columbia-Presbyterian Medical Center between 1960 and 1965. The second part is a brief discussion of endocrine factors of interest to clinical anesthesiologists who may be called to manage such cases.

Patient material

Thirty-two operations were performed at the Medical Center. The youngest patient was a fourteen-year-old boy with a craniopharyngioma and the oldest was a sixty-seven-year-old man with acromegaly. Most of the patients were females forty to fifty-five years of age. Hypophysectomy was accomplished in 15 patients for advanced carcinoma of the breast with metastasis, in 11 patients for chromophobe adenoma of the pituitary, and in 6 patients for craniopharyngioma. The pituitary was approached via a frontotemporal craniotomy in 17 cases and via a transnasal route in 15.

Four attending anesthesiologists supervised the conduct of the anesthesia which was administered by residents. Great variation was found in the selection of premedication, anesthetic agents, muscle relaxants, and use of blood and other intravenous fluids, as well as monitoring devices. However, care was taken to adhere to the basic principles of neurosurgical anesthesia.[11] These consist of (1) perfect airway with minimal resistance, (2) light general anesthesia without coughing or straining, (3) adequate ventilation, (4) nonflammable and nonexplosive anesthetic agents, and (5) a speedy return to consciousness at the end of the surgical procedure.

The average patient was prepared for surgery with 100 mg. of cortisone acetate intramuscularly the evening before surgery. Premedication usually consisted of secobarbital 100 mg., meperidine hydrochloride 50 mg., scopolamine 0.5 mg., and cortisone acetate 100 mg. administered intramuscularly one to one and a half hours before the induction of anesthesia. The dosage of each drug was determined individually, and the barbiturate and/or narcotic was omitted when necessary.

Anesthesia was induced in all patients but 1 with intermittent injection of $2^1/_2$ per cent thiopental sodium, 50 to 500 mg., and intubation, usually with a cuffed wire spiral endotracheal tube facilitated with a single dose of succinylcholine chloride, 50 to 100 mg.

All patients received a combination of nitrous oxide and oxygen during maintenance, supplemented either with halothane (23 cases), a thiopental sodium (maximum dose 625 mg.)-meperidine hydrochloride (maximum dose 300 mg.) combination (7 cases), or trichloroethylene (Trilene) (2 cases).

Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Anesthesiology, February 14, 1967.

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Craniotomy

The mean operating time for frontoparietal craniotomy was seven and a quarter hours with a range of five to nine and a half hours. An automatic ventilator set to deliver a tidal volume between 100 and 125 per cent of that predicted by the Radford nomogram was used in all cases.[12,13] In the more recent cases, adequacy of ventilation was assessed by measurement of arterial blood gases. Fourteen of the 17 patients treated by craniotomy received urea intravenously, approximately 0.6 Gm. per kilogram of body weight to reduce brain volume to improve operating conditions.[14] Moderate hypothermia to a minimum temperature of 29 C. was provided on three occasions by a surface-cooling mattress. Since 1963 hypothermia has not been used for hypophysectomy. Curare was used nine times (average dose 30 mg. with a range of 15 to 69 mg.) to reduce shivering, ease automatic ventilator control, and prevent movement during light anesthesia. Those patients operated on since 1963 had blood pressure monitored directly by a Fink manometer attached to an arterial catheter.[15] A three-way stopcock connected to the catheter permitted blood to be drawn for estimation of arterial blood gases.

Transnasal

The mean operating time for transnasal approach to the pituitary was four hours with a range of one and a quarter to seven and a half hours. An autonomic ventilator was used in 6 cases, and in the remainder ventilation was assisted or controlled. Hypotension was induced with the aid of trimethaphan camphor sulfonate (Arfonad) in 3 cases.

Blood loss was roughly proportional to the duration of the procedure rather than the surgical approach. The blood replacement of those patients receiving blood (27 cases) averaged 2.7 units (range 1 to 7 units). Blood loss was estimated. Calcium ion was not administered with multiple blood transfusions, and venous pressure was not measured. The use of radioiodonated human serum albumin is presently being evaluated as a means of measuring blood volume.

HYPOPHYSECTOMY WAS PERFORMED *in 15 patients for advanced carcinoma of the breast with metastasis, in 11 patients for chromophobe adenoma of the pituitary, and in 6 patients for craniopharyngioma. The pituitary was approached via a frontotemporal craniotomy in 17 cases and via a transnasal route in 15. Anesthetic management is discussed as well as hormonal replacement in the postoperative period. The advantages gained by such difficult surgery can be lost unless extreme care is paid to postoperative medical management.*

Intravenous fluid replacement during surgery averaged 1,500 cc. of 5 per cent dextrose and water containing 200 mg. of cortisone acetate plus 250 cc. of normal saline.

Patients in both groups were monitored with an esophageal stethoscope since we find it provides valuable information for heart rate and quality of beat as well as evaluation of pulmonary function. In addition, all patients were monitored with a cardioscope.

One patient, surgically approached by the transnasal route, died on the table from uncontrollable hemorrhage. Five of the 15 patients operated for advanced carcinoma of the breast have been lost to follow-up.

Five of the remaining 10 patients are still living. Of the remaining 17 patients, 14 were available for follow-up, and their disease process has either been eliminated or the symptoms alleviated.

Four patients operated by transnasal approach developed cerebrospinal fluid rhinorrhea which stopped spontaneously. There was 1 case of postoperative pneumonia and 2 cases of postsurgical depression.

Severe diabetes insipidus requiring therapy occurred in 6 cases, and hypothyroidism developed in 1 patient in the hospital.

There are five major endocrine systems of concern in the postoperative period: (1) adrenal function, (2) the hypothalamic-neurohypophysial system, (3) carbohydrate metabolism, (4) thyroid function, and (5) gonadal function.[9]

Adrenal function

In anticipation of hypophysectomy, 100 mg. of cortisone acetate are administered intramuscularly the evening prior to surgery. On call to surgery, the patient is given another 100 mg. Following the onset of surgery, an additional 200 to 300 mg. of hydrocortisone are administered in a constant intravenous drip of 5 per cent dextrose and water over a twenty-four-hour period. The cortisone is then tapered to an average maintenance dose within seven to ten days of 37.5 mg. of cortisone by mouth, 25 mg. at breakfast and 12.5 mg. at supper. For minor stresses, doubling the daily dose is adequate, whereas for severe stress, 200 to 300 mg. per day in divided doses will be required.

Signs of adrenal insufficiency such as drowsiness, anorexia, nausea, weakness, vomiting, and prostration can occur in two to three days without cortisone therapy.

Hypothalamic-neurohypophysial system

Electrolyte balance is carefully maintained because of the severe diuresis symptomatic of diabetes insipidus, resulting from removal of the pars nervosa of the gland and the failure of the hypothalamus to readily restore vasopressin (Pitressin). Accordingly, postoperative urine flow is measured via an indwelling catheter. If urine flow exceeds 200 cc. per hour for more than five hours, then 5 units of vasopressin tannate in oil are administered intramuscularly. This usually controls excessive urine flow for from twenty-four to seventy-two hours. Excessive fluids should not be given to a patient who has received vasopressin since water intoxication may result. When the patient can void spontaneously, usually twenty-four hours after surgery, the catheter is removed and fluid intake and output are carefully recorded as part of the daily routine.

The development of diabetes insipidus is dependent on the level of pituitary stalk section. If the stalk is divided at a high level, severe diabetes insipidus occurs and is permanent; if cut close to the diaphragm sella and minimally traumatized, then only mild polyuria and polydipsia may occur. In the latter case, if fluid exchange does not exceed 3 to 4 L. per day, replacement therapy is not required. If the fluid exchange exceeds 4 L. per day, then posterior pituitary powder by nasal insufflation may be all that is necessary. The powder is supplied in 40-mg. capsules, and a plastic insufflator is available for administration. The vasopressin tannate in oil is given in a dosage of 5 mg. at one- to three-day intervals. Patients with mild diabetes insipidus may undergo spontaneous remission of symptoms two to three months after surgery.

Carbohydrate metabolism

Hypophysectomy in nondiabetic patients causes minimal alterations in carbohydrate metabolism. With cortisone therapy, fasting blood sugar is either unchanged or shows minimal depression. Following hypophysectomy, the requirements for insulin are markedly reduced in patients who, prior to surgery, have diabetes mellitus. Postoperatively, glycosuria is covered by small doses of regular insulin until the new dose of long-acting insulin can be determined. This is usually about one third the preoperative dose. With Y^{90} implants, the fall in insulin requirement may occur around the sixth or seventh day. It should be remembered that changes of 1 to 2 units of insulin per day will induce profound effects in the hypophysectomized as compared with the unhypophysectomized patient.

Thyroid function

Thyroid hormone replacement is usually not necessary during the first few weeks after surgery. If the serum protein-bound iodine or thyroid iodine-131 uptake checked one month after surgery reveals a deficiency, full thyroid replacement therapy is begun. The need for replacement therapy may take as long as six months to develop. The earliest signs may be dry skin, cold intolerance, and myxedema.

Gonadal function

No need exists for gonadal hormone replacement in the immediate postoperative period. In males the testes gradually become small and soft within four to six weeks after surgery. Atrophy of the sex organs follows, and patients become impotent. Testosterone, 200 mg. every two weeks, restores the size of organs and potency.

In females, ovarian function ceases after hypophysectomy in menstruating women. If surgery occurs early in the menstrual cycle, no further menses occurs; if, however surgery occurs during the progestational phase, one subsequent menstrual period occurs. Menopausal symptoms are usually absent following surgery. There is a decrease in axillary and pubic hair as well as a decrease in libido, all of which can be restored with small doses of testosterone. Sterility in both sexes is a consequence of hypophysectomy and is permanent.

Conclusion

It is concluded that with careful attention to anesthetic technic and hormonal replacement, patients can be safely managed during hypophysectomy and the postoperative period.

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Discussion

THOMAS K. LAMMERT, M.D., *New York City*. Dr. Ravin has very ably summarized the major problems associated with hypophysectomy and the management of the resulting endocrine disturbances.

As to the management of the anesthetic itself, I can only strongly emphasize his findings that the actual choice of agent and technic are of little importance as long as fundamental anesthetic principles are observed.

Several observations can be made regarding the endocrine problems encountered.

The adrenal replacement therapy is with cortisone and hydrocortisone. One must realize that a number of other newer cortical drugs have been developed for specific purposes but will not protect against Addisonian episodes.

The anesthesiologist must be alert to the management of these patients when they arrive in the operating room for other procedures and supplement the cortisone maintenance dosage for even such minor procedures as cystoscopy or appendectomy.

The degree of fluid and electrolyte disturbance varies greatly. In minor degrees of disturbance, it is adequate to provide a low-salt, low-protein diet. This regimen is still valuable in conjunction with pituitary powder or vasopressin.

In hot weather or when a patient is running a high fever, special care must be exerted to avoid severe electrolyte derangement.

Finally, a word of caution in the selection of patients for hypophysectomy. A markedly reduced vital capacity because of pulmonary involvement may preclude intervention. If massive pulmonary effusion is present, its removal preoperatively may enable one to undertake the procedure.

A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Combination Antimetabolite and Alkylating Agent Chemotherapy in Advanced Breast Carcinoma

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CANCER OF THE breast, the most common fatal neoplasm among American women, is annually responsible for 25,000 deaths, 60,000 new patients, and almost 100,000 individuals under continuous treatment for metastatic disease. The management of metastatic breast cancer has been dominated for more than twenty years by hormonal-ablative modalities despite the gradual accumulation of substantial clinical evidence that breast cancer often responds to chemotherapeutic agents. The effectiveness, advantages, and limitations of androgens, estrogens, hypophysectomy, and adrenalectomy have been adequately established in the clinical literature. Regressions of advanced hormone-dependent tumor without hematologic or systemic toxicity are among the most gratifying experiences of clinicians and patients faced with serious illness. Although significant hormonally mediated responses are usually sustained for from eighteen to twenty-two months, they are obtained in only 20 to 30 per cent of unselected patients of all age groups. The period of six to twelve weeks which is usually required before maximum benefit becomes apparent from the hormonal or ablative methods of management is a major disadvantage when attempting to control rapidly-growing, life-threatening metastases such as massive metastatic hepatomegaly, metastases to the central nervous system, lymphangitic carcinomatosis, multinodular pulmonary metastases, obstructive metastases, and "late diffuse" metastases. These disseminated or crucially-placed organ metastases have usually been considered to signify a "preterminal" state with a median life expectancy from two to three months.

Evaluation of chemotherapy as a primary treatment for life-threatening recurrent breast cancer has been delayed by the natural inclination of surgeons and gynecologists to resort to ablative measures and the understandable desire of endocrinologists and internists to seek the second hormonal response occasionally obtained by switching to alternative "nontoxic" hormonal modalities. Fear of uncontrollable drug toxicity also has contributed to the hesitation and delay in employing chemotherapy.

The practical clinical role of chemotherapy in metastatic breast cancer has been obscured by enthusiastic, conflicting, and often one-sided reports based largely on differences in the experiences and preferences of individual investigators with single agents. Variations in the methods of drug administration and the selection of clinical material also add to the confusion regarding any single "drug of choice." The inhibiting effects of thiotepa (N, N′, N′′-triethylenethiophosphoramide) and other similar alkylating agents in 30 to 40 per cent of various series of breast cancer patients were reported by many investigators from 1946 to 1959.[1] Less well known are observations that rapid regressions could be induced in at least 30 per cent of soft-tissue metastases by the folic acid antimetabolite, methotrexate.[2,3] Enthusiasm for thiotepa chemotherapy, initially stimulated by Noer *et al.*[4] among American surgeons in the early 1960's, has been more recently replaced with much skepticism engendered by failure of a nationwide cooperative surgical adjuvant study of single courses of postoperative thiotepa. The favorable preliminary survival data in this well-publicized study were subsequently shown to be inconclusive because of the noncomparable groups of controls and a somewhat naïve and insufficiently sustained chemotherapeutic regimen.[4] The atypical alkylating agent cyclophosphamide (Cytoxan), initially investigated in Europe, has also been effective in providing significant clinical inhibition of mammary carcinoma in at least one third of patients.[5] Early enthusiasm for the antipyrimidine 5-FU (5-fluorouracil) in 1960 to 1961 was soon followed by despair because of its unpredictable serious toxicity.[6] Recently, a modified clinically oriented dosage schedule has resulted in renewed claims of a preference for this agent capable of inhibiting 20 to 40 per cent of patients with metastatic breast cancer. The clinical indications for chemotherapy in general and the use of individual agents in particular have thus remained poorly delineated despite much widespread and often frustrating use of single agents. Guidelines have not been established to predict the type of patient likely to respond to any given agent or to indicate when chemotherapy should be preferred over hormone therapy.

A study of the combined effects of simultaneous and sustained long-term use of thiotepa with intermittent oral methotrexate therapy in breast cancer and other solid tumors was begun by us in 1959 at The Mount Sinai Hospital. Our hope was to obtain synergistic and rapid antitumor action from an antimetabolite-alkylating agent combination without undue toxicity in preterminal patients with hormone-resistant recurrent metastases. Adequate experimental evidence had been previously accumulated to warrant this approach.[7,8] The term "combination cytotoxic chemotherapy" was applied to this use of near-toxic effective dose levels of two or more cytotoxic agents capable of inhibiting tumor growth by different biochemical mechanisms. Noteworthy was the fact that the direct cytotoxic effects of the thiotepa plus methotrexate combination on neoplasm are probably supplemented by known alterations in ovarian morphology induced by thiotepa and changes in adrenal function after administration of methotrexate and other folic acid antagonists.[9-11]

Combination (thiotepa plus methotrexate) chemotherapy resulted in temporary objective regression of metastases in 60 per cent of the first 37 hormone-resistant patients treated between 1959 to 1961.[12] The safety of the antimetabolite and alkylating agents in combination, although acceptable in the preliminary study, has improved further to a level of less than 3 per cent drug-precipitated mortality rate since 1962 when we adopted the concomitant routine use of hematostimulative and anabolic agents with chemotherapy. Careful prospective evaluation of individual medical risk factors in each patient was found essential to estimate the low, medium, or high aggregate dose range deemed necessary to induce minimal tolerable methotrexate toxicity with both safety and a therapeutic potential.

After the relative safety of drug combinations was established, the use of methotrexate plus thiotepa therapy was extended as a primary form of treatment to "fresh" cases of life-threatening metastases, together with the continuous support of testosterone and the use of moderate doses of steroids in certain types of organ metastases.[13] The long-term sustained effects of thiotepa plus methotrexate combination chemotherapy was also surveyed in a small pilot series of pre- and postoperative inflammatory carcinomas, in a group of Stage IIB (positive high axillary nodes) in conjunction with postoperative radiotherapy and in "fresh" Stage III patients. The initial thiotepa plus methotrexate combination was sustained until tumor resistance or metastatic recurrence was observed. Then, a prompt switch in chemotherapy was instituted to either simultaneous combined or sequential cyclophosphamide and/or 5-FU. Thus, almost all patients with uncontrolled or recurrent mammary carcinoma have been treated since 1962 with 4 chemotherapeutic agents. The four agents were never employed simultaneously. However, 3 initial cytotoxic agents, namely, thiotepa, methotrexate, and 5-FU, were employed simultaneously in the cohort of patients presenting symptoms of metastatic hepatomegaly since 1962 because of the relatively poor response obtained in this group with thiotepa plus methotrexate therapy alone from 1959 to 1961.[14] The combined toxicity of the multiple drug regimens was neither additive nor overwhelming even though each agent was given to a point of minimal toxicity (approximately 80 per cent of maximal tolerated doses). Individualized drug dosage schedules plus continuous use of testosterone, B_{12}, and modest doses of steroids appear to have been largely responsible for the good hematologic tolerance to these drug combinations. Comparative drug safety was maintained also by prompt resort to antibiotic therapy for control of such infectious complications as erysipelas, furunculosis, and others.

Methods

The sine qua non for the safe use of cytotoxic drug combinations is a wide empirical clinical experience with the toxicity and pharmacology of each individual drug. Modification of dosage and frequent observation in accordance with the clinical condition of each patient was paramount in avoiding rapid lethal drug toxicity, especially from the antimetabolites, methotrexate or 5-FU.

Patients were initially classified into good- or poor-risk categories depending on a detailed current medical status, the type of preceding therapy, and the extent and pattern of organ metastases. Antimetabolite methotrexate dosage was never rigidly prescribed by "protocol," or on the basis of body weight, or a priori without careful daily scrutiny of the patient during the initial course of the "antifol titration" with methotrexate. The priming schedule of intramuscular thiotepa, 15 mg. daily for four days, was started simultaneously with the first course of methotrexate. Thiotepa was resumed three weeks later on a maintenance schedule of 15 mg. every seven to fourteen days according to the hematologic status at each visit. The first course of oral methotrexate was started in divided 2.5-mg. doses and continued until such time as the earliest signs of methotrexate toxicity appeared, usually on the fifth to seventh day of therapy. Poor-risk patients were usually started on 2 tablets per day, and good risks on 3 or 4 per day (three hours apart). During the first course of methotrexate, daily monitoring of patients for the first signs of impending toxicity, such as, burning mouth, aphthous mucosal lesion, and stomatitis, was essential for safe yet effective dosage. Prompt interruption of methotrexate therapy was necessary to abort severe toxicity which was expected from two to four days after stopping the antifol. The wide variation in tolerance of patients to methotrexate was a most striking clinical phenomenon. Some poor medical risk patients developed severe toxic antifol effects on aggregate doses as low as 20 per cent of those necessary to induce the antifol effects in good-risk patients. It has not been possible to employ methotrexate safely on a standard protocolized arbitrary or predetermined drug-body weight basis. The individual patient's initial "oral clinical titration" of the folic acid antagonist to tolerably toxic levels was repeated in three to four weeks if any signs of tumor regression were observed during the ten- to twenty-day period of maximum thiotepa plus methotrexate action. Effective methotrexate dosage during the second and subsequent courses was easier to predict since it could be based on the aggregate dose needed to induce toxicity during the patient's first course. Patients who showed any degree of response usually received at least two or three courses. Good responders received four to six courses of methotrexate. A few were given as many as 12 courses of methotrexate over a three-year period while on thiotepa maintenance therapy. Marked reduction of aggregate methotrexate dosage per course to 50 per cent or less of the good-risk levels was always adopted in the presence of borderline renal function, cachexia, diarrhea, previous extensive radiotherapy, post-adrenalectomy state, and other clinical features.[13] Significant azotemia and gastrointestinal bleeding were absolute contraindications to the use of methotrexate plus thiotepa. Variation of aggregate methotrexate dosage is schematically given elsewhere as are details of the dosage employed of testosterone, prednisone, B_{12}, cyclophosphamide, and 5-FU.[12-14] More than 500 patients, predominantly cases of mammary or ovarian carcinoma, have been treated in this manner over an eight-year period with only 9 drug-precipitated deaths, all occurring in poor-risk patients.

Results

Objective regressions were induced in approximately 60 per cent of hormone-resistant patients and 80 per cent of "fresh" advanced cases not previously given hormonal or ablative therapy in the 113 cases of breast carcinoma treated from 1959 to 1965 with intermittent oral methotrexate plus priming and maintenance doses of thiotepa. The median duration of control, that is, regression, was about eight months in the 60 to 80 per cent of cases classified as responders. Sustained regressions of more than six months duration occurred in more than 40 per cent of all patients treated, but regressions were maintained in only one half of these (20 per cent) for more than one year with thiotepa plus methotrexate. These substantial clinical responses were associated with grossly "complete" (more than 95 per cent) excellent regressions or "incomplete" (50 to 80 per cent) good regressions of measurable metastases.

The conspicuous clinical feature of regression after thiotepa plus methotrexate was the rapidity of response in patients with drug-sensitive metastases. Cutaneous, subcutaneous, and pulmonary metastases showed softening resorption or shrinkage within five to ten days after onset of chemotherapy usually at the height of the antifol stomatitis (mucosal ulceration). Prompt improvement in dyspnea from lymphangitic carcinoma, in central nervous system signs, in pleural effusions, and in bone pain also occurred this early among the responders. Metastatic disease which had shown no response whatsoever by the third week after starting thiotepa plus methotrexate therapy usually failed to respond to any further treatment with thiotepa plus methotrexate. On the other hand, partial responders to the first course of methotrexate often showed further regressions during the second course of methotrexate while on thiotepa maintenance. The rapid disappearance of self-observed chest-wall metastases within a few days after onset of a transient sore mouth, tongue, and buccal mucosa encouraged patients to accept alopecia, hirsutism, and gastrointestinal side-effects of the drug regimen, especially if followed by sustained signs of clinical improvement. Prompt subsidence in the dyspnea of lymphangitic carcinomatosis or improvement in aphasias, ocular palsies, pareses, or ataxias from central nervous system metastases reinforced the very close physician-patient rapport needed for subsequent chemotherapeutic management. The most recently developed neurologic deficits responded more rapidly than the more chronic central nervous system disabilities. Long delays during complicated neurologic work-up appeared to account for stabilization after therapy with thiotepa plus methotrexate in some cases with central nervous system metastases rather than regression of neurologic deficits despite rapid coincident objective regression of metastases in such observable organs as lungs, liver, or subcutaneous tissues. The more recent patients receiving somewhat earlier treatment for central nervous system metastases appear to obtain further improvement in response rate and survival. Regressions of more than three months duration were induced in 17 of 25 cases of intracerebral metastases treated to October, 1967. A total of 8 regressions were obtained among 15 patients receiving no adjuvant cobalt therapy, whereas 8 were also obtained among 9 receiving cobalt therapy one to three weeks after onset of thiotepa plus methotrexate chemotherapy (Table I). Late metastatic recurrence one and one-half years after cerebral radiation alone in 1 patient responded with an excellent and prompt regression of more than one year duration. The one-year survival rate in this group with central nervous system metastases was 4 out of 15 with maintenance thiotepa plus methotrexate therapy alone and 6 out of 9 with thiotepa plus methotrexate and broadside cobalt therapy. Chorioretinal metastases were controlled for more than a year in 4 of 6 patients given sustained thiotepa plus methotrexate therapy.

Hormone-resistant diffuse bone metastases showed a mediocre response to thiotepa plus methotrexate prior to 1962 when only 3 of 9 patients had shown objective improvement. However, 10 of 14 "fresh" cases of diffuse bone metastases responded objectively when treated simultaneously with testosterone, prednisone, and thiotepa and methotrexate. Most significant was the finding that cyclophosphamide was effective in inducing long-term secondary regression in one third of these cases when substituted for the thiotepa in patients with resistant osseous metastases. These secondary cyclophosphamide remissions were sustained for from twelve to thirty-six months in 6 of 19 patients.

The poorest responses to thiotepa plus methotrexate therapy were obtained in the group presenting symptoms of massive hepatomegaly from 1959 to 1961, only 1 of 8 regressions. Triple chemotherapy with the addition of 5-FU to the thiotepa-methotrexate combination was employed for all cases presenting symptoms of metastatic hepatomegaly after 1962. The addition of 5-FU to the combination resulted in regression of hepatomegaly in 15 of 16 consecutive patients. Significant clinical remission and regression for more than three months occurred in 12 of 16 patients and was maintained for more than one year in 7 patients (Table I).

Despite the 60 to 80 per cent incidence of response in recurrent visceral metastases after simultaneous thiotepa plus methotrexate combinations and the use of sequential or combined therapy with cyclophosphamide and 5-FU, only 15 per cent of all cases with recurrent metastases remained in remission eighteen months after onset of combination chemotherapy.

TABLE I. Life-threatening metastases, response and survival rate after thio-tepa plus methotrexate therapy

Therapy	Regression, > three months	Survival, > one year
Cerebral metastases		
Radiotherapy		
None	5 of 15	4 of 15
Simultaneous	8 of 9	6 of 9
Previous	1 of 1	1 of 1
Metastatic hepatomegaly		
Without 5-FU	1 of 8	1 of 8
With 5-FU	12 of 16	7 of 16
Pulmonary lymphangitic	6 of 9	5 of 9

Inflammatory carcinomas demonstrated a marked sensitivity and a relatively long-term control from thiotepa plus methotrexate therapy in 10 cases treated. Excellent regressions were obtained in 8 of 9 of these with massive involvement of the breast, axilla, and chest-wall. One died of neglected hypercalcemic renal failure eight months after onset of therapy. None died of uncontrolled metastatic disease in the first year of combined chemotherapy. A total of 5 of these 8 patients already have remained in remission more than two years after onset of chemotherapy, and 4 have survived for more than three years. One case of inflammatory carcinoma with a coincidental pulmonary metastasis showed complete regression on serial chest x-ray films for twenty-one months before recurrence in the lung.

The effect of long-term thiotepa plus methotrexate therapy was also evaluated in a group of Stage IIB and Stage III patients treated postoperatively. All 7 patients in this group were given full courses of regional cobalt therapy several weeks after initiating the thiotepa plus methotrexate regimen. Two to five years of follow-up in the small number of cases so treated suggest a favorable influence on survival.

Comment

These studies of combination cytotoxic chemotherapy over a seven-year period at The Mount Sinai Hospital require corroboration and extension by investigators elsewhere. The intensity and maintenance of the drug therapy regimen must be similar for any comparable quantitative assessment of the clinical value of drug combination therapy. The 60 to 80 per cent responses to combination chemotherapy with a median remission of eight months contrasted with the eighteen- to twenty-two-month duration of control usually obtained in 20 to 30 per cent of hormone-dependent tumors. The clinical course of mammary carcinoma in large heterogenous groups is so variable that the effect of chemotherapy cannot be accurately assessed unless patients are segregated into clinical cohorts according to (1) predominant organ metastases when treatment is initiated and (2) previous hormone-ablative response, if any, for recurrent metastases. In this way, the effects of thiotepa and methotrexate on survival could be more rapidly confirmed in patients who would have been expected to show a short survival rate of from two to three months duration untreated. Pending such comparable data, comparison must be made with the few pertinent reports of single-drug therapy or of other modalities in the literature. The advantage of triple-drug therapy (thiotepa plus methotrexate plus 5-FU) for metastatic hepatomegaly is indicated by comparison of the results of 5-FU therapy reported by Dao and Grinberg.[15] They obtained only 6 of 15 responses to 5-FU alone without any control beyond six months. Our triple-therapy results exceeded their results with 5-FU in 3 parameters, that is, liver shrinkage, three-month regression, and one-year survival results. On the other hand, Dao and Grinberg's[15] results show that thiotepa plus methotrexate therapy is probably inferior to 5-FU therapy alone.

The rapid responses to thiotepa plus methotrexate therapy in the majority of cases with central nervous system metastases confirm recent experimental data that oral methotrexate crosses the blood-brain barrier.[16] Regressions from thiotepa plus methotrexate at the height of the methotrexate toxicity in the group with central nervous system metastases were dramatic in 5 cases which had relapsed after previous transient response to steroids. The 66 per cent one-year survival rate in this cohort of cases with central nervous system metastases treated with thiotepa plus methotrexate plus cobalt therapy far exceeds the published data of 30 per cent survival after cobalt radiotherapy alone or the 1 in 15 survival rate on prednisone alone.[17-18] Survival of more than a year in 5 of 9 cases of lymphangitic carcinoma has not been heretofore demonstrated with any other form of therapy. Restoration of the lungs to a grossly normal appearance noted in 2 of our most recent cases after prompt treatment, has not been reported by others.

Life-threatening metastases to the liver, lung, and brain thus appear to be as potentially responsive as metastases elsewhere, provided simultaneous double- or triple-drug therapy is initiated with speed. For the cohort of patients with diffuse osseous metastases, cyclophosphamide would seem to be preferred as a primary agent over thiotepa (or other similar alkylating agents) were it not for the cystitis, alopecia, and emesis all so often encountered during cyclophosphamide therapy. The so-called systemic "resistance" of patients to their existing regional neoplasms in inflammatory or postoperative Stage IIB and Stage III cases was apparently not lowered by the long-term sustained combination chemotherapy despite continuous maintenance of patients at moderately leukopenic levels (with support of testosterone, as discussed). Formerly, extensive inflammatory neoplasms had culminated in gross distant visceral or osseous dissemination within six to eight months without chemotherapy. This preliminary study suggests that the one- and two-year survival rate in these "inoperable" patients will be favorably influenced by thiotepa plus methotrexate chemotherapy.

Since chemotherapy responses far outnumber the hormone-dependent responses, the practicing clinician may wonder how the 4 chemotherapeutic and the supportive measures fit into the general management of advanced breast carcinoma. A three-month trial of endocrine control still appears justifiable for slow-growing metastatic disease in nonvital organs before turning to combination chemotherapy. However, the more advanced, life-threatening, and rapid are the spread of metastases, the more likely is combination chemotherapy to offer a temporary but worthwhile palliation not obtainable by conventional radiation, ablative, or hormonal measures. Drug resistance will usually be encountered within eight to twelve months in the overwhelming majority of responders. The favorable effect of cytotoxic antitumor combinations on survival has been confirmed clinically in acute leukemia, choriocarcinoma, and a few other neoplasms during the last several years. Better "mileage" from the existing 4 drugs awaits the clinician who will employ combination chemotherapy as an urgent primary form of treatment for immediate life-threatening forms of metastatic mammary carcinoma. The physician desiring to obtain the maximum benefits of cytotoxic chemotherapy must, however, be committed to avoid homeopathic underdosage, toxic overdosage, or any transitory, haphazard, and ambivalent trial of these difficult and relatively unfamiliar agents.

Summary

A regression rate of 60 to 80 per cent was observed among a large series of mammary carcinoma patients treated at The Mount Sinai Hospital since 1959 with sustained thiotepa plus intermittent methotrexate combination chemotherapy. Life-threatening metastases in the brain or lungs showed rapid regressions after thiotepa plus methotrexate therapy. Liver metastases responded to the addition of 5-FU to the thiotepa plus methotrexate combination. One third of cases of diffuse osseous metastases resistant to thiotepa plus methotrexate responded to cyclophosphamide therapy. Regressions averaged eight to ten months in duration in these patients heretofore considered to be terminal (two to three months life-expectancy), but only 15 per cent of the entire series was under control eighteen months after onset of chemotherapy. Good hematologic tolerance during sustained treatment with multiple chemotherapeutic agents was possible due to the androgens, B_{12}, and steroids employed as supportive therapy. The inhibitory action of combined drugs was more rapid and more reliable than hormone-ablative methods alone for the control of important life-threatening metastases from mammary carcinoma.

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Beekman-Downtown Hospital
New York City
May 29, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by STEFAN SHANZER, M.D., and
FERNANDO ALEU, M.D.

Progressive Weakness, Nuchal Rigidity, and Mental Deterioration

Case history

HAK-JO KIM, M.D.: A seventy-one-year-old white female was admitted to the Beekman-Downtown Hospital with difficulty in walking, mental confusion, and difficulty with memory during the preceding two weeks.

One month before admission the patient had fainted in the subway but revived immediately and was able to return home by herself. Thereafter she developed intermittent weakness of the right leg; two weeks before admission she was noted to have lapses of memory, and one week before admission became drowsy, confused, and had increasing difficulty with memory for recent events. She became slow in speech with very slow responses to questions and conversation. For two days before admission, she had posterior cervical pain, increased difficulty in walking, and weakness in both legs.

Her past medical history was entirely unremarkable except for a bilateral radical mastectomy for carcinoma of the breast in 1947.

Physical examination revealed a blood pressure of 130/74; the pulse was 80 and the respirations 20 per minute; the temperature was 103 F. The patient was conscious, aware of her surroundings, and in no obvious acute distress. The pupils were equal and reacted well to light; the fundi were not initially visualized. There was slight rigidity of the neck on anterior flexion; the carotid pulses were equal and moderately strong. There was evidence of old bilateral radical mastectomy.

The neurologic examination revealed the patient to be conscious, confused, with considerable decrease in the acuity of vision, and a poorly defined contraction of the visual fields. There was lateral nystagmus, a mild right facial weakness, weakness of both lower extremities, flexor-plantar responses, and no clonus.

Hemoglobin and hematocrit were normal; the white blood count was 11,300 per cubic millimeter with 66 per cent segmented forms with moderate toxic granulation; 2 per cent nonsegmented forms, 23 per cent lymphocytes, 8 per cent monocytes, and 1 per cent eosinophils. The sedimentation rate was 38 mm. per hour (normal up to 20 mm. per hour). The urinalysis showed negative findings; the VDRL serologic test was nonreactive. The fasting blood sugar, two-hour postprandial sugar, blood urea nitrogen, uric acid, liver function tests, total serum protein and albumin/globulin ratio, alkaline phosphatase, serum transaminase determinations, serum electrolytes, and plasma prothrombin time were all within normal limits.

The initial spinal fluid showed 585 white blood cells with 95 per cent polymorphonuclear leukocytes and 5 per cent lymphocytes; the spinal fluid chloride was 110 mEq. per liter, the glucose 63 mg., and the protein 200 mg. per 100 ml. A repeat spinal fluid determination showed 1,000 white blood cells with 96 per cent polymorphonuclear leukocytes and 4 per cent lymphocytes; no red blood cells were seen. Both spinal fluids showed negative results on smear for acid-fast bacilli and on culture for bacteria and fungi.

The skull x-ray film showed results entirely within normal limits. The electroencephalogram showed a diffuse abnormality without focal accentuation. The initial chest x-ray film showed an infiltrate at the base of the left lung laterally which, however, cleared on a repeat chest x-ray film taken seven days later.

The electrocardiogram showed results within normal limits.

During the first week in the hospital, the patient's temperature fluctuated irregularly between 98.6 and 101.4 F. The patient continued to be confused with poor memory for recent events and disorientation as to time and place.

The neurologic consultant found no papilledema or retinal hemorrhages; marked nuchal rigidity was elicited. Therapy during the first week consisted of tetracycline, chloromycetin, PAS (para-amino salicylic acid) and INH (isoniazid).

During the second hospital week, the temperature remained between 99 and 101.6 F. Somnolence, mental confusion, disorientation, and confabulation persisted. The neurologist found cranial nerve functions intact with a questionable drift of the right upper extremity, a positive snout reflex, marked nuchal rigidity, bilateral palmar mental reflexes, and occasional slight tremulousness. Superficial and deep pain sensations appeared intact, although other sensations were difficult to evaluate. The deep tendon reflexes were equal in symmetrical locations but generally hypoactive; the plantar responses were flexor. The neurologist's impression was progressive encephalopathy, probably of infectious origin. A repeat white blood cell count was 12,600 per cubic millimeter with an unchanged differential count. Skin tests for tuberculosis, histoplasmosis, blastomycosis, and coccidioidomycosis showed negative results. A repeat lumbar puncture showed an opening pressure of the spinal fluid to be 150 mm. of water; the fluid itself was straw colored and contained 249 red blood cells and 5 white blood cells. The spinal fluid protein was 246 mg., the glucose 81 mg. per 100 ml., and the chlorides 108 mEq. per liter. The spinal fluid showed negative results for acid-fast bacilli on smear and negative findings on routine culture after seventy-two hours. Cytologic studies of the spinal fluid revealed no evidence of malignant cells. Gastric aspiration gave negative results for acid-fast bacilli on smear and on culture after six weeks and a culture showed negative results for fungi. Three lupus erythematosus preparations gave negative findings. A bone marrow aspiration revealed only slight erythrocytic hypoplasia.

During the third hospital week, the temperature remained between 99 and 100 F. The patient's general condition was unchanged. Treatment with chloromycetin was discontinued; PAS, INH, and streptomycin were continued throughout the remainder of the hospital course. A fourth spinal tap revealed a fluid containing 5 red blood cells and 22 white blood cells per cubic millimeter (14 segmented forms, 8 lymphocytes), the protein was 200 mg. and the sugar 83 mg. per 100 ml., the spinal fluid chloride was 110 mEq. per liter, and the spinal fluid VDRL test gave a nonreactive result. Again cytologic study revealed no evidence of malignant cells in the spinal fluid.

During the last fifteen days in the hospital, the temperature ranged between 99 and 100.6 F.; the patient appeared slightly more stuporous; and less spontaneous movement of the extremities and some increased spasticity of the left extremities were noted. A right carotid arteriogram showed incomplete results because of inability to obtain lateral views; the patient developed a transient left hemiparesis following injection of the contrast material. An area of increased vascularity was noted just lateral to the midline with a number of small tortuous vessels superior to the carotid syphon (Fig. 1). Further localization was not possible. There was rapid shunting of the contrast material into the transverse sinus; there was a slight shift to the left of the ascending segment of the right anterior cerebral artery which was interpreted as not significant. The internal cerebral vein was in the midline. The

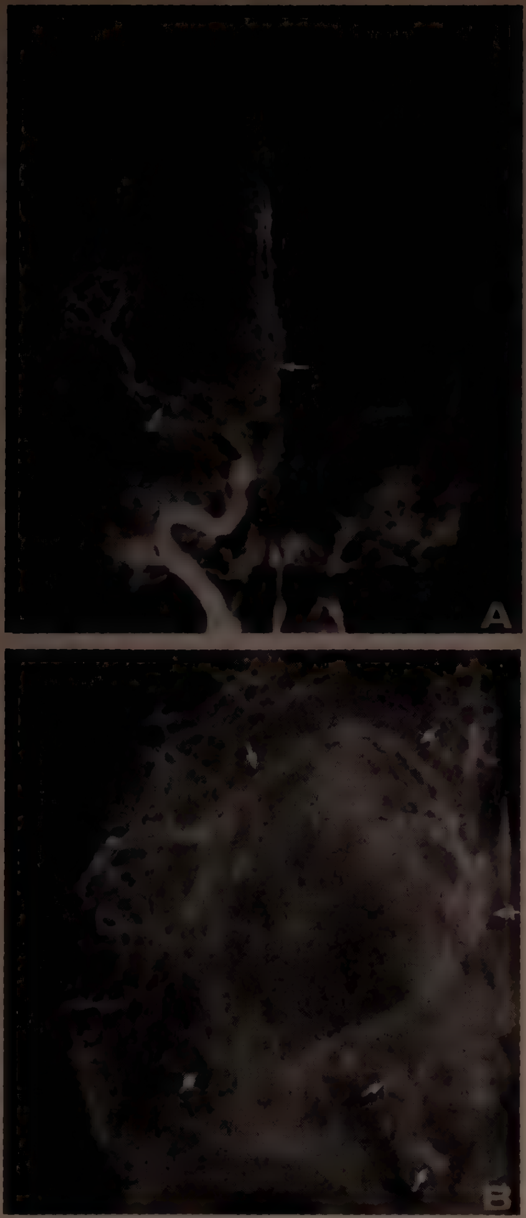

FIGURE 1. (A) Angiogram of right carotid showing elevation of knee of right middle cerebral artery (left arrow) and slight left displacement of right anterior cerebral artery (right arrow). (B) Magnified view of central portion of right cerebral hemisphere showing tortuous vessels with increased vascularity (2 lower right arrows) and oval area of decreased vascularity with stretched and narrowed vessels (remaining 4 arrows).

radiologic impression was an arteriovenous malformation rather than a tumor stain.

The discharge diagnosis was meningoencephalitis of undetermined origin.

The patient was transferred to a chronic disease hospital on the thirty-seventh hospital day, where the admission physical examination revealed a blood pressure of 130/80, the pulse was 84 and respirations 18 per minute, and the temperature 99.8 F. The patient was stuporous, with nuchal rigidity. The fundi showed no abnormalities of optic nerve heads or vessels. There was a mild tremor of both upper extremities and weakness of the right side of the face and of the right upper and lower extremities. There was a right Babinski sign and mild cog-wheel rigidity on the left. There was also forced grasping bilaterally, more on the right. The limited sensory examination suggested diminished sensation on the right half of the body. Repeated neurologic examinations revealed the patient's eyes were deviated to the left with inability to cross over to the right, a suggestion of optic-kinetic nystagmus to the left, and a right homonymous hemianopsia.

The hemoglobin was normal; the white blood cell count was 11,400 per cubic millimeter, with 92 per cent polymorphonuclear leukocytes and 8 per cent lymphocytes. The urinalysis showed a 3 plus positive test for albumin. The serum creatinine, fasting glucose, blood urea nitrogen, and serum electrolytes were all within normal limits.

The chest x-ray film was reported to show some left ventricular enlargement and scoliosis of the dorsal spine.

The lumbar puncture showed an opening pressure of 180 mm. of water, the spinal fluid was clear with a glucose level of 124 mg. and the protein 146 mg. per 100 ml., chlorides 116 mEq. per liter, and the blood cell count showed 284 red blood cells, 3 polymorphonuclear forms, and 1 lymphocyte per cubic millimeter. A left carotid arteriogram showed marked displacement of the internal cerebral vein in the anteroposterior projection, and the middle cerebral artery was somewhat straightened. The anterior choroidal artery and smaller thalamic arteries were not identified; a lateral displacement of the sylvian point in the anteroposterior projection was reported.

Three days after transfer, the patient underwent a left parieto-occipital craniotomy with incision of the left parietal cortex down to the left lateral ventricle. No gross tumor was seen, although the posterior portion of the left lateral ventricle appeared to be displaced upward by an enlargement of the underlying thalamus. Sections of the cortex and white matter removed for histologic study were reported as "normal brain tissue." A small piece of choroidal plexus containing a small cyst was removed and reported pathologically as showing small cystic change and slight calcification. The patient made an immediately satisfactory postoperative recovery although semistupor persisted; the neurologic findings remained unchanged.

Throughout the remaining twelve days in the hospital, the patient progressively deteriorated with repeated generalized convulsions, progressive right hemiparesis, and intermittent fever up to 102 F. The operative wound healed well, but deep coma persisted; the patient gradually developed rales at both lung bases and expired on the fifteenth hospital day.

Case discussion

Stefan Shanzer, M.D.*: We are confronted with a patient with a neurologic problem presenting symptoms of confusion, progressive deterioration of memory, and psychomotor retardation. Later we hear of difficulty in walking, neck pain, trouble with speech, weakness of the legs, at times greater on the right, and finally the arms, and spasticity. This constellation of symptoms is highly suggestive, not to say characteristic, of rapidly developing intracranial disease with bilateral brain dysfunction. When I refer to bilateral dysfunction I do not necessarily mean that the underlying brain disease must be bilateral; unilateral brain disease can produce bilateral dysfunction as manifested by an organic mental syndrome. Twice during the patient's course, in the beginning and prior to surgery, there was reported to be greater involvement of the right side of the body. In this hospital there was never any significant asymmetry in the neurologic findings on this patient. The history alone localizes the lesion to the patient's cerebrum, with possible indication of greater involvement on the left side of the brain. By cerebrum I refer to all structures above the midbrain level, including the thalamus.

On admission this patient had fever with slight rigidity and pain in the neck. These will, of course, immediately alert the physician to the possibility of an infectious process in the meninges and brain, yet in an elderly person a certain degree of resistance to neck flexion is not unusual. Marked spondylosis and cervical arthritis can produce similar symptoms. Fever is a different story, but in this patient we know that there was a pneumonic process. Dr. Batillas, would you show us the chest x-ray films?

John Batillas, M.D.: Examination of the chest, at the time of admission, demonstrates a small area of pneumonitis at the base of the left lung. Six days later the x-ray film reveals resolution of the pneumonic process.

Dr. Shanzer: The pulmonary infiltrate was resolved almost completely after one week's treatment with antibiotics. Of course, it would be complacent to say that this patient's fever was caused by the pneumonia and that, therefore, meningitis could be entirely eliminated. On the other hand, one must remember that some patients will show no manifestations of their underlying organic brain disease until another acute condition supervenes, such as the pneumonia in this case. Thereafter the patient's condition may very rapidly deteriorate and show neurologic findings which were not previously apparent. Similarly, pneumonia may complicate an organic brain disease, but this is more likely to occur in patients with acute stroke, or hemorrhage, or terminal illness.

I would now like to analyze certain findings which may or may not help us to localize this process further. The visual field changes will have to be disregarded because the patient was confused; and in such patients, only very clear-cut findings such as homonymous hemianopsia can be relied on. Similarly I question the nystagmus which was described on admission. When the eyes are deviated to the extreme lateral position, minor physiologic nystagmus may be observed. The use of drugs may also contribute to nystagmus. If we can convince ourselves that nystagmus is not physiologic, then of course this implies some brain stem involvement. I do not think that the nystagmus, as described in this particular patient, was significant.

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Although the plantar responses were flexor, such a normal finding should not stop us from diagnosing disease of the central nervous system, especially in the presence of a significant history and neurologic findings.

In analyzing any neurologic problem, it is absolutely essential to determine if the clinical picture can be explained by a single anatomically circumscribed lesion. If one lesion cannot explain the problem, we have to ask whether we are dealing with multiple lesions or with a diffuse process. An accurate anatomic diagnosis will restrict the etiologic possibilities which we have to consider.

The salient features in our patient are an organic mental syndrome and gait difficulty. The intellectual impairment indicates dysfunction of both cerebral hemispheres, as mentioned before. Whether this is caused by bilateral lesions or a unilateral lesion producing bilateral effects because of increased intracranial pressure is difficult to tell. We can state, however, that one lesion could produce the clinical picture in this case. A disease process involving the structures of the brain close to the midline can typically result in intellectual impairment and gait trouble, even without demonstrable leg weakness on examination. More specifically, we should suspect one of the following: bilateral involvement of the frontal lobes; lesions in the parasagittal area of the brain or corpus callosum; lesions within or around the third ventricle; and, finally, midline lesions in the posterior fossa.

Once we accept the fact that the picture can be explained by a single lesion, we can proceed to discuss the cause of the disease process. A mass lesion, such as an abscess or a tumor, must be considered first, especially in view of the progressive downhill course. It is here that we run into laboratory results which seemingly point in a different direction.

From the beginning the findings in the spinal fluid confront us. On admission the first spinal fluid contained 200 mg. of protein and 585 white blood cells, almost all of them polymorphonuclear leukocytes. The second tap a few days later showed an increase in the white blood cells. Thus we have a patient with fever, stiff neck, and blood cells in the spinal fluid, and it is almost impossible not to make a diagnosis of meningitis, meningoencephalitis, or brain abscess. With this type of blood cell count in the spinal fluid, you would think of a bacterial meningitis. But bacterial meningitis tends to present symptoms of a very acute illness of the central nervous system, whereas this patient experienced a more chronic process. Tuberculous meningitis may present symptoms of chronic illness, but it is unusual for the spinal fluid to show numerous polymorphonuclear leukocytes repeatedly. Furthermore the spinal fluid sugar was normal. This patient was treated with INH and PAS possibly because she was suspected of having tuberculous meningitis, or pulmonary tuberculosis, or both. I think treatment of this type is justified on any reasonable suspicion of tuberculosis. It may be weeks before an accurate diagnosis of tuberculous meningitis can be made by culture examination. There are other diseases, of course, which will show blood cells in the spinal fluid. Viral diseases will usually produce a predominance of lymphocytes or at least cells resembling lymphocytes. Although we do not have an India ink preparation for cryptococcus, I think it would be quite unusual to have this many polymorphonuclear leukocytes in cryptococcus meningitis.

It is interesting that the spinal fluid became straw colored on the third lumbar puncture, although the amount of protein did not increase much. Sometimes a discoloration of the spinal fluid can be caused by an increase in protein alone. However, on the initial tap there was no unusual color when the amount of protein was high. We should consider the possibility of bleeding, not necessarily massive bleeding, but in the form of multiple small hemorrhages. The chances that the red blood cells resulted from a traumatic tap cannot be excluded. In summary, the white cells decreased, the red cells appeared in increasing numbers, and the patient did not improve, even though the fever showed some response to therapy. Therefore, we must consider possibilities other than infectious disease.

Intracranial bleeding can present symptoms of nuchal rigidity, fever, and confusion, especially in an older person. There was never any evidence of massive hemorrhage in this patient's spinal fluid, and we probably have to reject the possibility of aneurysm or other vascular anomaly. Minor degrees of bleeding could occur from almost any type of lesion including primary or metastatic tumors. Carcinomatosis of the meninges which is often associated with a primary carcinoma of the breast typically mimics meningitis with blood cells in the cerebrospinal fluid. The interval between primary lesion and metastasis in our patient would be nineteen years, which is unusually long and difficult to accept. Spinal fluid sugars are almost always very low in carcinomatosis of the meninges, and the differential diagnosis may be very difficult. In meningeal carcinomatosis the cranial nerves are very often affected, but we have no such evidence here.

Except for the spinal fluid findings everything in the patient's history pointed to a brain tumor. First, the progressive story would not be characteristic of vascular disease of the brain other than multiple occlusions or bilateral occlusion of carotid vessels. The bilateral difficulty and the organic mental syndrome are certainly compatible with a widespread neoplasm. The fact that both legs were involved almost symmetrically points to a midline lesion, anywhere from the parasagittal area of the brain through the corpus callosum. Probably the posterior fossa was not involved because we have no brain stem signs at all in this patient, at least during her stay in our hospital.

Someone may well ask why this patient never had headache, papilledema, or increase in spinal fluid pressure. But a great many patients with brain tumors never show papilledema, and many never have any headache at all.

Now that we are considering brain tumor, what about the blood cells in the spinal fluid? Some midline tumors occasionally empty their cystic contents into the spinal fluid, which I believe happened in this case. Any neoplasm, especially a malignant one, which is in contact with the meninges or with the ventricular system, especially the third ventricle, can induce aseptic meningitis or a meningeal reaction with blood cells in the spinal fluid. The last two spinal fluids were examined for malignant cells and negative results were reported, but by then the blood cell count was relatively low.

After the patient was transferred to another hospital, the protocol specified that she had signs which suggested a lesion located almost exclusively on the left side of the brain, but this I find difficult to accept. In fact the cog-wheel rigidity of the left extremities and the bilateral forced grasping indicates more than a unilateral lesion on the left. The eyes could deviate to the left and to the midline but not to the right, admittedly suggesting a left-sided lesion above the mid-brain. The optokinetic nystagmus to the left is a normal phenomenon. Can we review the arteriograms?

Dr. Batillas: X-ray study of the skull is unremarkable. A right carotid arteriogram taken three weeks following admission is limited to the anteroposterior projection because the patient developed a transient left hemiparesis following injection of the contrast material. An area of increased vascularity is noted just lateral to the midline with a number of small tortuous vessels superior to the carotid siphon (Fig. 1B). Further localization is not possible because of the lack of lateral views. There is rapid shunting of the contrast medium into the transverse sinus. Slight shift of the ascending segment of the right anterior cerebral artery to the left side is observed (Fig. 1A). The internal cerebral vein is in the midline. It was felt at the time that we were dealing with an arteriovenous malformation rather than a tumor stain.

Dr. Shanzer: Apparently the physicians at the other hospital were impressed by the focal picture and proceeded to do a left carotid angiogram. They found displacement of various vessels to the opposite side but no displacement of the left anterior cerebral artery. The internal cerebral vein was displaced to the right. The physicians at that hospital were satisfied that there was a space-occupying lesion on the left side and proceeded to operate. Although the biopsies included normal brain tissue, the surgeon was impressed by a lesion pushing upward in the region of the left thalamus.

John T. Flynn, M.D.: I have the impression that we need to reconcile the results from the angiograms taken in the two different hospitals.

Dr. Batillas: I must reiterate that the right angiogram taken by us was limited to the anteroposterior view, because of the transient hemiparesis. However, one of the most striking findings in the very early

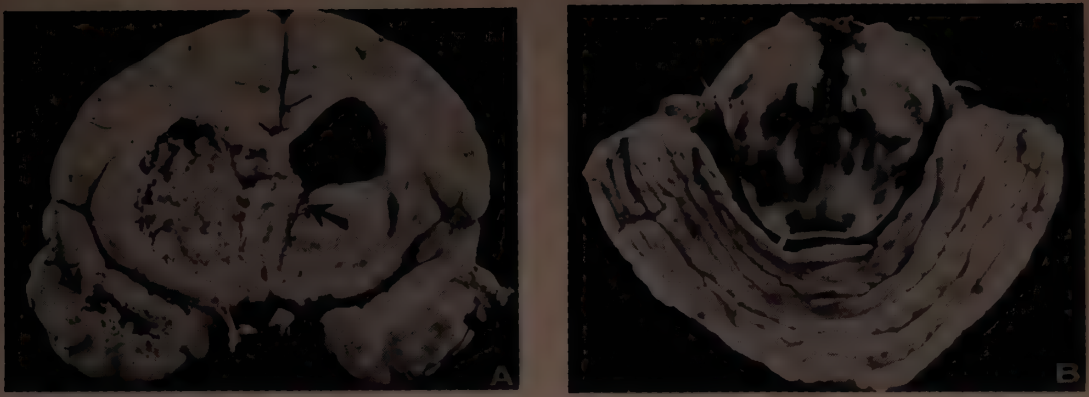

FIGURE 2. (A) Cross section of primary cerebral neoplasm showing involvement of major portion of right hemisphere and invasion of midline structures of right temporal lobe (arrows). (B) Section of midbrain showing multiple hemorrhages.

arterial phase was the presence of dye in the transverse sinuses, suggesting a fairly rapid shunting of dye from the arterial to the venous system. The other significant findings are a slight but definite shift of the right anterior cerebral artery toward the left side, the normal midline position of the internal cerebral vein, and the ovoid area of increased density above the carotid syphon. Together all these findings suggest some type of arteriovenous malformation or a tumor mass. At the time we favored the arteriovenous malformation.

Dr. Shanzer: I am confident that the findings from this angiogram are typical of a tumor; whether metastatic or primary, I cannot tell for certain. But the stain shows one mass that is highly vascular with the vessels having a beaded appearance.

This huge mass displaces the right anterior cerebral artery to the left. The elevation and rounding of the knee of the middle cerebral artery indicate that the tumor extends into the temporal lobe. There is no shift of the internal cerebral vein. One explanation of this finding, especially in view of the bilateral symptoms, would be a separate mass on the other side, or else an extension of the same tumor across the midline, the so-called "butterfly tumor."

The left carotid angiogram taken in the other hospital, which is not available at this time and which we did not see, showed an avascular mass on the left, whereas the lesion visualized on the right side by our angiogram is highly vascular. Part of the difference may be due to a difference in technic, particularly in the rapidity of the injection of the contrast medium, but I still think this is most likely one lesion of the butterfly type. Initially it caused displacement of the right anterior cerebral artery but no displacement of the internal cerebral vein. Within a week or ten days a change in the mass produced a shift in the position of the internal cerebral vein from left to right. After looking at the original x-ray films, I had little doubt that this was a tumor, most likely a glioblastoma, involving the midline structures, the third ventricle, and the thalamus bilaterally.

Dr. Flynn: Aren't you a little disturbed that the neurosurgeon obtained only normal brain tissue on his biopsy specimens?

Dr. Shanzer: He biopsied the parietal lobe only, but this lesion was much deeper and ventral to the lateral ventricle. He was justified in not going deeper, since I do not think there was anything that he could do other than biopsy the tissue.

Stanley Yormak, M.D.: Did the surgeon describe any evidence of infection or other alterations of the dura mater or the arachnoid on entering the skull?

Dr. Flynn: There is no comment about any evidence of infection or other lesion in the operative report. The patient had been given intensive antibiotic therapy during her hospital stay here so that any initial infection may have subsided.

Dr. Batillas: In view of the bilateral involvement and the past history of a mastectomy, wouldn't you be a little more suspicious of a metastatic tumor?

Dr. Shanzer: It is very difficult to

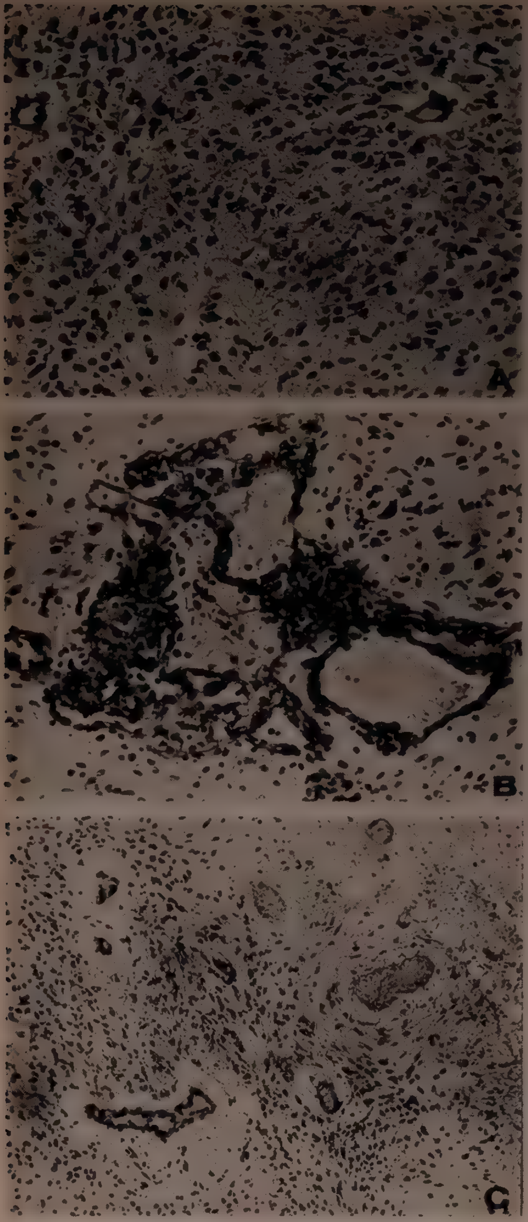

FIGURE 3. Section of neoplasm (astrocytoma) showing (A) prominent celluarity (× 150); (B) vascular malformation within astrocytoma and anaplastic endothelial cells (× 130); and (C) characteristic perivascular clear areas.

distinguish clinically between multiple lesions and a single lesion which marches across the midline or at least develops on both sides of the midline. However, the symptoms were symmetrical bilaterally from the beginning, and I would tend to think of one lesion rather than two or more. I do not think one can be adamant about it. I also believe that the angiographic appearance of the lesion is quite typical of glioblastoma.

Clinical diagnoses

1. *Possible meningoencephalitis*
2. *Status postmastectomy, suspected cerebral metastases from breast neoplasm*
3. *Possible cerebral vascular anomaly*

Dr. Shanzer's diagnoses

1. *Intracerebral neoplasm, probably glioblastoma multiform, involving third ventricle and thalamus bilaterally*
2. *Status postmastectomy*

Pathologic discussion

Fernando Aleu, M.D.*: The autopsy was performed by Masazumi Adachi, M.D., the neuropathologist at the Jewish Chronic Disease Hospital, and his findings confirm Dr. Shanzer's well-formulated hypothesis.

The important autopsy findings, in addition to the central nervous system lesion, included terminal bronchopneumonia, chronic moderate emphysematous changes, and a polypoid lesion in the endometrium. There was no recurrence of the lesion which led to the mastectomy twenty years earlier.

In the brain there was a cystic, partially necrotic, fairly well-demarcated neoplasm with a butterfly distribution, as Dr. Shanzer suspected. It obliterated a large portion of the right hemisphere and extended into the temporal lobe of the same side (Fig. 2A). There is very little displacement of the midline structures and no evidence of cingulate gyrus herniation. The neoplasm had infiltrated into the opposite hemisphere via the fornix and the anterior commissure and apparently counterbalanced the pressure of the expanding mass on the right side. The neoplasm was in direct contact with the ependymal surfaces of the right lateral ventricle. Necrotic and hemorrhagic debris from the tumor had easy access into the ventricular system, thus accounting for the increased blood cell count and xanthochromia in the spinal fluid. There is excessive pressure on the right internal capsule, the caudate is flattened, the putamen is disturbed, and the globus pallidus is elongated.

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As a result of the increased intercranial pressure, there were midbrain hemorrhages in the tegmental region, in the reticular formation, in the region of the peduncles, and in the pons (Fig. 2B). There was a massive herniation of the right uncus but without the usual compression of the posterior cerebral artery against the tentorium. Therefore there was no occipital infarction, which is usually associated with this type of pressure. The herniated uncus was largely necrotic, and instead of pushing the posterior cerebral artery against the tentorium, it was actually indented by the artery.

The tumor itself consists primarily of glial cells of the astrocytic type, showing some degree of pleomorphism and hyperchromatism with a bipolar effect, certainly indicating a fast rate of growth (Fig. 3A). There are extensive areas of ischemic infarction, again characteristic of a fast-growing neoplasm and almost the hallmark of an astrocytoma. There was no evidence of metastatic disease.

Associated with the prominent vascularity of the tumor, there is a vascular malformation, although not in the usual sense. The vessels are abnormal in number, size, and in their constituent cells (Fig. 3B). These cells are anaplastic endothelial forms which characteristically swell in malignant gliomas, sometimes resulting in complete occlusion of the vascular channels.[1] Under high-power view, some of these cellular elements have the superficial appearance of clusters of neoplastic cells.

Adjacent to the vessels are characteristic areas of pallor which the electron microscope has shown to consist of highly distended astrocytes (Fig. 3C).[2] Ultramicroscopic studies of such areas suggest an accumulation of intracellular fluid, thus supporting the "swollen cell-dry brain" concept of cerebral edema. However, the light-microscope studies have seemed to favor an extracellular type of fluid accumulation. Recent investigations have shown that the edema is slightly different, depending on the area studied. In the cortex the edema is mainly intracellular, within the astrocytes; in the white matter the fluid is outside the cells and within the myelin sheaths. The end result is the same—the intracranial pressure increases, and the brain stem hemorrhages occur as we have seen in this patient.

Thus I have corroborated everything Dr. Shanzer proposed.

Final diagnoses

1. *Astrocytoma (grade IV) involving right hemisphere, including temporal lobe, and extending through fornix and anterior commissure into left hemisphere (so-called butterfly distribution)*
2. *Cerebral edema, marked, with hemorrhages in midbrain*
3. *Postmastectomy, ? mammary carcinoma*
4. *Bronchopneumonia, bilateral*

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Correlation Conferences in Radiology and Pathology

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Aseptic Necrosis of Hip

Case history

Virginia Kanick, M.D.: A forty-year-old Jewish male artist first noted pain in the anterior portion of his left upper leg two years prior to his present hospital admission. At that time, radiographs of the left hip were said to have revealed no abnormality.

The pain, aggravated by motion, had recurred at intervals during this two-year period; in the two weeks prior to admission the pain localized to his left hip.

The patient stated that his childhood was characterized by many illnesses; he had been told he had been anemic and sickly. There was a history of multiple injuries with many falls while skiing. There was no history of familial disease other than the fact that a sister, aged thirty-five, is known to be anemic.

No positive findings were found on physical examination. The abdomen was tense, muscular, and difficult to examine. The liver and spleen were not felt.

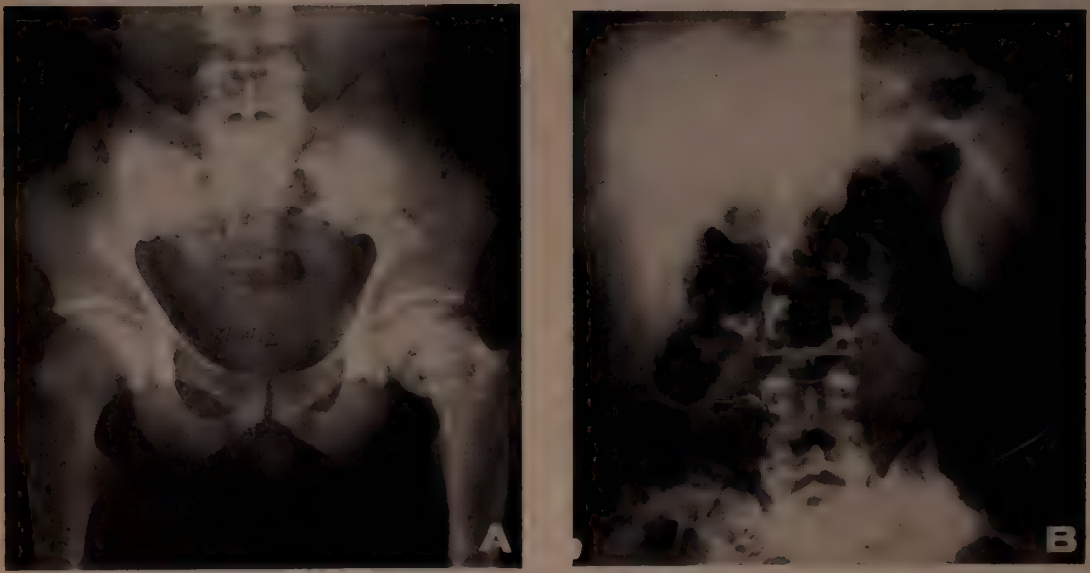

FIGURE 1. Roentgenograms. (A) Frontal roentgenogram of pelvis shows aseptic necrosis of femoral head with irregular areas of increased bone density and localized cystic changes together with flattening of articular surface. Note generalized increase in bone density in proximal portion of femur. (B) Roentgenogram of abdomen reveals splenomegaly.

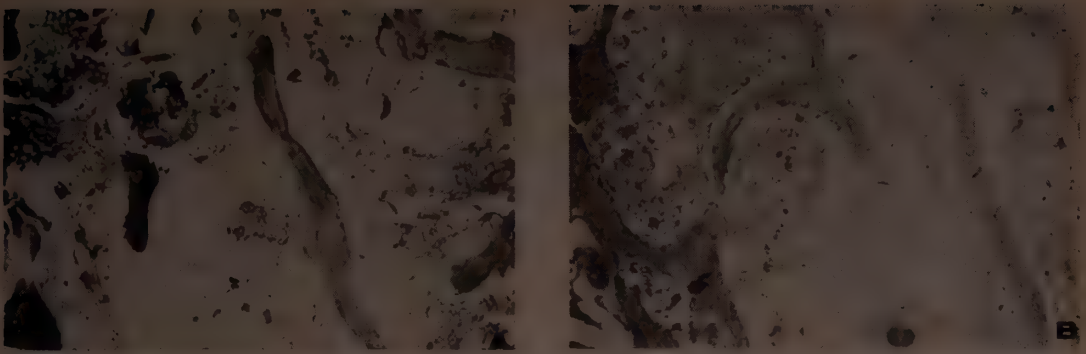

FIGURE 2. Bone. (A) From femoral head. Trabeculae thin and lacunae empty, indicating nonviability. Between trabeculae are remains of necrotic fat and Gaucher cells. (B) From seemingly normal area of femoral neck. Appearance similar to (A).

Laboratory examinations revealed a normal urinalysis and normal blood count. Blood chemistries were within normal limits except for the acid phosphatase which was 6.6 King-Armstrong units. On repeat study, this determination was 5.5.

Radiographic discussion

Dr. Kanick: Roentgenograms of the pelvis and both hips showed a lesion of the left hip characterized by irregularity of the femoral head with flattening of its articular surface (Fig. 1A). There were irregular cystic-appearing areas of diminished lucency with surrounding areas of increased density of bone in the metaphysis. These radiographic findings in the left femoral head are those of an aseptic necrosis. Some increased density was noted in the proximal shaft of the femur.

A subsequent radiograph of the abdomen revealed splenomegaly (Fig. 1B). The liver was not enlarged. No other bone abnormality was seen.

Surgical discussion

Frederick R. Thompson, M.D.: At operation, a hole was drilled through the greater trochanter into the head of the femur through a lateral trochanteric incision. The head of the femur was hollowed out with bur and curette to remove as much of the aseptic necrotic material and lipoid tissue as possible.

A sponge containing a lead marker was packed into the head of the femur, and roentgenograms revealed that the desired excavation had been performed in the proper weight-bearing position of the femoral head. After removal of the gauze marker sponge, bone grafts from the ilium were packed into the cavity of the femoral head. The patient was then not permitted to bear weight for four months.

Pathologic discussion

Charles F. Begg, M.D.: Fragments of bone, taken from the affected area of the femoral head and from what seemed to the surgeon normal bone of the femoral neck and from the graft site in the ilium, were submitted. The fragments from the femoral head and the seemingly normal area in the femoral neck all showed ischemic necrosis of bone trabeculae and the marrow spaces (Fig. 2). The marrow spaces contained considerable amorphous debris in which, rarely, the vague outline of cells suggesting Gaucher cells could be identified. The marrow space of the bone from the graft site in the ilium was crowded with clearly identifiable Gaucher cells (Fig. 3A). Prior to surgery, marrow was aspirated from the sternum and contained numerous Gaucher cells (Fig. 3B).

Comment

Dr. Kanick: The roentgenographic features of aseptic necrosis of the femoral head are usually, as in this case, diagnostic. They are quite similar in all cases regardless of the basic etiology responsible for the interruption of the local circulation.

Aseptic necrosis of the femoral head may

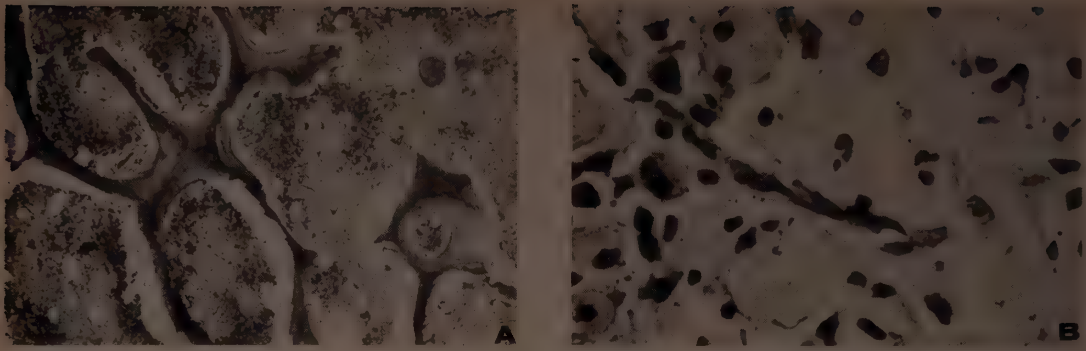

FIGURE 3. (A) Bone from iliac crest. Trabeculae are slightly thin. In spaces between them are masses of Gaucher cells. (B) Marrow aspirate. Group of Gaucher cells having typical wrinkled "tissue paper" appearance of their cytoplasm.

develop in patients with sickle cell anemia, Gaucher's disease,[1] congenital hemolytic anemia, generalized arteriosclerosis, Caisson's disease, or after repeated trauma and even after a single episode of trauma with or without dislocation and/or fracture. Prolonged use of high-dosage corticosteroid therapy has also been implicated in a number of reported cases.[2]

Although the etiology of the avascular necrosis cannot usually be determined solely from the radiographic findings in the hip, there may be additional x-ray changes or clinical information which may aid in the differential diagnosis. For instance, such findings as biconcave wedging of vertebral bodies and medullary bone expansion suggest the diagnosis of sickle cell disease. In this patient, splenomegaly was diagnosed on the abdominal radiograph, not previously noted on physical examination, and led to the presumptive diagnosis of Gaucher's disease.

Dr. Begg: Gaucher's disease is a term applied to various syndromes which have in common the accumulation of neutral glycolipids in cells of the reticuloendothelial system. The appearance of these cells is so distinctive that diagnosis is easily made if adequate material is presented for pathologic study. Another aid to diagnosis is elevation of tartrate-inhibitable acid phosphatase. An excellent review of this subject is presented by Frederickson[3] in which there is a thorough discussion of the nature of the neutral glycolipids and the various possibilities of etiology. Although there is a striking difference in the course and presentation in Gaucher's disease in infants as compared with adults, no significant chemical differences have been found.

In the infantile variety, the patient presents signs of severe cerebral damage, and the course is rapidly fatal. The appearance of the reticuloendothelial system in the various organs of the body is similar to that found in the adult form but, in addition, there are evidences of severe neuronal damage in the central nervous system, particularly the midbrain, pons, and medulla. No abnormal cerebroside accumulations, however, are found in the central nervous system.

In the adult form, the cells of the reticuloendothelial system become increased in number and greatly distended with cerebrosides in many parts of the body, particularly in the liver, spleen, bone marrow, and lymph nodes. Symptoms arise as the result of interference with normal function and metabolism, and the presentation of the patient depends on the areas of most severe involvement. Perhaps the most common presentation is related to hypersplenism with severe pancytopenia. It is possible that marrow replacement also contributes to this severe pancytopenia, but these cases are usually benefited by splenectomy, and it is thought, therefore, that marrow replacement is not the most significant factor in the pathogenesis of the pancytopenia.

Lesions of the bones are characterized by ischemic necrosis producing weakened structure and, finally, fractures. The necrosis would appear to be the result of simple crowding of marrow space and interference with blood supply.

In many cases a diffuse yellow-brown

pigmentation of exposed areas of skin may give a clue as to diagnosis, and there also may be pingueculas. The skin pigmentation is the result of increased iron and melanin, and no Gaucher cells are present. In the case presented here, no involvement of skin or conjunctivas was noted.

The etiology of this condition is not clear, but more recent evidence cited by Frederickson[3] strongly suggests that there is an enzymatic defect causing a block in degradation of glycolipids. There is also strong evidence that the disease is of a familial nature.

The subsequent course of the patient presented here is known for only two years. It was ten months before he was able to place any weight on the affected limb, and he was unable a year later to do more than light weight-bearing. The last roentgen study, two years following surgery, showed a recurrence of resorption of bone in the affected area.

Shortly after surgery his hemoglobin, red count, and platelets fell abruptly, although there had been no excessive blood loss. His hemoglobin and red count gradually improved to normal levels, but his platelets were still moderately depressed one year following surgery.

It is unfortunate that the patient has disappeared from our follow-up clinic. One would suspect that he will have further trouble and disability as the result of his bone lesion and that he may well develop hypersplenism in the future.

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History of Medicine

Evolution of Use of Quinine in Treatment of Malaria

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THERE IS NO DISEASE that has changed the population of the world as much as the scourge of malaria. This dread disease has killed millions of people in Europe, Asia, and Africa and had made many large areas of the world almost uninhabitable.[1]

This disease spread from Europe to the Americas. Seventeen of the southern states of the United States have been afflicted with malaria. It is still a moot question whether or not it was brought to the New World by Christopher Columbus. Neither the rich nor the poor were safe from this nefarious sickness. The world looked for centuries for a cure of this devastating disease called malaria. At the first sign of hope, it was the Jesuit Fathers who played an important role in the cure of malaria. For at Lima, Peru, about the year 1630, came the great news that a cure for malaria had been found by a group of Jesuits. The Old World welcomed the news that the cinchona tree of Peru had the cure for this dread disease. For nearly two hundred years the bark of the cinchona tree was the cure for malaria. In 1820 a group of French chemists found the answer in the isolation of quinine from the bark of the cinchona tree. The story of quinine is not more than three hundred years old, a mere episode in the long history of malaria.[2]

Discovery

In 1630, word was sent from Lima to Spain that along the eastern slopes of the Andes mountains, a certain tree had in its bark the cure for malaria. This was discovered by a group of Jesuits in that area of South America. It was quickly confirmed that an infusion from the bark of this tree could cure malaria.

Linnaeus named the tree cinchona. This was to honor Countess Francisca Henrique de Ribera, the wife of the Count of Cinchona, then acting for the King of Spain as viceroy of Peru. It has been known under the name of cinchona for over three centuries. Subsequent investigations have shown that cinchona is a group of shrubs and trees which are found on the eastern slopes of the Andes in Colombia, Ecuador, Peru, and Bolivia. There are 50 kinds of cinchona trees, but only a few are of any interest as far as malaria is concerned. Cinchona trees grow at 3,000- to 9,000-foot levels and require a rainfall of 85 to 100 inches.

In the early part of 1630, Jesuit fathers in the region of Lima, Peru, ground the bark of the cinchona tree into white powder, and it was known as Jesuit's powder. Many shipments of the bark were sent to Spain and Rome and many parts of Europe where malaria was so prevalent.

In Europe many physicians in the seventeenth century would not use a remedy not sponsored by the medical profession. They were especially suspicious and skeptical of a remedy that only had ecclesiastical backing, particularly the Jesuits' whom so many people distrusted.

At the European Congress of Jesuits held in Rome, Italy, in the spring of 1649, Cardinal John del Luge decided at the end of the meeting that he would spend the last years of his life promoting Peruvian bark.

Cinchona was a priceless gift of God in the treatment of malaria. Against the advice of physicians in Rome and several other European cities, Cardinal del Luge distributed large quantities of cinchona bark for treatment of malaria. He studied the proper dosage of the infusions of cinchona bark before he completed the distribution of the infusions. In Rome many people took the medication, although they said it was bitter, and gulped it down, convinced that it would cure malaria. In 1660 the cardinal died in Rome.

Robert Talbor

In 1660 an Englishman named Robert Talbor, working as an apprentice to an apothecary near London, decided to go to the County of Essex to try out his cure for malaria. He never said what was in the cure. The Royal College of Physicians was at first very skeptical and hostile over the news of the cure of malaria by a secret powder administered by an apothecary's apprentice. At that time physicians were treating their patients by bleeding them. In 1686 Talbor moved to London and soon became a fashionable quack favored by the aristocracy and anyone else who could afford to pay his fees.

Charles II soon heard of the great reputation of Robert Talbor and his acceptance by the aristocracy. He was proclaimed a national hero for his work in the cure of malaria. Although the king's physician scorned him, when Charles became ill with malaria he demanded the services of this quack Talbor, and Talbor cured the king with his secret powder. Charles II was so grateful for his cure from the dreaded disease that he demanded the Royal College of Physicians make Talbor a member.

Charles II sent Sir Robert Talbor to Paris where he cured King Louis XIV of malaria by his secret powder. He earned the everlasting gratitude of the French king, who sent him to Vienna and Madrid where he treated and cured many people.

Louis XIV offered Talbor an opportunity to sell this famous remedy, and the quack politely refused to give him the contents of the powder. The king paid him 3,000 crowns and a pension for life for this cure, and the international quack returned to England. He was honored with special citations and was made a fellow commoner of St. John's College, Cambridge. He died in London in 1681. The chief physician to Louis XIV of France analyzed the powder and found that its chief and only ingredient was the Jesuit powder.

On September 11, 1820, Joseph Pelletier and Joseph Caventou announced the discovery of the alkaloid in the cinchona bark that cured malaria. Because the native term for bark was quina, they called their discovery quinine.[1,2]

Production of drug

Another important alkaloid discovered in the bark by Pelletier and Caventou was quinidine, a powerful drug in the treatment of heart disease.

These French scientists, unlike Robert Talbor, refused to patent their discovery and made the drug available to the whole world. In 1823 a small factory for the manufacture of quinine was opened in the suburb of Philadelphia, Pennsylvania.

The isolation of quinine in 1820 gave the medical profession for the first time an effective measurable remedy for the treatment of malaria. The scramble for cinchona bark became so great that private and governmental monopolies were formed by the British and Dutch to control the cinchona bark trade in Bolivia and Peru.[2]

An investigator named Antonio Ullca cautioned the Indians to be very careful in stripping the bark from the cinchona trees. Very little attention was paid to the warnings of Ullca that wholesale stripping of the bark of the trees would kill the trees and require the planting of new ones.[1,2] With the supplies of cinchona bark from South America dwindling, England and Holland decided to do something to assure a future ample supply of the bark.

New methods

An Indian by the name of Charles Ledger knew more about the cultivation of cinchona trees than any other planter in Peru or Bolivia. Ledger finally secured 14 pounds of seeds of the cinchona tree and offered them to Holland to be sent to their government plantation in Java in 1865. The thrifty Dutch agreed to take only 1 pound of the seeds from Ledger and paid him 100 francs with a promise of further payment for 24 pounds if the seed turned out to be of any value.

The single pound of Ledger's seed was sent by the Dutch to Java in December, 1865. No one in Java was looking for a miracle from the pound of Ledger seeds. With careful planting and special protection against the dreaded "damping off," in one year they had over 12,000 seedlings.

Finally the Netherlands Cinchona Plantation Foundation sent to Holland for an expert well-trained chemist to evaluate bark in their seedlings. A chemist named John Moens collected small strips of bark from the younger Ledger trees, took them to his laboratory, and examined them. To his astonishment, he found some of the batches of trees he tested contained from 8 to 10 per cent quinine. He knew the few thousand Ledger trees were a long way from the millions of trees necessary to supply the world with quinine.

For years the private tea and coffee planters had been critical of the government's futile, slow cinchona venture. For one thing, when a tree is planted, it takes from ten to fifteen years before it has matured enough to cut down the whole bark of the tree.

The two Netherlands Indies cinchona stations offered to distribute the seeds of the Ledger trees in 1877 to the farmers and planters of Java. The planters kept on increasing their plantings until just before World War II there were over 150 private cinchona plantations in Java.

The English planted seeds in Jamaica and India, the French in Indochina, The Belgians in the Congo and Federated Malaya States, and the United States in California. All failed to produce an adequate supply of quinine. In 1913 all the Dutch farmers and planters formed a cooperative union called the King Bureau located in Amsterdam, and this combine controlled practically all the production of quinine.

Up to the time of World War II, the Dutch made Java the center of the monopoly of the quinine supply of the world. Many farmers and planters made great fortunes out of the production and sale of quinine.[2]

In 1939 the United States government bought from the King Bureau 13 million ounces of quinine for its armed forces. The United States also made available for commercial use a German formula of chlorophenothane (DDT) that effectively destroyed 85 to 90 per cent of the mosquito population.

In 1939 two new purely synthesized drugs were discovered that many public health physicians stated were superior to quinine. One was produced at Liverpool School of Tropical Medicine which was marketed through England and Far East under the name of chloroguanide (Paludrine) hydrochloride. The second drug was discovered at Johns Hopkins University Laboratory for Tropical Disease, Baltimore, Maryland, and sold under the name of chloroquine (Aralen) phosphate. Several pharmaceutical firms began to manufacture synthetic drugs such as quinacrine (Atabrine) hydrochloride which were far more successful than quinine in the treatment of malaria in endemic areas.[2]

In World War II, Japan came into possession of the chief source of quinine when she took over the Netherland colonies in Southeast Asia. By that time, however, sufficient amounts of quinine and other synthetic drugs were available to treat the Allied combat troops in their battle in malaria-infected areas of South Pacific and Asia.

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Necrology

Murray Richard Arnold, M.D., of New York City, died on January 31 at the age of forty. Dr. Arnold received his medical degree from the University of Basel in 1958. He was an assistant attending obstetrician and gynecologist at Harlem and Jewish Memorial Hospitals. Dr. Arnold was a Diplomate of the American Board of Obstetrics and Gynecology and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Josif Bat, M.D., of New York City, died on October 4, 1967, at the age of sixty-one. Dr. Bat received his medical degree from the University of Warsaw in 1938. He was a clinical assistant cardiologist at the Hospital for Joint Diseases and the Hospital for Joint Diseases Outpatient Department. Dr. Bat was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Allen A. Belenky, M.D., of New York City, died on August 27, 1967, at the age of sixty-six. Dr. Belenky graduated in 1929 from Tulane University School of Medicine. He was a member of the American Psychiatric Association, the American Geriatrics Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Imre Braun, M.D., of New York City, died on January 8 at the age of sixty-three. Dr. Braun received his medical degree from the University of Budapest in 1929. He was an associate attending surgeon at Trafalgar Hospital. Dr. Braun was a Fellow of the American College of Surgeons, a Fellow of the International College of Surgeons, and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Eugene Cahan, M.D., of New York City, died on January 9 at the age of seventy. Dr. Cahan received his medical degree from the University of Rostov in 1922. He was director of hematology and transfusion service and the blood bank at Sydenham Hospital, an associate attending pathologist at City Hospital Center at Elmhurst, director of the blood bank at Lincoln Hospital, and a consulting physician at the blood bank at Medical Arts Center Hospital. Dr. Cahan was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Lawrence Cattano, M.D., of The Bronx, died on February 1 at the age of fifty-seven. Dr. Cattano received his medical degree from the University of Bologna in 1937. He was an attending anesthesiologist at University Heights Hospital. Dr. Cattano was a member of the American Society of Anesthesiologists, Inc., the American Geriatrics Society, the New York State Society of Anesthesiologists, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph Edward Dempsey, M.D., of Olean, died on December 25, 1967, at the age of sixty-two. Dr. Dempsey graduated in 1933 from the University of Buffalo School of Medicine. He was an attending otolaryngologist at Olean General and St. Francis Hospitals and a consulting otolaryngologist at Cuba Memorial Hospital. Dr. Dempsey was a Diplomate of the American Board of Otolaryngology and a member of the American Society of Plastic and Reconstructive Surgery, the Cattaraugus County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Jacob Feldman, M.D., of The Bronx, died on January 15 at the age of seventy-two. Dr. Feldman graduated in 1927 from the University of Maryland School of Medicine and College of Physicians and Surgeons. He was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Erwin Friede, M.D., of Buffalo, died on November 30, 1967, at the age of fifty-four at Roswell Park Memorial Institute. Dr. Friede received his medical degree from the University of Lausanne in 1939. He was an attending physician in tuberculosis at the Edward J. Meyer Memorial Hospital and a clinical assistant physician at Millard Fillmore Hospital. Dr. Friede, an assistant clinical professor at the State University of Buffalo Medical School, was a Fellow of the American College of Chest Physicians and a member of the American Thoracic Society, the New York Society of Industrial Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Henry Gardiner, M.D., of New York City, died on July 31, 1967, at the age of eighty-two. Dr. Gardiner graduated in 1912 from Queens University Faculty of Medicine, Kingston, Ontario. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arnold Gottesman, M.D., of Santa Monica, California, formerly of New York City, died on August 10, 1967, at the age of sixty-eight. Dr. Gottesman received his medical degree from the University of Giessen in 1923. He had been an assistant surgeon at City Hospital Center at Elmhurst. Dr. Gottesman was a Fellow of the International College of Surgeons and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Mortimer Greer, M.D., of New York City, died on April 29, 1967, at the age of fifty-nine. Dr. Greer graduated in 1933 from Long Island College of Medicine. He was a senior attending psychiatrist at Bellevue Hospital and an assistant in-clinical-psychiatry at University Hospital. Dr. Greer was a member of the American Psychiatric Association.

Edward Francis Healey, M.D., of Buffalo, died on November 4, 1967, at Mercy Hospital at the age of eighty-five. Dr. Healey graduated in 1906 from Baltimore Medical College. Retired, he was a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ernest Kisfaludy, M.D., of Elmhurst, died on December 13, 1967, at the age of seventy-three. Dr. Kisfaludy received his medical degree from the University of Budapest in 1924. He had been a clinical assistant surgeon at City Hospital Center at Elmhurst. Dr. Kisfaludy was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Isadore Kuritzky, M.D., of Brooklyn, died on January 30 at the age of sixty-six. Dr. Kuritzky graduated in 1926 from Long Island College Hospital. He was an attending surgeon in otolaryngology at Brooklyn-Cumberland Medical Center and Brooklyn Eye and Ear Hospital, an attending bronchoscopist and surgeon-in-charge of plastic surgery at Brooklyn Eye and Ear Hospital Outpatient Department, and director of otorhinolaryngology at Coney Island Hospital. Dr. Kuritzky was a Diplomate of the American Board of Otolaryngology, a Fellow of the American College of Surgeons, and a member of the American Academy of Facial Plastic and Reconstructive Surgery, the American Geriatrics Society, the Pan-American Medical Association, the American Academy of Ophthalmology and Otolaryngology, the New York Academy of Medicine, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Vincent Emil Leggiadro, M.D., of Port Chester and The Bronx, died on November 22, 1967, at the age of seventy-three. Dr. Leggiadro received his medical degree from the University of Naples in 1923. He was a consulting physician and chief of orthopedics at Pelham Bay General Hospital. Dr. Leggiadro was a Fellow of the International College of Surgeons.

Daniel Francis Luby, M.D., of Cazenovia, died on October 31, 1967, at the age of eighty-four. Dr. Luby graduated in 1910 from the University of Pennsylvania School of Medicine. Retired, he was a member of the American Geriatrics Society, the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Murray Marren, M.D., of Brooklyn, died on January 12 at the age of fifty-seven. Dr. Marren graduated in 1938 from the University of Arkansas School of Medicine. He was an associate attending proctologic surgeon at Maimonides Hospital of Brooklyn and Maimonides Hospital of Brooklyn Outpatient Department. Dr. Marren was a Fellow of the International College of Surgeons and a member of the American Geriatrics Society, the American Proctologic Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Hugo Peiser, M.D., of New York City, died on May 19, 1967, at the age of seventy-six. Dr. Peiser received his medical degree from the University of Munich in 1914. He was a clinical assistant physician at Lincoln Hospital Outpatient Department. Dr. Peiser was a member of the New York Cardiological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Ziba Roberts, M.D., of Buffalo, died on November 5, 1967, at the age of ninety-nine. Dr. Roberts graduated in 1892 from the University of Buffalo School of Medicine. Retired, he was a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hyman M. Robinson, M.D., of Miami, Florida, formerly of Brooklyn, died on January 5 at the age of sixty-four. Dr. Robinson graduated in 1927 from Long Island College

Hospital. He had been an attending physician in gastroenterology at Coney Island Hospital, chief of gastroenterology at Coney Island Hospital Outpatient Department, an associate attending gastroenterologist at Jewish Chronic Disease Hospital, an assistant attending physician at Maimonides Hospital of Brooklyn, and an assistant chief gastroenterologist at Maimonides Hospital of Brooklyn Outpatient Department. Dr. Robinson was a Diplomate of the American Board of Internal Medicine (Gastroenterology), a Fellow of the American College of Gastroenterology, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

David N. Roginsky, M.D., of New York City, died on January 27 at the age of sixty-eight. Dr. Roginsky graduated in 1926 from Yale University School of Medicine. He was an attending physician at Sydenham Hospital and a senior attending clinical assistant physician at The Mount Sinai Hospital. Dr. Roginsky was a Fellow of the American College of Cardiology and a member of the New York Cardiological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Mortimer B. Rohen, M.D., of Flushing, died on January 11 at the age of sixty-two. Dr. Rohen graduated in 1935 from Charing Cross Hospital Medical School, London, England. He was an assistant attending physician at City Hospital Center at Elmhurst. Dr. Rohen was a Fellow of the American College of Allergists and a member of the American Academy of of Allergy, the American Geriatrics Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Monroe A. Rosenbloom, M.D., of Syracuse, died on January 2 at the age of sixty-five. Dr. Rosenbloom graduated in 1925 from Syracuse University College of Medicine. He was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Obstetricians and Gynecologists, a Fellow of the American College of Surgeons, and a member of the Syracuse Academy of Medicine, the New York Pathological Society, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert C. Schleussner, M.D., of New York City, died on January 26 at the age of seventy-five. Dr. Schleussner graduated in 1916 from Columbia University College of Physicians and Surgeons. He was a consulting physician at Lenox Hill and Misericordia Hospitals. Dr. Schleussner was a member of the New York Academy of Medicine, the New York Pathological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Lionel Share, M.D., of Syracuse, died on December 12, 1967, at the age of fifty-nine. Dr. Share graduated in 1936 from Jefferson Medical College of Philadelphia. He was an attending physician in general practice at Crouse-Irving Hospital and an associate attending physician at Community-General Hospital. Dr. Share was a member of the American Academy of General Practice, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ralph Benjamin Smallman, M.D., of Batavia, died on January 6 at the age of seventy-two. Dr. Smallman graduated in 1924 from McGill University Faculty of Medicine. He was an attending physician in eye, ear, nose, and throat at Genesee Memorial Hospital, and honorary physician in eye, ear, nose, and throat at St. Jerome Hospital, and a consulting ophthalmologist at Veterans Administration Hospital. Dr. Smallman was a member of the Pan American Association of Ophthalmology, the Genesee County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Jack Morton Spitalny, M.D., of Albany, died on January 27 at the age of forty-seven. Dr. Spitalny graduated in 1944 from Cornell University Medical College. He was an attending pediatrician at Albany Medical Center Hospital and Albany Medical Center Hospital Outpatient Department, St. Peter's Hospital and St. Peter's Hospital Outpatient Department, and a consulting pediatrician at Nathan Littauer Hospital (Gloversville). Dr. Spitalny was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Daniel Squires, M.D., of Binghamton, died on January 24 at the age of seventy-eight. Dr. Squires graduated in 1913 from Syracuse University College of Medicine. Retired, he had been a senior surgeon at Binghamton General Hospital. Dr. Squires was a Fellow of the American College of Surgeons and a member of the Binghamton Academy of Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Vicars Stevenson, Jr., M.D., of Poughkeepsie, died on December 11, 1967, at the age of fifty-two. Dr. Stevenson graduated in 1942 from Albany Medical College. He was

continued on page 809

Do you have patients who try to hide frustration behind conformity?

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense.
The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you.

Whether depression is open or secretive, Aventyl HCl assists in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

Lilly
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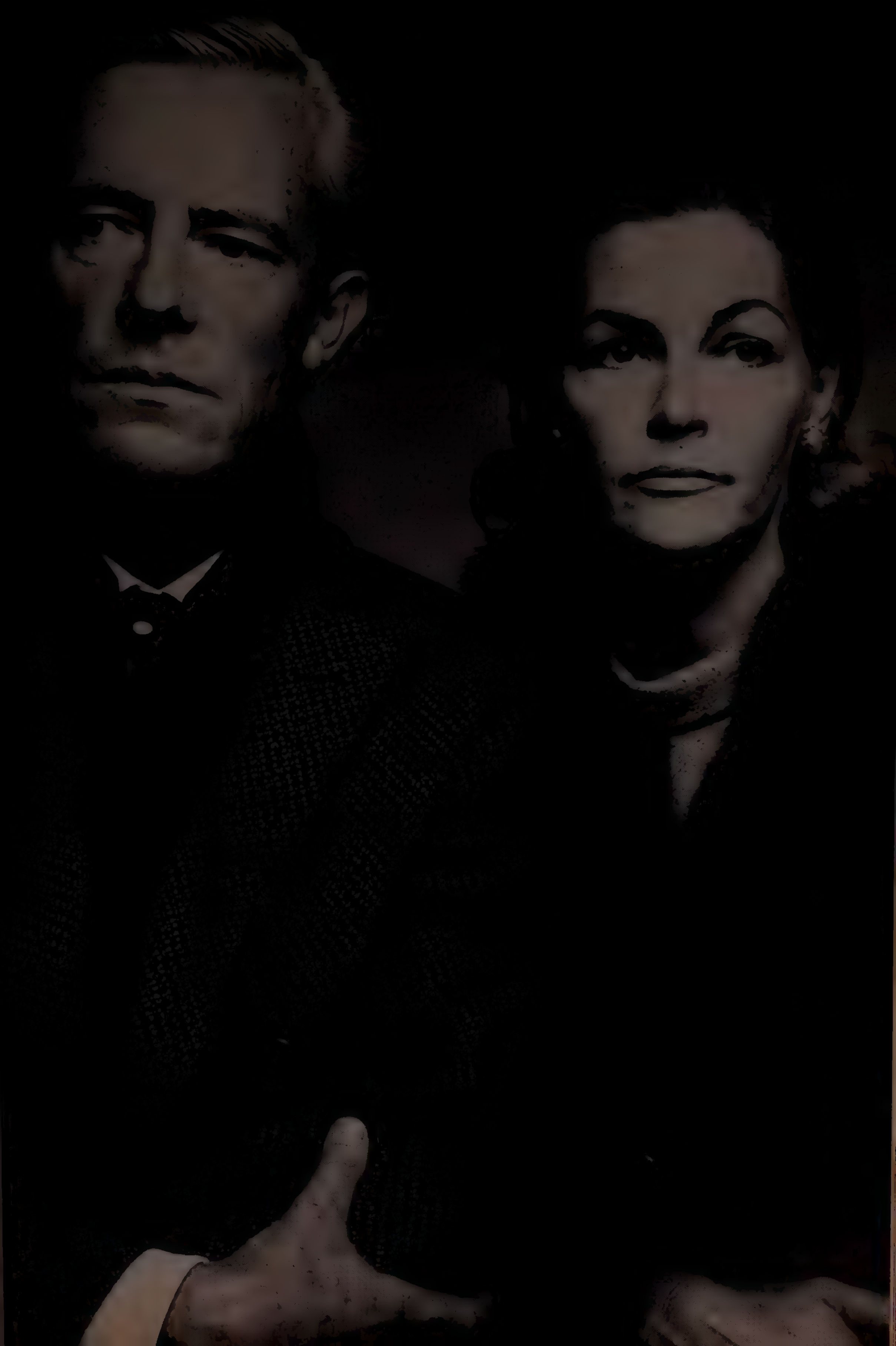
Indianapolis, Indiana 46206

Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

(See last page for prescribing information.)

800314



Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl® HCl (nortriptyline hydrochloride, Lilly) is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily

Pulvules:	25 mg.—1 Pulvule one to four times daily 10 mg.—1 or 2 Pulvules one to four times daily
Liquid:	1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily

CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily

Pulvules:	25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily 10 mg.—Ages three to six, 1 Pulvule one to three times daily Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid:	Ages three to six, 1 teaspoonful (5 cc.) one to three times daily Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid, 10 mg. (equivalent to base) per 5 cc., in pint bottles. [101267]

Pulvules, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500.

Additional information available to physicians upon request. 800314

Lilly

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continued from page 805

an associate attending anesthesiologist at Vassar Brothers Hospital and an assistant attending anesthesiologist at St. Francis Hospital. Dr. Stevenson was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Anesthesiologists, Inc., the New York State Society of Anesthesiologists, the Dutchess County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Simeon J. Tropp, M.D., of Babylon, died on January 25 at the age of seventy. Dr. Tropp received his medical degree from the University of Vienna in 1933. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Anthony Seth Werner, M.D., of Bronxville, died on January 2 at the age of thirty-five. Dr. Werner graduated in 1959 from Yale University School of Medicine. He was an assistant attending physician at The New York Hospital. Dr. Werner was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Rules for hospital examinations

No more than 5 patients an hour may be scheduled for examination by a hospital outpatient department physician who accepts primary responsibility for health supervision of patients under a new amendment to the State Hospital Code, it was announced recently by H. S. Ingraham, M.D., State Health Commissioner. This rule, he feels, would benefit both physicians and patients by preventing overly crowded schedules.

A related provision requires that at least thirty minutes be scheduled for a patient work-up, the initial patient-physician meeting when a medical history is taken, a physical examination given, and laboratory tests made.

In other Code changes, hospital employes, already required to have regular x-ray examinations, will have to be immunized against various diseases as required by the Department. The measure is designed to prevent the spread of disease within hospitals and to protect the workers themselves.

Nursing home operators must notify the Department of any actual or anticipated interruption in service of employes or utilities. This will enable the Department to take necessary corrective or protective measures.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic? We'll send you samples if you'll send a request on your Rx blank, addressed to Department 150.)

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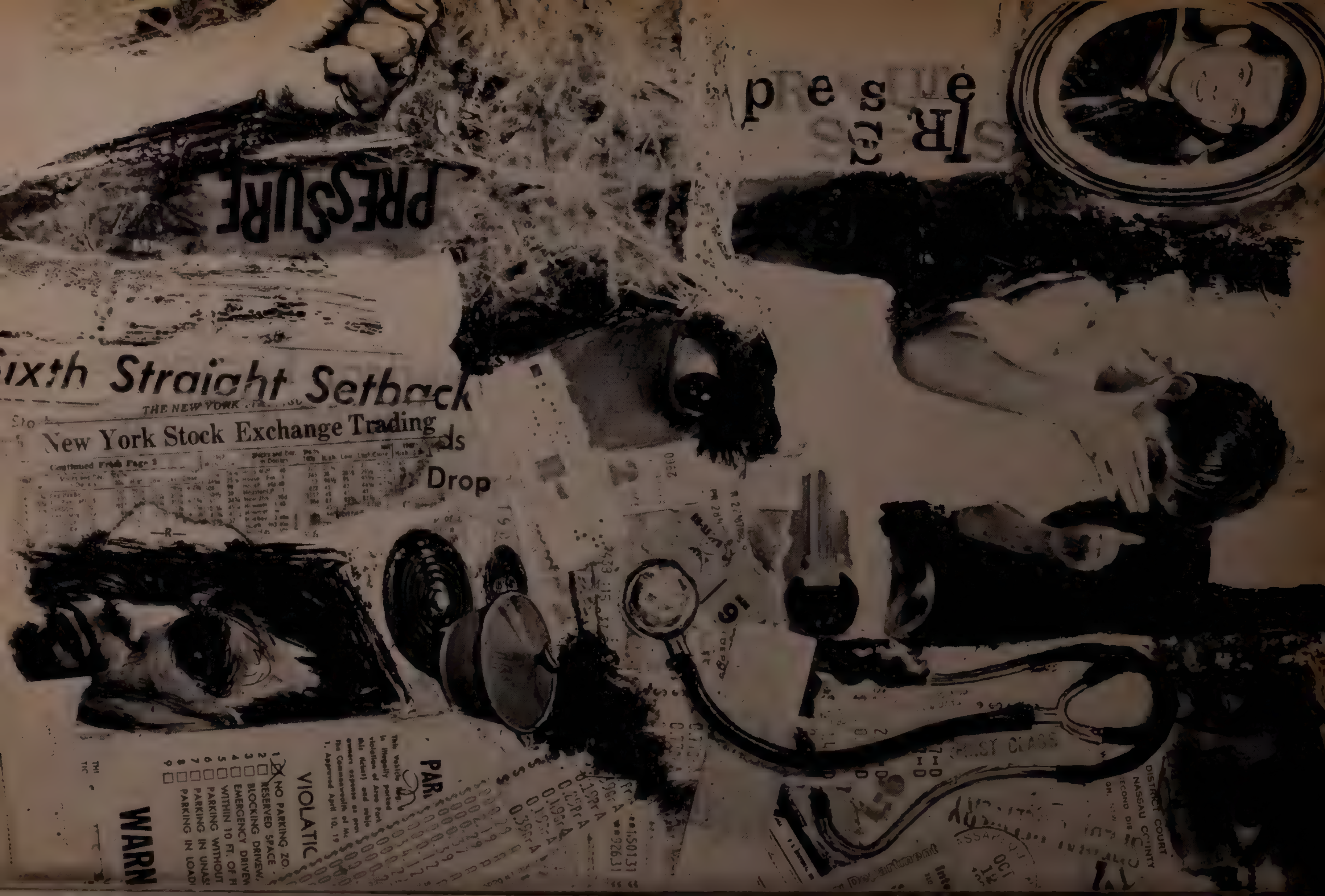
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When life's pressures build up blood pressure in the hypertensive patient

Life's pressures and frustrations can often set the stage for a rise in blood pressure in the hypertensive patient. Emotional fluctuations of blood pressure may be especially intensified in the hard-driving individual who continuously pushes himself. Along with your advice to help the patient adjust to living with hypertension, you can also prescribe help in the form of Hydropres.

Hydropres, a combination of two proven antihypertensive agents, has a mild tranquilizing effect that lets the patient relax as it reduces his blood pressure. It alleviates symptoms associated with hypertension, such as headache and tachycardia, that frequently reflect the general tenseness of the patient.

It's worth noting that potassium loss with Hydropres at usual therapeutic doses is usually minimal, and a diet rich in potassium normally avoids serious depletion.

Another point to remember: When other antihypertensive drugs are used adjunctively they must be given at one-half their usual dosage simply because Hydropres potentiates the action of such agents. Hydropres is contraindicated in anuria and in patients known to be sensitive to hydrochlorothiazide or reserpine.

So, when life's pressures build up blood pressure, consider Hydropres to help your hypertensive patient feel more relaxed while under pressure.

HYDROPRES®

ANTIHYPERTENSIVE

HYDROPRES-25:	**HYDROPRES-50:**
25 mg. hydrochlorothiazide	**50 mg. hydrochlorothiazide**
0.125 mg. reserpine per tablet	**0.125 mg. reserpine per tablet**

helps your patient relax as it lowers his blood pressure

For additional prescribing information, please see following page.

helps your patient relax as it lowers his blood pressure

INDICATIONS: Mild to severe hypertension.

CONTRAINDICATIONS: Anuria; increasing azotemia and oliguria during treatment of severe progressive renal disease. Known sensitivity to hydrochlorothiazide or reserpine. Nursing mothers. Electroshock therapy; discontinue drug at least 7 days before initiating electroshock therapy.

WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls.

Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. The possibility of sensitivity reactions should be considered in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of child-bearing age, potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.

PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, paresthesias, purpura, rash, urticaria, photosensitivity or other hypersensitivity reactions may occur. Cutaneous vasculitis precipitated by thiazide diuretics has been reported in elderly patients on repeated and continuing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice. Whenever adverse reactions are moderate or severe, the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, and pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS (including ocular) sensitization have been noted. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure. Since reserpine may increase gastric secretion and motility it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other gastrointestinal disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Anxiety, depression, or psychosis may develop. Pre-existing depression may be aggravated.

Before prescribing or administering, read product circular with package or available on request.

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Abstracts in Interlingua

Smith, B. H., Leslie, E. V., e Alker, G.: Encephalographia a radioisotopos (*anglese*), New York State J. Med. **68:** 769 (15 de martio) 1968.

In le detection e le diagnose de tumores cerebral, de lesiones cerebrovascular, de infection intracranial, e de complicationes in casos de trauma afficiente le capite, le technicas del radioscrutinage cerebral complementa tal methodos de diagnose neurologic como le studio del anamnese, radiographia, electroencephalographia, e echoencephalographia. Le radioscrutinio del cerebro indica le sito del lesion, proque le isotopo se concentra in isto, e le constationes etiam pote suggestionar le natura del lesion. In comparation con angiographia e pneumographia, le technica del radioscrutinage es a preferer como studio initial, particularmente in le presentia de un augmentate pression intracranial o quando le patiente es debile o quando un morbo vascular adde al hasardos del angiographia.

Ravin, M. B., e Feinberg, G.: Le maneamento del anesthesia in hypophysectomia (*anglese*), New York State J. Med. **68:** 776 (15 de martio) 1968.

Hypophysectomia esseva effectuate in 15 patientes con carcinoma mammari in metastase, in 11 patientes con adenoma chromophobe del glandula pituitari, e in 6 patientes con craniopharyngioma. In 17 del casos, le via de accesso al pituitario esseva craniotomia frontotemporal. In le altere 15, le accesso esseva transnasal. Le maneamento anesthetic es commentate e etiam le reimplaciamento hormonal durante le periodo postoperatori. Le avantages obtenite per un talmente difficile intervention chirurgic pote esser perdite si le maneamento medical durante le periodo postoperatori non es effectuate con le plus grande attention possibile.

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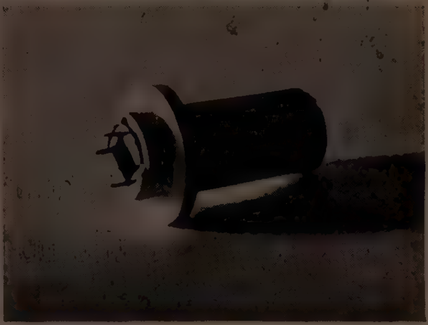
Make tuberculin testing routine with every physical examination.



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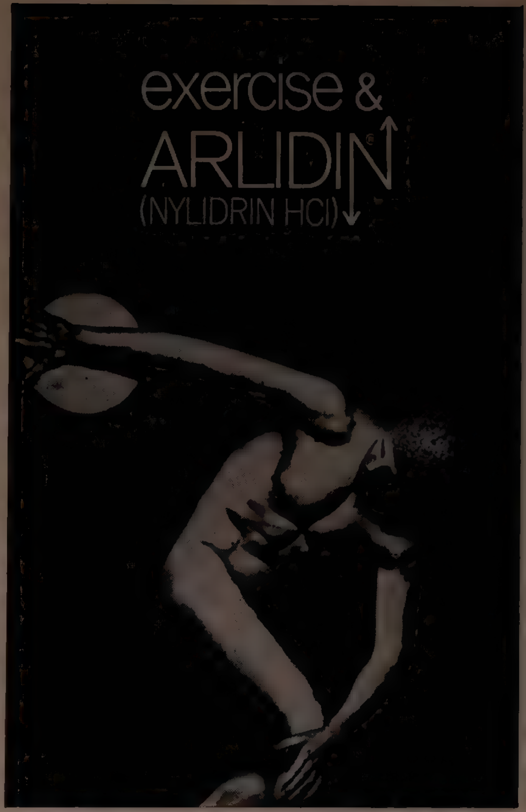
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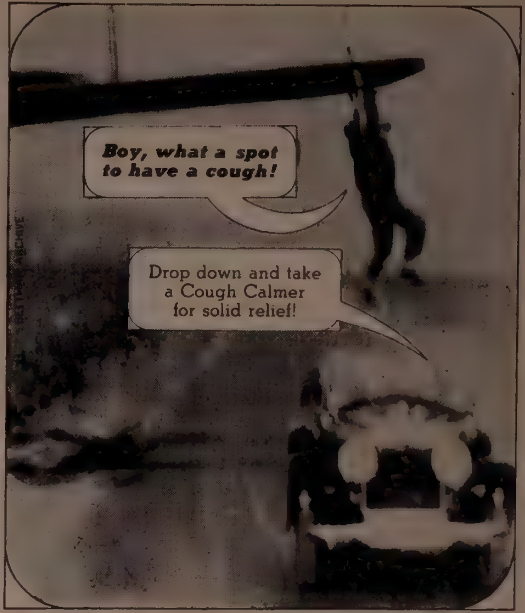
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1. Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. *65*:311 (Feb.) 1953.

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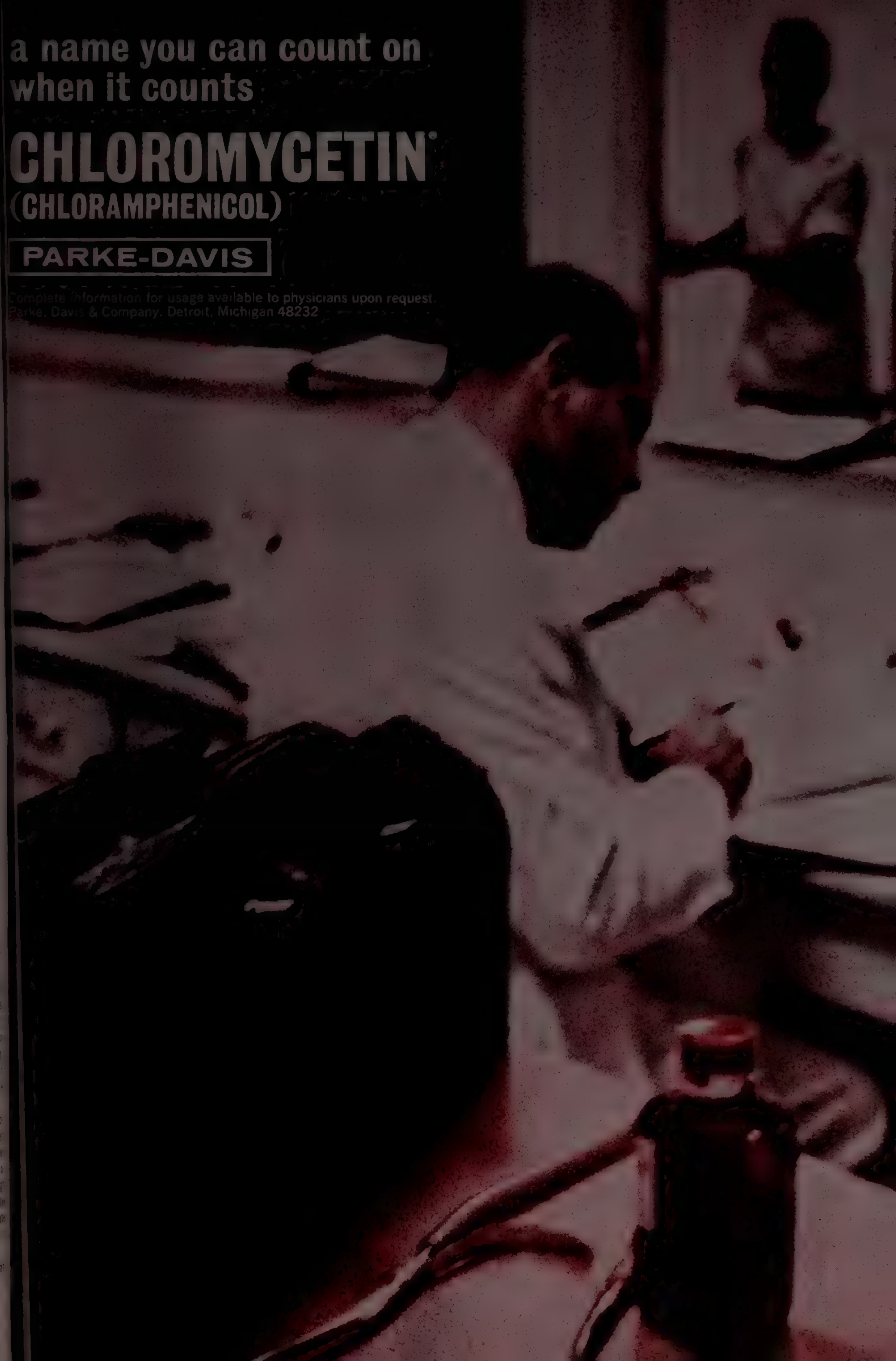

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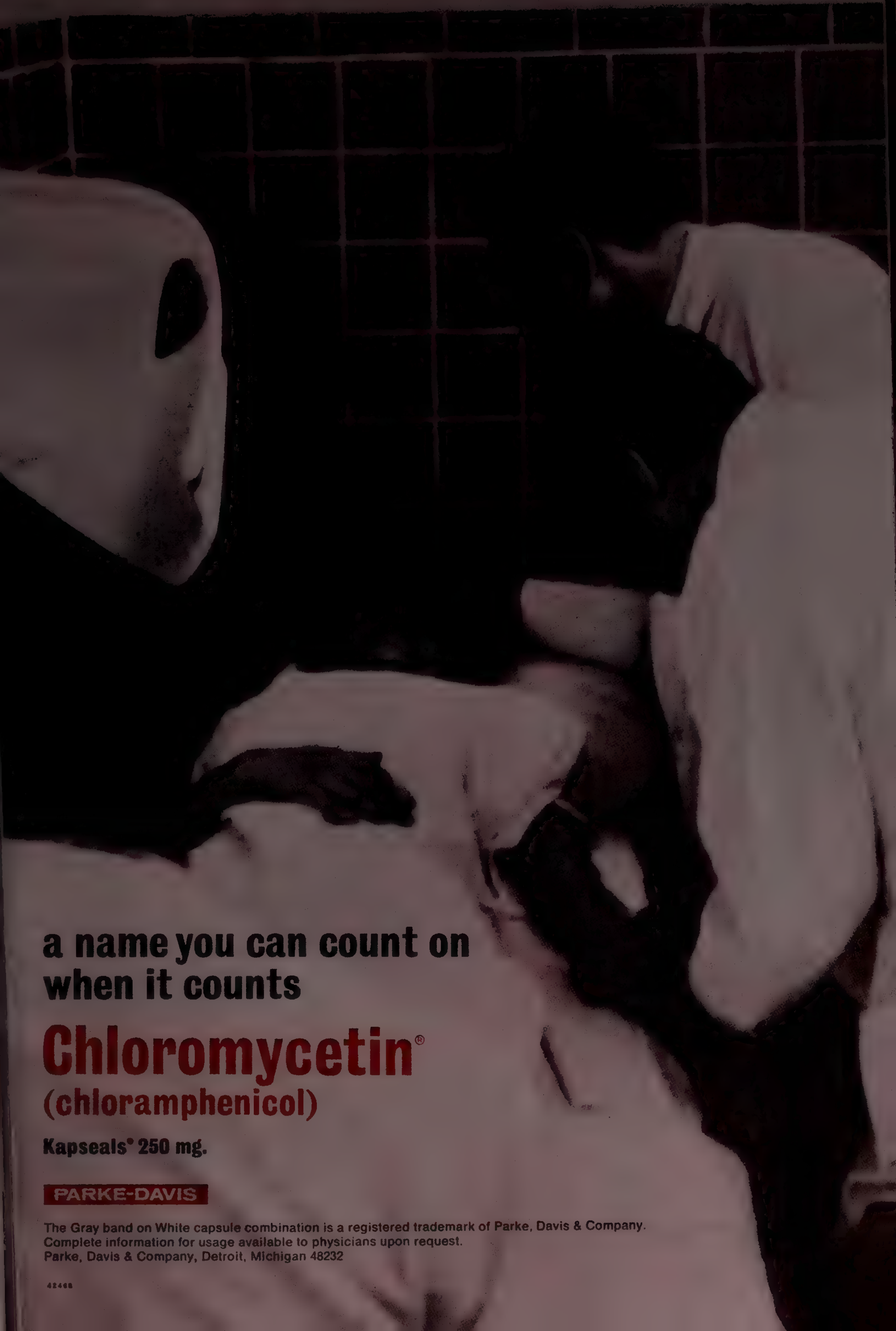

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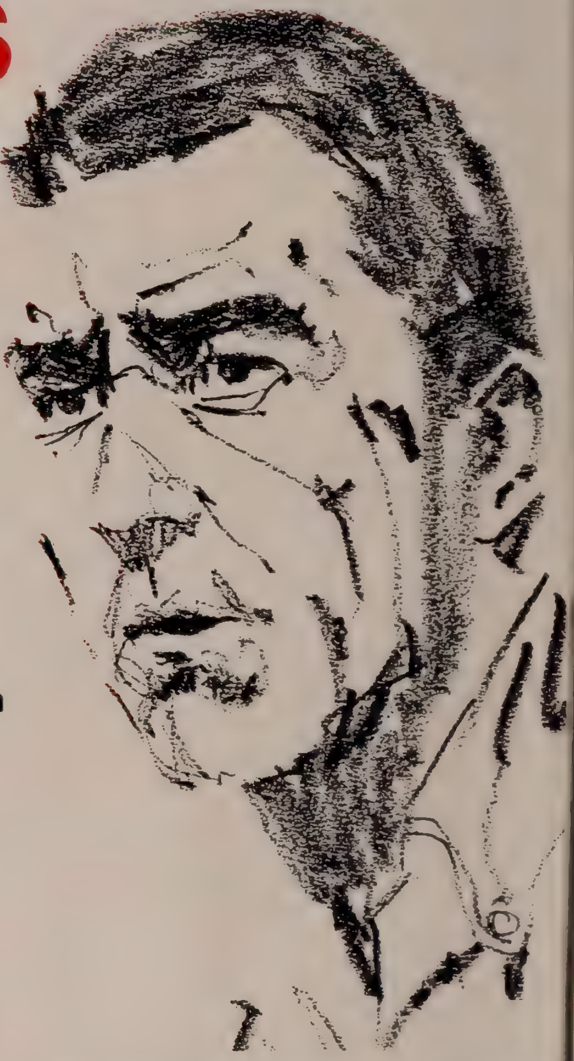

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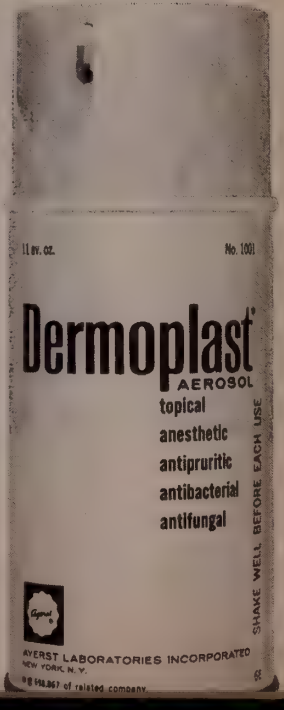
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Help clear up that miserable stuffed-up feeling with Dimetapp. Each hard-working Extentab brings welcome relief from the stuffiness, drip and congestion of upper respiratory conditions for up to 10-12 hours. Yet, patients seldom experience drowsiness or overstimulation. The key to success is the Dimetapp formula: Dimetane (brompheniramine maleate)—along with phenylephrine and phenylpropanolamine, two time-tested decongestants. They get the job done . . . in a hurry.

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Books Received

*The following books were received during the month of January, 1968.**

The Management of Trauma. By Members of the Staff of the Johns Hopkins University School of Medicine and the Johns Hopkins Hospital. Edited by Walter F. Ballinger, II, M.D., Robert B. Rutherford, M.D., and George D. Zuidema, M.D. Quarto of 815 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $25.

The Broad Scope of Psychoanalysis. Selected Papers of Leopold Bellak. Edited by Donald P. Spence. Quarto of 392 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $14.75.

Histologic Patterns in Tumor Pathology. By Mark E. Williamson, M.D., Jan E. Leestma, M.D., William C. Black, III, M.D., and Donald West King, M.D. Quarto of 212 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $16.

Principles of Nuclear Medicine. Edited by Henry N. Wagner, Jr., M.D. Quarto of 896 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $29.70.

A Textbook of Histology. By William Bloom, M.D., and Don W. Fawcett, M.D. Ninth edition. Quarto of 858 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $18.90.

Current Pediatric Therapy 3. By Sydney S. Gellis, M.D., and Benjamin M. Kagan, M.D. Quarto of 1,029 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $24.30.

New and Controversial Aspects of Retinal Detachment. Edited by Alice McPherson, M.D. Quarto of 509 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $30.

The Lung. Edited by Averill A. Liebow, M.D., and David E. Smith, M.D. Quarto of 400 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $14.75. (International Academy of Pathology Monograph)

Endocrines and Aging. Compiled and edited by Leo Gitman, M.D. Octavo of 305 pages, illustrated. Springfield, Charles C Thomas, 1967. Cloth, $12.50.

Garlock's Surgery of the Alimentary Tract. By John H. Garlock, M.D. Quarto of 494 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $19.50.

Progress in Neurology and Psychiatry. Volume XXII. Edited by E. A. Spiegel, M.D. Octavo of 573 pages. New York, Grune & Stratton, 1967. Cloth, $19.75.

Vascular Diseases of the Lung. Compiled and edited by Harold A. Lyons, M.D. Octavo of 195 pages, illustrated. Springfield, Charles C Thomas, 1967. Cloth, $12.75.

Patients, Doctors, and Families. By Faye C. Lewis, M.D. Octavo of 240 pages. Garden City, N. Y., Doubleday & Company, Inc., 1968. Cloth, $4.95.

Febrile Convulsions. By J. Gordon Millichap, M.D. Octavo of 222 pages, illustrated. New York, The Macmillan Company, 1968. Cloth, $7.95.

Dysphasia: Professional Guidance for Family and Patient. By McKenzie Buck, Ph.D. Octavo of 145 pages. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1968. Cloth, $5.95.

A Fifty-Year View of Psychiatry and the Golden Years of Medicine. By Eugene N. Boudreau, M.D. Octavo of 211 pages. New York, Vantage Press, 1967. Cloth, $3.95.

Modern Motherhood. By H. M. I. Liley, M.D., with Beth Day. Octavo of 239 pages, illustrated. New York, Random House, 1967. Boards.

The Medical Clinics of North America. Chicago Number. January, 1968. Pain and Its Clinical Management. James E. Eckenhoff, M.D., Guest Editor. Octavo. Philadelphia, W. B. Saunders Company, 1968. Published Bi-Monthly (six numbers a year). Boards, $21 per year.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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sodium levothyroxine, FLINT

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Patient costs are competitive with the cost of animal gland products. And in comparison to the other synthetic thyroid hormone, SYNTHROID (sodium levothyroxine) costs approximately half as much.

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SYNTHROID (sodium levothyroxine) tablets are specific replacement therapy in diminished or absent thyroid function when indicated by diagnostic test criteria in primary, hypopituitary, pediatric, and geriatric hypothyroidism, and for reproductive disorders associated with hypothyroidism. SYNTHROID (sodium levothyroxine) is especially useful in confirming your diagnosis when a diminished level of thyroid is implicated, because it precludes variability in response often encountered with desiccated thyroid.

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Available in six strengths. Tablets are scored and color-coded for dosage convenience. SYNTHROID (sodium levothyroxine) INJECTION is also available.

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0.1 mg. SYNTHROID (sodium levothyroxine)
APPROXIMATELY EQUIVALENT TO 1 gr. THYROID U.S.P.

Synthroid®

sodium levothyroxine, FLINT

Precautions: As with other thyroid preparations, an overdose may cause diarrhea or cramps, nervousness, tremors, tachycardia, vomiting and continued weight loss. Medication, in such cases, should be stopped for 2—6 days, then resumed at a lower dose level. In patients with diabetes mellitus, careful observations should be made for changes in insulin or other antidiabetic drug dosage requirements. In cases of adrenal insufficiency, the dysfunction must be corrected prior to, and during SYNTHROID (sodium levothyroxine) administration. It should be administered with caution to patients with heart disease.

Contraindications: Thyrotoxicosis, acute myocardial infarction.

Side Effects: Side effects, when they do occur, are secondary to increased rates of body metabolism: sweating, palpitations, leg cramps, and weight loss. Diarrhea, vomiting, and nervousness have also been observed. Myxedematous patients with heart disease have died from abrupt increases in dosage of thyroid drugs. Reduction in dosage followed by a more gradual upward adjustment will usually result in a more accurate indication of the patient's dosage requirements without the dosage side effects.

Dosage and Administration: Administer tablets as a single daily dose, preferably after breakfast. In hypothyroidism without myxedema, the usual initial adult dose is 0.1 mg. daily, and may be increased by 0.1 mg. every 30 days until proper metabolic balance is attained. Final maintenance dosage will usually range from 0.2—0.4 mg. daily. In adult myxedema, starting dose should be 0.025 mg. daily. The dose may be increased to 0.05 mg. after two weeks and to 0.1 mg. at the end of a second two weeks. The daily dose may be further increased at two month intervals by 0.1 mg. until the optimum maintenance dose is reached (0.1—1.0 mg. daily). The initial dose for children with cretinism or severe hypothyroidism is the same as for adult myxedema, but all intervals of change should be made every two weeks.

SYNTHROID (sodium levothyroxine) Injection may be administered intravenously utilizing 200—400 mcg. of a solution containing 100 mcg. per ml. If significant improvement is not shown the following day, a repeat injection of 100—200 mcg. may be given.

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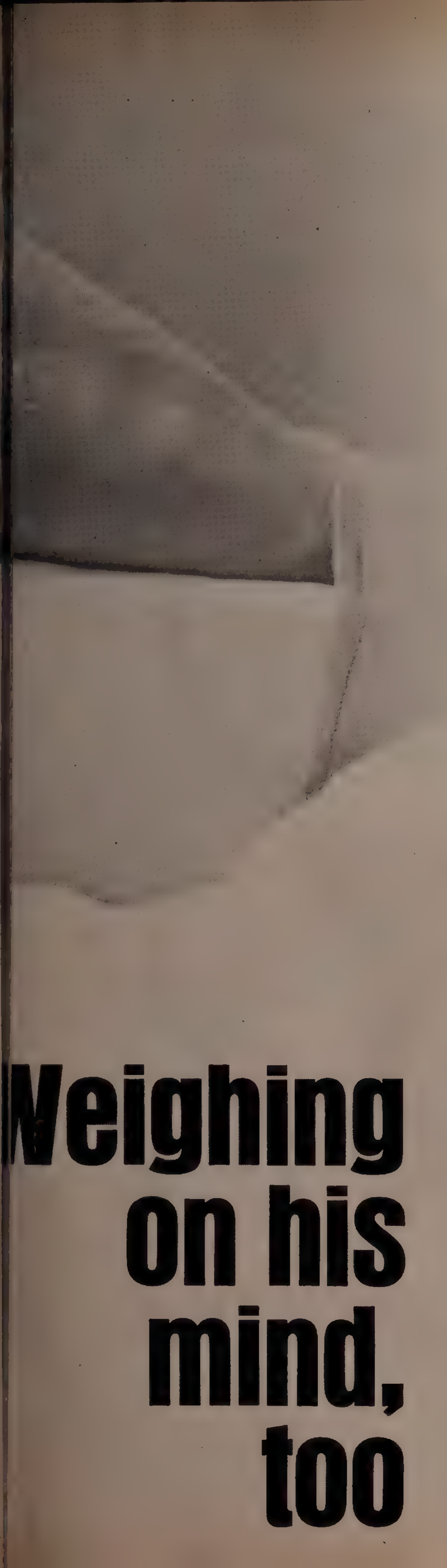


Weighing on his mind, too

TABLETS

Equagesic®

(meprobamate and ethoheptazine citrate with aspirin) Wyeth®

Contraindications: History of sensitivity or severe intolerance to aspirin or meprobamate.

Warnings: USE IN PREGNANCY: Safety for use during pregnancy or lactation has not been established; therefore, it should be used in pregnant patients or women of childbearing age only when the physician judges its use essential to the patient's welfare.

Precautions: Keep out of reach of children. Not recommended for patients 12 years old or less. Carefully supervise dose and amounts prescribed, especially for patients prone to overdose themselves. Excessive prolonged use of meprobamate may result in dependence or habituation in susceptible persons—as alcoholics, ex-addicts, severe psychoneurotics. Withdraw gradually after prolonged high dosage to avoid possibly severe withdrawal reactions including epileptiform seizures. Warn patients of possible reduced alcohol tolerance. If drowsiness, ataxia or visual disturbances (impairment of accommodation and visual acuity) occur, reduce dose. If symptoms persist, caution patients against operating machinery or driving. After meprobamate overdose, prompt sleep, reduction of blood pressure, pulse and respiratory rates to basal levels, and hyperventilation are reported. Give cautiously to patients with suicidal tendencies. Treat attempted suicide (has resulted in coma, shock, vasomotor and respiratory collapse and anuria) with immediate gastric lavage and appropriate supportive therapy (CNS stimulants and pressor amines as indicated).

Side Effects: Ethoheptazine and aspirin may occasionally cause nausea, vomiting, epigastric distress, and rarely dizziness. Overdosage may result in CNS depression (drowsiness and lightheadedness) or CNS stimulation and salicylate intoxication (requires induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration, and observation for hypoprothrombinemic hemorrhage [usually requires whole blood transfusions]). Meprobamate may cause drowsiness, ataxia and rarely allergic or idiosyncratic reactions. These reactions, sometimes severe, can develop in patients receiving only 1 to 4 doses who have had no previous contact with meprobamate. Mild reactions are characterized by urticarial or erythematous maculopapular rash. Acute nonthrombocytopenic purpura with petechiae, ecchymoses, peripheral edema and fever have been reported. If allergic reaction occurs, meprobamate should be stopped and not reinstituted. Severe reactions, observed very rarely, include angioneurotic edema, bronchial spasms, fever, fainting spells, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia. Treat symptomatically such as with epinephrine, antihistamine and possibly hydrocortisone. A few cases of leucopenia, usually transient, have been reported following continuous use. Rarely, cases of aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis, and hemolytic anemia have been reported; almost always, in the presence of known toxic agents.

Composition: 150 mg. meprobamate, 75 mg. ethoheptazine citrate and 250 mg. aspirin per tablet.

Wyeth Laboratories **Philadelphia, Pa.**

When pain evokes anxiety and tension, thereby heightening patient discomfort, a simple analgesic may only touch on part of the problem.

This single-prescription, non-narcotic product, however, usually provides effective analgesia *and* helps put the patient's mind at ease.

Medical News

Cellular proliferation and tumor growth studied by Clinical Center

The cooperation of physicians is requested in the referral of patients with tumors for a study now being conducted by the Medicine Branch of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland. The purpose of this investigation is to gain information on rate of cellular proliferation and growth of tumors in man.

Of particular interest are patients with untreated lymphosarcoma or reticulum cell sarcoma with tumor readily accessible to biopsy. Patients with other tumors, particularly lung, will be considered if they have accessible disease. Patients will be treated when appropriate, and when the study is completed, the patient will be returned to the care of the referring physician.

Physicians who wish to refer patients for these studies should write or telephone: Vincent T. DeVita, M.D., Clinical Center, Room 12–N–236, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 656–4000, extension 61480, area code 301.

New York physicians named to AMA committees

Twenty physicians from New York State have been named to councils and committees of the American Medical Association, according to recent announcements by Wesley W. Hall, M.D., chairman of the AMA's Board of Trustees.

Among these are the following:

Reelected: James H. Sterner, M.D., Rochester, as chairman of the Council on Environmental and Public Health; Norman S. Moore, M.D., Ithaca, as chairman of the Council on Voluntary Health Agencies.

Appointed: George Himler, M.D., New York City, as chairman of the Committee on Planning and Development; Edmund D. Pellegrino, M.D., Stony Brook, as vice-chairman of the Committee on Nursing; Henry Brill, M.D., Brentwood, as chairman of the Committee on Alcoholism and Drug Dependence of the Council on Mental Health; Ralph S. Emerson, M.D., Roslyn Heights, as co-chairman of the Physicians Advisory Committee on Television, Radio, and Motion Pictures.

Reappointed: Marvin A. Block, M.D., Buffalo, to the Committee on Alcoholism and Drug Dependence of the Council on Mental Health; Milton Helpern, M.D., New York City, John C. McClintock, M.D., Albany, and Irving M. Pallin, M.D., Brooklyn, to the Physicians Advisory Committee on Television, Radio, and Motion Pictures; Granville W. Larimore, M.D., Albany, to the Council on Environmental and Public Health; Julius B. Richmond, M.D., Syracuse, to the Council on Mental Health; James M. Blake, M.D., Schenectady, to the Council on Legislative Activities.

Also: Henry I. Fineberg, M.D., New York City, to the Committee on Quackery; Cyril H. March, M.D., New York City, to the Committee on Cutaneous Health and Cosmetics; Theodore G. Klumpp, M.D., New York City, to the Committee on Exercise and Physical Fitness; Alexius Rachun, M.D., Ithaca, to the Committee on Medical Aspects of Sports; Gotthard Booth, M.D., New York City, to the Committee on Medicine and Religion; Ludwig Lederer, M.D., New York City, to the Committee on Aerospace Medicine of the Council on Occupational Health; William R. Buckley, M.D., Rochester, to the Subcommittee on Skin of the Committee on Rating of Mental and Physical Impairment.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Medical center opens unit for burn victims

A new unit for the treatment of patients suffering from burns has been opened at Albany Medical Center Hospital. The unit is specially designed and equipped to make practical the maintenance of highly aseptic conditions, since infection is a frequent and dangerous complication in cases of severe burns. Special paints and wall covering have been used and only stainless steel equipment is found in the rooms and lavatories. Also special nursing staff, similar to that in the hospital's intensive care unit, has been assigned to this unit.

Behcet's syndrome studied by Clinical Center

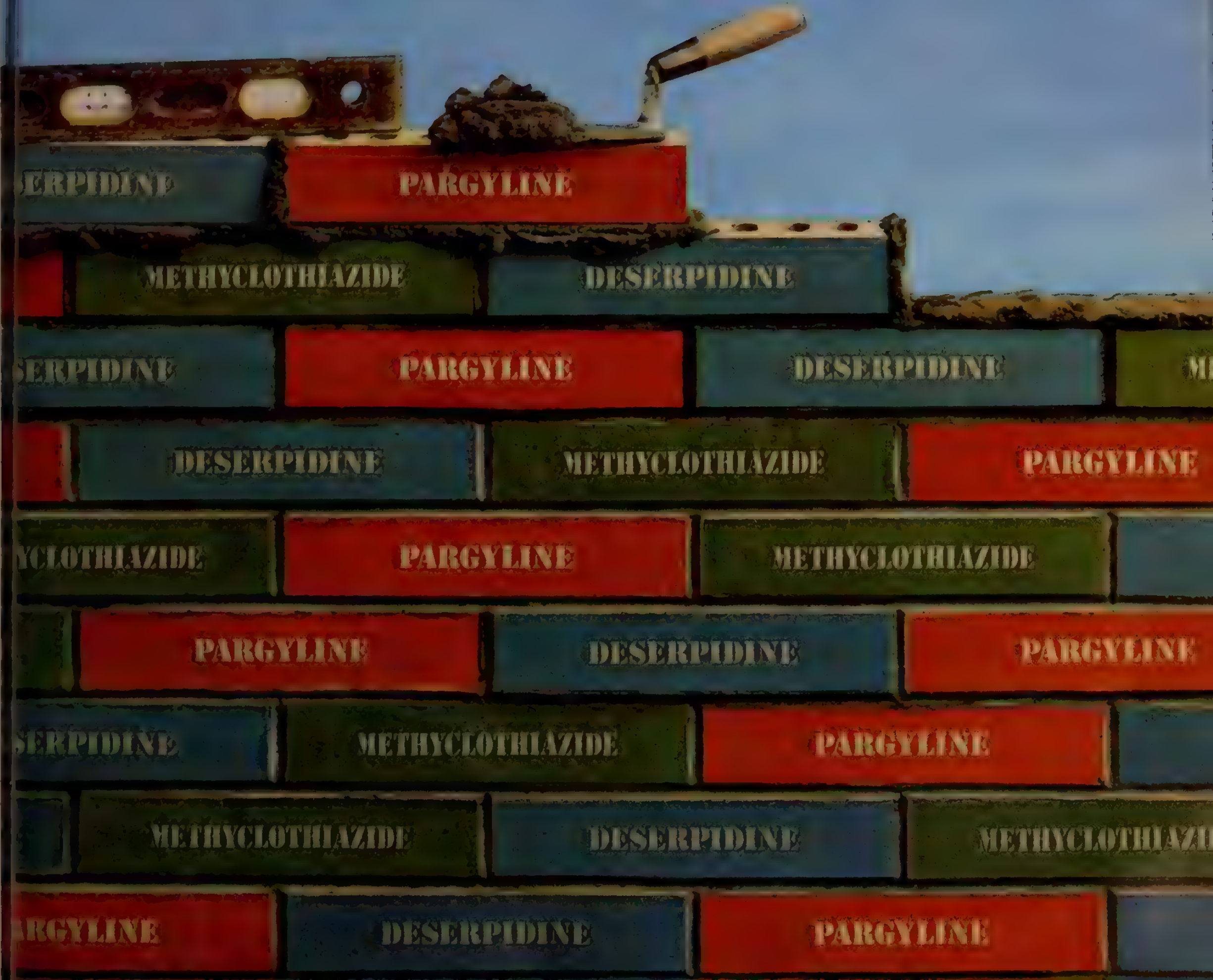
The cooperation of physicans is requested in the referral of patients for a continuing study of Behcet's syndrome being conducted by the National Institute of Dental Research at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Needed are patients with oral ulcerative lesions and other characteristic manifestations, such as arthritis, ophthalmologic inflammation, erythema nodosum, erythema multiforme, brain stem, meningomyelitic or organic confusional syndromes, or significant gastrointestinal disease. Studies will include blood tests, electroencephalography, and lumbar puncture. Selected

continued on page 840

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension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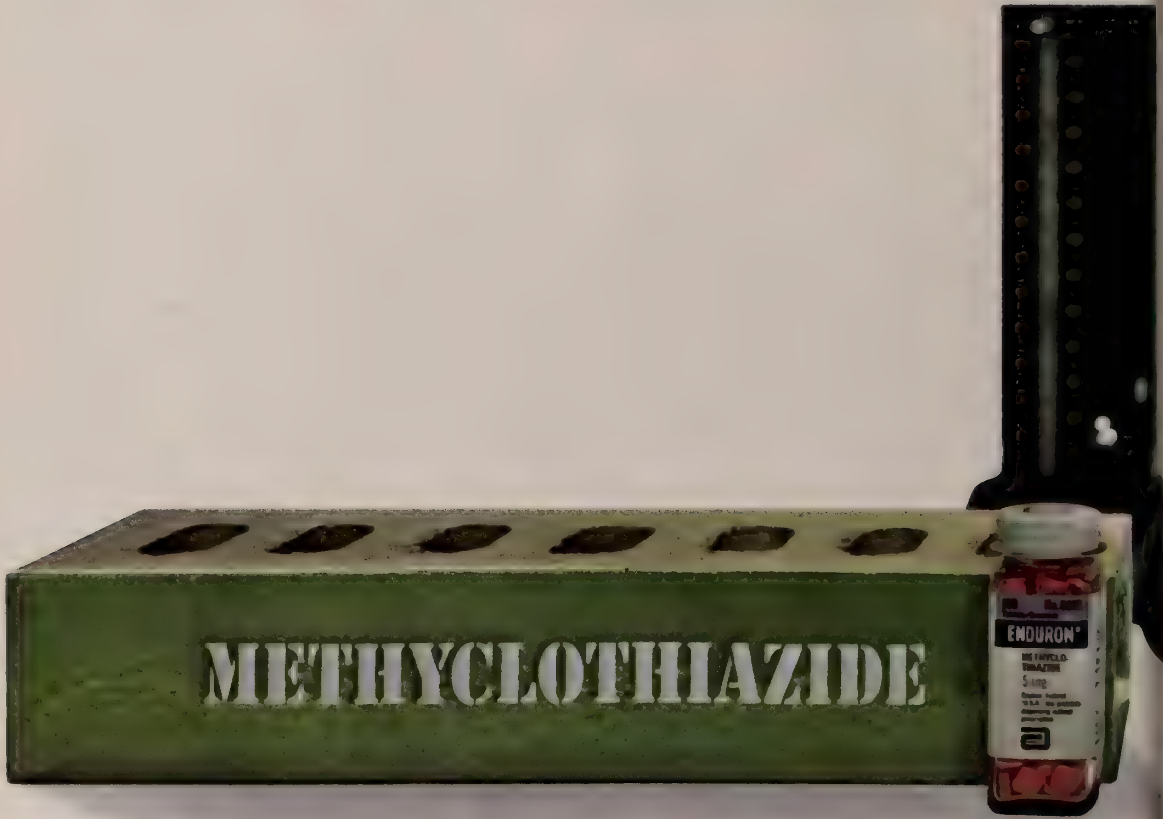
Enduron: (methyclothiazide) A basic building block for mild hypertensives



Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

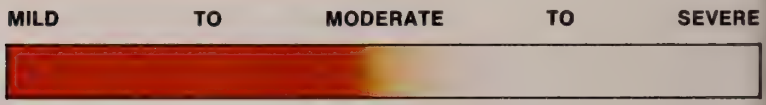
Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

ENDURON®

METHYCLOTHIAZIDE



See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension

DESERPIDINE
METHYCLOT
ZIDE
ENDURONYL

Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

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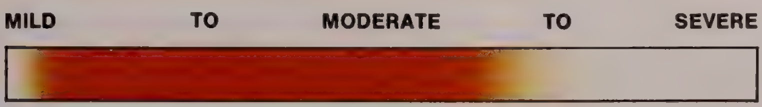
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.



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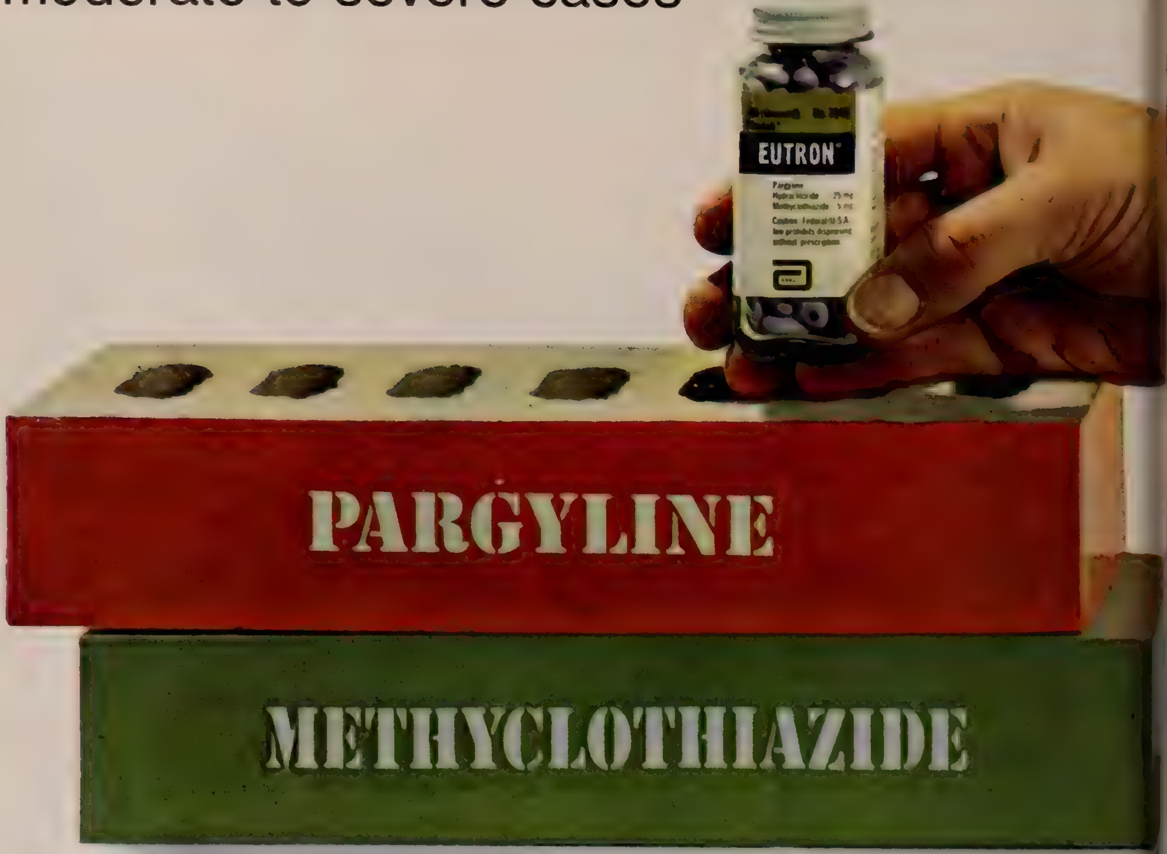
801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

ENDURON® | ENDURONYL®

METHYCLOTHIAZIDE

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg.

ndications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications—Moderate to severe hypertension.

Contraindications—Pheochromocytoma, paranoid schizophrenia, hyperthyroidism and advanced renal failure. Not recommended in malignant hypertension, children under 12, pregnant patients.

Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. 804438R

ABBOTT

TM-TRADEMARK

continued from page 834

patients will be admitted to the Clinical Center for a period of two weeks or more. On completion of their studies, patients will be returned to the care of the referring physican who will receive a summary of findings.

Physicians interested in having their patients considered for admission to this study may write or telephone: Norman A. Cummings, M.D., Clinical Center, Room 2–B–10, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 656-4000, extension 1363, area code 301.

Center established for patients with arthritis

Arthritis Midway House is an inpatient rehabilitation center exclusively for patients with arthritis. It offers an intensive therapy program aimed at enabling patients to reach and maintain the maximum level of function and of independence in the community. Patients may be in an acute stage of the illness with little deformity or in a chronic stage with advanced deformities.

Midway House is sponsored by the New York Chapter of the Arthritis Foundation, with the cooperation and support of the New York University Rheumatic Diseases Study Group, under a grant from the U.S. Public Health Service. The City of New York has made available a ward at Goldwater Memorial Hospital as the site for the program and contributes supportive services to it.

Admission is open to residents of New York State (in special cases to a limited number of out-of-state residents) who are suffering with any form of arthritis and who are psychologically able to participate in their own treatment. Referrals to Arthritis Midway House are accepted from hospitals, outpatient clinics, private physicians, health and welfare agencies, The Arthritis Foundation, and patients themselves or their families. A referral may be made by telephoning the nearest office of The Arthritis Foundation or Midway House directly.

For further information call The New York Chapter of The Arthritis Foundation, Inc.: In New York City, Miss Maureen Pyne, 532–1740; in Nassau County, William Knott, 516–747–1811; in Westchester, Mrs. Ilse Berk, 914–946–4900; and Arthritis Midway House, Miss Linda Matheson, 421–7270.

Trophoblastic neoplasia center established in Buffalo

A Trophoblastic Neoplasia Center, located in the Buffalo General Hospital, has been established by the Department of Obstetrics and Gynecology, State University of New York at Buffalo, in cooperation with the Roswell Park Memorial Institute. Laboratory services of the Center are available to physicians in Upstate New York and neighboring areas as an aid in the diagnosis, treatment, and follow-up of patients with malignant trophoblastic tumors.

The laboratory services of the Center are supported by the Public Health Service; as a result, multiple determinations of chorionic gonadotropin titer are now available, at no charge, for every patient with choriocarcinoma and hydatidiform mole. Also available without charge will be assays to screen patients in the "high-risk group," patients with unexplained post-abortal and postpartum bleeding, pulmonary emboli, pulmonary metastasis from an unknown primary source, cerebral vascular accident, and other manifestations when trophoblastic growth is considered.

To arrange for these assays or consultations write: Myroslaw M. Hreshchyshyn, M.D., 100 High Street, Buffalo, New York 14203.

Clinical Center to study bilateral cryptorchidism

Physicians are requested to refer patients with bilateral cryptorchidism for studies being conducted by the Surgery and Endocrinology Branches of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Needed are patients of all ages with bilateral cryptorchidism and patients in whom exploration is contemplated or in whom exploration has already failed to reveal gonads. On completion of their studies, patients will be returned to the care of the referring physician who will receive a summary of findings.

Physicians interested in referring patients for admission to these studies may write or telephone: Elwin E. Fraley, M.D., room 10–N–119, or Marvin A. Kirschner, M.D., room 12–N–206, at the Clinical Center, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 656–4000, extension 63351 or 63079, area code 301.

Personalities

Appointed. Leonard W. Sincerbeau, M.D., Ithaca, as staff physician of Ithaca College's health center...Julian B. Schorr, M.D., New York City, as director of clinical services for The Greater New York Blood Program... Harry S. Goldsmith, M.D., New York City, as chief of the gastric and mixed tumor service at Memorial Hospital for Cancer and Allied Diseases.

Elected. Milton Helpern, M.D., New York City, as president of the National Association of Medical Examiners...Irving J. Frohman, M.D., Belle Harbor, as chairman of the medical board of Peninsula General Hospital... Edward C. Weppner, M.D., Niagara Falls, as president of the medical staff of Memorial Hospital...Sidney Lilienfeld, M.D., Far Rockaway, as president of the medical board, Peninsula General Hospital.

Named. Norman Last, M.D., Carmel, pathologist of Putnam Community Hospital.

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Antacid users like the more fluid consistency of RIOPAN Antacid Suspension because it's a welcome relief from thick, chalky mixtures. RIOPAN provides fast, prolonged antacid action and a pleasant minty taste.

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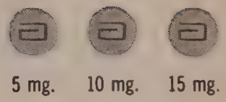

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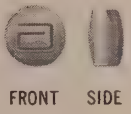
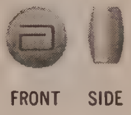


DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital



The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.

the secret of controlling your weight

Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories. 801444

To help you control your weight...

lease see Brief Summary next page.

Ask Your Abbott Man For Free Supplies

Book Notes

Introduction to Anesthesia: The Principles of Safe Practice. By Robert D. Dripps, M.D., James Eckenhoff, M.D., and Leroy D. Vandam, M.D. Third edition. Quarto of 529 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $10.50.

This third edition has been extensively revised, reflecting primarily the large amount of knowledge which has become available since the second edition appeared in 1961. Every chapter has been rewritten and, in most instances, expanded. New chapters have been added on the effect of prior drug therapy on the course of anesthesia and on regional nerve blocks. Several chapters have been combined and one omitted. Numerous references to pertinent literature are also provided.

Hamilton Bailey's Demonstrations of Physical Signs in Clinical Surgery. Edited by Allan Clain, M.B. Fourteenth edition. Quarto of 627 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. $16.75.

This work, an acknowledged classic, is the first new edition to appear since Hamilton Bailey's death in 1961. It is intended primarily for the medical student commencing clinical studies and, for him, the material is presented in ordinary type. Small print sections are intended for postgraduates. This does not apply to the medical student in the tropics, however, for whom some of the small print sections are basic. In this new edition a number of obsolete physical signs have been deleted along with some alternative methods of examination. Also, some sections not falling strictly into the field of general surgery (e.g. physical signs of eye diseases) are omitted. As a consequence, this edition is some 300 pages shorter than the last one.

Textbook of Anatomy. By W. Henry Hollinshead, Ph.D. Second edition. Quarto of 994 pages, illustrated. New York, Harper & Row, 1967. $18.75.

The present edition follows the first one in general format. A relatively brief section presents a general account of the systems of the body with emphasis particularly on continuities of the various systems from one part of the body to another, and on anatomy and function which pertain to each system as a whole rather than specifically to its regional parts. The major part of the book is regional with material presented as much as possible in the order in which it is likely to be observed in the dissecting room. It has been carefully and fully revised in both text and figures.

Brief Summary

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form

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10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
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Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic? We'll send you samples if you'll send a request on your Rx blank, addressed to Department 150.)

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Medical Meetings

Seminar in Neurology

The State University of New York at Buffalo School of Medicine is sponsoring a seminar in "Neurology" to be held April 2, from 9:00 A.M. to 5:00 P.M., at Meyer Memorial Hospital, Buffalo. This program will emphasize the examination of patients demonstrating neurologic disorders that are commonly encountered in office practice.

This program is accepted for seven accredited hours by the American Academy of General Practice.

Enrollment is limited to 30; the tuition fee is $30 which includes the cost of luncheon. For registration and information write: Associate Dean for Continuing Medical Education, 2211 Main Street, Buffalo, New York 14214.

Tuberculosis topic of meeting

The 1968 Spring Conference on Tuberculosis and Other Respiratory Diseases is to be held April 22 and 23 at the New York Hilton Hotel. The conference is sponsored by the Brooklyn, New York, and Queensboro Tuberculosis and Health Associations, the New York State Tuberculosis and Respiratory Disease Association, and the New York Trudeau Society.

Geriatrics Society to meet in New Orleans

The silver anniversary meeting of the American Geriatrics Society is to be held April 25 and 26 at the Roosevelt Hotel, New Orleans, Louisiana. Presiding at the meeting will be the following officers of the American Geriatrics Society: Paul I. Robinson, M.D., New York, president; Hans H. Zinsser, M.D., New York, president-elect; and Edward J. Lorenze, M.D., chairman of the Board of Directors.

The program will feature the following topics and speakers:

April 25—"The Medical Profession and Care of the Aged," Dwight L. Wilbur, M.D., president-elect, American Medical Association; "Regional Health Centers," The Honorable Durward G. Hall, M.C., M.D.; "The Case for Geriatrics," Hans H. Zinsser, M.D.; "Nutritional Aspects," Leo Lutwak, M.D., Cornell University; "Human Thyrocalcitonin and Osteoporosis," Asher Haymovits, M.D., The Rockefeller University; and "Experimental Studies in Osteoporosis in Menopause," Paul D. Saville, M.D., Cornell University.

April 26—"Cryoprostatectomy," Myron S. Roberts, M.D., College of Physicians and Surgeons, Columbia University; "Geriatrics—Our Number One Sociomedical Problem (The Edward Henderson Lecture)," Howard A. Rusk, M.D., New York University College of Medicine; and "Aspects of Autoimmunity," William Dameshek, M.D., Mt. Sinai School of Medicine.

In addition to the scientific program, a Forum on Medicare will be held April 26, from 2:00 to 5:00 P.M. The program is as follows: "Medicare: Challenge or Chore," Hilton S. Read, M.D., Ventnor Diagnostic Center, New Jersey; "Current Look at Medicare," Erwin Witkin, M.D., chief medical officer, Bureau of Health Insurance, Department of Health, Education, and Welfare; "The Extended Care Facility (Geriatric Division) at the Mt. Sinai New York City Hospital Center; Three-Years Experience," Leslie S. Libow, M.D., Robert M. Viola, M.D., and Martin F. Stein, Jr., M.D., all from the Mt. Sinai New York City Hospital Center.

Eye diseases topic of teaching day

The State University of New York at Buffalo and the Edward J. Meyer Memorial Hospital are sponsoring a teaching day in eye diseases to be held May 2 at the Meyer Memorial Hospital in Buffalo. The program will feature original papers by the chief resident of the Department of Ophthalmology and also the following guest speakers: Werner Noell, M.D., professor of physiology, State University of New York at Buffalo; Ramon Castroviejo, M.D., professor of clinical ophthalmology, New York University Post-Graduate Medical School; W. S. Hunter, M.D., clinical teacher in ophthalmic pathology, University of Toronto; Donald N. Zehl, M.D., assistant professor of ophthalmology, University of Rochester School of Medicine and Dentistry; and Charles J. Campbell, M.D., assistant professor of ophthalmology, College of Physicians and Surgeons, Columbia University.

For further information contact: W. Yerby Jones, M.D., Department of Ophthalmology, Edward J. Meyer Memorial Hospital, 462 Grider Street, Buffalo, New York 14215.

College of pharmacology and chemotherapy to meet

The fifth annual meeting of the American College of Clinical Pharmacology and Chemotherapy is to be held May 2 through 4 at the Claridge Hotel, Atlantic City, New Jersey.

There is no registration fee. For further information contact: Sage Rosen, administrative secretary, The American College of Clinical Pharmacology and Chemotherapy, 230 North Broad Street, Philadelphia, Pennsylvania 19102.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Symposium on the lens

The Alumni Association of the Brooklyn Eye and Ear Hospital is sponsoring a Symposium on the Lens to be held May 4 at the Brooklyn Eye and Ear Hospital, 29 Greene Avenue, Brooklyn. The following hospital staff physicians will participate: R. M. Fasanella, M.D., Norman S. Jaffe, M.D., Robert D. Mulberger, M.D., and A. Benedict Rizzuti, M.D.

Wadsworth lecture to be given in Albany

The nineteenth Augustus B. Wadsworth Lecture is to be given May 16, at 8:00 P.M., at the Division of Laboratories and Research, New York State Department of Health, Albany. Guest speaker will be Conrad L. Pirani, M.D., chairman of the Otto Saphir Department of Pathology, Michael Reese Hospital and Medical Center, Chicago, on the topic, "Clinical and Histologic Evolution of Poststreptococcal Glomerulonephritis."

Arthritis Foundation to mark twentieth anniversary

The twentieth anniversary meeting of The Arthritis Foundation is to be held May 18 through 20 at the Waldorf-Astoria Hotel in New York City. The theme of the symposium will be "Chemotherapy in the Rheumatic Diseases," and it will highlight practical therapy today and spell out current developments which promise key discoveries in the near future.

New Jersey medical society to hold convention

The Medical Society of New Jersey is holding its 202nd annual meeting May 18 through 22 at Haddon Hall in Atlantic City. In addition to the scientific sessions, a special session on "Suicide" is to be held May 19, at 1:00 P.M.

There is no registration fee for out-of-state and/or nonmember physicians.

Dextrans topic of symposium

The first international symposium on "Current Concepts of the Basic Actions of Dextrans and Their Clinical Application in the Cardiovascular and Related Fields" will be held May 19 and 20 at the Flagship Hotel on Galveston Island, Texas. The symposium is cosponsored by the Texas Heart Association, the Council on Circulation of the American Heart Association, the University of Texas Medical Branch, the University of Minnesota Medical School, and the biomedical division of Georgia Institute of Technology. Benjamin Alexander, M.D., of New York City, will be one of the participants in this symposium.

For further information contact: Texas Heart Association, P. O. Box 25041, Houston, Texas 77005.

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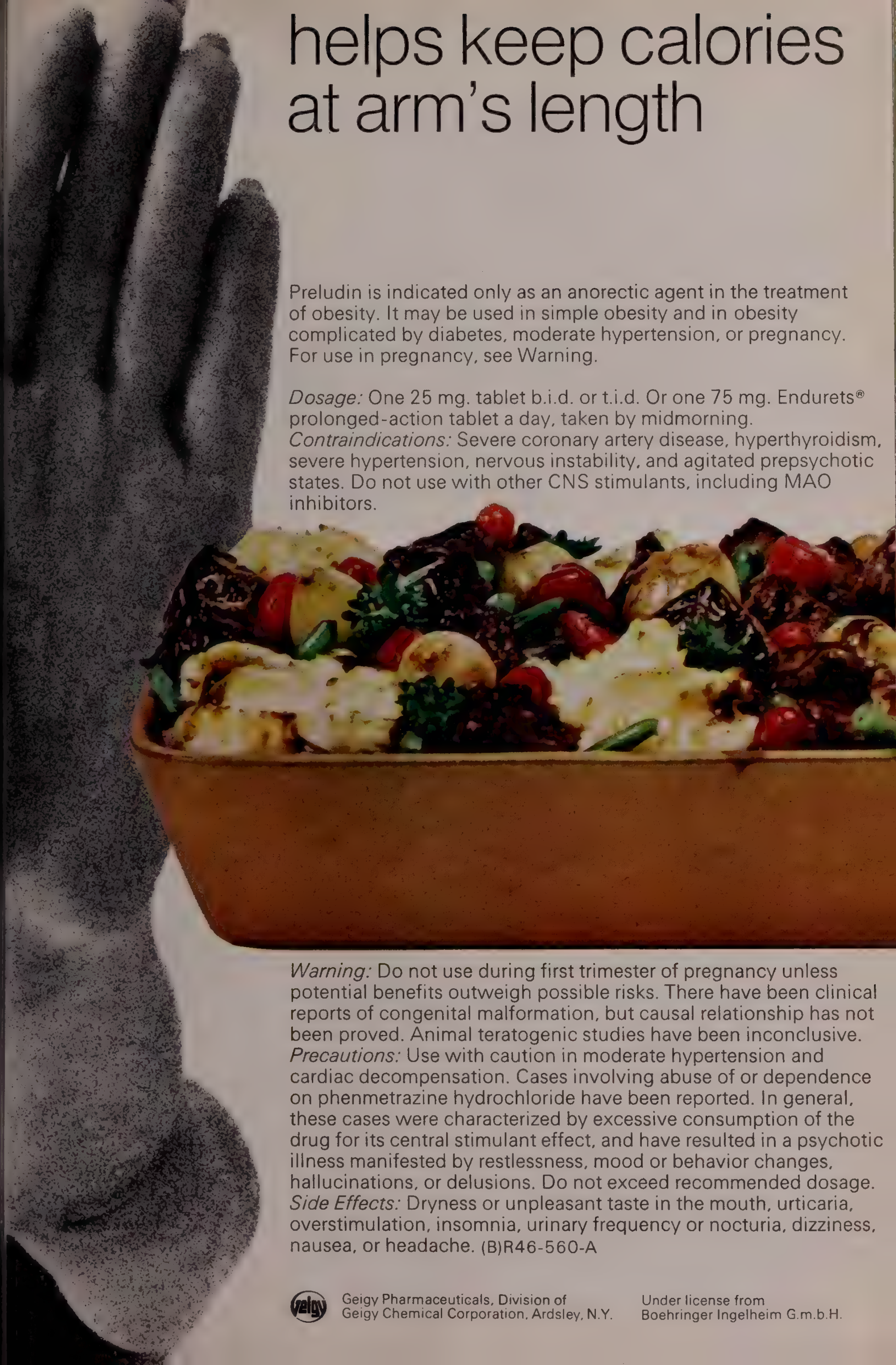
please see full
Prescribing Information.



helps keep calories at arm's length

Preludin is indicated only as an anorectic agent in the treatment of obesity. It may be used in simple obesity and in obesity complicated by diabetes, moderate hypertension, or pregnancy. For use in pregnancy, see Warning.

Dosage: One 25 mg. tablet b.i.d. or t.i.d. Or one 75 mg. Endurets® prolonged-action tablet a day, taken by midmorning.
Contraindications: Severe coronary artery disease, hyperthyroidism, severe hypertension, nervous instability, and agitated prepsychotic states. Do not use with other CNS stimulants, including MAO inhibitors.

Warning: Do not use during first trimester of pregnancy unless potential benefits outweigh possible risks. There have been clinical reports of congenital malformation, but causal relationship has not been proved. Animal teratogenic studies have been inconclusive.
Precautions: Use with caution in moderate hypertension and cardiac decompensation. Cases involving abuse of or dependence on phenmetrazine hydrochloride have been reported. In general, these cases were characterized by excessive consumption of the drug for its central stimulant effect, and have resulted in a psychotic illness manifested by restlessness, mood or behavior changes, hallucinations, or delusions. Do not exceed recommended dosage.
Side Effects: Dryness or unpleasant taste in the mouth, urticaria, overstimulation, insomnia, urinary frequency or nocturia, dizziness, nausea, or headache. (B)R46-560-A

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Medical Schools

The Myasthenia Gravis Foundation, Inc.

Medical student research fellowships. The Myasthenia Gravis Foundation, Inc., will award eight medical student research fellowships for the summer of 1968 with a stipend of $750 each. The students may elect a program in either basic or clinical research related to the problems of neuromuscular disease. The work must be conducted under the supervision of a specified preceptor, whether such person chooses to work in his own medical school or another closer to his place of summer residence.

There is no formal application form. The application should be in the form of a letter and should include the following: 1. Personal data, education, and reason for applying. 2. The proposed program and name of sponsor. 3. A letter of recommendation from the sponsor outlining the proposed program of work and acceptance of the candidate.

Applications should be submitted no later than April 15 to: William S. Fields, M.D., Department of Neurology, University of Texas, Southwestern Medical School, 5323 Harry Hines Boulevard, Dallas, Texas 75235.

Selection will be made by the Viets Fellowship Committee by May 15.

The recipient of the award is expected to submit a report of his research to Dr. Fields by October 15, 1968, or within two months after completion of the traineeship if this ends later than September 15, 1968.

Albany Medical College

Promoted. Girard J. Craft, M.D., a member of the Department of Medicine since 1949, has been promoted to associate professor of postgraduate medicine.

Cornell University Medical College

New division instituted. A Division of Psychology was instituted in the Department of Pediatrics on January 1 under the direction of Dr. Lee Salk, clinical assistant professor of psychology and attending psychologist, Department of Pediatrics. The new Division's special concern is the diagnosis and prevention of psychologic problems that present themselves in the context of medical illness or the hospitalization experience. The Psychology Division's services are available to all children and adolescents hospitalized in any part of the Center; the object is to prevent disturbance which may result from the environmental change, to minimize the trauma of hospitalization, and to facilitate good physical recovery. The Division's members provide "on-the-spot" consultations in the outpatient department and consult in other cases involving diagnostic evaluation, patient management, or psychologic therapy. Working in association with Dr. Salk in the development of this service is Dr. Gail Gardner, instructor in psychology and assistant attending psychologist in the Department of Pediatrics. A related function of the new Division will be the instruction of medical students and staff in the recognition and handling of a broad range of problems. Dr. Salk's aim is to develop this service into a comprehensive program in child development in which post-doctoral training in pediatric psychology will be offered. His companion purpose is to develop investigations that involve basic research dealing with processes of normal human development and the influence of very early growth on later behavior.

Downstate Medical Center

Guest speaker. Peter Miescher, M.D., professor of medicine, New York University Medical Center, was a guest speaker of the Department of Medicine, Division of Dermatology, on March 1. Dr. Miescher spoke on "Systemic Lupus Erythematosus."

Annual Alpha Omega Alpha lecture. John P. Merrill, M.D., associate professor of medicine, Harvard Medical School, and director, Cardiorenal Section, Peter Bent Brigham Hospital, will deliver the annual Alpha Omega Alpha lecture on April 1, 4 : 00 P.M., First Floor Lecture Hall, Basic Sciences Building. Dr. Merrill will discuss "Present Status and Future of Renal Transplant."

New appointments. New appointments announced are: Medicine: Raymond Damadian, M.D., assistant professor; Neurology: Leon M. Protass, M.D., clinical assistant professor; Pediatrics: Guido Fanconi, visiting professor; and Physiology: Robert Collin, M.D., visiting associate professor.

Recent promotions. To professor: Isadore Katz, M.D., radiology; Herbert C. Lichtman, M.D., medicine; and Robert S. Speirs, M.D., anatomy. To associate professor: Harrison C. Anderson, M.D., pathology; Sumner Berkovich, M.D., pediatrics; Maurice B. Feinstein, M.D., pharmacology; Milton Margulies, M.D., radiology; Martin Metz, M.D., medicine; and Mario Vasalle, M.D., physiology. To assistant professor: Thomas J. Athanassiades, M.D., pathology; Frederick Baekeland, M.D., psy-

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chiatry; and Dorothy M. Holden, M.D., medicine. To clinical assistant professor: Herbert Berner, M.D., rehabilitation medicine; and Enrique Pantoja, M.D., radiology.

Faculty notes. Michael J. Fisher, M.D., clinical instructor in surgery, has been elected secretary-treasurer of the New York Society of Colon and Rectal Surgeons. Patrick J. J. Fitzgerald, M.D., professor and chairman, Department of Pathology, has been elected a member of the Executive Committee Council of Academic Societies American Association of Medical Colleges; Herbert B. Goldman, M.D., clinical instructor in otorhinolaryngology, has been elected president, Society of Ophthalmological and Otorhinolaryngological Allergy. Jonathan T. Lanman, M.D., professor and chairman, Department of Pediatrics, has been appointed chairman of the Mead Johnson Award Committee, American Academy of Pediatrics. Erwin Lear, M.D., clinical associate professor of anesthesiology, has been appointed chairman, Committee on Communications of the American Society of Anesthesiologists. Sigmund A. Wesolowski, M.D., clinical professor of surgery, has been appointed chairman, Stroke Committee of the New York State Heart Assembly. Harold Zarowitz, M.D., clinical associate professor of medicine, has been elected vice-president, New York Diabetes Association. * Schuyler G. Kohl, M.D., professor of obstetrics and gynecology and associate dean, has been named chairman of the new Joint Awards Council of the State University of New York. The Council provides advice to the Chancellor in the general area of grants and fellowships and reviews recommendations regarding faculty proposals for support from the University Grants Fund, a new fund which is to be used primarily for support of new projects by younger investigators whose studies might not qualify for funds from other sources.

Grants. A total of $1,608,996, was received during November and December, 1967, for 19 research and training grants, providing for renewal of eight studies already in progress, six supplements, and five new projects.

Student American Medical Association lecture. Stuart C. Finch, M.D., professor of medicine, Yale University School of Medicine, delivered the Student American Medical Association Lecture on January 8. Dr. Finch discussed "Radiation Induced Neoplasia in Man."

Immunologist visits Moscow as U.S.-U.S.S.R. exchange scientist. Cyril Jones, M.D., clinical assistant professor of medicine, recently returned from seven weeks in Moscow as an exchange medical scientist under the U.S. Public Health Service program. Dr. Jones worked at both the First and Second Moscow Medical Institutes and at the Institute for Experimental and Clinical Surgery.

Visiting professor lecture. Guido Fanconi, director, Children's Hospital, Zurich, Switzerland, retired, presented the visiting professor lecture in February. Dr. Fanconi discussed "Inborn and Acquired Errors of Carbohydrate Metabolism." Dr. Fanconi was in residence from February 3 through March 3 in the Department of Pediatrics.

Mount Sinai School of Medicine

First Arthur J. and Nellie Z. Cohen professor of genetics. Kurt Hirschhorn, M.D., was appointed the first Arthur J. and Nellie Z. Cohen Professor of Genetics on February 20. The chair is endowed in the sum of $750,000. The principal speaker at the investiture was Alexander G. Bearn, M.D., chairman, Department of Medicine, Cornell University Medical College and physician-in-chief, The New York Hospital-Cornell Medical Center.

Films Reviewed

*These films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Sound the Trumpets. Sound, color, 16 mm., twenty-two minutes.

The film dramatically depicts for the first time how everyday thoughtlessness in building construction affects successful rehabilitation and integration into community life for millions of handicapped and aged citizens. It illustrates how architectural barriers in building design prevent the handicapped and aged from finding suitable housing, receiving an education, traveling, attending church, receiving adequate medical care and treatment, fulfilling their duties as citizens, buying groceries or clothing, visit-

continued on page 854

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* Film evaluations provided by the Committee on Audio Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman;* Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

"All Registered Nurses are Alike"

It stands to reason. They all go through the same training; they all have to pass the same tests; they all have to measure up to the same standards. Therefore, all registered nurses are alike.

That's nonsense, of course. But it's no more nonsensical than what some people say about aspirin. Namely: since all aspirin is at least supposed to come up to certain required standards, then all aspirin tablets must be alike.

Bayer's standards are far more demanding. In fact, there are at least *nine specific differences* involving purity, potency and speed of tablet disintegration. These Bayer® standards result in significant product benefits including gentleness to the stomach, and product stability that enables Bayer tablets to *stay* strong and gentle until they are taken.

So next time you hear someone say that all aspirin tablets are alike, you can say, with confidence, that it just isn't so.

You might also say that all registered nurses aren't alike, either.

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NEW!
DOUBLE
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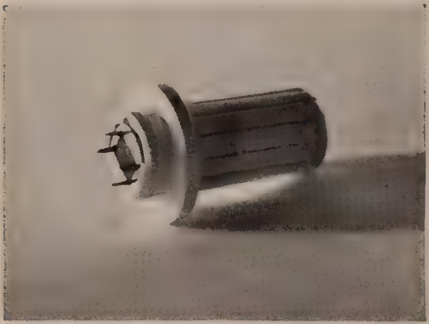
To fight TB- find it first!

Make tuberculin testing routine with every physical examination.



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(Rosenthal)

Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

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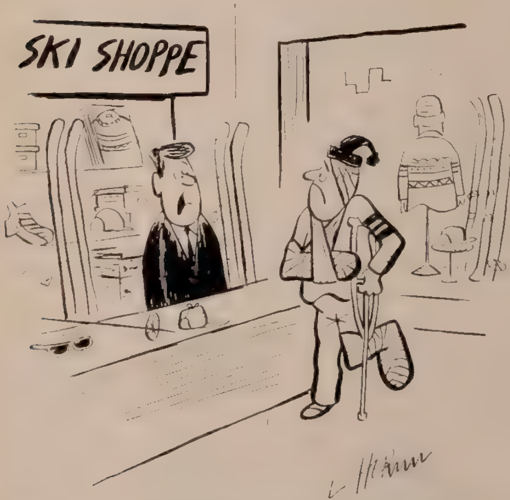


"Sorry, sir, I can't serve you. The boss says you've had enough."

continued from page 852

ing museums or art galleries, attending a sports event or theater production, finding suitable employment, and many other activities of daily living which the normal person takes for granted. It emphasizes how sensible planning and construction can bring savings and benefit to the community and to handicapped, aged, and nonhandicapped citizens in everything from increased church attendance and retail sales to lowered welfare costs and building insurance and maintenance costs

Source and producer: Minnesota Society for Crippled Children and Adults, 2004 Lyndale Avenue South, Minneapolis, Minnesota 55405.

Growth Failure and Maternal Deprivation. Sound, 16 mm., twenty-two minutes.

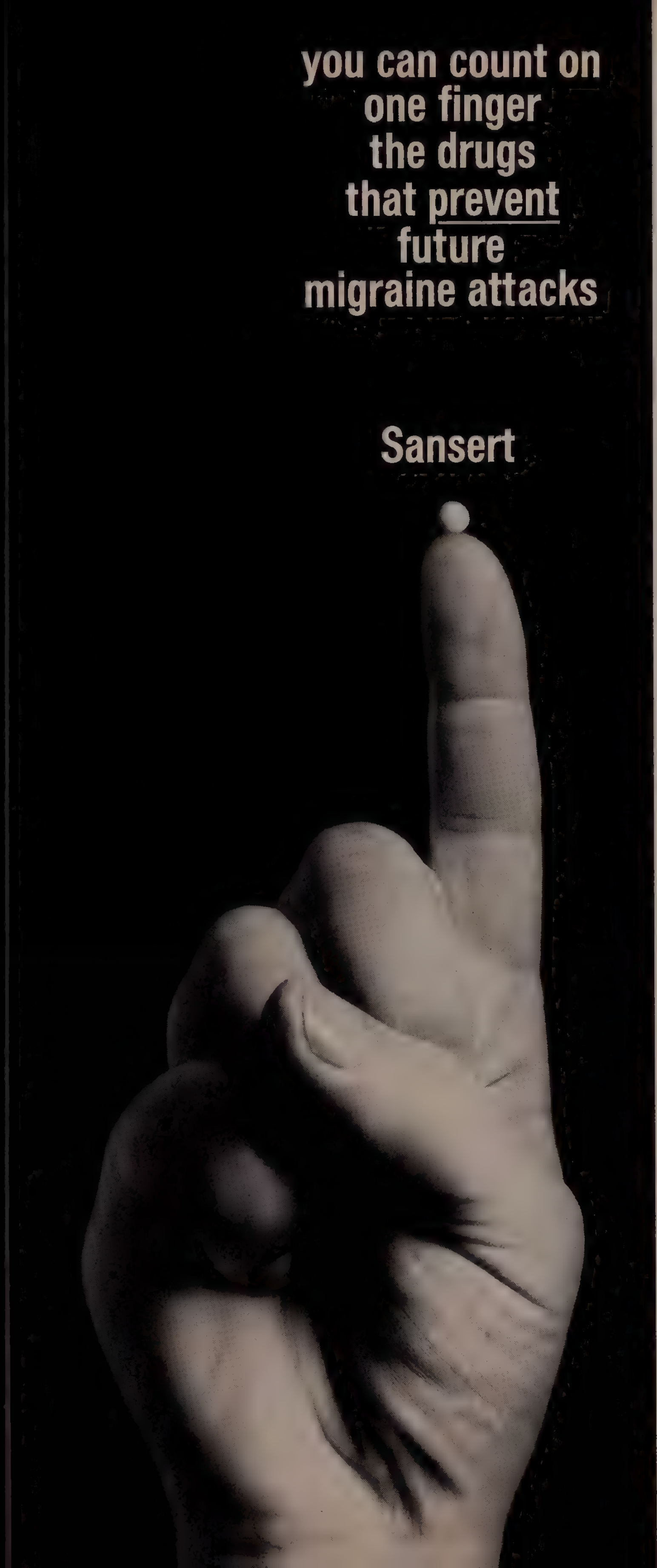
This film describes two children from an impoverished background, one thirteen months old and the other almost four years old, with severe growth failure because of inadequate mothering. It shows how the stress of poverty hampers the ability of parents to provide the warmth and stimulus, the essential ingredients of proper child care, and indicates briefly how these two children, who suffer from stimulus deprivation, compare with normal children. It demonstrates how exposure of these children to a great deal of human stimulation can result in a high degree of recovery in a very short time, six to eight weeks, and emphasizes that these results can be accomplished in any general hospital with a good pediatric unit or in a well-run child care facility and that the essential ingredients of human contact and stimulation can be provided by people who do not require special training to deal with this type of problem but who are warm human beings who can give the needed affection and stimulus.

Source and producer: McGraw-Hill Book Company, Text Film Department, 330 West 42nd Street, New York, New York 10036.

Immediate Postsurgical Prosthesis. Sound, color, 16 mm., forty-five minutes.

The film shows surgery, preparation of prosthesis, and training of patients to walk with it.

Source and producer: DuArt Film Laboratories, 245 West 55th Street, New York, New York 10019.



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Contraindications: Pregnancy, peripheral vascular disease, severe arteriosclerosis, severe hypertension, coronary artery disease, phlebitis or cellulitis of the lower limbs, pulmonary or collagen disease, impaired liver or renal function, cachectic or septic states.
Warning: Continuous medical supervision is recommended. In a few patients retroperitoneal fibrosis, pleuropulmonary fibrosis, cardiac murmurs, vascular bruits, arterial insufficiency and/or shutdown of major vessels have been reported and are indications for discontinuation of the drug. Spontaneous reversal of clinical and laboratory findings can usually be anticipated upon withdrawal of the drug. Therapy should be interrupted for three to four weeks at six-month intervals.
Side Effects: Girdle or flank pain and dysuria, evidence of urinary obstruction, elevated sedimentation rate and/or elevated BUN, phlebitis or signs of venous obstruction of the lower limbs, chest pain, shortness of breath, pleural friction rub or effusion should alert the physician to the possible diagnosis of retroperitoneal or pleuropulmonary fibrosis and the drug should be withdrawn. Cold, numb, or painful hands or feet and leg spasms have been noted, but have a tendency to subside when the drug is withdrawn. Nausea, heartburn, vomiting, insomnia, lightheadedness, dizziness, "unworldly" feelings, dependent edema, weight gain, and thinning of the hair may occur, but are infrequent.
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New York State Journal of Medicine

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Editorials

The changing of the guard

A well remembered name will be missing from the masthead beginning with this issue of the JOURNAL.

For twenty years Miss Alvina Rich Lewis served the JOURNAL first as technical editor, then as assistant to the editor, and until now as managing editor.

Serving in the terms of three editors she literally guarded the JOURNAL in many ways. Competence, tact, good manners, and good sense were the means by which she did this. The editor and the hall porter got the same even-handed, gracious, friendly treatment. The result is a smooth running JOURNAL with the reputation of having one of the finest copy editing results in the business.

Miss Lewis always gave more of herself than she expected of others and this, in itself, was an inspiration to her editors and coworkers.

She gave generously of her abilities to the local chapter of the American Medical Writers Association and to the National office of this organization, which she served as Secretary-Treasurer for four years.

She has a host of friends both within and without the medical profession and will be widely missed.

It is characteristic of Miss Lewis that she will retire from this job into another one for the Medical Society of the State of New York. She will become research assistant in the newly-formed Division of Research and Planning, with ample time to enjoy her retirement home at Wellfleet on Cape Cod, Massachusetts.

The combination of high ability and encompassing love is never lost. The JOURNAL is grateful for twenty years of these gifts and wishes Alvina Lewis health and happiness in her new cycle of life.

Application activity and medical college admissions test data of applicants to the class of 1966 to 1967

A total of 18,250 persons applied for admission to the 1966–1967 first-year class in U.S. medical schools. This is the second year in which there has been a decrease in the number of applicants following the high of 19,168 in 1964–1965. Based on the number of persons taking the Medical College Admission Test (MCAT) and U.S. population figures for the appropriate age group, it can be anticipated that the number of medical school applicants to the 1967–1968 class will remain approximately the same or will increase somewhat. The recent trend toward heightened application activity continued in 1966–1967 with an average of 4.8 applications per applicant. The resulting total of 87,627 applications represents a new high since 1950. One half of the total medical school applicants were accepted to the 1966–1967 first-year class, including 348 persons who did not matriculate. The multistage selection process utilized by medical school admission committees ensures the issuance of sufficient acceptances to fill available places. The first-year medical school enrollment of 8,991 students consisted of 8,775 new entrants and 216 students either repeating or completing the first year of medical school after a previous enrollment.

Table I presents a summary of application activity for each of the first-year med-

TABLE I. Summary of application activity 1957-58 to 1966-67

First-Year Class	Total Applicants	Applications Per Applicant	Total Applications	Accepted Applicants	New Entrants	First-Year Enrollment*	Per Cent of Total Applicants Accepted
1957–58	15,791	3.9	60,951	8,302	†	8,030	52.6
1958–59	15,170	3.9	59,102	8,366	†	8,128	55.1
1959–60	14,952	3.9	57,888	8,512	†	8,173	56.9
1960–61	14,397	3.8	54,662	8,560	†	8,298	59.5
1961–62	14,381	3.7	53,834	8,682	8,143	8,391	60.4
1962–63	15,847	3.7	59,054	8,959	8,394	8,642	56.5
1963–64	17,668	4.0	70,063	9,063	8,565	8,842	51.3
1964–65	19,168	4.4	84,571	9,043	8,587	8,836	47.2
1965–66	18,703	4.7	87,111	9,012	8,554	8,760	48.2
1966–67	18,250	4.8	87,627	9,123	8,775	8,991	50.0

* Includes previously enrolled students. Enrollment for 1957–61 based on AAMC-AMA Liaison Questionnaire data. Enrollment for 1962–67 based on AAMC Applicant Study data.

† Data not available.

TABLE II. Mean MCAT Scores of accepted, rejected, and total applicants, 1961-62 through 1966-67

	Mean MCAT Scores						
First-Year Class	Verbal Ability	Quantitative Ability	General Information	Science	No. Taking MCAT	Percentage of Total Applicants	Total Applicants
			Accepted Applicants				
1961–62	533	538	522	537	8,633	99.4	8,682
1962–63	544	537	541	545	8,920	99.6	8,959
1963–64*	537	552†	549	545	9,021	99.5	9,063
1964–65	540	567†	561	556	9,015	99.7	9,043
1965–66	541	583	565	549	8,983	99.7	9,012
1966–67	549	585	566	550	9,102	99.8	9,123
			Rejected Applicants				
1961–62	469	465	469	458	5,340	93.7	5,699
1962–63	475	464	485	460	6,515	94.6	6,888
1963–64*	484	476†	501	467	8,247	95.8	8,605
1964–65	481	492†	509	473	9,802	96.8	10,125
1965–66	473	502	511	466	9,324	96.2	9,691
1966–67	488	510	516	478	8,788	96.3	9,127
			Total Applicants				
1961–62	509	510	501	507	13,973	97.2	14,381
1962–63	515	506	517	509	15,435	97.4	15,847
1963–64*	511	516†	526	508	17,268	97.7	17,688
1964–65	509	528†	534	513	18,817	98.2	19,168
1965–66	507	542	538	507	18,307	97.9	18,703
1966–67	519	548	541	515	17,890	98.0	18,250

* Figures include University of Tennessee applicants for all terms during 1963 plus those for the March, 1964, term.

† Figure has been adjusted. See 1965–66 study of applicants.

ical school classes from 1957–1958 to 1966–1967. The number of first-year places in 1966–1967 rose significantly for the first time in the past three years to a record high that provided slightly more places for new entrants this year than the total first-year enrollment of the preceding year. The average MCAT scores of the 98 per cent of all 1966–1967 applicants who took the test are similar to the average scores obtained by applicants in previous years as shown in TableII.

Since a number of factors serve to limit the selectivity of both medical schools and applicants, there is an overlap in the ability levels of accepted and rejected applicants as represented by the distribution of MCAT scores for each group. The mean MCAT scores of rejected applicants show improved performance over previous years, suggesting that an increasing number of these rejected applicants might have qualified for medical school if additional places had been available. This consideration, together with projected increases in the number of applicants in the immediate future, indicate the potential for significant expansion of medical school enrollment without compromising high admission standards for medical students.

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SYMPOSIUM

Management of Skin Cancer: Basal Cell Epithelioma

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Roentgen Therapy

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IN MANY INSTANCES, any one of the modalities of treatment under discussion in this symposium can be expected to produce an equally favorable result. However, very often the anatomic location, size, depth, and other complicating factors determine the choice of method.

We consider roentgen therapy to be frequently the treatment of choice for basal cell cancer located in facial areas where surgical excision might result in objectionable cosmetic deformity. This is especially so in lesions involving the nose where preservation of contour is most important. Also, if the tumors are not too large, excellent cosmetic results are obtained in the canthus and eyelid regions. For most lesions of the scalp surgery is preferable, but good therapeutic results can be achieved with roentgen therapy even in large and penetrating carcinomas with fixation.

Basal cell cancer arising in atrophic scars can better be treated with surgery, chemosurgery, or electrosurgery. Likewise, these methods are more appropriate for the occasional basal cell carcinoma found on the extremities. While one can conceive of a rare exception, the retreatment of radiation failures with more irradiation is not recommended. These areas of residual carcinoma can be controlled much more effectively with surgery or chemosurgery. There is a great risk of exceeding skin tolerance if cancerocidal dosage of radiation is repeated. Combinations of roentgen rays with other modalities for the most part are not advisable in the treatment of cutaneous cancer. The rare exceptions might be instances where irradiation is used to reduce the size of a large tumor to simplify later surgical resection or to follow up post surgery where total resection is not feasible.

Technic

The dose schemes of roentgen therapy employed routinely in the radiation therapy department of the Roswell Park Memorial Institute are essentially those described in detail by Murphy[1] and evaluated in previous publications.[2,3]

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These total and increment doses are consistent with the time-dose plots of Strandquist, Patterson, and others in common usage throughout the world. A theoretical discussion of the specific limitations of such time-dose relationship constructions is beyond the scope of this article, but the effect of field size on the optimum therapeutic range and the role of the size of the individual fraction doses on biologic effectiveness are but two facets of the subject that have neither been fully clarified nor calculated. However, in spite of gaps in precision, these curves are useful guides in the formulation of a treatment scheme. It is noteworthy that the time-dose plots constructed from data in the treatment of squamous cell carcinoma of the larynx and uterine cervix closely parallel the slope of the Strandquist curve.

Moderate low voltage with a peak of 100 kilovolts (half-value layer 1.5 mm. aluminum) produces a quality of radiation with sufficient depth dose for most cutaneous cancers. Unless the area is unusually large, a target skin distance of 15 to 20 cm. is adequate.

Prolongation of the over-all treatment time results in increased skin tolerance and probably enhances therapeutic effectiveness. Therefore, a protracted treatment scheme is preferable to the single massive dose technic. Arbitrary dosage figures set forth in cookbook fashion are not applicable to many of the tumors presenting problems in radiation therapy. Therefore, only a very general discussion of dosage is possible apart from references to specific cases. The degree of fractionation and consequently the over-all treatment time and total dose are determined by the field size, the anatomic location, and other modifying factors. Usually basal cell carcinomas in fields of 2.5 cm. diameter and less can be treated with daily fractions of 500 r to a total of 4,500 to 5,000 r. For lesions requiring a field size larger than 2.5 cm., smaller daily fraction doses, such as 400 r or less may be given until a total dose of about 5,200 to 6,000 r is reached. All dosages are calculated to include backscatter at the surface.

For thick, bulky lesions, harder quality radiation from a peak of 140 to 200 kilovolts (half-value layer 0.4 to 0.9 mm. copper) is used. In these tumors the dose should be a calculated cancerocidal depth dose delivered to the estimated depth of the base of the tumor. Here it is even more important to build up the total dose with daily fractions, the larger the area to be treated, the smaller the fraction doses, and consequently, the greater the over-all time span.

Very low voltage, 45 kilovolts (half-value layer 0.3 mm. aluminum), short-distance (2-cm.) radiation with the Phillip's tube can be used for extremely superficial skin carcinoma requiring a field size of 2.5 cm. or less. However, this machine has a comparatively limited range of usefulness and usually is found only in large institutions.

Also, for the very superficial flat cutaneous carcinomas, the so-called eczematoid or psoriasiform type that often involve large areas, extremely soft radiation is sometimes the answer to what otherwise might be a very difficult problem. With a beryllium tube using a peak of 30 kilovolts (no filter), a quality of half-value layer 0.06 mm. aluminum is obtained. Approximately 80 per cent of the beam is absorbed in the first 2 mm. of tissue. Thus the deeper vascular network is spared the unnecessary damage that would occur with the harder radiation used for thicker lesions. Dosage figures for this ultrasoft roentgen radiation close to the Grenz range are somewhat arbitrary and empiric. Excellent results have been obtained with a single dose of 4,000 to 6,000 r for small fields (up to 3 cm. diameter) and 1,000 r on consecutive days to a total of 4,000 to 6,000 r for larger fields. The resulting scars may be temporarily hyperpigmented but otherwise are minimal.

Causes of treatment failure

Most failures following radiation therapy are due to the employment of insufficient dosage. All too frequently, the approach to therapy is one of haphazard guesswork rather than a carefully planned scheme calculated to deliver a cancerocidal dose to the base of the tumor within a specific span of time. Errors in estimation of the peripheral extent of the tumor with a consequent inadequate field size results in reappearance of tumor at the edges of the treated site. The iceberg-like topography of cutaneous cancer, especially older lesions, is not always appreciated.

Complications of roentgen therapy

FIBROTIC AND UNSTABLE SCARS. Fibrotic and unstable scars usually can be prevented by using small increment doses with a longer over-all time. It is particularly helpful to do this when treating large fields.

NECROTIC ULCERATION. Necrotic breakdown and ulceration may result following a severe immediate reaction to the roentgen ray administration, or it may occur years after exposure to the radiation. Not only the total dose and depth but also the size of individual fraction doses and the over-all treatment time determine the biologic effect. Skin tolerance is influenced by field size and the anatomic site. It is likely that exposure of radiation scars to intense cold, sunlight, and direct trauma may trigger such necrotic breakdowns. In previous publications we have reported detailed studies of this phenomenon.[4,5]

SLOW TUMOR REGRESSION. Occasionally we see that a tumor requires as long as four to six months or even longer to completely involute following cessation of therapy. As long as the involution is progressive, even though it is slow, it is well to wait at least six months before considering failure.

OCCLUSION OF LACRIMAL DRAINAGE SYSTEM. Occlusion or partial occlusion of the lacrimal drainage system may occasionally occur following irradiation of a tumor of the inner canthus which invaded these structures. Surprisingly, this occurs rather rarely.

PSEUDORECIDIVE. A very infrequent complication is the benign self-healing pseudoepitheliomatous wart-like lesion which occasionally develops at the treated site soon after the treatment for the carcinoma has been completed, and the irradiation reaction is subsiding. The term "pseudorecidive" has been applied because such a lesion can be easily confused with a recrudescence of the original cancer. The origin of these interesting but disturbing lesions is unknown. The literature has been reviewed by Herold and Nelson.[6]

Follow-up routine

After treatment, patients with basal cell carcinoma, which rarely metastasizes, are seen for periodic checkups to determine whether or not there is any visible or palpable residual of the tumor. The first 3 checkup visits are three months apart with subsequent examinations every six months for at least three years. Lesions in the most potentially dangerous areas, such as about the nose and canthi, lesions larger than average, or any which present a therapeutic problem where the possibility of recurrence might be anticipated to be greater than usual, receive more frequent inspection extended for five years or longer.

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Curettage and Electrodesiccation

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DERMATOLOGISTS CONTINUE to choose sharp curettage and electrodesiccation as the most convenient and most efficient method for eradicating selected lesions of basal cell epithelioma. Despite intemperate statements in medical journals and texts criticizing this method of therapy, it continues to yield high rates of cure when performed by experienced dermatologists.

Method of treatment

The success of this method depends on several factors peculiar to many cases of basal cell epithelioma. In addition to the replacement of normal epidermis by epitheliomatous tissue, the stroma underlying the lesion shows a fibroblastic response rich in mucopolysaccharides.[1,2] These factors make it relatively simple to separate diseased tissues by sharp curettage from the more dense and firm normal subjacent cutis.

Because some lesions of basal cell epithelioma do not show this type of stromal response, they may be better treated by other modalities. Typical of this group are the clinical lesions of morphea and infiltrating basal cell epithelioma where the islets of basal cell epithelioma are intimately admixed with a very dense fibrous stroma. In certain anatomic sites other types of therapy, such as x-ray, may yield a better cosmetic and functional end result. These include basal cell epithelioma involving the vermilion of the lip or commissures of the mouth, canthi of the eye, and eyelid margins. Lesions of the tip of the nose and edges of the ala nasae will respond to sharp curettage and electrodesiccation but may show less cosmetic deficit with x-ray therapy. However, the judgment about including or excluding a particular lesion will depend on the many factors specific to the individual case.

Size of lesion should be coupled with a description of the histopathology. Lesions of superficial basal cell epithelioma of several centimeters or more are readily eradicated by this technic. Large infiltrating lesions extending down to and involving bone or cartilage are best excluded from this type of therapy.

While it has been said that less training is necessary to acquire the skill for this type of therapy than is needed for scalpel excisional surgery and x-ray therapy, one must realize that the mere acquisition of knowledge about how to use a sharp curet and the electrodesiccating current is hardly sufficient to produce the desired cure rates. There is a high correlation between the experience of the operator and the cure rate he attains.

A question frequently raised is why it is necessary or desirable to perform a biopsy prior to treatment. While the skilled and experienced dermatologist has little difficulty in recognizing basal cell epithelioma clinically, a biopsy result provides unequivocal knowledge of the diagnosis. Equipped with this knowledge, the dermatologist proceeds with more confidence to use a vigorously applied curet and electrodesiccating current. Pretreatment biopsy necessitates an extra visit for the patient. In some rural areas, this may pose an economic problem, but it is suggested that whenever possible, a biopsy should precede definitive therapy. Exceptions, of course, would be in basal cell nevus syndrome and multiple superficial epitheliomata where, after a few biopsies had been taken to establish the diagnosis, therapy might reasonably be continued without taking a biopsy on each lesion.

The problem arises about the type of biopsy to take in basal cell epithelioma when one anticipates that the therapy will be sharp curettage and electrodesiccation. Here again, there are conflicting points of view. There are valid reasons to favor the use of the scalpel shave biopsy, parallel to the skin surface, rather than the punch biopsy or scalpel vertical incisional biopsy.

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The reason for this is well known to dermatologists. When the patient returns in one to three weeks for definitive therapy by sharp curettage and electrodesiccation, the defect created by punch or scalpel incisional biopsy results in the curet "dropping into" the cutis. The dermatologist cannot be certain at this point whether there is true full-skin thickness extension of the lesion or merely the previously created biopsy defect that the curet is entering. One must sacrifice the pretreatment knowledge of depth and invasiveness when a scalpel shave-type biopsy is elected. However, countering this deficiency is the clinical judgment of the dermatologist (after palpation and inspection) to include this lesion as suitable for treatment by sharp curettage and electrodesiccation. An added assurance is the fact that the technic of sharp curettage enables the operator to follow the lesion down to its fullest depth.

Having established that the lesion is suitable for sharp curettage and electrodesiccation, the next somewhat controversial point comes up. How vigorous should the curettage and electrodesiccation be? Here again, there may be some disagreement among experienced dermatologists, some of whom feel that "light" therapy is desirable because a better cosmetic result ensues. When one participates in a combined specialty skin tumor conference and sees the recurrences from all types of therapy and the problems attached to eradicating persistent or recurrent disease in a previously treated site, one is less disposed to treat basal cell epithelioma lightly excluding, for the time being, superficial basal cell epithelioma.

Initial curettage must be vigorous and forceful and must be followed by the use of the curet with the small-diameter working head to probe for and eradicate pseudopod-like extensions which are typical of basal cell epithelioma. Following aggressive curettage, electrodesiccation should be undertaken with a medium heavy spark, purposely destroying the bed and a rim of normal tissue beyond that which the sharp curet has removed. These processes are repeated a second time or several times until 3 to 5 mm. of normal tissue have been destroyed around the lesion.

Having completed the treatment by electrodesiccation and curettage, the question arises as to what special considerations must be given to after care. It is wise to tell the patient about the subsequent exudation which may take place in five to seven days. It is advisable to remove the crust, if it is present, in two to three weeks, particularly if one sees an inflammatory halo and suspects underlying purulent exudate since in such a wound bed exuberant granulation tissue is likely to develop which may compromise the cosmetic end result.

Subsequent observation of the healing scar may show hypertrophy in some cases. This usually subsides spontaneously but may be treated by injections of triamcinolone suspension (2.5 to 5 mg. per cubic centimeter). Usually a few drops of such a concentration injected at monthly intervals suffices to reduce any hypertrophic scarring.

Results

Table I shows a comparison of representative results of various modalities in the treatment of basal cell epithelioma. It is of interest that the lower cure rates reported for curettage and electrocautery or electrodesiccation were the result of differences in technic or were due to the inexperience of the operator. In the Williamson and Jackson[6] series the 89.2 per cent cure rates were from procedures performed for the most part by dermatology residents; whereas in the case of Sweet,[1] the 88 per cent cure rate may well be explained by his use of curettage and electrocautery destruction once as opposed to the more usual curettage and electrosurgical destruction of surrounding tissues two or more times at the first treatment. When he retreated his recurrences, his cure rate rose to 95.1 per cent. We may infer from this that had he performed the additional curettage and electrosurgery initially, his cure rate may well have been 95.1 per cent or better. It will be noted that cure rates of 96 per cent or better may be anticipated when experienced operators utilize the usual dermatologic technics of sharp curettage and electrodesiccation for the treatment of selected cases of basal cell epithelioma.

TABLE I. Basal cell epithelioma, reported cure rates

Author	Number of Lesions	Five-Year Cure Rate (Per Cent)	Method of Therapy, Comments
Lauritzen, Johnson, and Spratt (1965)[3]	2,900	96.6 (ten-year follow-up)	Surgical excision
Gooding, White, and Yatsuhashi[4]	1,197	98.1	Surgical excision, 5.5 per cent reported showing marginal extension; only 34.8 per cent of this 5.5 per cent required retreatment; "corrected" cure rate 98.1 per cent
Tromovitch (1965)[5]	75	96	Sharp curettage and electrodesiccation
Williamson and Jackson (1962)[6]	76	97.4 (four-year follow-up)	Sharp curettage and electrodesiccation
	148	89.2	
Knox, Lyles, Shapiro, and Martin (1960)[7]	56	96.67	Sharp curettage and electrodesiccation
Sweet (1963)[1]	593	88	Sharp curettage and electrocautery, single treatment; with retreatment 95.1 per cent cure rate
Freeman, Knox, and Heaton (1964)[2]			
105 patients at five years	540	97	Sharp curettage and electrodesiccation, lesions <2 cm.
12 patients at five years		100	Sharp curettage and electrodesiccation, lesions >2 cm.
68 patients at five years	112	98	X-ray therapy, lesions <2 cm.
11 patients at five years		91	X-ray, lesions >2 cm.
25 patients at five years	103	84	Surgical excision, lesions <2 cm.
8 patients at five years		87	Surgical excision, lesions >2 cm.
Mohs (1967)[8]	4,000 plus	99.1	Chemosurgical excision, microscopically controlled

Summary

The selection of sharp curettage and electrodesiccation as a method of treatment for basal cell epithelioma depends on an adequate knowledge and understanding of several factors.

These include the nature, biologic behavior, histologic picture, extent of invasion of the deeper underlying structures, and size of the lesion to be treated.

When this method of therapy is performed by the experienced dermatologist in selected cases, a high rate of cure may be anticipated. This cure rate compares quite favorably with other accepted methods of treatment.

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Surgical Treatment

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BASAL CELL CARCINOMAS are the most frequently occurring malignant tumor and the most amenable to treatment. However, this lesion should not be too lightly regarded. Even these lesions have resulted in disfigurement and loss of life.

The author has had the very good fortune to work closely with the Department of Dermatology at New York University Medical Center during the past seventeen years. During this period it has been possible to observe the results obtained in the treatment of various types of basal cell carcinoma treated by different modalities.[1]

The so-called "ordinary" primary basal cell carcinoma usually responds well to adequate treatment whether this treatment is electrodesiccation and curettage administered by the well trained dermatologist, radiation therapy given by a competent radiotherapist, or surgery performed by a knowledgeable surgeon.

On the other hand, the difficult and complicated basal cell carcinoma may be a problem regardless of the method used. These problem cases are usually a result of:

1. Anatomical location of lesion
2. Microscopic type of tumor: (*a*) infiltrative type, (*b*) morphea-like
3. Recurrent lesion

Surgery is often the method of choice for treatment of these difficult cases. It has the great advantage of giving the pathologist the best possible specimen for his study and comment as to the adequacy of the excision. Radiation therapy also can be very helpful in certain selected patients. This is particularly true in the poor-risk patient. More recently, the Mohs chemosurgical approach using zinc chloride paste and careful pathologic examination has found a place in the treatment of these cases.

It is particularly important that the "difficult" basal cell carcinoma be completely eradicated. If this type of tumor should recur, it may result in the loss of structures such as the nose, eyes, and ears and even in the loss of life itself. The best rule to follow to avoid the problem posed by a recurrent basal cell carcinoma is to remove the lesion adequately the first time.

Method and materials

In determining the surgical approach to these problem cases, the following factors are considered:

1. The anatomic location of the lesion
2. The extent of the lesion both on the surface and in depth
3. Whether the lesion is a primary or recurrent one
4. The microscopic appearance on biopsy

In regard to the anatomic location of the lesion, consideration must be given to the presence of nearby structures such as eyelid margins, motor and sensory nerves, and underlying structures such as bone, cartilage, arteries, and veins. One must never forget that the removal of this locally malignant tumor takes precedence over the preservation of any of the structures mentioned. However, that does not mean that these tissues should be needlessly sacrificed.

The fact that the lesion under consideration has been previously treated only to recur is an important consideration. This should alert the physician to the need for taking a wider and deeper margin than a primary lesion the same size and site would require. Before any treatment is begun, he should very carefully examine and palpate the recurrent lesion and note any unusual extensions of it.

The microscopic appearance of the biopsy of the basal cell carcinoma is important. One should be wary in casually approaching the basal cell carcinoma that is of the "infiltrative type." The "field-five" lesion also is one which may give trouble and be difficult to eradicate. These lesions require particularly wide margins of resection and a very careful and prolonged follow-up.

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Biopsies are most important. A 25 per cent error in making the correct diagnosis of basal cell carcinoma has been recorded by skilled observers.[2] It should go without saying that no large or disfiguring procedure should ever be done without a tissue diagnosis. After a positive biopsy has been obtained and the lesion is considered one best suited for surgical extirpation, the procedure should be carefully planned. One should consider the direction in which the incisions will be placed, the important structures that may be encountered, the width and depth of the excision, and the method of closure to be used.

If a primary closure is not feasible, ordinarily flaps should not be shifted to cover the defect. Only a simple full-thickness or split-thickness graft should be used. The reason is that one cannot be sure the lesion has in truth been adequately excised until the pathologist has examined the specimen and states that the surgical margins are all adequate, and in addition to this information must be added the test of time. About one year should elapse without reappearance before one can feel reasonably secure.

Placing a flap over a surgical defect may shift tumor-containing tissue about before the pathology report has been received. Even worse, it may fatally delay the detection of reappearance of tumor in the depths. A full-thickness graft usually gives a most acceptable cosmetic result. This result often looks so well that one is not frequently asked to remove the graft and replace it with a flap after the year of observation.

It is most important prior to operation to mark out with a dye, such as methylene blue, the planned extent of the incision. This is done before the infiltration with local anesthetic agents is performed to insure an adequate margin. As the incision progresses, the deep surgical surface of the specimen is carefully palpated to be sure that it, too, has an adequate surgical border.

Following excision, the specimen should be carefully oriented for the pathologist. This is done with a marking suture of silk placed in the specimen, and in addition a drawing is made on the pathology slip itself. It often helps to take the specimen over to the pathologist and personally go over it with him.

It is not the purpose of this article to dwell on the selection of donor sites to secure the best-matching skin graft; suffice it to say that color, texture, thickness, and the presence or absence of hair are important considerations.

If, following microscopic examination, the pathologist reports that the lesion extends to a surgical border, careful consideration should be given to performing a re-excision. If the surgeon also felt that clinically his surgical margins were doubtfully wide of the lesion, re-excision should be done. When this is required, it is usually performed after the operative site has healed. The entire area need not be removed if only one border is involved, a free graft was used for the closure, and the specimen was carefully oriented by the surgeon and the pathologist. Then only the incompletely excised area need be re-excised. On the other hand, if several borders are involved, there is no advantage in waiting for the operative site to heal and the graft to take, since the entire area should be re-excised. Also, if the operative site was closed primarily without a graft, the entire incision should be re-excised.

Before starting treatment, the patient should be told that re-excision is occasionally necessary and that this will depend on the operative findings and the pathologic report. This explanation will avoid difficulties at a later date if re-excision is indicated. It will also help the patient to understand the nature of the problem.

Frozen-section examinations at the time of surgery may be helpful, although their accuracy in cutaneous lesions is not as high as elsewhere. Ordinarily, no portion of the main specimen is disturbed for this procedure since it may affect the accuracy of the examination of the serial sections that is done by the pathologist to determine if the margins are satisfactory. However, after the main specimen has been removed, an additional piece of tissue may be removed from the doubtful area for a frozen-section examination.

Summary

1. Surgical treatment plays an important role in the treatment of basal cell

carcinoma, especially in the recurrent lesions and in the infiltrating ones.

2. Biopsy should always precede any procedure which may be disfiguring or extensive.

3. The main specimen surgical margins should be carefully marked out with dye prior to the performance of an excision. This marking should be done before any local infiltration with anesthetic agents is carried out.

4. The main specimen should be carefully oriented for the pathologist. Sutures are used for this purpose.

5. Re-excision should be considered if the lesion is found to extend microscopically to the surgical margins.

6. Frozen-section examination done immediately at the time of operation is of occasional value in checking on the margins of the defect that remain behind after the main specimen has been removed.

7. Do not ordinarily cover defects with flaps at the time of the original excision of the tumor. If primary closure is not possible, use simple free full-thickness or split-thickness skin grafts.

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Chemosurgery

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Physicians experienced in the treatment of basal cell cancer of the skin know that many of these neoplasms send out unpredictable or "silent" extensions for an appreciable distance beyond the clinically visible and palpable mass.[1] This is why it is standard practice to excise or irradiate a generous extra margin of tissue around the neoplasm. However, despite this sacrifice of normal tissues there is no complete assurance that all of these outgrowths have been eradicated. To eliminate this uncertainty and also to avoid the need to remove an extra margin, chemosurgery was developed to provide a means by which the silent outgrowths can be visualized microscopically and followed to their terminations in a selective manner.[2,3]

This microscopically controlled excision is accomplished by the systematic use of frozen sections. To facilitate the excision of layers of tissue and the accurate mapping of the specimens, the tissues under suspicion are subjected to chemical fixation in situ prior to excision. The excised specimens are mounted on the freezing microtome and complete sections are cut through the undersurface of each flat specimen. On scanning the prepared sections, the operator accurately locates any remaining areas of cancer. Since further fixation and excision is limited to these cancerous areas, selective removal of the neoplasm is possible.

For fixation in situ an old caustic chemical, zinc chloride, was chosen because it is essentially nontoxic systemically in the doses used, it produces adequate fixation with preservation of the microscopic features of the tissue, it is safe to handle because it does not readily penetrate the keratin layer of the skin, it has no odor, it has no tendency to cause cancers to spread by metastasis, it penetrates well through the tissues, and when incorporated in a vehicle of special design it penetrates in a predictable manner. Moreover, healing following its use is excellent.

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* By invitation.

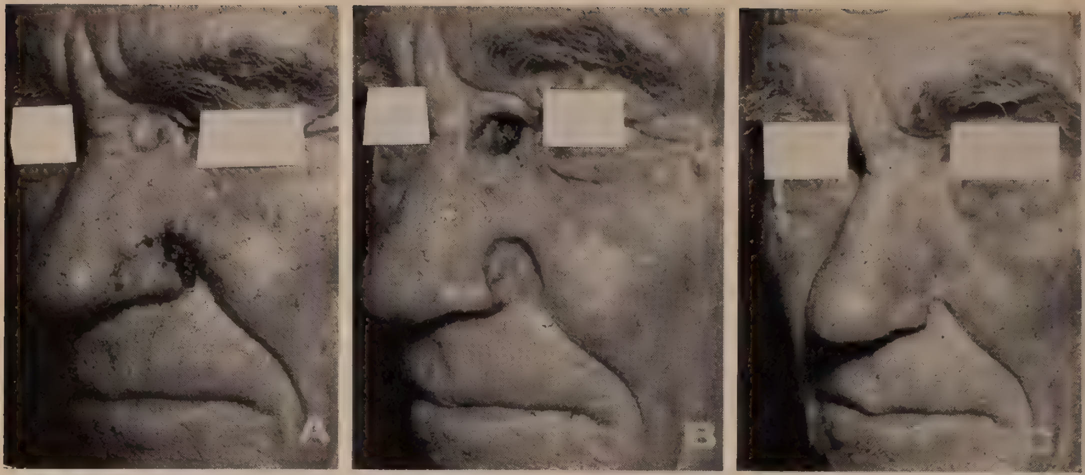

FIGURE 1. (A) Basal cell carcinoma of left nasal ala and nasolabial fold and of root of nose and left media canthus. (B) Granulation tissue after chemosurgical excision and after separation of final layer of fixed tissue. (C) Healed lesions after three months.

Technic

To illustrate the technic by which complete microscopic control of the excision of cancer may be accomplished, the case of a patient with basal cell carcinoma of the nasolabial fold and of the medial canthal area is reported (Fig. 1).

The first step was the application of dichloracetic acid to the surface of both lesions until the skin turned white. The whitening of the skin indicated penetration of the keratin layer which otherwise would have been a barrier to zinc chloride.

Then a layer of zinc chloride fixative paste, 1 to 2 mm. thick, was applied. (The fixative was composed of 40 Gm. of stibnite (80 mesh sieve), 10 Gm. of powdered Sanguinaria canadensis, and 34.5 cc. of saturated solution of zinc chloride.) A thin layer of cotton, to hold the fixative in place, was covered with an overlapping layer of cotton spread with vaseline to provide an occlusive dressing. Both dressings were held in place with adhesive tape. A preparation containing aspirin and 30 mg. of codeine was prescribed to be taken as often as every three hours if needed for pain.

After three hours a layer of fixed tissue was excised from each lesion. Since the incisions were through fixed tissue, there was no pain or bleeding unless the incisions were carried too deeply. Frozen sections cut vertically through the specimens revealed a highly invasive, keratinizing basal cell carcinoma in the nasolabial fold and a less invasive, nodular type of basal cell in the canthal area. After applying dichloracetic acid to the skin at the periphery of the lesions, the zinc chloride fixative again was applied and covered with a dressing.

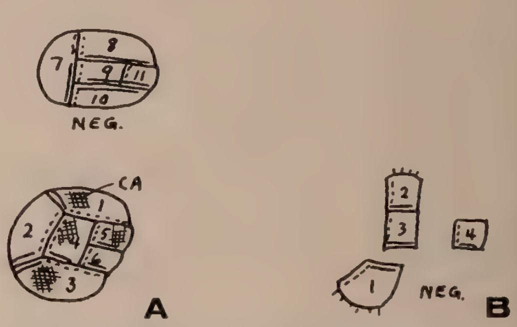

FIGURE 2. Maps of lesions. (A) Morning of second day. Crosshatched areas indicate areas which contain cancer in frozen sections. (B) Lower lesion afternoon of second day. Sections were free of cancer.

The next day a second layer of fixed tissue was excised from each lesion. As the layer was removed, it was divided into specimens of convenient size, two edges of each specimen were marked with dyes (mercurochrome for red, and ordinary washing bluing for blue), and the source of each specimen was marked on the lesion (with mercurochrome) and on a map of the lesion on a pad of paper (Fig. 2A). On the map solid lines denoted the red edge and dotted lines the blue edge. The dyes were chosen because their color persists through the sectioning procedures, and they make possible the exact orientation of the areas of cancer as they are observed on examination of the frozen sections. The preparation of the 11 frozen sections stained with hematoxylin and eosin took the technician one-half hour.[4] As the sections were systematically scanned by the operator, the areas of cancer were marked on the map with a red pencil.

Reapplication of the fixative was limited to the 3 cancerous areas in the nasolabial fold lesion. Four hours later 2 more specimens were excised from the areas, and since these were free of cancer, the patient was sent home with instructions to apply mercurochrome and small prepared dressings every day or two (Fig. 2B).

He returned in eight days when the final layers of fixed tissue had become loose so they could be dissected off readily with sharp-pointed scissors. A small piece of alar cartilage was dissected out with a small scalpel. The epithelium already was beginning to grow across the granulation tissue (Fig. 1B). When he returned in three months the wounds had healed in with soft, smooth scars (Fig. 1C). There was no recurrence after five years.

Indications

Chemosurgery may be used in the treatment of cancers in locations that are sufficiently accessible for a stage-by-stage procedure.

Cancer of the nose.[5,6] As illustrated in Figure 1, basal cell carcinoma on the ala and in the nasolabial fold tends to be an infiltrative, ingrowing neoplasm. Often, the deepest extensions are in the nasolabial fold area where they may follow the paths of the fairly large nerves and vessels in this region. Basal cell epitheliomas on the alae often exhibit only a flat or even a depressed ulcer and yet may prove to be quite deep since the cancer replaces the normal tissues without adding to the volume of the alar tissues. Chemosurgery not only permits the sure removal of these infiltrative neoplasms, but also it does so with the preservation of maximal amounts of normal tissue. Therefore, as in the present case, the defect often is not enough to require a repair. However, if the cancer is extensive, some niche necessarily is produced, but the well-vascularized tissues readily lend themselves to plastic repair with a composite graft from the ear lobe. Cancers on the tip and bridge of the nose may likewise necessitate defects which may be repaired with composite grafts or with flaps from adjacent areas. As illustrated in Figure 1, a cancer on the root of the nose and the adjacent medial canthus may heal with a virtually invisible scar. Septal carcinomas lend themselves well to chemosurgical excision, and even if quite extensive, they often can be removed without impairing the external structures of the nose.

Cancer of the ear.[7] Basal cell carcinomas of moderate size on the helix of the ear can be removed with good cosmetic results. However, extensive lesions may require removal of a considerable portion of the ear and some defect may result. Often a niche can be rendered unnoticeable by removing some of the helix on both sides of the defect. This may produce a slightly smaller ear, but since both ears are rarely seen at once, this often is a satisfactory way to avoid an unsightly niche. Another way is to excise a wedge and close the defect. Only rarely is it necessary to reconstruct the ear with flaps from surrounding tissues.

Cancers on either the anterior or posterior surface of the ear usually can be removed chemosurgically without perforation because the cartilage usually acts as a barrier to the spread of the cancer through the ear. Great care must be used to avoid excessive fixation, however, since perforation through such a thin structure otherwise could readily occur.

Cancers in the concha may deeply invade the external auditory canal, and occasionally carcinomas arise in the canal. These can be followed out chemosurgically to the level of the middle ear by the use of slender instruments and a good headlight.

It is important to remove the fixed portions of ear cartilages as a preventive of chronic perichondritis.

Cancer of the eyelids.[8] As illustrated in Figure 1, cancer in the medial canthal area can be removed with little visible scar. Often the cancer extends into the commissure, but unless the neoplasm is very extensive the canthal tissues pull together with remarkably little defect. Occasionally, medial tarsorraphy may be carried out at the completion of treatment to prevent separation of the medial parts of the eyelids.

Fortunately, the more extensive medial canthal lesions tend to follow the periosteum of the medial orbit so the eye almost always can be spared. Even if the cancer invades to the sclera of the eyeball, the eye often can be saved. Only if complete penetration through the sclera occurs is it necessary to remove the eye. If the eye must be removed it usually is done by excision under local anesthesia with hemostasis being secured by the rapid application of dichloracetic acid.

Lateral canthal cancers also can be removed chemosurgically, but since the distance between the eye and the outer rim of the orbit is small, great care is required to limit fixation. If the cancer has become extensive, the eyeball may be affected enough to necessitate removal.

Cancers on the lower and upper eyelids are removed chemosurgically if they are 5 mm. or more from the lid margin, and the scars often are virtually invisible. The elasticity of the eyelid tissues prevents ectropion. If the cancer extends through the full thickness of the eyelid, there is little danger of damaging the eye since the tears carry away the fixative as fast as it penetrates the lid.

Cancers at the lid margins can be removed chemosurgically by developing an excavation on the external surface and carrying fixation inward from this cavity. However, it often is more expedient to inject a local anesthetic, apply a lid clamp, and excise layers of unfixed tissues from the eyelid for microscopic study as is done chemosurgically using fixed tissues. The small size of eyelids and the nature of the tissues make it feasible to use fresh tissues. The edges of the specimens are marked with dyes, and their locations are drawn on a map. The tissues are heated in formalin for a few minutes and then cut through the undersurface as is done with tissues which have been fixed in situ.

A considerable defect may be produced in the lower lid margin without the necessity of a repair because the margin pulls up to normal position within a few weeks. Even though it may be necessary to remove the entire lower eyelid, the cosmetic and functional results are unexpectedly good. The upper eyelid accommodates well to a considerable loss of lower eyelid tissue.

Basal cell carcinomas of the margin of the upper eyelid also are usually removed under local anesthesia and the fresh tissues used for frozen sections to provide microscopic visualization. The procedure is carried out in the course of one day even though several layers have to be removed before a cancer-free plane is reached.

No ectropion is produced in removing cancers of the lid margin if care is used to remove approximately the same amount of the conjunctival edge as of skin edge. If too much conjunctiva is left, the lid margin could be pulled forward to cause ectropion with resultant irritation.

CANCERS IN NONORIFICIAL AREAS.[9,10] Basal cell carcinomas of the forehead, temples, and scalp often tend to extend unexpectedly in the dermis at the edge of the grossly visible mass, and they may extend quite widely without going deeply. However, some cancers do invade deeply, but even though the periosteum is invaded by a more extensive cancer, the outcome is good. The fixed bone requires about three weeks to demarcate enough to permit it to be lifted out, after loosening it with a chisel and exposing well-vascularized granulation tissue which supports prompt epithelization. The wounds should be left to heal by themselves rather than covering with grafts which usually produce a much poorer cosmetic result. In the scalp the scar contraction reduces the hairless scar appreciably.

Lesions over a strongly pulsating superficial temporal artery require the placement of suture-ligatures around the vessel in the wound at the completion of treatment. Otherwise hemorrhage may occur, and although this never is serious, the patient may be alarmed by it. Only occasionally are suture-ligatures required elsewhere on the face, but usually a small amount of oxidized cellulose (Oxycel cotton) is supplied the patient for application with pressure if needed for hemostasis.

Basal cell carcinomas often arise on the skin of the upper lip, and since they often arise close to the vermilion border, they may erroneously be believed to arise in that structure. Usually the lesions heal with vertical scars which give quite good results cosmetically. Only if the cancer is very extensive is the lip pulled upward enough to require a repair.

Cancers which deeply invade the preauricular cheek may involve the parotid salivary gland, but this heals without a permanent fistula unless the main parotid duct is opened. The microscopic control permits a conservative approach which, in turn, permits preservation of maximal amounts of facial nerve fibers as they course through the parotid gland. Cancers invading the temporomandibular joint may require removal of part or all of the joint, but never does ankylosis develop.

Cancers over the mandible may involve a considerable part of the bone, but usually it is possible to save at least some structure of bone so that the outline of the jaw is retained. If bone is invaded by cancer, it may be fixed in situ and removed layer by layer with a chisel. The excised specimens of bone are decalcified for twenty-four hours and frozen sections made as with soft tissues.

Some basal cell cancers of the cheek or upper lip may have a strong affinity for nerve sheaths and may even follow the infraorbital nerve for some distance back into the floor of the orbit. Other cancers may have a tendency to follow along other structures such as periosteum, fascial planes, lymphatic vessels and plexuses, or the adventitia of blood vessels.[1] Other cancers have no particular affinities but nevertheless spread irregularly and unpredictably. Since these extensions tend to be thin sheets or slender strands of cancer cells, they are not detectable clinically and must be followed out microscopically.

Cancer of the extremities and trunk.[11] Basal cell carcinomas similar to the types which occur on the face do occur on the extremities and trunk, and they are managed chemosurgically the same as the facial lesions. However, on the trunk and somewhat less often on the extremities there may occur a special type of superficial basal cell carcinoma. This is so superficial and so easily seen grossly with a magnifying loupe that chemosurgical excision usually is not necessary. These lesions are excised superficially and hemostasis secured with dichloracetic acid applied rapidly with pressure. If any downgrowths are missed with the first excision, they are readily seen as more whitish epithelial tissue against a slightly more grayish connective tissue background, and they can readily be excised and the cauterization repeated. In cases in which an old superficial basal cell carcinomah as undergone a transformation toward higher malignancy, chemosurgical excision is used to assure complete removal. Basal cell carcinomas of the scrotum, penis, and of the perianal region are removed with the full microscopic control provided by the chemosurgical technic.[12]

Advantages

Unprecedented reliability. The most important advantage of chemosurgery is the virtually complete assurance of eradication of the cancer. This reliability is attested to by the five-year end results in a consecutive series of basal cell carcinomas which were removed chemosurgically. The cancers were in all stages, from early to far advanced, and nearly a third of them had received some kind of previous surgical or radiation treatment. There were 4,858 cases, 3,719 determinate, and the five-year cure rate was 99.1 per cent. This compares favorably with the next best result of 88.2 per cent reported by Magnusson[13] of the Radiumhemmet of Stockholm and based on a comparable series of 272 determinate cases.

Conservatism. Since most basal cell cancers involve the face, the importance of conservative treatment which can safely be practiced with the chemosurgical technic is obvious. Actually, only 1 or 2 mm. of tissue beyond the cancer need be removed. Often extensive procedures are carried out chemosurgically, but this is because of the extensiveness of the cancer and is closely related to the extent and direction of the cancerous spread. Of course, the conservatism as well as the reliability of chemosurgery is a consequence of the complete microscopic control which makes it possible to accurately follow out the silent extensions from the main cancerous mass.

Low operative mortality rate. In the series of skin cancers treated chemosurgically, the mortality rate was less than one third of 1 per cent despite the fact that many of the patients were old and in fragile physical health. The lack of need for a general anesthetic, the feasibility of a more conservative approach, and the lack of complications from infection all are reasons for the low operative mortality rate associated with chemosurgical treatment.

Extension of operability to patients with otherwise inoperable cancer. Basal cell carcinoma may become inoperable and not amenable to radiotherapy because of extensiveness and difficult position, but many of these cancers still can be eradicated chemosurgically.[14] The microscopic control makes a less radical procedure feasible, the "silent" outgrowths which may be quite extensive can be surely followed out in a bloodless field, there is no danger of infection, and there are other technical advantages all of which contribute to make successful treatment possible in spite of adverse conditions.

Excellent healing. Following removal of cancers by the chemosurgical technic, the final layer of fixed tissue separates promptly, exposing granulation tissue which is highly vascular, resistant to infection, and supports rapid epithelization with the production of remarkably soft, smooth, comely scars. If defects are necessarily produced, the tissues are so well vascularized that the plastic repair can be carried out with excellent chance of success.

Comment

The chemosurgical treatment of far-advanced cancers may be painful for the patient and time consuming for the physician, but since it is in such cases that the method is most desperately needed, these disadvantageous features do not seem to be of major importance. However, attempts have been made to reduce the discomfort and to accelerate the treatment by the initial excision of the grossly visible mass under local anesthesia. For several years I did this almost routinely, but the discomfort from injection of the anesthetic and the time consumed injecting and securing hemostasis often counterbalanced the advantages, so I have come to carry out an initial surgical excision only in selected cases. When the cancer to be treated is extensive and located in a sensitive area, the discomfort from the initial application of the keratolytic and fixative chemicals can be greatly reduced by preliminary injection of a local anesthetic. Sometimes 10 per cent cocaine on a cotton pledget suffices to reduce the sensitivity of a denuded lesion prior to the initial application. Incorporation of an anesthetic in the fixative preparation has not been successful to date because the zinc chloride penetrates more rapidly through the tissues than does the anesthetic agent.

Since chemosurgery is a valuable addition to our armamentarium against skin cancer, chemosurgical clinics eventually should be established in every large population center. More than 50 physicians are now actively using chemosurgery, and since many of these are training others in the use of this method, it should become generally available within the next few years.

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Tumors of Skin

VIII. Local Chemotherapy of Metastatic Neoplasms*

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LOCAL APPLICATIONS of medications to sites affected by skin diseases probably antedate recorded history. For obvious reasons almost any chemical or physical agent has been applied directly to cutaneous lesions, including neoplasms. A systematic approach to the exploration of antitumor agents in malignant lesions in or of the skin, however, has been initiated only relatively recently.[1,2]

The apparent lack of interest in cutaneous tumors is due in part to the ease with which the majority of primary cutaneous tumors can be managed by surgery or radiation therapy and the seriousness of metastatic malignant disease which relegates secondary tumors in the skin to a problem in palliation.

The purpose of this and the consecutive presentations is to review the background and current status of local cancer chemotherapy.[3,4] This approach has been recently introduced for the study of tumor biology.[1,2] Superficially located tumors in animals and subsequently in man were found to constitute model systems of neoplasia with a high level of investigative flexibility which significantly complemented studies on deep-seated tumors.[5] It was evident that accessible tumors were particularly well suited for the study of interactions between tumor, host, and antitumor agents.[6] It became apparent that local administration of antitumor agents to premalignant and malignant lesions altered the natural course of neoplasms in a clinically significant manner.[6-13]

Since local chemotherapy was a new approach, it was necessary to assess the potential hazards of the requisite procedures. Therefore, studies on cutaneous lesions of advanced disseminated malignant disease were undertaken prior to investigating the less serious primary cutaneous neoplasms. In this report some of the background and the early studies on metastatic malignant tumors and specific infiltrates of disseminated malignant diseases, such as leukemia and lymphoma, will be presented. In the first of the succeeding two reports, studies on local cytostatic chemotherapy of primary cutaneous premalignant and malignant lesions will be presented.[3] In the second article, the initial development of an immunotherapeutic approach to the management of cutaneous neoplasms will be discussed.

Clinical investigation

Our initial clinical studies on the effects of locally administered chemotherapeutic agents were carried out in patients with advanced malignant disease with metastases to the skin and subcutaneous tissues.[1] These tumors included squamous cell carcinomas, several types of adenocarcinoma, malignant melanoma, lymphoma, fibrosarcomas, leukemia cutis, Kaposi's hemorrhagic sarcoma, mycosis fungoides, and others.

A total of approximately 300 individual lesions in a group of 35 patients were studied. The agents in the study included several types of antimetabolites (folic acid antagonists, substituted purines† and pyrimidines, and analogues of other metabolites); alkylating agents (nitrogen mustard derivatives, dimethylurethamide, and iminobenzoquinone derivatives**); antibiotics (actinomycin D, mitomycin C, and mithramycin and their nucleotides or other derivatives); alkaloids (vinblastine, vincristine, and other members of the leuko-

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† 5-FU (5-fluorouracil) was obtained in the course of collaborative studies from Edward Miller, M.D., Hoffmann-La Roche, Inc., Nutley, New Jersey.

** 2-3,5-tri-ethylene-imino(1,4)-benzoquinone (Trenimon or TEIB) was obtained through the cooperation of R. Goeswald, M.D., of the Farbenfabriken Bayer AG, Leverkusen, Germany.

vincoblastine group); and a number of other agents. A total of approximately 30 different agents with antimitotic activities were investigated. When possible, cogeners without cytostatic activities were included in the controls. The agent and control preparations were administered by inunctions, injections (that is intralesionally, intracutaneously or subcutaneously, respectively), or as topically applied solutions to the study sites. Depending on the conditions, inunction was carried out under occlusion, under a loose dressing, or by leaving the area open. Injections were carried out by administering a volume not exceeding 0.3 cc. of a solution or a suspension of the agent under study per estimated cubic centimeter of lesion or control site. Usually the 0.3-cc. volume was divided into smaller aliquots ranging from 0.05 to 0.1 cc. which were distributed throughout the region under study. Injections were carried out daily, until inflammatory reactions or regression of the lesions occurred.

The bases used for inunctions included preparations varying in lipoid concentrations from 5 to 100 per cent. The vehicles used for injection ranged in concentration of saline or water from 100 per cent to 0, the remainder of the preparation consisting of lipoids and emulsifying agents. Injectable preparations containing high concentrations of lipid were investigated as depot preparations for studying sustained release of the agent under study.

The concentration of the agents administered ranged from two orders of magnitude below the calculated tissue level obtained following systemic administration of the recommended dose, assuming uniform distribution, to concentrations several orders of magnitude above this level. Frequency of administration ranged from once every two weeks for depot preparations to three times daily for injections of aqueous preparations or for inunction. The duration of the courses of administration varied from less than twenty-four hours to several months. In some instances protracted or continuous courses of maintenance levels were explored. Alternately, intermittent courses at intervals ranging from two to four weeks to several months were investigated.

A wide range of various modes of administration was explored to provide a basis for subsequent, more definitive studies which were protocoled in regard to the conditions for administration of agents and the types of lesion under study.

The effects of locally administered antitumor agents varied from complete regression of lesions to no apparent effect on the natural course. Toxic side-effects, local or systemic, were not encountered, even when the antitumor drugs were administered at concentrations several orders of magnitude above the maximum levels which could be attained in the tumor or normal tissues by systemic administration.

Some of the observations made on the effects of local administration provided indications for guiding subsequent systemic chemotherapy. Thus, agents which on local administration resulted in tumor regression were then administered systemically.

ADENOCARCINOMA. The 7 patients with adenocarcinoma included 2 patients with primary lesions in the colon and 5 patients with adenocarcinoma of the breast. In patients with adenocarcinoma of the colon local administration of 5-FU (5-fluorouracil) to cutaneous metastases resulted in arrest or resolution of the lesions.

One patient illustrated some of the observations made. This patient had widely metastatic adenocarcinoma of the colon. The patient was undergoing systemic administration of 5-FU, 1 Gm. per day for ten days, resulting in partial regression of metastatic lesions. During systemic 5-FU administration, a metastasis developed at the tip of the third finger of the right hand (Fig. 1A). Evidently systemic administration had not prevented the development of new metastases while it induced regressions of other metastatic lesions. 5-FU at concentrations considerably above the tissue levels obtainable by systemic administration, was subsequently administered topically, 20 per cent 5-FU in an aqueous base, to the lesion. This resulted in rapid onset of necrosis accompanied by separation and regression of the metastatic tumor (Figs. 1B and 1C). The adjacent normal skin or the nail bed showed no changes, as indicated by the subsequent re-epithelization of the involved area and normal nail formation. The patient subsequently died with multiple metastases. By the time of

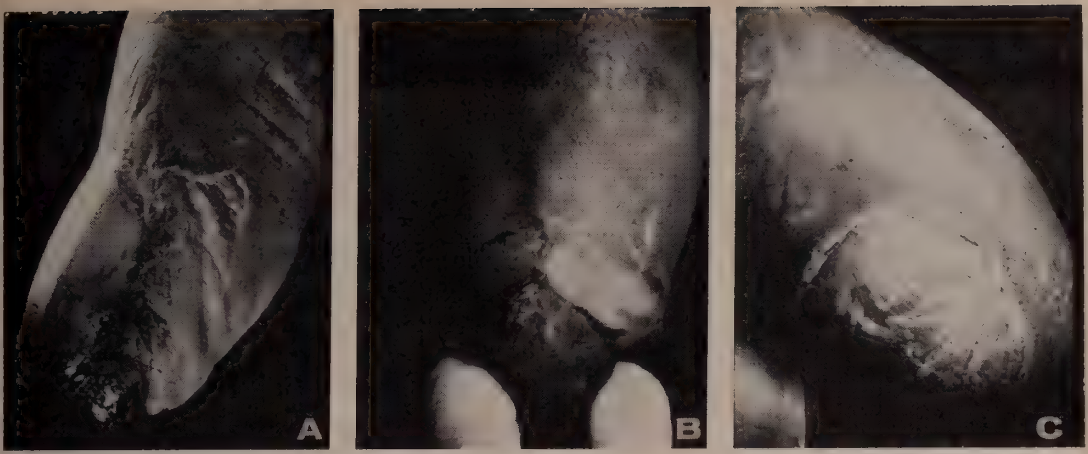

FIGURE 1. (A) Metastatic adenocarcinoma of colon arising on finger during systemic administration of 5-FU which resulted in partial regression of other metastases. (B) Lesion shows necrosis and separation from its attachment to finger after seven daily applications of 20 per cent 5-FU preparation in hydrophilic base. (C) Lesion has disappeared and shows area has re-epithelized and nail growing back three months after discontinuing 5-FU therapy.

death, there was no recurrence of the lesion which had been treated with high concentrations of topical 5-FU.

These observations indicated several aspects not previously demonstrated. (1) Malignant neoplasms which are resistant to a given drug at relatively low levels of concentration may be sensitive to the same drug at a higher concentration. Such alternate metabolic pathways which may develop and result in resistance, therefore, may present partial rather than complete resistance. (2) These observations further indicated that under the appropriate conditions, antitumor agents can suppress the multiplication of malignant cells without apparent interference with the multiplication of normal cells, such as those of the granulation tissue and the epidermal cells of the surface epithelium and of the nail. (3) A further suggestion which arose from these observations indicated that local chemotherapy may be useful for the palliation of accessible metastatic lesions which fail to respond to systemic chemotherapy.

These observations are in agreement with previous findings that the efficacy of a drug against a tumor does not necessarily infer similar activity against other closely related tumors under different conditions; the sensitivity of one type of rapidly multiplying normal cells, that is, those of the cutaneous epithelium, does not necessarily relate to the sensitivity of another type of rapidly multiplying normal cells, that is, those of the bone marrow.

In 2 patients with adenocarcinoma of the breast ulcers, 2 to 5 cm. in diameter, were present at sites of cutaneous metastases. Topical administration of a 20 per cent 5-FU preparation resulted in regression of the lesions and in formation of granulation tissue with subsequent re-epithelization. Formation of granulation tissue and re-epithelization occurred following necrosis of the superficially located tumors, while neoplastic cells remained in the subcutaneous and deeper layers.

In 1 patient with adenocarcinoma of the breast, extensive cutaneous lesions of the chest wall (en cuirasse) regressed following intralesional administration of methyltestosterone, resulting in partial to complete disappearance of tumor cells at the sites of administration. It is of interest that in this patient subsequent systemic administration of testosterone derivatives did not result in remission, whereas administration of estrogen derivatives which had been shown not to have any effect on the tumor by local administration resulted in remission. These observations suggest that the effects of locally administered hormones may differ from those of systemically administered hormones; the latter route of administration may operate through the pituitary-ovarian axis, while the former affects the tumor cells directly.

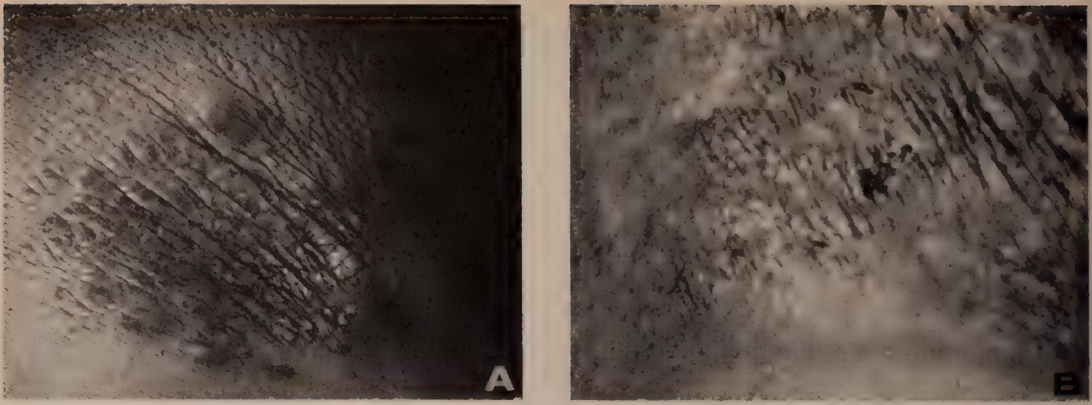

FIGURE 2. Recurring infiltrate at posterior aspect of neck following x-radiation in patient with lymphatic leukemia. (B) Areas show gross regression one month after discontinuing daily intralesional injections of 0.3 cc. of 5 per cent 5-FU preparation. No recurrence observed during four years of follow-up.

In a male patient with mammary adenocarcinoma and several nodular metastases in the skin, intralesional administration of estrogen preparations and of 5-FU resulted in complete regressions of the cutaneous lesions. In 1 patient with multiple small nodular metastases to the skin, intralesional administration of a large number of lesions did not produce any effects.

Lymphoma. Analogous observations were made in patients with lymphoma or leukemic infiltrates of the skin. Superficial lesions which had been exposed on several previous occasions to ionizing radiation and had ceased to respond, regressed following local administration of an antimitotic agent (Fig. 2). The lesion shown in the 2 illustrations disappeared following intralesional administration of a 5 per cent 5-FU solution and has remained quiescent for a period of over four years. This further indicates that local chemotherapy may be helpful in the palliation of lesions which have become resistant or are otherwise not responsive to standard modalities of management. These observations also indicate that an agent, 5-FU, which is not usually considered to be therapeutically effective in leukemia may be suitable for local management, which permits the attainment of significantly higher tissue concentrations than could be reached by the systemic route.

In the 6 patients with lymphomatous infiltrates of the skin, several types of reaction were noted. In 1 patient with multiple lesions of reticulum cell sarcoma, no effects were observed with a large number of agents over wide ranges of concentration and frequent administration.

A second patient with cutaneous infiltrates of chronic lymphatic leukemia who had several extensive leukemic infiltrates of the skin received intralesional administration of 5-FU, nitrogen mustard, methotrexate, and actinomycin D; complete regressions for periods lasting several years were induced. In 2 patients with cutaneous involvement of Hodgkin's disease resulting in ulcerations, none of a number of agents produced observable effects on the lesions. In a patient with subcutaneous lesions of lymphosarcoma, when protracted administration of nitrogen mustard at concentrations considerably in excess of those obtainable by systemic administration was done, eventual regression of the lesions was observed. On discontinuation of intralesional administration of nitrogen mustard, the lesions recurred. Resumption of intralesional administration of nitrogen mustard again led to regression of the lesions. This sequence of events was repeated several times over a period of eighteen months. In another patient with lymphosarcoma involving the skin, the administration of very low concentrations of methotrexate, nitrogen mustard, or 5-FU, at levels considerably below the tissue concentration obtainable by systemic administration, resulted in complete and protracted resolution of subcutaneous infiltrates.

Melanoma. A number of agents were explored by local administration, intralesionally as well as topically, in patients

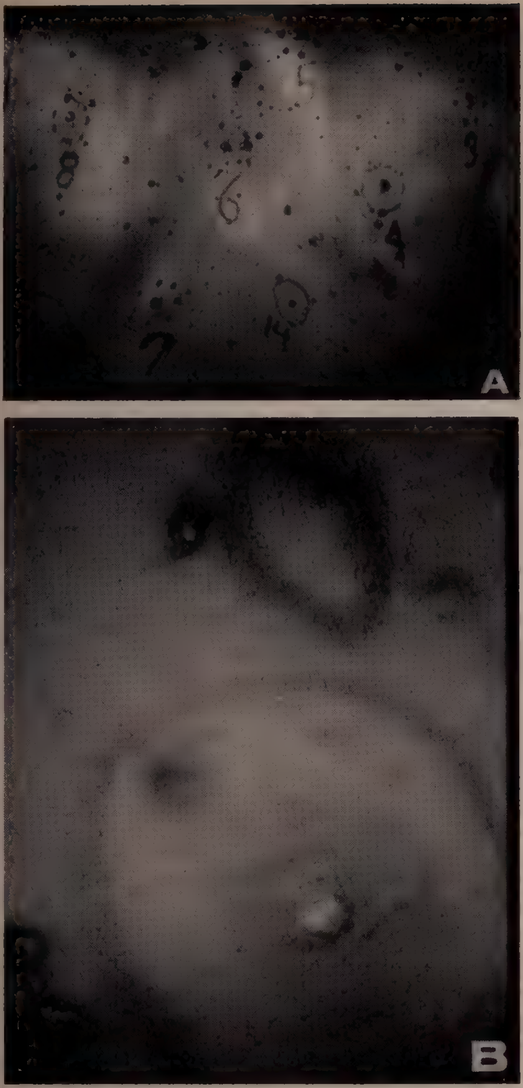

FIGURE 3. (A) Nodular metastatic melanoma. (B) Lesion shows necrosis and regression after intralesional administration of AB-132, 1 gamma per 0.1 cc., immediately prior to exposure to 265 r, repeated daily for fourteen consecutive days.

with malignant melanoma. One of these agents, dimethylurethamide (AB-132), was shown to induce increased sensitivity to x-radiation (Figs. 3 and 4). It can be seen from these illustrations that local administration of chemotherapeutic agents permits the assessment of potential synergistic effects with other chemical or physical antitumor agents. The extension of these observations made in patients with melanoma to the potential systemic use of the combination of dimethylurethamide with x-radiation are under exploration.[11,13] In 2 of 9 patients with metastatic melanoma, intralesional dimethylurethamide followed by x-radiation resulted in regression of lesions ranging from complete resolution to arrested progression. In one patient with multiple cutaneous melanoma nodules, dimethylurethamide combined with x-radiation resulted in regression of the lesions treated. Because of advanced systemic involvement, the patient died within three months, thus making it impossible to assess the duration of the regressions. In a patient with multiple cutaneous nodules of melanoma involving primarily the right leg, intralesionally injected spiramycin, high concentrations of 5-FU, and combinations of both agents produced regressions in a patient with advanced melanoma; intralesional spiramycin combined with x-radiation resulted in partial to complete regression of lesions lasting several weeks to months. In 3 patients the various agents used and the combinations of several agents with or without concomitant x-radiation produced no changes in the course of the lesions studied. Injections of vinblastine, vincristine, TEIB (2-3,5-tri-ethylene-imino-(1,4)-benzoquinone), and 5-FU produced no changes with or without x-radiation in a patient with multiple cutaneous and subcutaneous metastases of malignant melanoma. In a patient with extensive involvement of metastatic melanoma of both legs, topical administration of 20 per cent 5-FU in aquaphor produced partial regressions of the lesions. The duration of the regressions could not be evaluated since the patient expired after three weeks.

KAPOSI'S HEMORRHAGIC SARCOMA. Studies in patients with extensive cutaneous involvement of Kaposi's hemorrhagic sarcoma were carried out on intralesional vinblastine, vincristine, mitomycin C, mithramycin, dimethylurethamide with and without x-radiation, and TEIB. The most marked changes were observed with dimethylurethamide combined with x-radiation, vinblastine, and vincristine. Vinblastine was subsequently explored systemically in 3 patients. In 2 patients with extensive involvement, systemic vinblastine, as suggested by the effects of intralesional administration, produced marked improvement. In 1 patient the favorable changes produced by systemic vinblastine, however,

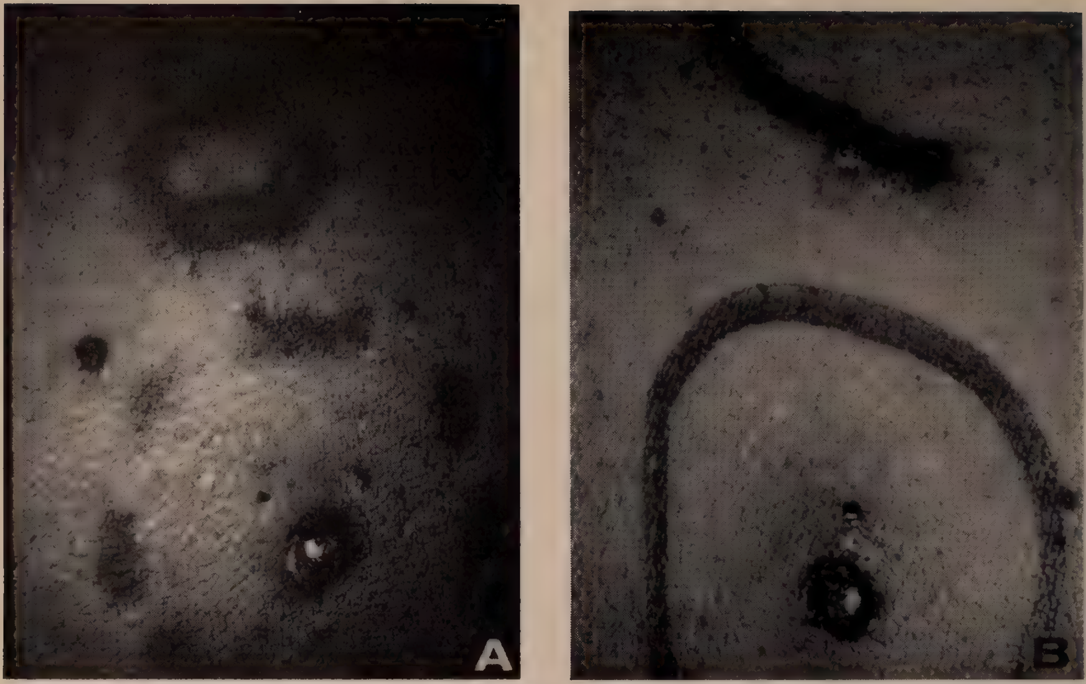

FIGURE 4. Clinically equivalent lesion to that shown in Figure 3A. (A) Lesion remains relatively unchanged after 14 consecutive daily intralesional administrations of AB-132, 1 gamma per 0.1 cc., in absence of x-radiation. (B) Lesion remains relatively unchanged except for radiation halo surrounding it after 14 consecutive daily exposures to 265 r in absence of prior administration of AB-132.

were of short duration; within three months the tumor had escaped from the effects of intravenously administered vinblastine and progressed rapidly, resulting in fungating ulcerated lesions. Subsequent attempts at controlling these areas by topical and intralesional administration of vinblastine were not satisfactory. The patient expired of unrelated causes before the systemic effects of vincristine could be evaluated. In a second patient systemic vinblastine produced rapid and marked improvement (two to three weeks), including regression of large fungating ulcerated lesions, resurfacing with granulation tissue, and subsequent epithelization of the involved sites. The regression was maintained by repeated doses of intravenous vinblastine which, however, had to be increased progressively to prevent progression or recurrence of tumor. This status of partial control has still been maintained for a period of approximately one year. In the third patient with Kaposi's sarcoma, systemic vinblastine gave temporary results lasting approximately three to four weeks. The tumor then continued to progress at the same rate as prior to the institution of systemic vinblastine therapy. Increases in the dose of intravenously administered vinblastine and decrease in intervals between successive administrations of the agent did not result in arresting or reversing the progression of the disease. A large ulcerated exophytic lesion in this patient was treated with topical vincristine concurrently with systemic vinblastine. Topical vincristine appeared to accelerate the regression and re-epithelization as compared with other lesions in this patient which did not receive topical vincristine. In the fourth patient with Kaposi's sarcoma, intralesional administration of vinblastine and vincristine were adequate to maintain control of the lesions. In view of the relatively less severe involvement and the adequacy of the control obtained by intralesional administration into the lesions, systemic administration of vinblastine or of vincristine did not appear indicated. The patient remains under observation with intermittent intralesional administration of leukovincoblastine alkaloids.

MYCOSIS FUNGOIDES. Four patients

with mycosis fungoides were studied. Local administration of methotrexate, vinblastine, vincristine, hydrocortisone, 5-FU, TEIB, and dinitrochlorobenzene appeared to have some effects. In 1 patient with extensive disease, having nodular and ulcerated lesions, topical administration of preparations of these agents to the ulcerated lesions and intralesional administration to the nodular lesions resulted in marked regressions. Changes were evident within twenty-four hours of local administration. Systemic administration of vinblastine, which appeared to give the most marked results, produced apparent regression of the lesions within twenty-four hours. The patient expired from unrelated causes within thirty-six hours. In a second patient, topical applications of a 5 per cent hydrocortisone preparation in acid mantle cream resulted in marked to complete regressions of lesions which were in the plaque stage. The patient was, therefore, maintained on topical hydrocortisone cream which resulted in virtually complete disappearance of the lesions while the topical hydrocortisone preparation was being applied. This included healing of several ulcerated areas. This patient has continued to be maintained on topical applications of 5 to 10 per cent hydrocortisone in a vanishing cream. In 2 patients the administration of TEIB resulted in regression of lesions following induction of cutaneous hypersensitivity to the agent. Hypersensitivity to TEIB was induced in 1 patient by transfer of lymphocytes from another patient who had previously been sensitized to TEIB. In a second patient, sensitivity to TEIB was induced by topical application of 0.05 per cent TEIB-containing cream.

Miscellaneous tumors. A group of 5 patients with miscellaneous tumors including fibrosarcoma, mesothelioma, and squamous cell carcinoma of the oropharangeal region was studied. Local administration of solutions of TEIB, vinblastine, and vincristine administered by hypospray to the patient with fibrosarcoma resulted in temporary arrest of the progression of the disease. Following discontinuation of the intralesional administration of these agents, progression of the tumor continued. None of a large number of agents appeared to have any effect on mesothelioma. Two of the patients with squamous cell carcinoma of the oropharangeal area had advanced metastases which resulted in death of the patients before local administration could be evaluated. In 1 patient with carcinoma of the larynx which had metastasized to the regional lymph glands, local administration of TEIB, particularly by means of a "hypospray" device, following the induction of hypersensitivity to TEIB, resulted in decrease and softening of the lesions.

Comment

The studies presented indicated that local administration of chemotherapeutic agents to superficially located lesions are a safe and informative approach to studies of interactions between tumor, host, and chemotherapeutic agents. These studies further suggest that superficially located tumors may be suitable model systems for studies on tumor biology. The experimental flexibility of superficially located tumors facilitates the study of the direct action of antitumor agents on the tumor and adjacent tissues. The accessibility of superficially located lesions permits early recognition of toxic effects and rapid control of them. For these reasons, it is possible to attain much higher tissue concentrations of chemotherapeutic agents by local administration than by systemic administration. The amount of a chemotherapeutic agent required to produce a high concentration at the site of local administration is small. Since this small amount is diluted on absorption, blood and tissue levels are below the threshold for systemic toxicity. Topically applied agents, furthermore, are absorbed relatively slowly, as compared with parenteral administration, thus further decreasing the maximum blood levels. Bone marrow depression and other evidence of systemic toxicity, therefore, were not encountered following local administration of antimitotic agents to superficially located tumors.

Local administration may be of significance in evaluating the response of a tumor to a particular agent. The response of the tumor to concentrations higher than those attainable by systemic administration does not permit prediction of the effects at concentrations attainable by the parenteral route. It justifies, however, the exclusion of the agent from further evaluation, unless the agent is administered as an inactive precursor which requires in vivo activation. This type of screening for excluding a particular agent from systemic evaluation may avoid the unnecessary toxicity as well as the loss of time associated with the systemic administration of an ineffective chemotherapeutic agent.

In the presence of multiple superficial lesions, it is possible to evaluate a number of antitumor agents concurrently at levels which correspond to those attainable by systemic administration. This, therefore, provides concurrent guidelines for the choice of chemotherapeutic agents rather than the sequential process of evaluating antimitotic agents by systemic administration. It would further appear that evaluation of antitumor drugs by the effects of local administration to superficial lesions in man may complement studies on experimental tumors in animals and provide some information for guiding pharmacologic studies in man.

Local administration of antitumor agents to superficially located neoplasms appears to provide a model system for studying several aspects of tumor biology including the interactions of tumor, host, and antitumor drugs. When multiple lesions are present, studies on combinations of two or more chemical and physical antitumor agents are possible. In the studies presented, synergism between two chemical agents or of chemical agents and radiation therapy was demonstrated. Antagonism between metabolites and their respective antimetabolites, acting as antimitotic agents, was also evaluated in the course of our studies. It was possible to titrate the effects of antimetabolites against the metabolite which they antagonized. Studies of compensatory mechanisms and of adaptative processes or metabolic bypass pathways were initiated. Studies on superficially located lesions, therefore, permitted the investigation of problems, which hitherto had to be carried out in vitro, under in vivo conditions.

Local administrations of chemotherapeutic agents provided indications of possible toxic effects on epithelial structures, as well as on the connective tissue and other components of the dermis and subcutaneous tissues. Thus, the effects of the chemotherapeutic agent on blood vessels, nerve fibers and receptor organs, and muscle could be assessed. While this information may or may not necessarily allow the prediction that systemic administration would produce the same effects on these types of tissue, evidence of changes in these structures following local administration would provide guidance for subsequent studies on parenteral administration of the agent.

In some of the studies presented, apparently complete eradication of superficially located malignant lesions was demonstrated during the period for which the patient survived. These observations indicated that under the appropriate conditions, eradication of malignant cells with minimal effects on adjacent normal tissues by chemical agents is possible. This was demonstrated in a lesion which had developed while the patient was on systemic therapy with the same agent which, subsequently at much higher concentrations, was shown to be effective when administered locally. Thus information was obtained that apparent resistance of tumor to a chemotherapeutic agent may be relative and concentration dependent. While it is clearly not possible to use 5-FU at the same concentrations systemically as used topically, the feasibility of tumor eradication by chemical means encourages the search for agents with a higher therapeutic index. It further appears that local chemotherapy provides a step in the process for determining their potential value.

It was shown that local administration of antitumor agents may result in palliation of lesions which are not adequately controlled by systemic chemotherapy. It was apparent that the combination of local chemotherapy and systemic chemotherapy may provide more adequate results than can be obtained by either route alone. The partial to complete control of fungating ulcerated lesions by local administration of antitumor agents may provide a relatively harmless and simple means for the management of intractable metastatic lesions on the body surface. The potential hazard of infection has not been borne out by experience.

Since most antimitotic agents, particularly at high concentrations, inhibit bacterial multiplication in a wide spectrum of organsims, severe local or systemic infections have not been encountered.

Studies on the effects of local administration of antitumor agents to metastatic lesions in the skin provided the basis for subsequent studies on the use of local chemotherapy for primary malignant disease of the skin. The studies on the use of local chemotherapy for metastatic or disseminated malignant lesions in the skin or subcutaneous tissues indicated the safety and efficacy of local administration of antitumor agents. Although the safety of local administration of antitumor agents had been demonstrated in animal studies, confirmation of lack of toxicity in man was considered essential. The safety of these procedures was particularly significant to justify the investigation of potentially hazardous chemical agents in patients whose lives were not immediately threatened by their disease. The development of local chemotherapy as a new modality for the management of extensive premalignant and malignant lesions of the skin is a direct result of the studies presented.[3]

The observations on the efficacy of local chemotherapy is of particular significance to nonmetastasizing lesions, such as basal cell carcinomas. Since eradication of these lesions by local chemotherapy was demonstrated, it appears warranted to explore this approach in other nonmetastasizing malignant diseases, such as tumors of the brain. A further development which was derived from studies on local administration of antimitotic agents was the observation that specific cell-mediated immunity may affect the course of premalignant and malignant lesions.[4] It appears on the basis of the studies on local chemotherapy carried out so far that a number of other areas can be approached by the use of superficially located tumors as model systems.

Summary

1. Studies on local chemotherapy of superficially located tumors indicate that these lesions may present model systems for studies of tumor biology.

2. Local administration of antitumor agents permits the attainment of higher concentrations of antitumor agents in malignant lesions than can be reached by the systemic route.

3. This facilitates the early recognition of potentially toxic effects and their control without the induction of severe systemic toxicity.

4. Evaluation of antitumor activity by local administration may permit the exclusion of antimitotic agents from further systemic evaluation and thus avoid toxicity and delay in the management of disseminated malignant disease.

5. Local administration of antitumor agents demonstrates that eradication of malignant lesions for protracted periods can be induced by selective chemical action.

6. Local chemotherapy may permit the palliation of intractable accessible lesions.

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Tumors of Skin

IX. Local Cytostatic Therapy of Cutaneous and Mucosal Premalignant and Malignant Lesions*

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LOCAL, IN PARTICULAR, topical administration of cytostatic agents was recently introduced for the management of accessible premalignant and malignant lesions arising from the skin and mucosa.[1,2] Extensive studies in animals and patients with disseminated malignant diseases had indicated the safety and suggested the potential value of local administration of chemotherapeutic agents for the management of superficial malignant lesions.[3] Preceding[3] and subsequent studies[4-7] in this and other institutions confirmed and extended the findings obtained in the initial studies.[1-3] These studies also indicated that accessible neoplastic lesions were suitable model systems for studies on tumor biology which complement investigations on deep-seated tumors.[3-7]

Initial and subsequent follow-up studies of the effects of local administration of cytostatic agents to cutaneous malignant and premalignant lesions indicated that local chemotherapy presented a new method for the treatment, early diagnosis, and prevention of skin cancers and precancerous lesions. Local chemotherapy was particularly useful for extensive superficial cutaneous carcinomatoses and premalignant keratoses which could not be adequately managed by previously available methods.

In addition to being an effective new method of therapy, local chemotherapy was shown to be free of systemic toxicity or other severe side-effects, both immediate or delayed. Recovery was rapid, and healing occurred with minimal or no scarring even when extensive areas of the body surface like the entire face or chest were involved.

Several new concepts emerged or were clinically and experimentally confirmed by studies on local chemotherapy for skin cancer. It was shown that under the proper conditions chemical management of cancer was feasible, selective, and effective. It was further shown that chemotherapy aids in the early diagnosis of malignant or premalignant lesions at a stage at which these would, otherwise, not be detectable. The reduced incidence of premalignant and malignant lesions following topical chemotherapy indicated that chemical agents were able to prevent the development of neoplasms. Basic aspects of tumor biology, such as host defense mechanisms, differential effects on normal cells and on their neoplastic counterpart, antagonism between metabolite and its respective structural analogues acting as antimetabolites, and the role of immune reactions were investigated as part of the investigations of local chemotherapy in a manner in which it could not be done by studies on systemic administration of antitumor agents. One of the important developments which resulted from studies on the effects of locally administered chemotherapeutic agents was the recognition of the role of specific cell-mediated (that is, delayed) hypersensitivity reactions in the course of malignant disease, and the manner in which delayed hypersensitivity may be used for the therapy, diagnosis, and prevention of cutaneous malignant lesions will be presented in the succeeding paper.[8,9]

Attempts to treat primary cutaneous cancer by local and systemic administration of chemical agents with antimitotic action or agents which generally interfere with cellular integrity have been previously reported.[10-17] The primary objective of these previous studies was to determine therapeutic efficacy rather than to develop a system for studying tumor biology, the mechanism of action of antitumor agents, or factors relating to host defenses. Most of the previous studies on the effects of

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antitumor agents in primary cutaneous neoplasms are concerned with single infiltrative lesions for which local chemotherapy at the present stage of its development is not indicated as a routine treatment.[2,6,18] Other reports deal with combinations of surgery or radiation and local chemotherapy and are concerned with the end result rather than distinguishing or controlling one or the other of the several modalities employed.

Studies

Clinical. Initial clinical studies on effects of local chemotherapy on epitheliomas were carried out in patients with extensive cutaneous malignant disease which could not be adequately managed by standard procedures because of the large areas involved and the persistent incidence of new lesions. Parallel studies were carried out in patients with epitheliomas who had concurrent advanced diseases such as disseminated cancer. The former group of patients included those with extensive radiation dermatitis, arsenical dermatoses with keratoses and malignant lesions, and patients with xeroderma pigmentosum.[4-6]

In the initial studies a large number of cytostatic agents were studied, including agents which had already been explored by systemic administration as well as agents which had not previously been studied in man.[5] Since the majority of these patients had many lesions, concurrent studies were carried out in which a number of different agents could be compared.[6] Several parameters of administration were studied, such as variations in the concentrations of the agents, duration and frequency of administration, mode of administration (that is, topical with or without occlusion and intralesional injection), and nature of the vehicle.[19] Studies were further carried out on the relation of the characteristics of the lesion, such as location, size, and depth, to the effect of local chemotherapy. The effects of combining one or more chemical or physical antitumor agents were also studied and the multiplicity of lesions permitting adequate control of each agent by itself to determine whether additive or synergistic effects could be demonstrated.[4,6,7] These studies indicated that the conditions required for producing regressions varied considerably between different types of lesions within the same patient as well as between one patient and another.[4,7]

These exploratory studies provided the basis for a double-blind, placebo-controlled investigation on the effects of topical administration of a number of antimitotic agents including methotrexate, 5-FU (5-fluorouracil),* 5-MU (5-mercaptouracil),† AB-132 (dimethylurethamide),† nitrogen mustard, and actinomycin D, to solitary nodular basal cell carcinomas.[5] The natural course of all the tumors studied in this group of 36 patients was altered by each of these agents but was not necessarily followed by the disappearance of the lesions under the conditions of this study. Statistical significance (P** equals greater than 0.001) was demonstrated for 5-FU in regard to tumor resolution. 5-MU, AB-132, and subsequently methotrexate also led to tumor eradication. While statistical significance of tumor eradication by these three agents was not demonstrated in these studies, the biologic significance of their effects is unequivocal since basal cell carcinomas do not undergo spontaneous regression.

Since 20 per cent 5-FU in a hydrophilic base was shown to produce regression in basal cell carcinomas on a statistically significant basis, this agent was investigated further in solitary nodular basal cell carcinoma.[18] The protocol of the earlier studies mandated excisional biopsy removal of the site involved by the lesion as an end point to determine whether or not residual cells were present.[5] In the subsequent studies lesions were selected which were large enough to permit serially repeated biopsies during the period of observation.[18] Following an observation period of approximately three years, the incidence of tumor resolution was 56 per cent in a group of 32 patients with solitary nodular basal cell carcinoma. These data show that under the conditions of this study which require a 20 per cent 5-FU prepara-

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* 5-Fluorouracil was provided for these collaborative studies by Edward Miller, M.D., Hoffmann-La Roche, Inc., Nutley, New Jersey.

† 5-Mercaptouracil and diethylurethamide were provided for collaborative studies by Thomas Bardos, Ph.D., School of Pharmacy, State University of New York at Buffalo, and Julian Ambrus, M.D., Springville Laboratories, Roswell Park Memorial Institute, Buffalo, New York.

** Indication probability.

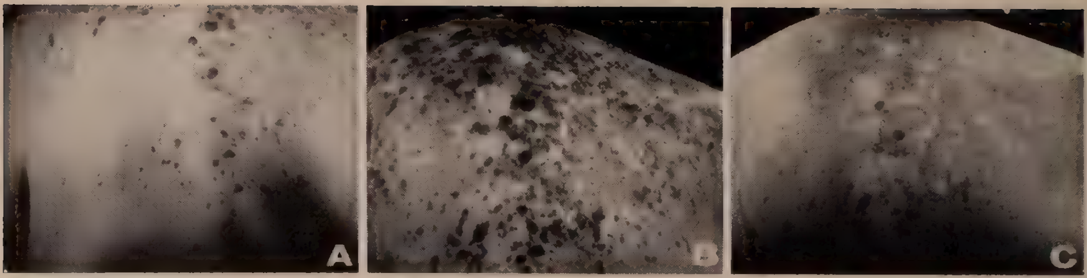

FIGURE 1. (A) Patient with multiple superficial basal cell carcinomas associated with basal nervoid syndrome prior to topical chemotherapy; (B) after 10 daily topical applications of 5 per cent 5-FU; and (C) two months after discontinuation of topical 5-FU therapy.

tion in hydrophilic base under an occlusive dressing applied daily for a period of twenty-eight days, topical chemotherapy is not indicated for the routine treatment of solitary nodular basal cell carcinoma. A cure rate of 56 per cent is far inferior to the results obtained by surgery, including Mohs' chemosurgery, electrocoagulation, and cryosurgery, or radiation therapy which results in cure rates of 98 per cent.

MULTIPLE SUPERFICIAL BASAL CELL CARCINOMA SYNDROMES. Studies were carried out on patients with multiple clinically equivalent lesions to determine the effects of various concentrations of 5-FU in a hydrophilic base over a range of several orders of magnitude.[19] The range extended from 0.005 to 20 per cent 5-FU.

There were considerable differences in the reaction of individual tumors and of individual patients to the same concentrations of 5-FU.

The reaction to 5-FU in the concentration range 0.005 to 0.5 per cent did not consistently result in tumor regression. Both 5 and 20 per cent 5-FU in hydrophilic base resulted in adequate tumor resolution. The 20 per cent 5-FU preparation, however, produced a more intense reaction and was occasionally followed by more noticeable scar formation than the 5 per cent preparation. Based on these observations, subsequent studies were carried out with a 5 per cent 5-FU preparation. However, the 5 per cent 5-FU preparation should not be considered as a definitive recommendation, since at present the number of observations are too few to permit conclusive decisions. In fact in patients with large numbers of lesions, one or more lesions are usually found which do not respond to 5 or even 20 per cent 5-FU. In those cases, after the majority of lesions have responded, a second course of a higher concentration of 5-FU is employed for the treatment of residual lesions. The duration of the course of 5-FU applications is also extended. The most resistant superficial lesion in our studies has responded to 30 per cent 5-FU in a hydrophilic base following daily occlusive application for three months.

Topical chemotherapy in superficial basal carcinomas resulted in tumor resolution in 95 per cent or more of involved areas with minimal or no recurrence and reduced the development of new lesions over periods extending up to five years in a group of 27 patients. Topical chemotherapy was well tolerated, except for minor discomfort at the time of the maximum reaction to the chemotherapeutic agent.

Systemic toxicity was not observed. The following studies were carried out in these patients: hematology tests including hemoglobin, hematocrit, red blood cell count, total and differential white blood cell count, platelet count, red blood cell sedimentation rate, and a battery of coagulation tests; liver function studies including sulfobromophthalein test, serum glutamic oxalopyruvic transaminase, alkaline phosphatase, direct and indirect Van den Bergh test, total protein, albumin-globulin ratio, plasma protein electrophoresis; and blood chemistries including blood urea nitrogen, fasting and two-hour postprandial blood sugar, uric acid levels, creatinine levels, and free amino acid levels. In initial phases of the investigation most of these studies were carried out at least once a week. White blood cell

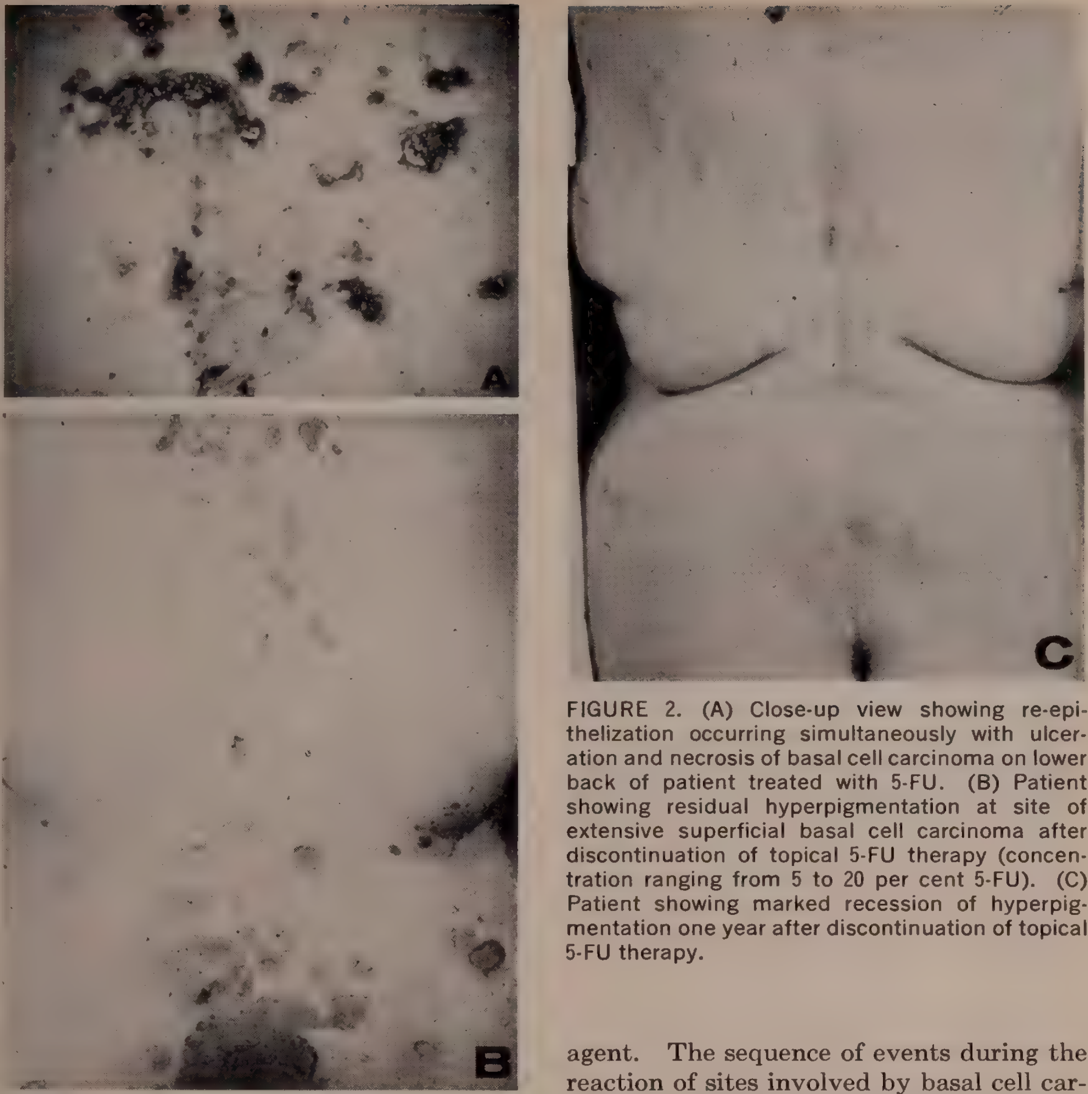

FIGURE 2. (A) Close-up view showing re-epithelization occurring simultaneously with ulceration and necrosis of basal cell carcinoma on lower back of patient treated with 5-FU. (B) Patient showing residual hyperpigmentation at site of extensive superficial basal cell carcinoma after discontinuation of topical 5-FU therapy (concentration ranging from 5 to 20 per cent 5-FU). (C) Patient showing marked recession of hyperpigmentation one year after discontinuation of topical 5-FU therapy.

counts and platelet counts were obtained at more frequent intervals. Since the patients were under close observation, either daily on the ward or 2 to 3 times a week in the outpatient clinic, close attention was given to their general medical state. In a number of patients, therefore, additional clinical studies such as electrocardiography, thyroid function, renal function, hormone studies, and other investigations were carried out. Clinical, hematologic, or other studies did not reveal changes which were related to local chemotherapy.

Onset of the reaction to local chemotherapy usually occurs following 3 to 20 daily applications of the chemotherapeutic agent. The sequence of events during the reaction of sites involved by basal cell carcinoma consisted of erythema usually followed by vesiculation, erosion, ulceration, necrosis, and healing within a period of an additional five to fourteen days depending on the extent of the lesion. Healing proceeded with granulation tissue formation and re-epithelization and minimal or no scarring (Fig. 1). It was found that granulation tissue formation and marginal re-epithelization occurred while topical 5-FU or other chemotherapeutic agents were being administered. This indicated that these agents exerted a selective action on the neoplastic cells which underwent destruction while the normal adjacent epithelium behaved and multiplied in a normal manner, except for relatively insignificant temporary changes.

Since re-epithelization cannot proceed

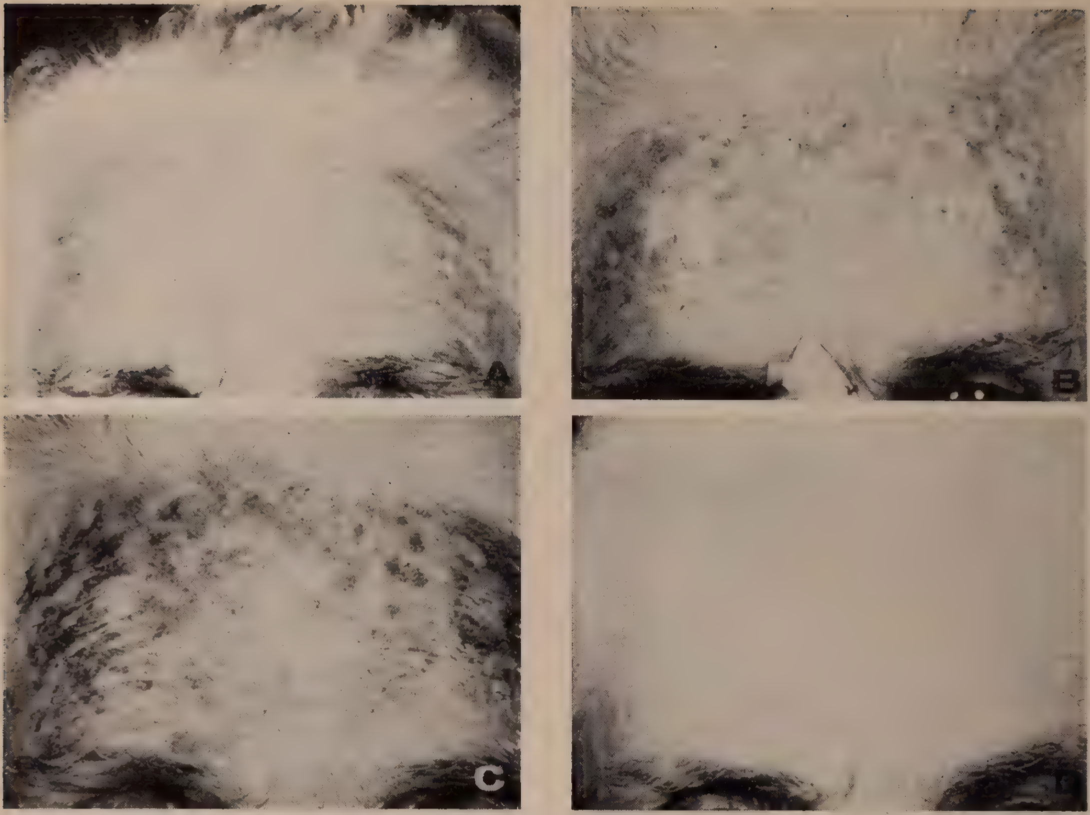

FIGURE 3. (A) Patient with multiple actinic keratoses prior to treatment with with topical 5-FU; (B) one week after treatment with 5 per cent topical 5-FU in hydrophilic base; (C) two weeks after treatment; and (D) one month after cessation of therapy, showing little or no scarring.

without granulation tissue formation, it was evident that continued chemotherapy administration did not prevent the formation of an adequate fibrous exudate and its organization. Healing and re-epithelization was frequently followed by residual erythema lasting for periods of up to four weeks following the discontinuation of chemotherapy. In a number of patients, residual pigmentation was present for periods ranging from six weeks to eight months in the course of which the pigment gradually faded. Scarring was minimal or absent (Fig. 2).

The reaction to 5-FU was confined to the areas involved by basal cell carcinoma or other cutaneous neoplastic changes. This further suggested a selective action of the cytostatic agent on neoplastic cells, as compared with its lack of effect on their normal counterpart. In patients with extensive involvement, early lesions which were too small to be recognized clinically became apparent as a result of their reaction to cytostatic agents. Since these lesions were small, the reaction was frequently very superficial and consisted of erythema only. As a result of even this limited reaction, however, the lesions underwent resolution. Thus their subsequent development into more extensive and clinically more significant lesions was aborted. It would appear from these observations that areas involved by neoplasms at a stage at which they do not produce a grossly detectable reaction may, nevertheless, be similarly affected by the local administration of chemotherapeutic agents and may undergo involution without becoming apparent. It is believed that this process of resolution of earliest lesions is responsible for the decreased incidence of basal cell carcinoma in patients with otherwise persistent development of new lesions.

Since the reaction of 5-FU is largely limited to areas involved by neoplasms, it

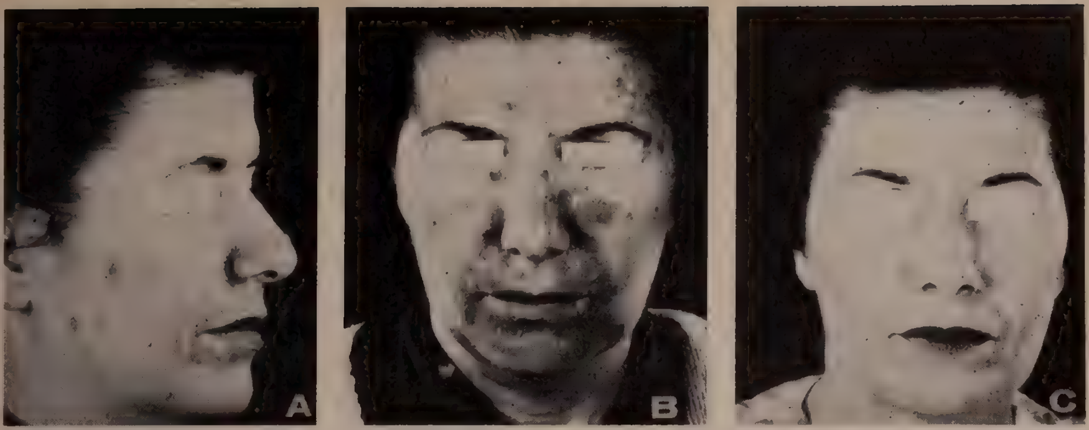

FIGURE 4. (A) Patient with solar keratosis prior to therapy with 5-FU; (B) two weeks after therapy, showing intense inflammatory reaction in lower portion of face; and (C) one month after completion of topical chemotherapy.

is not necessary to confine the application of the agent to areas of obvious involvement. The agent, therefore, is generally applied over the entire area in which neoplasms are present. Thus in patients with 2 or 3 lesions on the forehead, the 5-FU preparation is applied over the entire forehead. The areas not involved do not react, and, therefore, there is no contraindication to more extensive application. On the other hand, should lesions which have not been clinically recognized be present in those areas, in patients with multiple lesions they frequently are present, they will react and undergo resolution. Thus not only is there no contraindication but also there is a definite indication for not confining the application of the preparation containing the cytostatic agent to the sites grossly involved.

Premalignant keratoses. The majority of premalignant keratoses studied were of actinic origin (Fig. 3). A number of patients with keratoses associated with arsenical dermatitis, xeroderma pigmentosum, and late radiation dermatitis were also investigated. The results in patients with solar keratoses, xeroderma pigmentosum, and late radiation dermatitis, were substantially similar to those obtained in patients with multiple superficial basal cell carcinomas. Arsenical keratoses were considerably less responsive to topical chemotherapy than other lesions.

Most of the studies were carried out with a 5 per cent 5-FU preparation in hydrophilic base. In patients with solar keratoses, up to 95 to 98 per cent of the areas involved underwent resolution. Residual lesions were treated with a second course of 5 per cent 5-FU. This usually resulted in complete eradication of solar keratoses. In less than 1 per cent residual keratoses were treated with higher concentrations of 5-FU (10 or 20 per cent) and occlusion, if they proved to be resistant.

The sequence of events during the reaction of solar keratoses to 5-FU is similar to that observed in multiple basal cell carcinoma. Since these lesions are usually more superficial than basal cell carcinomas, erosion is less marked and the presence of exudation and necrosis is of shorter duration. Marginal re-epithelization is frequently observed while 5-FU is still being administered. The reaction is limited to the areas involved except for rare adverse side reactions which will be discussed.

Since solar keratoses are usually superficial and since, consequently, the reaction is not as intense as it is in basal cell carcinoma, the recovery is more rapid and almost always occurs without observable scar formation. As with multiple superficial basal cell carcinoma, early small keratoses, which may not be clinically detectable, react to the chemotherapeutic agent. This reaction is correspondingly mild but results in eradication of lesions which otherwise may undergo further progression. The early eradication of subclinical lesions probably accounts for the reduced incidence of solar keratoses in patients who have undergone topical chemotherapy.

Systemic toxicity was not encountered in patients with solar keratoses who received local chemotherapy extending over the entire face, neck, chest, arms, and legs. The side reactions which were less than 2 per cent were local and were limited to an inflammatory reaction in the lower central part of the face. This involved particularly the creases extending from the nasolabial folds onto the chin (Fig. 4). In rare instances the inflammatory reaction also involved the upper and lower eyelids and was accompanied by edema of the circumorbital area. These side reactions were not usually an indication for discontinuing 5-FU therapy and were adequately managed by concurrent administration of topical corticosteroids.

Keratoses as well as other malignant lesions of late radiation dermatitis were treated with concentrations of 5-FU lower than 5 per cent. Determination of the optimal dose in late radiation dermatitis varies with the extent of the dermatitis and the type of lesion. In several patients 1 per cent 5-FU in hydrophilic base was sufficient for producing resolution of keratoses in late radiation dermatitis. The optimal dose in these patients was determined by progressive increase in the concentration until an adequate response without untoward intensity was obtained. Late radiation dermatitis in areas other than the face, such as the back, the neck, and the upper arms, usually responded adequately to a 5 per cent 5-FU concentration.

SQUAMOUS CELL CARCINOMA. Studies on squamous cell carcinoma of the skin were initiated in patients who had, in addition to squamous cell carcinoma, far-advanced severe diseases of other origin or who had metastases of squamous cell carcinoma of the skin beyond the regional lymph nodes which were considered inoperable and not suitable for radiation therapy. Other studies on squamous cell carcinoma of the skin were limited to patients with multiple superficial lesions, the large number of which rendered treatment by surgery or radiation therapy unsatisfactory. These were patients with arsenical dermatitis, xeroderma pigmentosum, and patients with extensive keratoses which had undergone transformation to carcinoma in situ. A number of patients with solar keratoses and arsenical dermatitis were found to have squamous cell carcinoma in situ which was clinically not apparent before local chemotherapy.

The concentration of 5-FU in hydrophilic base used was 5 per cent when squamous cell carcinoma in situ was found incidental to treatment for premalignant keratoses. When squamous cell carcinoma was known to be present prior to the initiation of local chemotherapy, a 20 per cent 5-FU preparation in hydrophilic base was used daily under occlusion for a minimum of four weeks and subsequent applications twice daily.

The results in squamous cell carcinoma in situ were essentially similar to those obtained with superficial basal cell carcinoma and premalignant keratoses. Approximately 95 to 98 per cent of individual lesions or involved areas responded by resolution and lack of recurrence over periods of up to five years. Residual lesions responded to a second course of topical chemotherapy. A second course of 5-FU therapy was given only to those patients who had advanced disease or patients with arsenical dermatitis or xeroderma pigmentosum who showed persistent development of large numbers of new lesions. The latter group were given repeated courses of local chemotherapy at intervals of from two to six months. This regimen appeared to control new lesions as they developed. Patients without serious diseases other than multiple superficial squamous cell carcinoma who had a few residual lesions following the first course of 5-FU therapy, almost invariably were found to have become suitable for management by standard modalities. Thus in these patients a second course of topical chemotherapy was not considered indicated for isolated residual lesions which had become manageable by surgery or radiation therapy.

The reaction to topical chemotherapy in squamous cell carcinoma in situ was similar in nature to that observed in multiple superficial basal cell carcinoma and premalignant keratoses but was considerably more intense. Onset of the reaction was earlier than in basal cell carcinoma. The reaction usually proceeded to the stage of

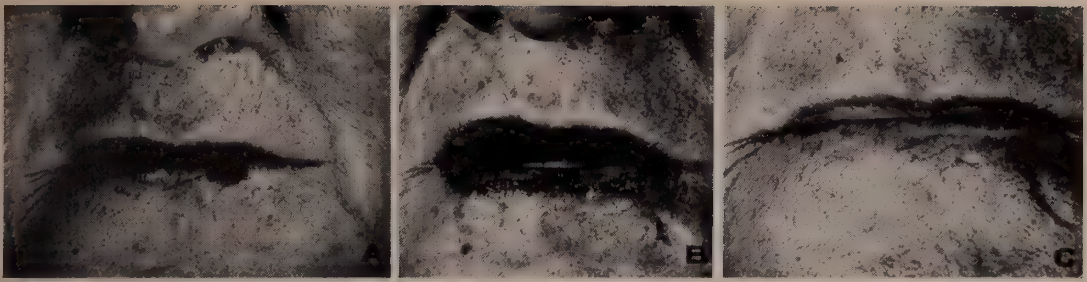

FIGURE 5. (A) Patient with leukoplakia of lip prior to topical application of 20 per cent 5-FU in hydrophilic base; (B) three weeks after therapy; and (C) six months after discontinuation of therapy.

erosion. Healing occurred with minimal or no scarring. As had been observed in multiple basal cell carcinoma and in solar keratoses, topical chemotherapy resulted in the detection and eradication of lesions which could not be detected clinically. The subsequent incidence of squamous cell carcinoma in patients who had received one course of topical chemotherapy was considerably less than it had been while the patient was managed by standard modalities.

There was no evidence that local chemotherapy resulted in dissemination of squamous cell carcinoma. In this group of approximately 20 patients who had been under observation for periods of up to five years, metastatic squamous cell carcinoma was not found unless metastatic lesions had been present prior to topical chemotherapy.

Leukoplakia. Studies on leukoplakia of the mouth and of the lower female genitourinary tract were carried out. Topical administration of 20 per cent 5-FU in an aqueous base was carried out in patients with leukoplakia of the vulva who had been scheduled for vulvectomy. Considerable discomfort was experienced, but eradication of the lesions was induced without recurrence for periods extending over three years.

Leukoplakia of the external aspect of the lips was treated by topical application of 5 per cent 5-FU in an aqueous base to the circumoral area. Resolution of the leukoplakia occurred which lasted for periods of up to two years (Fig. 5).

Intraoral leukoplakia was not suitable for topical chemotherapy until methods were developed which permitted the retention of the locally applied chemotherapeutic agents on the surface by appropriate dressings.* The development of an adhesive dressing which could be applied to moist mucous surfaces permitted the application of these agents without their removal by saliva and without swallowing the antimitotic agent. Topical application of antimitotic agents to the oral mucosa without a protective cover would not allow protracted contact of chemotherapeutic agents with the involved sites and would present the usual hazards of oral ingestion of antimitotic agents.

Concentrations of 5-FU ranging from 5 to 30 per cent in an aqueous base were applied to areas in the oropharyngeal cavity under the cover of the intraoral bandage. As a precautionary measure, the chemotherapeutic agents and the bandage were removed at mealtime and bedtime to avoid the possibility of swallowing or aspirating these materials. As has been noted with cutaneous premalignant or malignant lesions, continuous maintenance, that is, for twenty-four hours per day, of an adequate level of chemotherapeutic agents at the involved site considerably accelerates resolution. Since continuous application of topical medication was not considered desirable for these reasons in patients with intraoral leukoplakia, resolution of lesions required considerably longer courses of therapy than on the skin. Topical application of 5-FU was continued in patients with intraoral leukoplakia for periods of up to four months.

Lesions on the gingiva and hard palate underwent partial to complete ablation (Fig. 6). The response of lesions on soft

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* Intraoral bandage (Orahesive) was provided for these studies through the cooperation of G. Beckloff, M.D., and R. Heiser, D.D.S., of the Squibb Institute for Medical Research, New Brunswick, New Jersey.

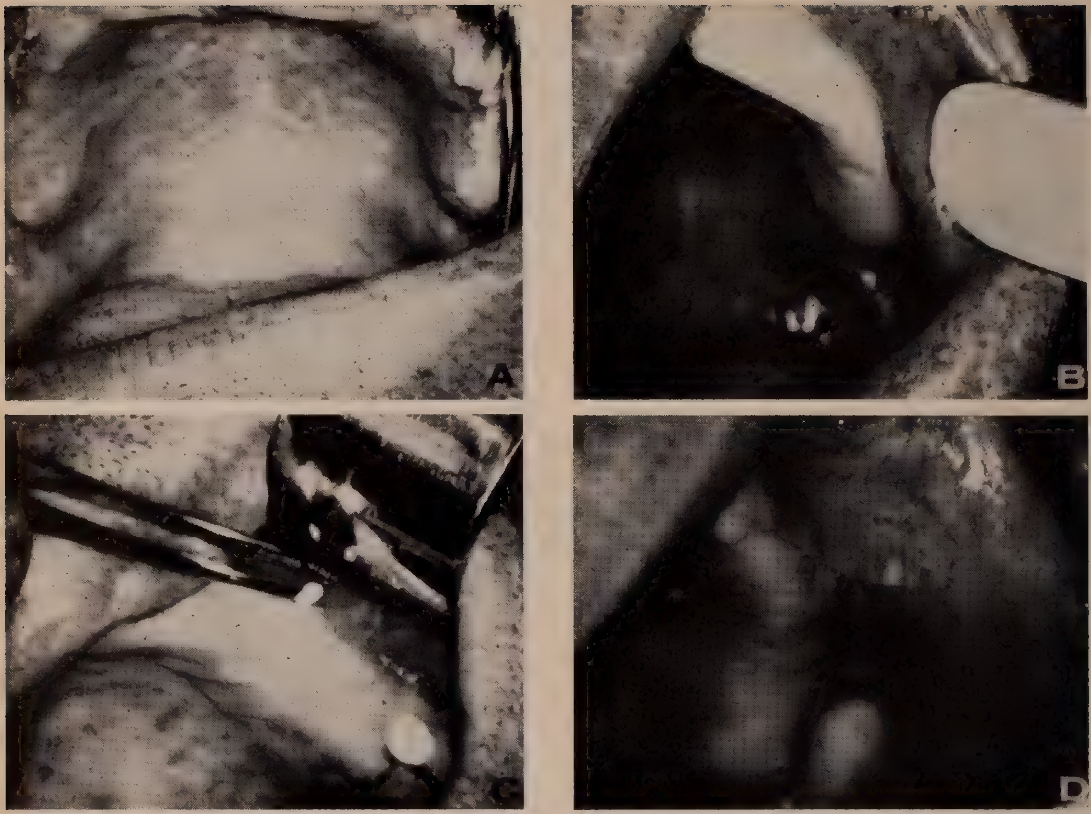

FIGURE 6. (A) Patient with extensive leukoplakia of gingiva prior to topical application of 20 per cent 5-FU in hydrophilic base. (B) Patient shown with intraoral adhesive bandage in place covering 20 per cent 5-FU in hydrophilic base applied to cut sponge. (C) Six weeks after therapy patient shows that residual involvement of leukoplakia is ready to undergo ablation and minimal effects on adjacent or underlying mucosa. (D) Complete resolution of gingival leukoplakia six months after discontinuation of therapy.

surfaces, such as the tongue and buccal mucosa, was less satisfactory and resulted in temporary partial regression only. Partial regressions consisted either of decrease in the size of the lesion or in reduction of the thickness of the plaque, or usually both.

The reaction to topical 5-FU consisted of an initial increase in the density of the lesion resulting in a more prominent appearance and more marked elevation above the surface of the adjacent normal mucosa than had been the case prior to treatment. Ablation of the lesion followed, leaving a very superficial erosion or a normal-appearing mucous membrane at the site of involvement. In some instances this process was more gradual; the lesion became progressively less noticeable and faded away rather than underwent ablation.

Signs of systemic toxicity were not encountered in patients receiving intraoral chemotherapy. Local side-effects consisted of mild erosions in areas adjacent to the site involved by leukoplakia. It was not feasible to determine whether or not these erosions indicated early leukoplakia, which had not become apparent clinically, since histologic examination only indicated the presence of an inflammatory reaction. Erosions in areas adjacent to leukoplakia healed spontaneously with or without the administration of triamcinolone acetonide in emollient dental paste (Kenalog in Orabase).*

MISCELLANEOUS. To compare the effects of local chemotherapy with standard modalities, studies were carried out on symmetrical areas in patients with multiple basal cell carcinomas, squamous cell carcinoma in situ, and premalignant keratoses. The chemotherapeutic agents were applied topically to one side, and the symmetrical area on the other side was treated surgically or with radiation therapy. The patients selected for these studies had intractable diseases, such as xeroderma pigmentosum, late radiation dermatitis, or arsenical dermatitis.

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* Obtained through the courtesy of Gerald Beckloff, M.D., and Arthur Olivett of the Squibb Institute for Medical Research, New Brunswick, New Jersey.

It became apparent that topical chemotherapy in patients with extensive disease was more suitable for therapeutic management than standard modalities. Since scarring was minimal or absent, local chemotherapy gave better functional and cosmetic results than other methods. Furthermore, because of the eradication of early lesions which were clinically not detectable, the incidence of new lesions was considerably higher on the side treated by conventional methods than on the symmetrical side which had undergone topical chemotherapy.

In view of the diminished incidence of new lesions, the potential prophylactic value of topically applied chemotherapeutic agents was further investigated in patients who had consistently developed large numbers of new lesions. These studies have been and are continuing to be carried out in patients with xeroderma pigmentosum, multiple superficial basal cell carcinoma syndromes, arsenic-induced squamous cell carcinomatosis, and premalignant keratoses, respectively. As described, symmetrical sites are investigated by the application of topical chemotherapy and standard therapeutic methods, respectively. Chemotherapy is being applied intermittently at intervals of from two to twelve months depending on the nature and severity of the epitheliomatosis. The data available at present indicate that intermittent chemotherapy results in removal of lesions which are apparent as well as in early detection, eradication of tumors before they reach appreciable sizes, and resolution of keratoses before they transform into squamous cell carcinoma. Intermittent chemotherapy, therefore, appears to have a significant prophylactic value in the management of multiple cutaneous neoplasms.

Comment

Studies on local chemotherapy for primary cutaneous neoplasms have led to the development of a new therapeutic modality and suggest a number of avenues for the investigation of tumor biology utilizing cutaneous tumors as model systems.

The studies presented have largely dealt with the effects of topical 5-FU. These and parallel studies, however, indicate that local chemotherapy justifies further exploration in other types of diseases associated with hyperproliferative epithelium. A number of other chemical antitumor agents were also shown to be of interest. Derivatives of 5-FU, such as 5-fluoro-2-deoxyuridine or 5-iodo-2-deoxyuridine, and other substituted purines and pyrimidines as well as members of the leukovincoblastine group of alkaloids, hydroxyurea, and mustard derivatives merit further attention. It would, therefore, be premature to conclude that 5-FU, which was the first agent to be studied, should be considered as necessarily the optimum drug. Studies carried out so far suggest that a number of agents may be superior to it for the purposes of management of cutaneous neoplasms.

The studies carried out so far should primarily be considered as feasibility studies with therapeutic implications rather than as presenting a definitive therapeutic modality. In solar keratoses, multiple basal cell carcinoma syndromes, and in xeroderma pigmentosum, in which topical 5-FU has been shown to be an effective method of management when other standard therapeutic modalities were not satisfactory, insufficient data are available to determine the optimum methods for utilizing topical chemotherapy. Thus, critical studies determining optimum mode of administration, duration and frequency of administration, type of vehicle, and other factors of clinical significance have not been adequately established. While these factors may seem not to be significant as compared with the value of an efficient therapeutic agent, they nevertheless require considerable additional attention. Such aspects as cost to the patient, degree and duration of temporary disability caused by the reaction to topical chemotherapy, and long-term observation on incidence of new lesions or recurrences are required.

Studies on several parameters of local chemotherapy are currently under way. To reduce the frequency of administration, chemotherapeutic agents are being studied in several depot forms to provide protracted release of the antitumor agent. Preliminary data suggest that depot administration of antimitotic agents reduces the frequency of administration and permits the resolution of more deep-seated lesions than topical administration. Studies are in progress to evaluate the effects of combining antimitotic agents with compounds such as dimethylsulfoxide and dimethylacetamide which increase the rate of percutaneous absorption. The observations made in these studies indicate that both the concentration of the antimitotic chemical and that of the absorption-promoting agent are critical for adequate control of the rate and extent of absorption of antimitotic agents. An excessive concentration of the absorption-promoting agent results in rapid removal of the antimitotic material from the skin surface but also accelerates the rate at which the antitumor agent passes through the areas involved by the lesion, is absorbed into the general circulation, and is distributed throughout the organism. This leads to a dual disadvantage in that inadequate amounts of antitumor agent reach the site of the lesion while excessive amounts appear in the blood stream, thus posing a hazard of systemic toxicity.

Several types of vehicle for incorporating 5-FU are under study. Data obtained so far on several bases show that the final result is less affected than the rate of onset of the reaction to the chemotherapeutic agent. Liquid vehicles, such as propylene glycol, have the advantage over solid or semisolid bases in that lower concentrations of 5-FU are required. In our studies a 2 per cent solution of 5-FU in propylene glycol was found to be reliably effective in solar keratoses.

When the concentration of 5-FU in propylene glycol was lower than 2 per cent, significant numbers of residual or recurrent lesions were found. In studies on symmetrical sites, a 5 per cent 5-FU solution in propylene glycol was found to be considerably less effective in the eradication of superficial basal cell carcinomas than a 20 per cent 5-FU cream. The side-effects of 5-FU in propylene glycol were more marked than those of the 5-FU cream. This presumably is due to the greater tendency of the liquid to accumulate in the creases of the nasolabial folds, the circumoral area, and the chin.

Studies are in progress to evaluate synergistic effects between locally and systematically administered antimitotic agents. Preliminary studies indicate that synergism between methotrexate on systemic administration and 5-FU on local administration can be demonstrated. These observations were made in patients with extensive and intractable psoriasis as well as in patients with cutaneous neoplasms. Studies are being carried out to determine whether or not synergism between ionizing radiation and locally applied chemotherapeutic agents can be demonstrated. These studies are being extended to a systematic investigation of the photosensitizing effects of ultraviolet light on topically or systemically applied chemotherapeutic agents. The data obtained from these studies indicate that synergistic effects of potential therapeutic significance may be established.

Studies have been continued to investigate the antagonism between metabolites and their respective antagonists on systemic and local administration. The studies carried out so far indicate that side-effects of systemically administered antimetabolites may be controlled at sites to which the metabolite is administered locally, without reduction in therapeutic effects. This may be of significance in systemic chemotherapy when severe toxic effects at areas accessible to local chemotherapy constitute a limiting factor to further treatment.

The lack of systemic toxicity or severe side reactions is understood when it is considered that the relation of the concentrations of the agent in the tumor and in other tissues, respectively, is reversed as compared with systemic chemotherapy. In local chemotherapy a relatively small amount is applied directly to the tumor, but the concentration at the tumor site is high. However, as the agent is absorbed into the blood stream, it is diluted throughout the body of the recipient. Conversely, in systemic chemotherapy, a relatively large amount has to be given to allow a relatively small proportion of the total amount administered to reach the tumor site. Therefore, the concentration within the tumor following systemic chemotherapy is relatively low. Thus, the range of concentrations which can be employed in local chemotherapy is orders of magnitude above those feasible in systemic chemotherapy.

Another reason for the lack of systemic toxicity is the fact that topical administration results in continuous absorption of the chemotherapeutic agent; thus, high blood or systemic levels, which would be produced by giving the same or a smaller quantity by intravenous injection, are not reached following local chemotherapy. It has, therefore, been possible to apply supralethal doses in topical form without inducing systemic toxicity. This is analogous to the observations made by Sullivan and Miller[20] in which supralethal doses of 5-FU were administered by continuous infusion without the induction of severe systemic toxicity. These data were confirmed by preliminary studies in which carbon^{14}-labeled 5-FU was applied topically to mice. Although the concentration of 5-FU at the site of application was 10 to 20 times above the minimal dose, C^{14}-labeled 5-FU, did not become detectable in the blood. This is in agreement with the observations by Dillaha *et al.*[21] who found that only 6 per cent of the administered 5-FU could be recovered from the urine as C^{14}-labeled material. Thus, it is apparent that topical application of chemotherapeutic agents does not lead to a systemic level which would exceed the threshold for the induction of bone marrow depression or other signs of systemic toxicity.

The hypothetical hazard of using potentially carcinogenic agents has been considered. Animal and subsequent clinical studies over a period of up to six years have not shown any indications of carcinogenesis. In clinical studies of premalignant states, such as in solar or arsenical keratoses, late radiation dermatitis, or xeroderma pigmentosum in which the predisposition toward the formation of malignant neoplasms is high, topical administration of antimitotic agents has caused a decrease rather than an increase in the formation of new neoplasms. It should be borne in mind, however, that the observation period may be too short to have revealed the possible induction of carcinogenic effects. It should, furthermore, be pointed out that extrapolation from the effects of one antimitotic agent to another is not justified, since the mechanisms by which carcinogenesis may be induced may differ with each chemical agent. It would appear, however, that the failure to induce an increased occurrence of neoplasms in patients with a high incidence of preneoplastic or neoplastic lesions would suggest that for practical considerations, the potential hazard of carcinogenesis has not been demonstrated.

Data obtained so far on solitary lesions of nodular basal cell carcinoma or squamous cell carcinoma demonstrate that topical chemotherapy for this type of lesion is not indicated as a routine form of management. The incidence of recurrences of these lesions was much higher following topical chemotherapy than after surgery or radiation therapy. It does appear, however, that under carefully selected and controlled conditions, further studies are warranted to determine whether or not the cure rate may be increased by modifying the chemotherapy procedures.

One of the potentially treacherous pitfalls of topical chemotherapy consists of superficial removal of a malignant lesion with subsequent re-epithelization, leaving residual malignant cells in the depth of the area. Therefore, close observations of areas treated with topical chemotherapy for protracted periods is essential to recognize this contingency. Furthermore, treatment of squamous cell carcinoma by topical chemotherapy as a routine form of management is strongly contraindicated for several reasons. The possibility of disturbing the natural milieu of the lesion with the release of viable tumor cells into the lymphatic system and bloodstream may increase the tendency toward metastatic dissemination. Although in the studies on patients with multiple squamous cell carcinoma for which other forms of treatment were not feasible have not shown this to be the case, the possibility of such an occurrence remains. A five-year observation period is not sufficient to rule out the possibility of notoriously slowly growing tumor to become apparent in the event that dessimination had taken place.

While superficial tumors are an indication for topical chemotherapy, lesions which have recurred following surgery or radiation require special attention and are usually not suitable for topical chemotherapy. It appears that the reasons for the higher incidence of a second recurrence following any form of therapy are related to the biologic characteristics of the tumor and to the scar tissue, which forms following the initial therapeutic intervention and may harbor tumor cells which are protected from the therapeutic modality or may not be recognized as being present.

The observation that re-epithelization occurs while local application of chemotherapeutic agents is in progress is of considerable interest. It indicates a selective action of the chemotherapeutic agents against normal epithelial cells and their neoplastic or preneoplastic counterpart, respectively. It appears from these observations that the neoplastic or preneoplastic cells remain sensitive to the chemotherapeutic agents, while the normal epithelial cells are either resistant or become so after initiation of local chemotherapy. This is the opposite of what is encountered in systemic chemotherapy, in which almost invariably the malignant cells develop resistance to the chemotherapeutic agent. During local chemotherapy, as the tumor undergoes involution at the margin of the involved site, re-epithelization becomes apparent. Since epithelization cannot occur in the absence of underlying granulation tissue, it is apparent that locally-applied chemotherapy does not necessarily interfere with regeneration of the normal tissue components while it results in destruction of the malignant cells. This indicates that differential chemical action on normal and malignant cells occurs under the proper conditions. The model systems provided by cutaneous tumors, therefore, indicate the principle and feasibility of obtaining analogous effects in tumors arising from other tissues.

Marginal re-epithelization occurring during topical chemotherapy is an indication that tumor resolution is progressing satisfactorily. Depending on the size of the lesion and the estimated depth, the onset of re-epithelization indicates that the course of therapy is near the stage at which it may be discontinued.

The data reported in this presentation have been obtained in studies on over 300 patients with an aggregate of more than 10,000 individual lesions, followed over observation periods of up to five years. These data were confirmed and extended by 20 medical centers which are collaborating with this group on a program for evaluating topical chemotherapeutic agents. Further work is likely to result in considerable improvement and further advances. Studies on immunotherapy presented in a succeeding article indicate a completely different approach to the management of cutaneous tumors.[9] The combination of cytostatic therapy and immunotherapy has been shown to provide synergistic effects which considerably shorten the period required for treatment. Furthermore, it appears that lesions which may be resistant to one form of therapy will respond to the combination of both methods. Further work in this area may be expected to result in extension of the principles described in this article to other neoplasms and to other types of disease.

Conclusions

The studies described have been carried out on an aggregate of more than 10,000 lesions in over 300 patients for observation periods in excess of five years. These observations are in agreement with studies made at other institutions. The conclusions reached are as follows:

1. Local, including topical, chemotherapy permits selective resolution of skin cancer with minimal or no effects on the adjacent skin or other normal tissues. Healing occurs with slight or no visible scarring thus reducing or eliminating functional or disfiguring defects.
2. Topical chemotherapy is indicated for the management of multiple primary skin cancers and precancerous lesions when standard therapeutic measures are complicated because large areas of the skin are involved by persistently developing tumors.
3. High concentrations of anticancer drugs in tumors can be attained by local administration, although the total amount administered and the rate of absorption is relatively low. General toxicity such as bone marrow depression and other untoward systemic side-effects are therefore not encountered with local cancer chemotherapy.
4. Early primary skin cancers may be recognized by their reaction to topical antitumor agents before they are otherwise clinically detectable. These tumors can,

therefore, be eradicated before they present significant clinical problems.

5. Topical cancer chemotherapy induces the resolution of premalignant skin lesions and thus prevents further development to the malignant stage. Clinically undiagnosed precancerous lesions like those of early basal cell and squamous cell carcinoma become manifest by selective reaction to the chemotherapeutic agents and can, therefore, be controlled at early stages.

6. Early detection and eradication of skin cancers and premalignant skin lesions results in a reduction of the subsequent incidence of clinically significant tumors. Local chemotherapy, therefore, appears to have prophylactic value.

7. Multiple accessible tumors of the skin facilitate the concurrent comparisons of different antitumor drugs, varying concentrations of a single agent, and assessment of combinations of chemical and physical antitumor agents.

8. Local chemotherapy indicates that differential and selective chemical effects can be produced in neoplastic cells and their normal counterparts.

9. Superficially located neoplasms are suitable model systems for the study of tumor biology.

10. Local chemotherapy demonstrates that the selective eradication of malignant disease in man by chemical means is feasible.

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Tumors of the Skin

X. Immunotherapy of Cutaneous and Mucosal Neoplasms*

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STUDIES ON THE relation of specific cell-mediated immunity (delayed hypersensitivity) to skin cancer which were initiated at this institution more than five years ago were subsequently extended and confirmed at other institutions. A number of the antitumor agents which were studied in a parallel program on local chemotherapy were found to produce cutaneous hypersensitivity reactions when studied on the skin of patients with epitheliomas.[1-6] It was further found that one of these agents, TEIB or tri-ethylene-imino-benzoquinone, which produced cutaneous hypersensitivity on local administration, caused a more intense reaction at the sites involved by cutaneous neoplasms than in the normal skin.[3-8] The reaction was a typical delayed hypersensitivity response to a challenging dose. When the concentration of the challenging dose was reduced sufficiently, the reaction was confined to the site of neoplastic involvement with minimal or no reaction in the adjacent normal tissues.[3] The selectively more intense reaction in cutaneous neoplasms than in their normal counterpart resulted in resolution of superficial basal cell carcinomas, squamous cell carcinoma in situ, premalignant keratoses, and leukoplakia with little or no scarring.[9] The hypersensitivity reaction was shown to be mediated by peripheral white cells as demonstrated by the transfer of leukocytes from sensitized to nonsensitized patients, and the response of the latter patients to challenging doses was followed by resolution of the lesions.[5,9]

Studies

CLINICAL. Initial clinical studies were carried out on a group of patients with advanced disseminated malignant disease and on patients with intractable multiple epitheliomatosis. The latter group includes 5 patients with multiple superficial basal cell carcinoma syndromes, 7 patients with xeroderma pigmentosum, 6 patients with arsenical dermatoses, 18 patients with extensive solar keratoses, and 14 patients with leukoplakia.

The agent initially studied was TEIB, (2, 3, 5-tri-ethylene-imino (1, 4)-benzoquinone),† and dinitrochlorobenzene was subsequently investigated as a sensitizer to determine whether the reaction resulting in tumor resolution required a cytostatic agent or could be induced by delayed hypersensitivity reactions to chemicals which did not have specific antimitotic activity. A third agent investigated was mumps vaccine to determine whether or not naturally occurring immune reactions could elicit tumor resolution on challenge procedures.

BASAL CELL CARCINOMAS. Cutaneous hypersensitivity in basal cell carcinomas was induced by topical application of a cream containing 0.05 per cent TEIB in an aqueous base. This preparation was applied daily to an area approximately 1 cm. square under occlusion until hypersensitivity became manifest. In earlier studies the same concentration was used for sensitization and for eliciting the challenging reaction. In subsequent studies the concentration of the challenging dose was titrated over a concentration range of several orders of magnitude below the sensitizing dose to establish the concentration of the sensitizer required for a minimal reaction which would result in tumor resolution.

One patient became sensitive to topical application of 0.05 per cent TEIB after three weeks of daily administration. This preparation was then applied over the patient's entire back (Fig. 1). Within four to six hours the reaction to the challenging ap-

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† 2,3,5-tri-ethylene-imino (1,4)-benzoquinone (Trenimon or TEIB) was provided through the cooperation of R. Goeswald, M.D., Farbenfabriken Bayer AG, Leverkusen, Germany.

plication started to become apparent. The reaction continued to go through the stages of erythema, edema, vesiculation, erosion, exudation, necrosis, and subsequent re-epithelization (Fig. 2). During a subsequent observation period of five years, there was no recurrence of the lesions which had disappeared as a result of the immune response (Fig. 3A). The patient subsequently developed new lesions at sites which had not previously been involved and responded in a similar manner to reapplication of the agent (Fig. 3B). This time the agent had been titrated to a lower concentration (TEIB 10^{-5}) which accounts for the considerably milder reaction. Resolution of lesions and subsequent recovery, however, was similar, although more rapid than it had been at the higher concentrations of the challenging dose (Fig. 3C). In general, eradication of multiple superficial basal cell carcinomas was observed in 98 per cent of lesions submitted to immunotherapy.

Prior to the first application of the challenging dose of TEIB, approximately 140 lesions were counted on the patient's back. When the reaction to the challenging application appeared, more than 500 areas showed the reaction (Fig. 1B). These areas included small lesions which could not be clinically detected prior to the onset of the hypersensitivity reaction. Biopsies of lesions not previously suspected revealed these to be basal cell carcinomas. Thus the hypersensitivity reaction unmasked clinically undetectable lesions and, therefore, provided a diagnostic tool. As a result of the reaction, these early lesions underwent resolution. The areas between the lesions did not react to a significant extent. It,

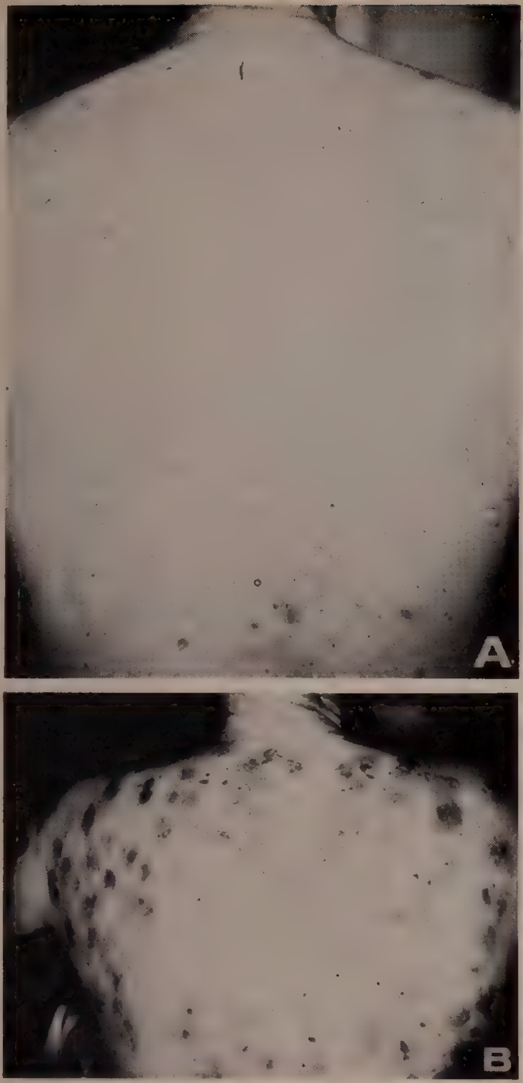

FIGURE 1. (A) Patient with superficial basal cell carcinoma, approximately 140 lesions recognized. (B) After patient has shown hypersensitivity reaction following topical administration of TEIB.

FIGURE 2. (A) Onset of vesiculation within three hours following administration of challenging dose of TEIB in patient in Figure 1. (B) Necrosis at site involved by neoplastic lesions as part of anamnestic reaction to topical TEIB administration. (C) Re-epithelization of lesion of site involved by neoplastic lesion following challenge with topical TEIB.

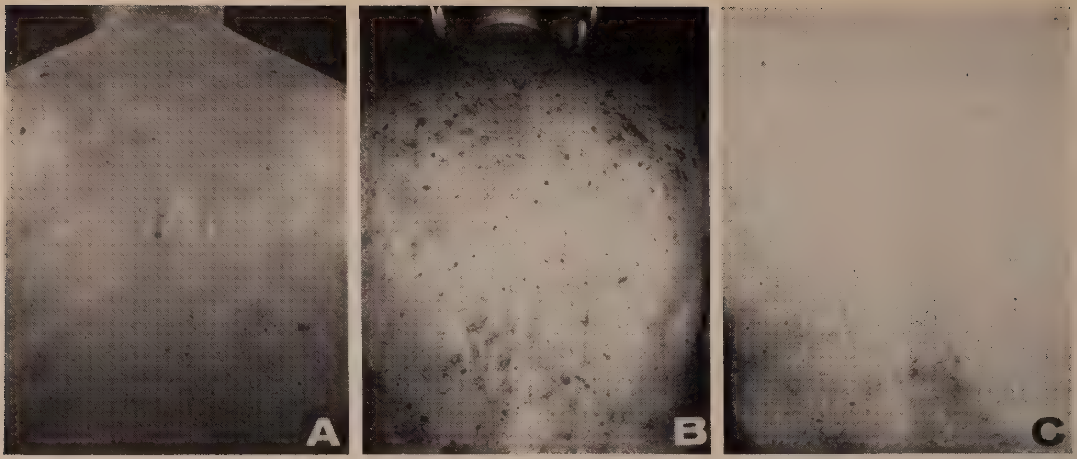

FIGURE 3. (A) Patient shown in Figure 1 one year after discontinuation of TEIB, applied as challenging dose. (B) Same patient on second course of topical TEIB given three years after initial challenge with TEIB. (C) Same patient one year after second TEIB course.

therefore, is evident that the differential reactivity on challenge results in permanent arrest of multiplication and in disappearance of malignant cells while temporary, reversible, or no effects occur in the corresponding normal cells. This differential effect is further demonstrated by the observation that normal re-epithelization is proceeding while the necrotic exudate of tumors is forming (Fig. 2C).

Immunotherapy resulted in resolution of more than 95 per cent of multiple superficial basal cell carcinomas tested for observation periods of up to five years. Systemic toxicity or other severe side reactions were not encountered. Results from hematologic tests and blood chemistries remained normal. The discomfort resulting from the cutaneous reaction was adequately controlled by mild analgesics and topical or brief courses of systemic corticosteroids. Steroid administration did not interfere with the resolution of the neoplasms, although the inflammatory component of the reaction was suppressed. This suggested that a protracted inflammatory reaction was not essential for inducing the resolution of neoplasms.

To reduce the intensity of the delayed hypersensitivity reaction, the challenging dose of the sensitizing agent was reduced. Hypersensitivity reactions in malignant and premalignant lesions were induced by topical administration of concentrations of 10^{-8} (that is, 1 part of TEIB per 100 million) or less, although usually concentrations of 10^{-4} to 10^{-6} TEIB are employed. The concentration of the challenging dose is obtained by titrating the concentration of the agent on the normal skin by means of patch tests to the lowest level at which a reaction occurs (Fig. 4). Advantage is then taken of the more intense reactivity of the neoplastic lesions. In this manner reactivity to the delayed hypersensitivity challenge is induced in the neoplastic lesions, which undergo regression while there is no apparent reaction in the normal skin. Thus the delayed hypersensitivity reaction appears to have a qualitatively and quantitatively different effect on neoplastic and normal cells.

PREMALIGNANT KERATOSES. Studies were initiated in patients with arsenical keratoses. TEIB at concentrations of 10^{-6} controlled but did not eradicate the arsenical keratoses. A concentration of 0.0005 per cent TEIB (that is, 5 parts of TEIB per million) applied topically resulted in supression of keratosis accompanied by erythema at the involved sites without the apparent effects on the adjacent normal skin. As will be described, the same concentration of TEIB (that is, 5 times 10^{-6}) resulted in necrosis and resolution of squamous cell carcinoma in patients with arsenical dermatitis.

In parallel studies the immunotherapeutic approach was explored in patients with solar keratoses. The results were essentially similar to those in patients with multiple superficial basal cell carcinoma.

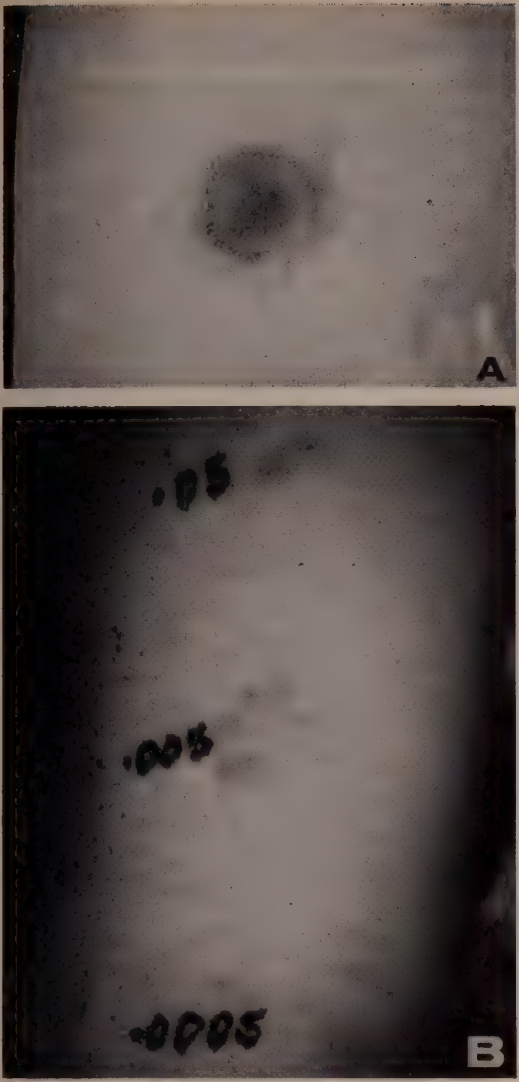

FIGURE 4. (A) Reaction of normal skin to patch test of TEIB at concentration 0.05 per cent. (B) Reaction of normal skin to graded series of dilutions of TEIB. Concentrations 0.005, 0.0005, and 0.00005 per cent. Minimal response at 5 times 10^{-7} (5 parts per 10 million).

Following the induction of delayed hypersensitivity to TEIB, application of the challenging dose resulted in a reaction which was less severe but otherwise resembled the reaction of basal cell carcinomas.

As had been observed in basal cell carcinomas, the intensity of the reaction was considerably more marked at sites involved by keratoses than in the adjacent normal skin. At the proper concentration of the challenging dose, the normal tissues showed no changes. Keratoses which had not been clinically detectable prior to the application of the challenging dose became apparent as a result of the hypersensitivity reaction. The intensity of the reaction in these lesions was less marked than in clinically obvious lesions. Following hypersensitivity reaction the clinically obvious and subclinical lesions underwent complete resolution (Fig. 5). Resolution occurred in more than 95 per cent of the lesions following topical immunotherapy.

SQUAMOUS CELL CARCINOMA. Studies on the immunotherapeutic approach to squamous cell carcinoma of the skin were limited to patients who had advanced, disseminated malignant disease or patients with intractable multiple squamous cell carcinoma as seen in arsenical dermatitis or xeroderma pigmentosum. In the latter group of patients, studies were limited to superficial lesions. In a number of patients with solar keratoses, some of the lesions which had reached the stage of carcinoma in situ were included in the immunotherapeutic management of solar keratoses.

Squamous cell carcinoma in situ in patients with arsenical dermatitis responded with a more intense reaction to topical immunotherapy than arsenical keratoses. While the keratoses could be controlled but not eradicated, lesions of squamous cell carcinoma underwent necrosis and resolution (Fig. 6).

Early squamous cell carcinoma in patients with xeroderma pigmentosum reacted intensely and disappeared following challenging applications of either dinitrochlorobenzene or TEIB. Hyperkeratotic squamous cell carcinomas in patients with xeroderma pigmentosum showed an adequate response after the hyperkeratotic material had been pretreated with salicylic acid. Residual lesions of squamous cell carcinoma in patients with xeroderma pigmentosum were submitted to a second course of immunotherapy to which topical 5-FU (5-flourouracil) was added. While the reaction was considerably more intense than with topical 5-FU or topical immunotherapy alone, the effects on the adjacent, apparently uninvolved, skin were minimal. Resolution of the lesions followed the combined topical chemotherapy and immunotherapy approach. This suggested a synergistic effect on malignant cells without a

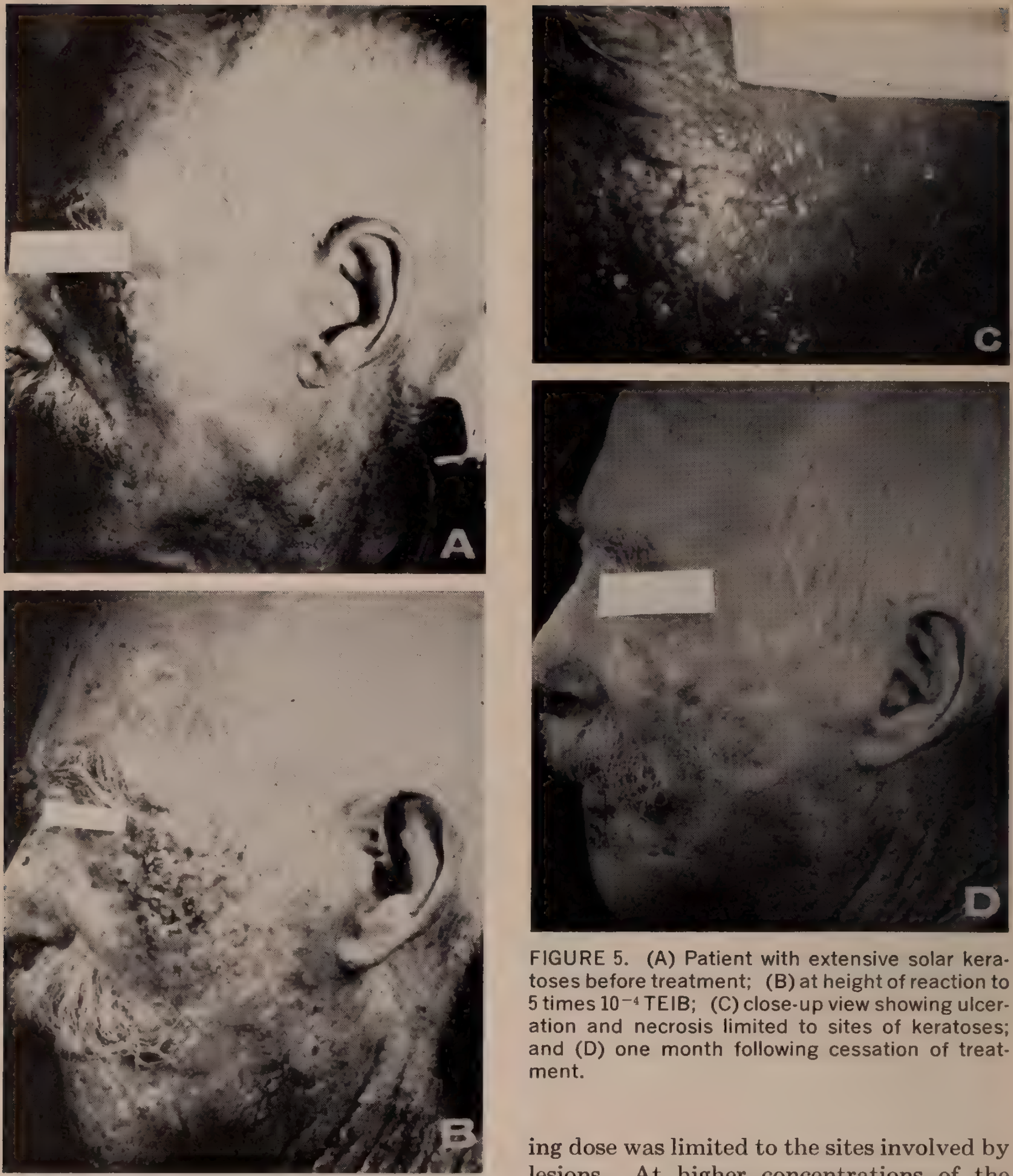

FIGURE 5. (A) Patient with extensive solar keratoses before treatment; (B) at height of reaction to 5 times 10^{-4} TEIB; (C) close-up view showing ulceration and necrosis limited to sites of keratoses; and (D) one month following cessation of treatment.

concomitant increase in toxic effects on the normal tissues.

In general the reaction at sites involved by squamous cell carcinoma was considerably more intense than the reaction of keratoses or superficial basal cell carcinoma. In other respects, the reactions were similar; early, undetectable lesions of squamous cell carcinoma became apparent following immunotherapeutic challenge. The reaction at the proper concentration of the challenging dose was limited to the sites involved by lesions. At higher concentrations of the challenging dose, the reaction was markedly more intense at sites involved by squamous cell carcinoma than in the apparently uninvolved skin. Recovery, healing, and reepithelization occurred while the immunotherapeutic challenge was being continued and exerted a destructive effect on neoplastic lesions. This provided further indication of the selectivity of the immunotherapeutic activity.

More than 90 per cent of squamous cell carcinomas in situ underwent regressions following a course of immunotherapy.

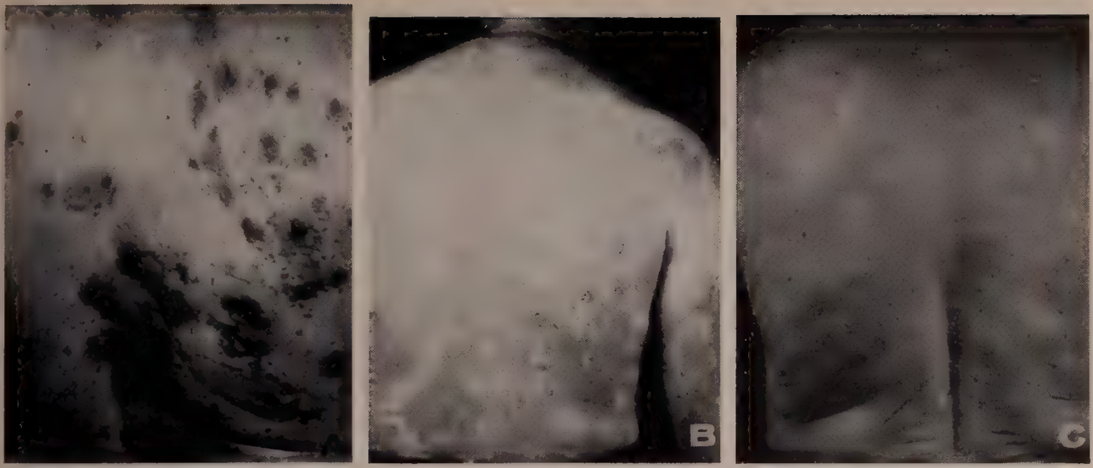

FIGURE 6. (A) Patient with arsenical keratoses and squamous cell carcinomas before topical administration of dinitrochlorobenzene. (B) Same patient showing erythema multiforme-like eruptions with premalignant or malignant lesions in center of concentric erythema lesions, after three days challenge with dinitrochlorobenzene. (C) Same patient showing resolution of lesions six weeks after challenge with dinitrochlorobenzene.

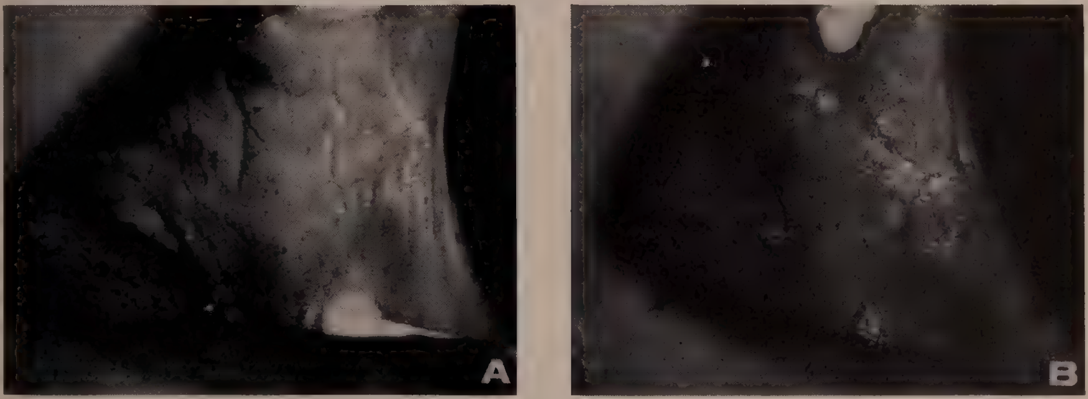

FIGURE 7. (A) Patient with extensive leukoplakia of buccal mucosa before treatment. (B) Same patient after seven days of treatment with 5 times 10^{-7} TEIB.

Deeper lesions responded less favorably; those which did not regress completely, became smaller and responded either to a second course of immunotherapy, topical chemotherapy, or to standard treatment. Lesions which had recurred following surgery or x-radiation gave unsatisfactory results, and after 2 to 5 successive courses of immunotherapy, less than 60 per cent of these recurrent lesions regressed.

Leukoplakia. Leukoplakia of the buccal mucosa and of the tongue which had not responded adequately to topical 5-FU therapy was submitted to local immunotherapy in a group of 14 patients. Hypersensitivity was induced by application of 0.05 per cent TEIB in aquaphor to the skin, usually the forearm. Following the establishment of a hypersensitive state, the concentration of the challenging dose was titrated to a minimal level, as described, for patients with cutaneous neoplasms. The lowest concentration at which a hypersensitivity reaction was elicited on the skin was then applied to the areas involved by leukoplakia under an occlusive dressing.* Within twenty-four to forty-eight hours a reaction supervened at the sites involved by leukoplakia. This reaction varied in intensity but was usually less than moder-

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* The intraoral dressing (Orahesive) was provided by G. Beckloff, M.D., and R. Heiser, D.D.S., of the Squibb Institute for Medical Research, New Brunswick, New Jersey.

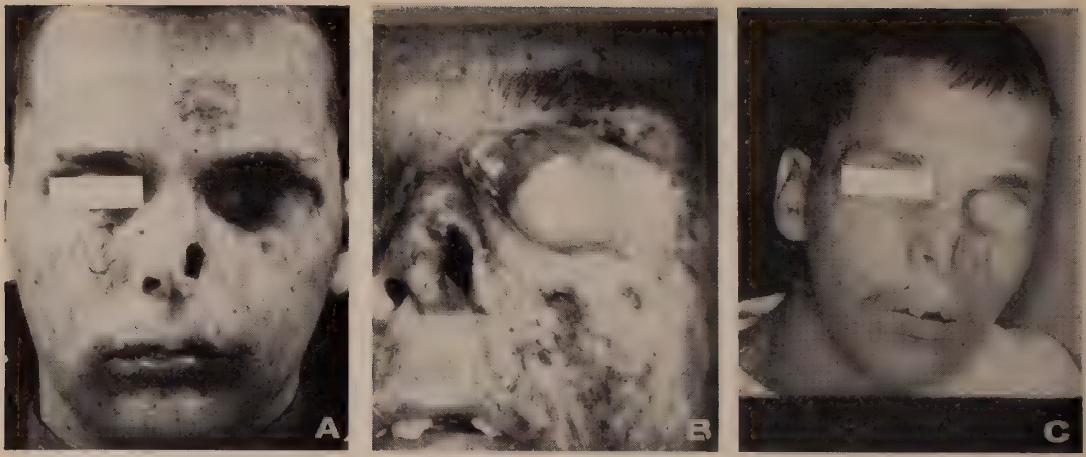

FIGURE 8. (A) Patient with xeroderma pigmentosum showing lesions of basal and squamous cell carcinoma and keratoses before treatment. (B) Close-up of same patient during treatment with intermittent applications of 5 times 10^{-5} TEIB. (C) Same patient during interval between intermittent TEIB administration.

ately severe. Adjacent areas of the mucosa were usually not affected. On three occasions the regional lymph glands became swollen and tender. Bacteriologic and hematologic studies failed to demonstrate an acute infection.

The reaction resulted in partial to complete remission of leukoplakia (Fig. 7). While the immediate results were apparently satisfactory, recurrences were noted within four to six weeks following discontinuation of the immunotherapeutic challenge. Repeated challenge again resulted in resolution of the lesions. The lesions on recurrence were less marked than they had been prior to immunotherapy. Patients kept on intermittent immunotherapy at intervals of from four to six weeks were controlled without apparent recurrences.

In several patients immunotherapy was combined with topical 5-FU. The reactions were considerably more severe than with 5-FU or immunotherapy alone. Resolution of lesions, however, ensued rapidly. The increased intensity of the reaction was not accompanied by significant discomfort. The manner in which the lesions underwent regression under combined immunotherapy and chemotherapy resembled the reaction to topical chemotherapy alone. The lesions became more prominent and then underwent ablation. With immunotherapy alone, the lesions either disappeared or became progressively less marked until they faded completely.

MISCELLANEOUS. Studies on tumors other than those of epidermal origin either failed to show a reaction which differed from those of the adjacent normal tissues or showed no reaction at all. These tumors included malignant melanoma, adenocarcinoma of the breast, mesothelioma, lymphosarcoma, Hodgkin's disease and other lymphomas, and infiltrates of leukemia.

Squamous cell carcinoma of the larynx which had metastasized to the regional lymph nodes was studied by induction of hypersensitivity to TEIB and subsequent challenge by topical intralesional and parenteral administration of the sensitizer. Temporary, partial reduction in the size of some of the lesions was observed, but eradication of metastatic lesions was not demonstrated.

Intermittent administration of TEIB and dinitrochlorobenzene was explored in patients with extensive frequently recurring involvement by multiple superficial basal cell carcinoma, squamous cell carcinoma in situ, and premalignant keratoses. Hypersensitivity reactions were elicited for periods of up to five years at intervals ranging from two months to two years. Resolution of newly developed neoplasms as well as eradication of lesions which were clinically undetectable resulted from each course of immunotherapy during the intermittent regimen. The incidence of new tumors was markedly reduced as determined by studies in which symmetrical sites were submitted to intermittent challenges to TEIB or dinitrochlorobenzene and standard therapeutic modalities respectively (Fig. 8). It, therefore, appeared that local immunotherapy is effective in eradicating established lesions, in aborting early lesions before they become clinically detectable, and in reducing the incidence of new lesions in patients with persistent development of new epitheliomas.

Studies were initiated to determine if sensitivity reaction on skin tumors was associated with mononuclear cells or circulating antibodies. Lymphocytes were collected from patients who had been sensitized with TEIB or with dinitrochlorobenzene. This was carried out by separating and concentrating white blood cells from the blood of the sensitized patients. Concentrated white blood cell preparations were then injected subcutaneously into patients who had been shown not to be hypersensitive to these agents. Within eight to twenty-four hours after transfer, a delayed hypersensitivity reaction to topical administration of the agent was demonstrated in the recipients of the transferred cells. The hypersensitivity reaction produced by challenge to TEIB or dinitrochlorobenzene following lymphocyte transfer was shown to result in selective resolution of cutaneous neoplasms. The sequence of events following challenge after transfer of lymphocytes was similar to the reactions in patients who had been directly sensitized by cutaneous application of the hypersensitivity-producing agent. It was observed that the hypersensitivity reaction following challenge by the sensitizer was more marked and more rapid at sites to which lymphocytes had been injected than in other areas. It was evident, however, that autogenous cells of the recipients had acquired reactivity to the sensitizer following the administration of white blood cells from sensitized donors. The acquired reactivity also expressed itself more markedly at sites involved by cutaneous neoplasms than in the apparently normal skin when challenged by the same dose of the sensitizer. The reaction of neoplasms at sites other than those to which lymphocytes were injected differed from the reaction in the normal skin by resulting in destruction and eradication of superficial neoplasms, while the reaction in the normal skin was limited to an inflammatory process, which rapidly underwent recovery following discontinuation of the immunologic challenge.

As has been observed with direct sensitization, the reaction following white blood cell transfers which resulted in eradication of neoplasms was limited to superficial lesions. It had been observed following cutaneous induction of hypersensitivity (by application of the sensitizer to the skin) that the intravenous administration of the sensitizer (TEIB) did not result in a hypersensitivity reaction. Since it is known that agents which produce specific cell-mediated hypersensitivity reactions are also capable of producing antibodies which may block the lymphocytic response, an attempt was made to utilize lymphocyte transfer to avoid the formation of circulating antibodies. Hypersensitivity was, therefore, established by lymphocyte transfer to previously nonsensitized recipients; the sensitizing agent was administered intravenously to the recipients after a positive challenge reaction was obtained on the skin by patch testing.

White blood cells obtained from patients who had been sensitized were transferred to patients with mycosis fungoides. A temporary reduction in the degree of infiltration at areas involved by plaques and nodules was observed following intravenous administration of TEIB. Plaques which had been injected with lymphocytes and to which challenging doses of the sensitizer were applied topically underwent complete regression for observation periods of from six to eight months, as indicated by clinical and microscopic examination. Topical application of challenging doses resulted in partial regression of lesions which had not been injected with lymphocytes. Partial regression consisted of a reduction in the size and the consistency of the infiltrate. Complete resolution of lesions which were challenged but had not been injected with lymphocytes was not observed.

Analogous studies were carried out in a patient with squamous cell carcinoma on the dorsum of the right hand which had metastasized to the axillary lymph nodes and to the bones of the skull. Because of the patient's advanced age and severe cardiorespiratory disease, surgical intervention had been ruled out. This patient also had numerous solar keratoses, squamous cell carcinoma in situ, and superficial basal cell carcinomas. The patient was injected with lymphocytes which had been obtained from another patient with multiple superficial epitheliomas who had been sensitized both to TEIB and dinitrochlorobenzene. The concentrated white blood cells were injected into the site of the squamous cell carcinomas on the dorsum of the hand and into the dermis at an apparently noninvolved area on the left forearm. Transfer of the hypersensitivity to TEIB and to dinitrochlorobenzene was demonstrated by positive reaction to patch testing within forty-eight hours following lymphocyte transfer. The reaction to both topically applied TEIB and to topically applied dinitrochlorobenzene was much more marked at sites involved by cutaneous neoplasms than in the normal skin. The reaction to the challenging patch test resulted in eradication of the lesions, while the reaction in the normal skin subsided without permanent tissue changes. Following the demonstration of acquired hypersensitivity resulting from lymphocyte transfer, TEIB was administered intravenously. The lesion on the dorsum of the right hand which had been injected with lymphocytes, underwent regression and decreased from $3^1/_2$ cm. by $2^1/_2$ cm. to 2 cm. by 1 cm. within a period of three weeks, during which doses of from 0.4 to 0.6 mg. TEIB were administered intravenously at intervals of two to three days. Since there was no apparent change in the lymph nodes involved by metastatic carcinoma, subsequent administration of TEIB was carried out by injecting the agent directly into the node. During the course of 5 successive intranodular administrations of TEIB, the nodes initially increased in size and then decreased markedly. The consistency of the node changed from hard to fluctuant and subsequently to soft. Following the initial administration of 0.1 mg. of TEIB into one of the metastatic lymph nodes in the axilla, the aspiration biopsy revealed the presence of squamous cell carcinoma in the approximately 3 cc. of fluid obtained. The third successive aspiration of necrotic fluid material from the node in the axilla was free of malignant cells.

Studies were carried out in five patients with multiple superficial epitheliomatosis (xeroderma pigmentosum, arsenical dermatitis, multiple basal cell carcinoma syndromes, and solar keratoses) to determine whether or not hypersensitivity reactions to 2 or more sensitizers produced a synergistic effect. Patients were sensitized simultaneously to TEIB, dinitrochlorobenzene, mumps vaccine, and compound 48–80.* Combinations of 2 or more sensitizing agents were shown to have synergistic effects in producing resolution of premalignant keratoses, superficial basal cell carcinomas, and squamous cell carcinoma in situ. The intensity of the reaction of neoplastic lesions to the combination of 2 or more sensitizers was markedly enhanced at concentrations at which the agents separately produced a minor or no reaction. The effects on the adjacent normal skin, however, were not increased by the combination of the immunotherapeutic agents. The addition of cytostatic agents to an area which had undergone challenge by immunotherapeutic agents was also markedly increased. A reaction to topical 5-FU was obtained within twenty-four to forty-eight hours at concentrations at which the cytostatic agent had not produced any reaction or required several weeks to show an effect.

Comment

The data presented indicated that an immune reaction of the delayed hypersensitivity type can result in eradication of superficial cutaneous premalignant and malignant lesions with minimal or no effects on adjacent normal tissues. The effects of the immune reaction are selective as indicated by the simultaneous occurrence of tumor involution and re-epithelization accompanied or preceded by granulation tissue formation. Selectivity is further indicated by the marked difference in the intensity of the reaction following the application of a challenging dose of the sensitizer to normal and neoplastic epidermis. The qualitative and quantitative differences in the reaction are demonstrated by destruction of the neoplastic cells, while there is no significant alteration in the behavior and multiplication of normal cells.

The selective nature of the effect is further indicated by the reaction induced in clinically undetectable lesions. In view of the minimal effects of the sensitizing agent (at the proper concentration) on the normal tissues, topical application of the challenging dose was not restricted to the obvious areas involved by neoplasm but was extended over large areas of the body surface, such as the entire face, back, chest, and extremities. This brought forth a reaction in patients with multiple epitheliomas in areas which had not been suspected of harboring malignant cells. The reaction demonstrated the presence of early lesions as indicated by histologic examination. Although this reaction was considerably less severe than at sites of clinically obvious involvement, the fundamental nature of the reaction was the same. The result of the reaction, also, was the same in that it led to tumor eradication. The process of unmasking clinically undetected lesions by immunotherapy resembles an analogous effect of topical cystostatic therapy.[2] The reduced incidence of new lesions in patients who had persistently developed new skin tumors in the past, as well as in patients in whom symmetrical sites were submitted to immunotherapy and standard modalities, respectively, suggests that immunotherapy also results in destruction of lesions which are too small to become apparent by their reaction to the hypersensitivity-inducing agent. In this manner, lesions which are neither detectable grossly nor by their reaction to the immunotherapeutic agent may be destroyed without their presence or their reaction to the sensitizing agent becoming apparent.

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* Compound 48–80 was provided through the cooperation of Winston Singleton, M.D., Burrows Wellcome Company, Tuckahoe, New York.

The resolution of premalignant keratoses in patients with arsenical dermatitis, xeroderma pigmentosum, or solar keratoses also indicated the selective nature and prophylactic value of immunotherapy, since the involution of premalignant lesions prevents their transformation to squamous cell carcinoma. Further indications of the differential nature of the effects of delayed hypersensitivity reactions on neoplastic and normal cutaneous tissues, respectively, is provided by the results of titration of the challenging dose. It was thus established that at levels at which a hypersensitivity reaction cannot be elicited in the normal skin, a marked response to the challenging agent can be obtained at sites involved by neoplastic lesions. The extension of the reactivity to mucosal premalignant lesions, once hypersensitivity is produced in the skin, further suggests the presence of a factor which is common to neoplasms arising from epidermal structures.

The mechanism of the reaction affecting epidermal neoplasms is only partially elucidated. It appears from the studies on white blood cell transfer that the reaction is associated with cell-mediated specific immune mechanisms. Presumably the sensitizing agent interacts with components of both normal and neoplastic epidermal cells, which elicit an immune response on the part of the host. Since a reaction can be obtained in normal skin at sufficiently high concentrations of the challenging dose, the sensitizer appears to affect the normal elements as well as the neoplastic elements. The reasons for the more marked intensity of the reaction at the sites involved by premalignant and malignant lesions may indicate that proportionately larger amounts of the sensitizing agent have access to the neoplastic cells than to the normal cells. This in itself would constitute an important difference between normal cells and their malignant counterpart. A quantitative difference in the amount of sensitizer which reaches the normal and malignant cells, respectively, may occur on the basis of a mechanism similar to that of the Koch phenomenon. This may account for the qualitative difference in the result, namely, that neoplastic cells undergo destruction while the normal cells continue to behave normally except for relatively minor and temporary changes.

On the other hand, the possibility of the formation of different antigens in normal and neoplastic cells, respectively, under the influence of the same sensitizing agent, has not been excluded. Studies on the effects of combining 2 or more sensitizers indicate a synergistic effect at concentrations of the challenging doses, which are orders of magnitude below the dose at which each sensitizer alone elicits a reaction in normal cells or their neoplastic counterparts. While the marked increase in the effects of synergistic action of 2 sensitizers may be caused by quantitative differences in their effects on tumors as compared with normal tissues, the differences in concentrations ranging over 4 to 5 orders of magnitude suggest an exponential relationship rather than an additive phenomenon. The observations that transferred lymphocytes result in a reaction which differs in tumors as compared with normal tissues on challenge with the sensitizer, further suggests that the effect of the delayed hypersensitivity reaction may be qualitatively as well as quantitatively different in neoplastic cells as compared with their normal counterpart.

The enhancement of the effects of topical cytostatic agents on tumors of the skin which have been challenged following induction of hypersensitivity, further raises the question of the selective action of the immune response. The increased effects of cytostatic agents may be the result of altered absorption of the cytostatic agent due to increased permeability as a result of the delayed hypersensitivity reaction at the sites involved by neoplasia. It would be suspected, however, that some alteration of the permeability of the normal epidermis would also result from the changes produced by immunologic challenge, unless the reaction was different from that produced in neoplasms.

The question arises as to why the effects of immunotherapy are largely limited to superficial lesions. This may be due to the fact that the sensitizer produces an immunologic reaction which is mediated by both cells and humoral antibodies. In the avascular environment of the epidermis, the cellular immune reaction would predominate, since it depends on actively migrating cells rather than on passively diffusing macromolecules. In the deeper tissues, both the humoral antibodies and the cellular elements would be available to react to the challenging sensitizer. Therefore, the circulating humoral antibodies would more readily combine with the sensitizer thus reducing the intensity of the cellular reaction. These considerations may explain the lack of effects of intravenous administration of the sensitizer, following the induction of hypersensitivity by direct application of the agent. The limited number of observations on the effects of intravenous administration of the sensitizer following lymphocyte transfer suggests that the effects noted were due to the lack of circulating antibodies while the recipient host was generating sensitized cells. Circulating antibodies may, therefore, be considered to act in the nature of blocking antibodies, preventing the cellular reaction.

Current clinical studies indicate that immunotherapy at the present stage of its development is not suitable for the routine management of isolated nodular lesions of basal cell carcinoma or squamous cell carcinoma. The data indicate that at the present state of its development, immunotherapy is inferior to the standard modalities of surgery and radiation therapy for these types of lesions. Further studies, however, particularly on the combination of two or more sensitizers, possibly with the addition of cytostatic agents, may provide an approach to the clinical management of these lesions by topical therapy.

Topical immunotherapy, with or without concurrent topical cytostatic therapy, appears to offer promise in the management of extensive superficial premalignant keratoses, multiple basal cell carcinomas, and multiple squamous cell carcinoma in situ. Immunotherapy, particularly when it includes two or more suitable sensitizing agents and when combined with topical cytostatic therapy, may offer a well-tolerated and efficient approach to the management of such clinical problems. Induction of hypersensitivity by transfer of lymphocytes considerably decreases the time required for effective application of immunologic challenge. Present studies suggest that preserved lymphocytes or components of lymphocytes may transmit the selective reactivity of hypersensitization from one individual to another. This would considerably decrease the problem of making material available for the rapid induction of a suitable hypersensitivity reaction.

The lack of demonstrating effects of specific cell-mediated hypersensitivity in neoplasms other than those arising from the epidermis suggests that the agents under study behave differently in cells of different origin. This is not unexpected in view of the high degree of specificity of hypersensitivity-inducing agents for particular target cells or shock organs. It also indicates that the agents which induce cutaneous hypersensitivity have a selectivity for the production of a rejection phenomenon in cutaneous neoplasms.

Studies nevertheless appear warranted to explore agents which produce hypersensitivity in other tissues with a view toward eliciting delayed hypersensitivity reactions which may be utilized for producing effects in neoplasms arising from them analogous to those in epidermal tumors.

The utilization of a delayed hypersensitivity reaction in the management of clinical problems, particularly as related to neoplastic lesions, presents a new concept in the management of disease. This approach exploits the therapeutic potential of delayed hypersensitivity reactions which until now have been generally considered purely as causes of diseases or as obstacles to the treatment of diseases. Further work in this area may result in extending the principles of immunotherapy to other types of neoplasms or diseases.

Conclusion

These studies have been carried out over a period in excess of five years. Studies on the effects of hypersensitivity-inducing agents were carried out on more than 2,000 lesions in over 50 patients. The findings obtained were confirmed by studies at several other institutions. The following conclusions were obtained.

1. Topical immunotherapy utilizing cell-mediated specific immune reactions results in selective involution of skin cancers with minimal or no effects on the adjacent tissues. Healing occurs with negligible or no defects thus reducing functional or disfiguring complications.

2. Topical immunotherapy may be indicated for the management of extensive multiple superficial epitheliomas, including premalignant as well as malignant lesions, when standard therapeutic measures are not feasible because large areas of the body surface are involved by persistently developing tumors.

3. Systemic toxicity was not encountered as a result of induction of delayed hypersensitivity and subsequent challenge reactions. General cutaneous reactions or local reactions did not present limiting contraindications to immunotherapy and were readily controlled by anti-inflammatory agents.

4. Clinically undetectable lesions of basal cell carcinoma, premalignant keratoses, or squamous cell carcinoma became manifest by their response to immunotherapeutic challenge and underwent involution. Immunotherapy, therefore, has diagnostic as well as prophylactic value by reducing the subsequent incidence of clinically significant neoplasms and preventing the transformation of premalignant lesions to the malignant stage.

5. The results of the application of cell-mediated specific immune reactions indicate that selective effects of the immune mechanism on the resolution of neoplastic lesions can be induced.

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External Chemical Messengers

IV. Pineal Gland

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TABLE I. Estimates of probability

Estimate	Statement
0.01	The pineal of man is a vestigial organ
0.80	The pineal of man performs vital functions, so far unknown
0.95	In the pineal gland, neural input is transformed into hormonal output
0.90	Pathways from retinal epithelium to pineal carry photic (light-dark) information
0.40	Pathways from olfactory epithelium to pineal carry ECM information
0.75	Major pineal and pituitary hormones are paired: same target, opposite effect
0.20	Pineal predominates in control of ECM, pituitary in control of endohormones
0.30	The pineal of man retains some direct photoreceptor and chemoreceptor functions
0.05	The pineal-pituitary system controls hormonal response to x-irradiation
0.30	The melatonin-MSH system controls rate of ECM production in pigment cells

THE PINEAL HAS long been a puzzle. We have had two thousand years of speculation: What does it do? Seat of soul, valve of ventricles, and home of humors were commonly accepted notions. We have had two hundred years of science: What is it? Lymph gland, vestigial object, pineal eye, and endocrine gland have had their supporters. And for twenty years, we have had this problem licked: In man, the pineal organ is a functioning endocrine gland.

But one question leads to another. Now that we know what the pineal organ is, we are back at the older problem: What does it do? What are we to make of a gland which busily pours out a hormone that seems only to change the color of frogs from brown to yellow?

In this report, I shall review evidence for the proposition that

> *PINEAL AND PITUITARY ARE FUNCTIONAL MIRROR IMAGES OF EACH OTHER: WHERE ONE PUSHES, THE OTHER PULLS.*

For example, pineal melatonin turns brown frogs yellow, and pituitary MSH (melanocyte-stimulating hormone) turns yellow frogs brown. I shall suggest that this color change is merely outward evidence of a change in chemical activity, and that

> *IN FROGS AS WELL AS IN MAN MELATONIN AND MSH CONTROL THE PRODUCTION AND EMISSION OF ECM (EXTERNAL CHEMICAL MESSENGERS) FROM PIGMENT CELLS.*

Estimates of probability are given in Table I.

Characteristics

IS THE PINEAL VESTIGIAL? There are two main reasons why the human pineal has been considered a useless vestigial organ: It calcifies; and we do not know what it does.

Most human pineal bodies show calcification by the time of puberty, readily seen on x-ray films. This makes the pineal sound like a dead, nonfunctioning structure. But calcification *in* the pineal gland does not mean calcification *of* the pineal gland.

Uemura in 1917[1] performed a series of histologic studies of the human pineal gland. He was convinced beyond any doubt that this gland contains active parenchymal tissue and remains functional right through senescence.

Wurtman, Axelrod, and Barchas[2] compared pineal glands from human beings aged three to seventy. Infant and oldster both had the same speed of enzyme activity and the same ability to form melatonin:

> The fact that the human pineal retains the capacity to synthesize melatonin and to inactivate histamine and serotonin, suggests that this structure may be active throughout the entire life span.

What the pineal looks like and what it does, therefore, both indicate that calcification does not interfere with at least some of its gland functions. At most, some of the hormones of a calcified gland are no longer needed. The pineal body can be thought of as a structure which remains active throughout life but which works at maximum power in infancy and childhood.

As for the idea that the pineal does nothing because we do not know what it does, there is nothing to recommend it. In 1927 Herring[3] tried to dispose of this notion:

> The view sometimes expressed that the mammalian pineal body is a vestigial structure is the result probably of the mistaken impression that it has evolved from the parietal eye.

And in their complete 1954 review of the literature on the pineal body, Kitay and Altschule[4] conclude that "available evidence lends no support to the notion that the pineal gland is a functionless vestigial organ in any mammalian species studied."

Is THE PINEAL IMPORTANT? The reasons why some thought the pineal to be vestigial were reasons of ignorance, on the order of "what I don't know just isn't knowledge." What are the reasons others have long thought that the pineal plays some great role in the human body?

In 1918 Tilney[5] reported on his systematic review of the pineal problem: "In the beginning of this study, the speaker was strongly of the opinion that the pineal body was a vestige, but with the facts elicited very different conclusions were formulated." His four reasons for feeling that the pineal body is a functioning organ express his interest in neurology and are quite different from reasons adduced by others:

(1) A structure marked for regression would scarcely show the remarkable phyletic tenacity of the pineal; (2) there is a definite tendency toward specialization in the evolution of the pineal; (3) the weight of the epiphysis in different species keeps constant pace with the hypophysis, an organ of known endocrine function; and (4) in mammals, the pineal is the only organ to resist encroachment by the corpus callosum, and

> . . .this indicated in it such marked tenacity as a morphologic structure as to suggest the probability of some inherent functional activity. If there were inherent tendencies to retrogression in the pineal body, it must have given evidence of less resistance to the pressure of this newly developed mammalian structure which has so widely altered the configuration of other elements in the diencephalic roof plate, or perhaps have succumbed altogether.

An impressive aspect of the pineal organ is that it gets a far larger blood supply than its size would seem to warrant. Roux[6] pointed this out thirty years ago:

> The extreme vascularisation of the pineal gland is often its most striking feature. . . . So intense a flow of blood is, we think, one of the most important arguments against the hypothesis that the epiphysis is a rudimentary and vestigial organ, without function of its own.

In the rat, pineal blood flow is exceeded only by the kidney and equaled only by the pituitary; blood flow in all other endocrine glands, vascular as they are, is less than in the pineal.[7]

The furious pace at which blood rushes to supply the two brain glands, the pineal and the pituitary, is emphasized by cases of carcinoma of lung and kidney which metastasize only to the pineal[8] or only to the pituitary,[9] with no metastasis in the rest of the far more extensive brain mass.

All this blood supply brings in raw materials for chemical synthesis, and the pineal as a metabolic factory possesses some unique characteristics.

Borell and Örström[10] examined the rate of metabolism of radioactive phosphorus in various parts of the brain: "A very unexpected result was obtained, in that the pineal body was found to be the most active portion of the brain." Not only does the pineal absorb phosphorus more readily than any other tissue known, but it also takes up iodine more readily than any other organ except the thyroid.

In mammals, there is no tissue or organ which contains more serotonin by weight than the pineal. No other tissue or organ contains the enzyme HIOMT (hydroxyindole O-methyltransferase), which controls the formation of melatonin from serotonin; therefore no other part of the body can produce the hormone melatonin.[11]

Then there is the enzyme tryptophan hydroxylase, which catalyzes the first step in the synthesis of serotonin from tryptophan. Among a variety of tissues, the pineal gland has highest levels of this enzyme.[12,13] Serotonin levels in most human pineal glands are the highest reported for any neural structure of any species examined.[14]

The possession of unique enzymes may be a feature of the pineal-pituitary system rather than of the pineal gland alone. The pituitary, too, contains a methanol-forming enzyme of unknown function which seems to be absent from other tissues of the body.[15]

Furthermore, the pineal gland is characterized by high levels of amino peptidase[16]; succinic dehydrogenase[17]; a high rate of uptake of cystine, lysine, methionine, glycine, and glutamine[18]; and rapid absorption of bromophenol blue.[19] Histochemical examination shows high levels of alkaline phosphatase and adenosinetriphosphatase activity in pineal capillary walls, further evidence for intense input and output of metabolic products characteristic of a highly active endocrine gland.[20]

Besides these functional peculiarities, the pineal gland has a number of unique anatomic features. It is an unpaired midline organ in the mammalian brain.[21] While it is a part of the brain, it receives its autonomic nerve supply from the outside. It is surrounded by a disproportionately extensive network of great veins which presumably carry away its hormonal output. And nerves supply its blood vessels in a strikingly peculiar way:

> In the pineal gland of the cat and the guinea pig, the vascular nerves show an uncommon arrangement, in that they often penetrate the whole thickness of the muscular wall, especially in the arterioles. This is in striking contrast to the innervation patterns of other vascular beds, where the vessels are only coated by a nervous network. . . . This special arrangement in the pineal may offer a possibility for more intricate sympathetic control of vasomotor activity.[22]

Under the electron microscope, the pineal gland is found to possess another unique structure, a distinct perivascular space surrounding each small blood vessel, in which, it seems, raw materials for making pineal hormones are transferred from nerve endings to gland cells.[23]

The rabbit epiphysis contains spherical accumulations of mitochondria situated close to concentric lamellar bodies, presumably the factory in which pineal hormones are manufactured.[24] And rabbit pinealocytes dispose of their secretions in a most peculiar way. These cells have long slender processes, somewhat like axons, down which travel dense secretory granules, submicroscopic bags containing the pineal hormones. At the end of this process, the secretory granule assembles around it a ring of even smaller vesicles, forming a rosette-like structure. Presumably they give some finishing touches to the chemical messenger granule at this point before it leaves the pineal cell and enters the perivascular space.[25]

If all these oddities indicate that some special importance attaches to the pineal organ in general, then the odd features of the human pineal suggest that it is not vestigial, and may in fact be more important in man than in other animals.

Frauchiger and Wildi[26] list a number of these peculiarities. The human pineal has more mast cells, more globular bodies, and more calcified structures than animals. Two structures found in and around the human pineal have not been seen in animals: glial plaques and habenular calcifications. "It seems that in the formation of the epiphysis, as also in other realms (anatomy of the brain, hand, psychic function) man, compared to animals, is the universalist."

One last characteristic of the pineal gland is so outstanding that it is often overlooked: its variability.[6] When the gland is examined after death in man or mammals, enormous differences are found between individuals in size, form, and internal structure. I believe that the pineal is the controller of social hormones and that this variability relates to the enormous differ-

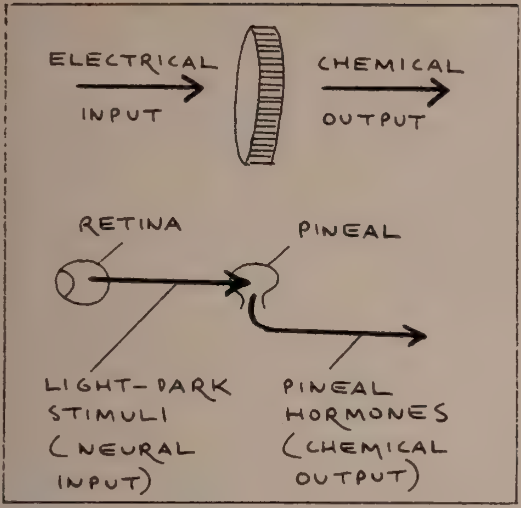

FIGURE 1. Pineal as neuroendocrine transducer. Two sides of same coin.

ences in the way individual human beings deal with their peers and with other living beings.

Eye or gland? Not long ago, a major pineal problem was: Is it receptor or effector? Eye or gland? Amphibia have a pineal eye, a functioning sensor for diffuse light. While the two lateral eyes perceive shapes and movements, the third eye perceives light and dark, color, and steady or flickering light. But in mammals, the pineal organ looks far more like a gland.

The currently accepted view of the human pineal gland is that it is a neuroendocrine transducer. This simply means that in the pineal, electric impulses coming from the retina and elsewhere are transformed into chemical messages (Fig. 1). Pineal sense input and gland output are seen not as conflicting alternatives but as two sides of the same coin.

The idea of the pineal body as a secretory organ is by no means new. The French anatomist Sylvius, 1416 to 1472, said: "We actually suspect that a certain humor is prepared in the pineal gland. As to what it is and what it does, we hesitate to say."[6]

The current position is summarized by Greep[27]:

> The pineal body, after knocking at the gates for many years, has finally been admitted to full membership in the endocrine family. It is known to produce, among other neurohumoral agents, a specific substance, melatonin, formed by an enzyme, hydroxyindole O-methyl transferase, found only in the pineal. There is good evidence that the pineal can exert an inhibitory influence on the development and secretory activity of the ovary. Whether it does so by secretion of melatonin is still an open question. The pineal is probably a mediator of the influence of photoperiods on gonadal activity.

Known functions of the pineal gland. The pineal gland is now known to receive two main types of input, photic and olfactory, and to emit two main types of output, antigonadal and melatonin.

First and most important, the pineal gland receives sense data from the retina. This is not the sense of sight as we know it. It is a description of intensity, type, and timing of light, and perhaps of other characteristics of light of which we are consciously unaware. This may be called "photic" input, as opposed to "visual" input to our sense of sight. The photic input stands in about the same relation to our conscious sense of sight as the nonconscious olfactory input (ECM) to our conscious sense of smell.

Next, there is input from that area which once was known as the rhinencephalon, the smell brain, and which now in the United States goes by the name of limbic system or visceral brain. The pineal gets much data from these structures, to the point that Relkin[28] suggests "the pineal gland may be considered a special functional part of the limbic system."

As for output, the pineal produces at least one specific hormone, melatonin. It lightens the skin of frogs and other lower vertebrates.

Finally, there is clinical and experimental evidence that the pineal gland affects reproductive processes.

This adds up to four broad avenues passing through the pineal crossroads:

1. From retina to gonad: This can easily be understood. In all living beings, reproductive affairs are much affected by darkness and light.

2. From limbic system to gonad: This seems easy to understand, too, at first. The limbic system is reputed to be concerned with emotions, gut reactions, sham rage, and so on. What is more natural than a link to the emotion-laden sexual sphere? But on second thought, "emotions" are more on the output side. They

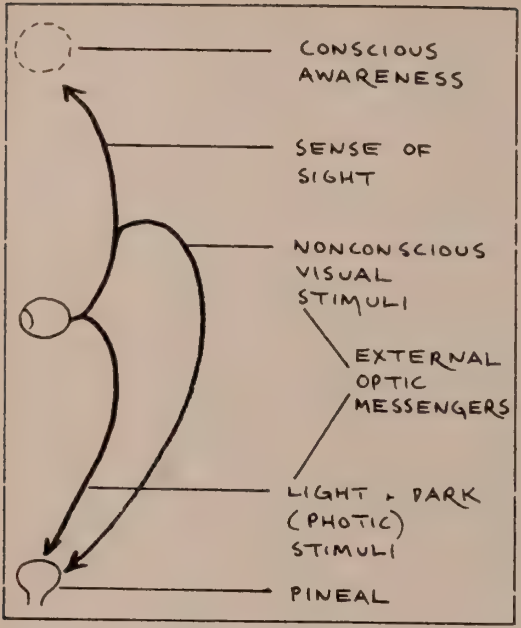
CONSCIOUS AWARENESS
SENSE OF SIGHT
NONCONSCIOUS VISUAL STIMULI
EXTERNAL OPTIC MESSENGERS
LIGHT + DARK (PHOTIC) STIMULI
PINEAL

FIGURE 2. Retinal input to pineal gland. Sense of sight versus "EOM sense."

certainly are not sensory input we receive from the environment.

3. From retina to whatever melatonin acts on in man: There must be some connection here to the fact that the retina records light and color input and that melatonin in lower animals has to do with color changes. But this hardly seems a significant function, at least in man, and melatonin has little effect on man's skin color.

4. From limbic system to whatever melatonin acts on in man: Here we are completely in the dark. From an area controlling emotional behavior, via a gland of unknown function, to the site of action of a hormone which seems to have no raison d'être in man?

This is the Gordian knot that must be unraveled or cut by any useful theory of pineal function.

PROPOSED ECM FUNCTION OF THE PINEAL GLAND. Let us now take a freshlook at the four points of the pineal compass in the light of the ECM hypothesis, that "man emits and receives ECM."[29]

Retinal input. By analogy with the concept of ECM, we can define EOM (external optic messengers) as stimuli received by the retina which are not destined for conscious awareness. As shown in Figure 2, these consist of visual and photic stimuli, and a good part of this input ends up in the pineal gland.

Limbic input. The ECM hypothesis implies that most messages carried on olfactory channels do not belong to the sense of smell (conscious) but to the ECM sense (nonconscious). The main argument against the term "rhinencephalon" (nose brain) has been that damaging or stimulating many of its parts seems to have no effect on the sense of smell and much effect on visceral and emotional functions. On the other hand, we cannot get away from the fact that a look at the anatomy of the rhinencephalon shows us that its function must be olfactory. The large tracts which enter it from the olfactory bulbs are not there for decoration.

In the light of the ECM hypothesis, shown in Figure 3, there is really no conflict between "rhinencephalon" and "limbic system." Olfaction and emotion are two sides of the same coin. Stimuli reaching the pineal gland from the limbic system are olfactory in origin and emotional in destination.

Gonadal output. Hormones elaborated by the sex glands serve not only to control functions within the body but also to transmit messages without.[29] Pineal control of this activity means control of an important ECM function.

Melatonin output. I suggest that in man, as in lower animals, the main site of action of melatonin is the pigmented cell, particularly the melanocyte. The pigment cell is a miniature ECM factory; the pigment granules, like secretory granules in general, are complex packages containing these chemical messengers.

The picture that emerges from all this is that one function of the pineal gland is to coordinate the slow hormonal response to various types of sensory stimuli, in particular nonconscious optic and olfactory (ECM) input.

Pineal-pituitary system

The discussion so far has dealt with the pineal gland. But while melatonin aggregates melanin granules of pigment cells, MSH disperses them. Melatonin is produced by the pineal gland, MSH by the intermediate lobe of the pituitary. Before going into details of the activity of the pineal, we must therefore examine the relations between it and the pituitary gland.

Pineal-pituitary similarities. The structural similarity between pineal and pituitary has long been known; it was summarized in 1940:

> From time to time anatomists have drawn attention to obvious analogies which exist between the epiphysis and the neural part of the hypophysis. Both are developed as diverticula of the diencephalon, both are characterized by cellular elements which are believed to represent a modified type of neuroglia, and whose processes have special relations with the walls of blood vessels, both are apparently related by nerve fibers to adjacent cell collections in the hypothalamus or epithalamus, and there is some evidence to show that both have a secretory function of some kind.[30]

It also seems that there is a close analogy between the mechanisms used by the central nervous system to regulate pineal and pituitary.[31] In both cases, diencephalic nuclei provide neural control of the gland. In both cases, the gland receives neurohormones from the brain nuclei. And in both cases, hormones discharged by the gland act in turn to modify the activity of the brain nuclei.

These structures are directly interlinked. For example, Roussy and Mosinger[32] describe association fibers linking the pineal-controlling center in the epithalamus with the pituitary-controlling center in the hypothalamus. They suggest also that pineal secretions affect the activity of the hypothalamic nuclei, and so on. Some neurons in the hypothalamus secrete hormones which travel down the axon not only to the pituitary, but also to the rhinencephalon, the habenula, and the parietal organs.[33]

Gardner[34] concludes from his experiments in the hooded rat:

> The relationship of the pineal gland to the epithalamus through a system of nerve fibers which may be called the epithalamo-epiphysial tract, therefore, appears to be comparable to the relationship of the neurohypophysis to the hypothalamus through the hypothalamico-hypophysial tract.

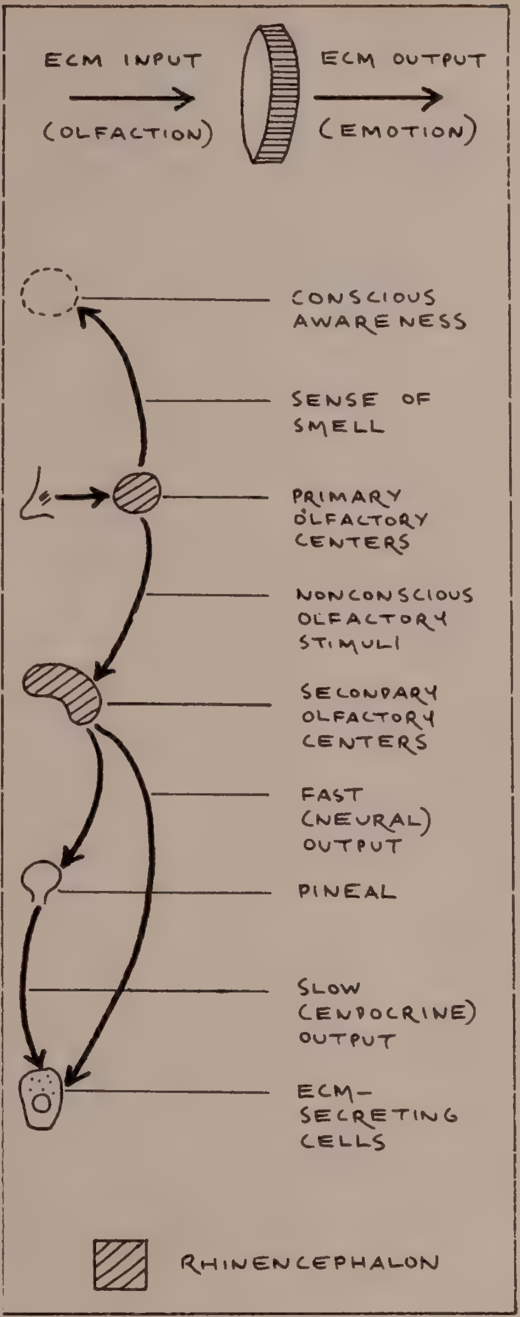

FIGURE 3. ECM theory of rhinencephalon. Two sides of same coin.

So far, we have spoken only of control by way of nerve fibers. But the most important discovery of recent years relating to the hypothalamus-hypophysis system is that nerve cells in the hypothalamus, such as those in the median eminence, dispatch neurohormones to the pituitary for storage and delivery. These neurohormones travel by an extraordinary and intricate system of portal vessels.[35] It has even been suggested that this is not a system of interlacing channels, but that each vessel trans-ports specific hormones from specific neurons to specific pituitary cells.

It would be a boost to the notion of analogy between pineal and pituitary if a similar system of vascular channels existed to transport neurohormones made elsewhere into the pineal region. There is no evidence that the habenular region is connected in any such way to the pineal gland. If cells in the habenula are in the business of producing "pineal" neurosecretions, they must transport them into the pineal by way of their axons. This is not unlikely, for the habenula shows pineal-type calcifications,[36] and melanin granules apparently representing some hormonal secretion have been observed to travel from habenula to pineal.[37]

But there is evidence that the role played for the pituitary by the median eminence gland is performed for the pineal by the SCO (subcommissural organ).

Palkovits[38] stresses the similarity of the epithalamo-epiphysial system, which he defines as including pineal, habenula, and SCO, to the hypothalamo-hypophysial system. Secretions formed by the SCO are transported to the pineal by way of a plexus of loop-shaped vessels. Granular secretion present in the pineal gland has been shown by histochemistry to be identical with secretion of the SCO:

> The morphologic picture and the direction of secretion transport appear to indicate that, in the epithalamus, there exists a system similar to the hypothalamo-hypophysial system and that, within it, the SCO, as a receptor and secretory organ, assumes a function analogous to that of the neurosecretory nuclei in the hypothalamus while the pineal body assumes one that is analogous to the neurohypophysis. The pineal body may be only a storage place for secretion, or it may activate secretion, or possess independent secretory activity.

Kappers[39] also finds a close topographic relationship between pineal afferent fibers and the SCO in the primitive fish Polypterus. The SCO seems tor eplace the pineal in those animals that do not possess a fully formed pineal organ.[40]

There are some other structures near the pineal gland which might serve to charge it with neurosecretions in this same manner. They include the subpineal organ, the retroepiphysial formation,[36] and the subfornical organ.[41]

In addition, there are also histologic and genetic similarities. Romieu and Jullien[42] have shown that the pineal and pituitary use similar histophysiologic mechanisms. Frauchiger and Wildi[26] claim that, like the pituitary, the mammalian pineal is composed of two genetically different elements, glandular and neuronal. In their opinion, the reason this has so far been overlooked is that the two pineal elements are completely intermingled, while the pituitary elements retain some of their original separation.

If the pineal, like the pituitary, turns out a large number of hormones, we will probably find, as in the pituitary, that different pineal cell types produce different pineal hormones, as Greving[40] suggested thirty-five years ago.

Pineal-pituitary antagonism. MSH and melatonin exert opposite effects on the melanocyte of the frog. They are not alone in this; by and large, the actions of pineal and pituitary tend to oppose each other. For example, Jullien,[43] in a study on "antagonism between epiphysis and hypophysis," found that subcutaneous implants of pineal and of pituitary tissue in guinea pigs tend to cancel each other out.

As we shall see, antagonisms between pineal and pituitary include effects on melanocytes, gonads, brain, growth of body, growth of tumors, thyroid, thymus, adrenal cortex, diuresis, carbohydrate metabolism, fat metabolism, and blood pressure.

This antagonism is seen even in tissue culture. Pituitary cells stimulate the growth of male gonad cells of the chick embryo, but when pineal cells are added to this culture the gonadal stimulation stops.[44]

Antagonism between pineal and pituitary bodies can be either direct or indirect.[45] Each of the two glands can counteract the other at the target organ. It can act directly on the competing gland, or it can reach higher, resetting the controls of the next higher center (epithalamus or hypothalamus).

The pineal directly inhibits growth and function of the pituitary. Pinealectomy causes pituitary hypertrophy.[46] Pineal extracts cause pituitary atrophy.[47] The pineal may act on the melanocyte not only directly, via melatonin, but also indirectly, by inhibiting the production of pituitary MSH.[48] Sudden spurts of pineal growth in an immature animal are accompanied by a slowing of pituitary development.[49]

Melatonin affects the secretion of luteinizing hormone by the pituitary.[50] Intravenous melatonin tends to empty the rat pituitary of MSH, while MSH has the opposite effect.[51]

In the opposite direction, pituitary to pineal, there is a similar inhibitory effect. Reiss, Badrick, and Halkerston[52] find that the already large phosphorus uptake of the rat pineal is doubled after hypophysectomy and returns to normal after the animals are given pituitary extract; similarly, the already large pineal uptake of iodine is doubled after hypophysectomy. It also seems that pituitary gonadotropin not only stimulates the gonads directly but also inhibits production of the pineal antigonadotropic hormone.[53]

If the one-to-one relationship between pineal and pituitary action holds true, then the pineal should manufacture not only indoles like melatonin but also polypeptides like pituitary oxytocin and vasopressin.

Two such peptides have now been identified: arginine vasotocin[54] in beef and lysine vasotocin[55] in pig pineal gland. Their function is thought to be antigonadotropic.[56] Marked aminopeptidase activity in the pineal cells suggests that polypeptide hormones are an important element in pineal output.[20]

All these examples of antagonism between pineal and pituitary deal with the major, most easily recognized hormones of these glands. Things may be different when we come to consider minor, secondary types of chemical messengers from the brain glands. Roussy and Mosinger[31] suggested thirty years ago that, under exceptional circumstances, pineal and pituitary might act with rather than against each other.

We know now, for example, that to speak of the pure antigonadal function of the pineal is an oversimplification. Substances which stimulate growth and activity of gonads can be extracted from pineal glands, as will be shown. In some cases, "minor" pineal hormones, substances found in the pineal gland which counteract its main effect and act like pituitary hormones, turn out to be delivered to the pineal gland from the subcommissural organ where they are actually produced.

Reiss *et al.*[57] summarize their findings in support of synergistic function:

> The fact that in all our investigations the dual nature of pineal action (inhibition and stimulation) could be demonstrated is certainly not in agreement with the assumption of a pituitary-pineal antagonism as the sole function of the pineal. It appears much more probable that a pineal inhibitor is produced at a certain age or endocrine status when the regulatory influence of an inhibitor is needed, and that a stimulator is produced, also when needed, to repair a disturbed hormone equilibrium.

I believe, however, that the simple hypothesis of antagonistic action between pineal and pituitary hormones remains a useful one. It may well be that major hormones of pineal and pituitary oppose each other's action, and minor hormones do so too. For example, the major pigment-cell hormones of pineal and pituitary, melatonin and MSH, are directly antagonistic. We can conceive of melatonin as the first in a series of pineal pigment-cell hormones, PIN_1, and similarly of MSH as PIT_1. We may later find that another pineal hormone, PIN_2, darkens rather than lightens the skin of frogs but is itself opposed by another pituitary hormone, PIT_2.

In this view, the major hormones of the pituitary are activators, and the major hormones of the pineal are inhibitors of cells which secrete internal chemical messengers. If the notion of inhibitory hormones seems a little hard to take at this time, it may be because we have forgotten the work of Collip.[58] In 1934, in a review of his concept of "inhibitory hormones," he pointed out that animals treated for some weeks with pituitary hormones become refractory to them, and substances counteracting these hormones appear in the body fluids.

While this might be interpreted as an antigen-antibody reaction, Collip's findings led him to the opposite view:

> . . . or else the inhibitory substance represents a normal constituent of the blood which under normal circumstances is balanced, as it were, against the respective hormone in such a manner as to be masked itself. We prefer this latter view, that the inhibitory substance which is found in the blood of animals after prolonged treatment with some hormone extract is a normal constituent of blood. . . . This theory may be extended further and one may suppose that for each hormone, or at least for many hormones,

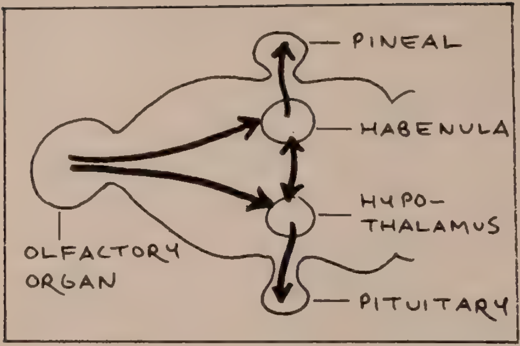

FIGURE 4. Primitive cyclostome: early stage in evolution of brain. Symmetrical olfactory input to pineal and pituitary.

there exists an opposite, an anti- or inhibitory principle.

Now, thirty years later, Collip seems to have been right. The inhibitory hormones he found come from the pineal gland, mirror image of the source of stimulant factors. The masking of these hormones under normal circumstances explains why for so long scientific authorities have looked askance at the pineal as an organ with no known means of support.

Outward and inward. I have now listed a number of reasons for thinking that pineal and pituitary are closely similar in anatomy, physiology, and target organs. But the reader might have good cause to think that this does not give verisimilitude to an otherwise unlikely story. If the two are so similar, why is it that we now seem to know all about the pituitary and nothing about the pineal?

To continue beyond one answer to this question (inhibitory hormones are normally masked and give no hint of their presence), let us look at an early stage in the phylogeny of these two glands (Fig. 4). In the cyclostome we see two symmetrical organs, both heavily and evenly supplied with olfactory input channels.[59] In human embryology, pineal and pituitary also start out in this fashion, although this symmetry is soon hidden by the overgrowth of cerebral convolutions.

The pineal points up and out, the pituitary down and in. As a rough rule of thumb, I would say that the direction of action of the pineal is up and out, of the pituitary down and in (Fig. 4). The pineal, then, would predominate in the control

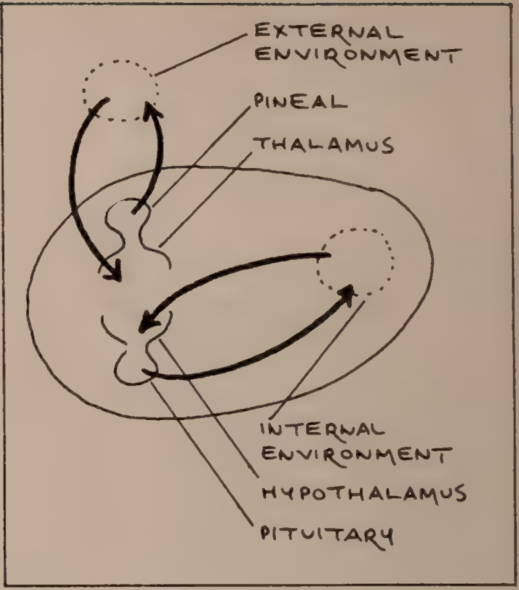

FIGURE 5. Pineal and thalamus reach out; pituitary and hypothalamus reach in.

of chemical communication with the outside: exohormones (external chemical messengers), and the pituitary with the inside: endohormones (internal chemical messengers).

If this is indeed a division of labor between the two, then Abderhalden was right in calling the pituitary the conductor of the endocrine orchestra. The pineal is the conductor of the exocrine orchestra, using the term "exocrine" in the sense of participation in exocrinology, external chemical communication, rather than in the sense of a gland which discharges its secretion through a duct. Human endocrinology has flourished for the last fifty years, while human exocrinology has not yet even begun to exist. No wonder, then, that we seem to know so much more about the pituitary than about the pineal.

The suggestion that the pineal tends to reach outward and the pituitary inward extends to output the conclusion reached for input by Etkin (Fig. 5)[60]:

> The thalamus has aptly been called the Rome of the nervous system, because all roads from the sense organs lead to it. As the headquarters of the sense organs the thalamus receives the information coming in from the environment outside the body. The hypothalamus, just below the thalamus, is the highest receiving center for information from the organs within the body itself.

This notion is also strengthened by the fact that phylogenetically the pituitary developed in close association with the saccus vasculosus, a sense organ for internal stimuli (vascular, cerebrospinal fluid), while the pineal developed in immediate contact with the pineal eye, a sense organ for external stimuli (light-dark, temperature).

But the idea that we know all about the pituitary and nothing about the pineal, although commonly held, is quite exaggerated. The rest of this report will show that far more is known about the pineal gland than is commonly realized. And three examples suggest that we do not as yet really know too much about the pituitary:

First, the melatonin problem (pineal) is matched by the MSH problem (pituitary). Why should the pituitary gland busily produce and distribute a substance, MSH, with the object of darkening the skin of frogs? And why the elaborate mechanisms in man's hypothalamus and higher up for control of this foolish function? Actually then, when we find what the pineal does by means of melatonin, we shall also have learned what the pituitary accomplishes by means of MSH.

Second, it is usually thought that the brain hormones produced by the hypothalamus must act via the pituitary. But it has just been shown that one hypothalamic neurohormone, sialogen, acts in minute quantities to stimulate salivation without involving the pituitary at all.[61] If salivation is a vehicle for ECM emission (Part I, page 3158),[29] this suggests that hypothalamic hormones which control ECM function need not use the pituitary as an intermediary.

Third, we may know one function of a pituitary hormone, but that need not be its only one. The unknown functions may be more important than the known ones. For example, there is a twenty-four-hour cycle in serum concentration of FSH (follicle stimulating hormone) in human males.[62] Clearly, the function of FSH in man goes beyond that implied by its name.

Light input

We are apt to forget the powerful hold of light and dark on living things. In animals, changes in illumination and overlong or overshort photoperiods cause radical changes in body chemistry, behavior, and sexual activity.

Dubos[63] points out that animal behavior is often modified by light and there is no reason to think that our own is not influenced also. Scharrer[64] concludes: "The visceral optic system of man represents essentially the same mechanism which mediates photic stimuli that on moonlit nights excite the palolo worm to swarm and cause the testes of birds to grow in spring." Bleibtreu[65] speculates:

> The great religious holy days of all faiths tend to cluster around the times of the solstices and equinoxes. Is it possible that the human pineal gland responds to these alterations in the length of daylight, and by changing the balance of neurohumors in the brain, perhaps effects a greater incidence of psychedelic states in certain susceptible individuals just at these crucial times? This possibility provides an entirely new potential dimension to our secular understanding of the religious experience.

Perhaps, too, excessive illumination in modern cities does more to us than we think. Nine months after the great New York City blackout, the August 9, 1966, issue of *The New York Times* stated that in many hospitals, births were running at two to three times the normal rate. A sociologist gave the expected answer:

> Our data show that most people wound up at home. They didn't have access to a major source of amusement—television. Under the circumstances it's not unreasonable to assume that a lot of sex life went on.

But an obstetrician demurred. He found that couples who had vainly sought to conceive were apparently successful on the night of the blackout. Perhaps, then, the human birth rate shot up because of decreased illumination as well as because of increased opportunity.

At this point, the reader may sense an air of unreality in the discussion. What is all this about light and dark? Day by day, we use our eyes to keep in touch with life about us. We see shapes, movements, colors, distances, and meanings. Compared to these intricacies, the light-dark difference seems puny and unimportant.

But all these are conscious elements of vision. There is much evidence that our body, shielded from conscious awareness, has its own quite different views of what is important and what is unimportant. Just as in the first article in this series we distinguished between conscious olfactory input (sense of smell) and unconscious olfactory input (external chemical messengers), so can we distinguish between conscious retinal input (sense of sight) and unconscious retinal input (photic stimuli, heliotropic system, accessory optic system, external optic messengers).

While the ECM system I have proposed remains a hypothetical construct, the EOM system (external optic messengers) has been closely studied during the last ten years, although not under this name.

Photic input does not just distinguish light and dark. It measures all characteristics of input in the visible spectrum which do not depend on specific figures and which we could detect through a frosted glass: color, intensity, timing, and source. Timing can be on a long-range (seasonal and daily photoperiods) or on a short-range basis. For example, brief light flashes cause diuresis.[66]

Besides the frosted glass type of input, complicated visual stimuli also affect endocrine function (Fig. 2). Female pigeons ovulate on seeing their mates or even their own images in a mirror.[67] And sexual arousal in a human male on seeing the picture of a female nude is probably mediated by nonconscious as much as by conscious pathways.[68]

The two pathways, one (visual) dealing with vision-space, and the other (photic) dealing with light-dark, start to diverge right in the retina. Becher[69] finds two different cells in the third ganglion of the retina. The larger cell has extensively branched dendrites; it transmits stimuli from rods and cones toward the central nervous system. The smaller cell, with only a delicate dendrite network, looks just like the cells in the hypothalamus which control pituitary function. This cell is the start of what Becher calls the "heliotropic system." He believes that this older phylogenic system represents a more vital and fundamental function of the eye than does our sense of sight.

Benoit[70] also concludes that the retina functions on two levels. Besides its visual function, he finds, the eye has a vegetative nervous function, exciting hypothalamic nuclei which govern the activity of the autonomic nervous system and of the pituitary. Such a mechanism is responsible for the optosexual reflex which Benoit has described in birds.

Oddly enough, as Kloek[71] recalls, this phenomenon was known long before endocrinologists became interested in it:

> Poultry farmers knew even before these experiments that something like this existed. The lay of hens can be stimulated by burning a lamp in the roost. Mostly this increased egg production was attributed to an extension of the condition of wakefulness with increased food absorption. But it is the radiation which has this effect and particularly the radiation of the head. When the whole body of the bird, with the exception of the head, is wrapped in a black sheath, the phenomenon is equally pronounced; when the trunk is left exposed, the head being covered with a hood, it does not occur.

Photic input affects man in many ways. The long polar night leads to autonomic disturbances in susceptible individuals,[72] and darkness tends to produce hypoglycemia. The day-night rhythm is tied to cycles in eosinophil count and adrenal steroid production. In man eosinophils are at low ebb during the day, and steroids are at a maximum. In the mouse, a nocturnal animal, the opposite holds true.[73]

Blindness also gives some leads to the functions of the external optic messengers. It produces marked changes in water balance[74] and in carbohydrate metabolism.[75] The sella turcica becomes smaller, suggesting pituitary atrophy.[76] The onset of menstruation in blind girls is reported in one study as earlier than normal, particularly when loss of sight is total[77]; in another study, no difference was found.[78]

RETINA TO PINEAL. The first part of the nerve path which transmits environmental light data to the pineal has been traced by Moore *et al.*[79] The fibers run from the retina through the optic chiasm to the inferior accessory optic tract which goes through the medial forebrain bundle to the midbrain tegmentum (Fig. 6).

The second part of the retina-to-pineal pathway runs from the tegmentum to the superior cervical ganglion. From there, the final segment of this path travels up through the tentorium cerebelli to enter the pineal gland with its blood supply.

Most central nervous system pathways run both ways. In this case, not only does retinal data come to the pineal, but also

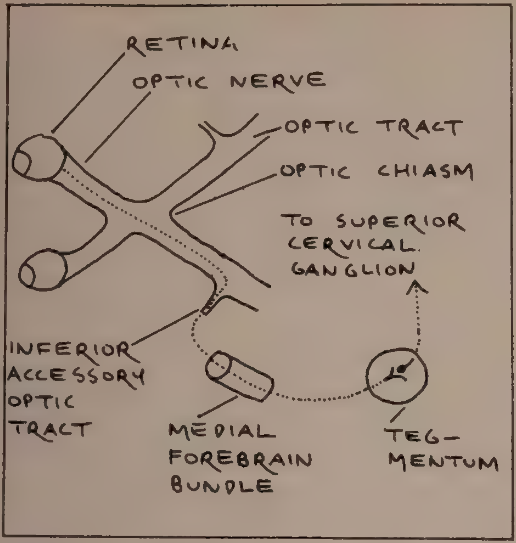

FIGURE 6. First third of pathway which transmits light-dark data to pineal gland.

pineal data comes to the retina. The details of this are not yet worked out, but it is known that melatonin affects retinal pigment.[80] MSH accelerates dark adaptation in man.[81]

Light-dark input to the pineal probably controls all steps in the synthesis of melatonin, including the activity of HIOMT, the melatonin-forming enzyme[11]; the activity of 5-HTPD, the serotonin-synthesizing enzyme; levels of pineal serotonin[82]; and the uptake of phosphorus.[83]

Light input produces visible (structural) as well as functional (chemical) changes. Pineal glands of animals kept under continuous light have smaller cells with fewer basophilic granules.[84] Pineals of blind men are found at autopsy to have a structure quite different from that of sighted subjects.

Not only the presence but also the color of light affects pineal-pituitary function. In amphibia, ultraviolet light inhibits and blue-green light stimulates the pineal organ.[85] Blue-violet light causes a more intense color change in frogs.[74] Long-wavelength light plays only a subordinate role in visual processes but has the greatest ability to affect sexual activities in a number of animals.[73]

FROM PINEAL EYE TO PINEAL GLAND. Our remote ancestors, groping on the sloshy bottom of primeval ponds, had an extra eye on the top of the head, where it would do the most good. As evolution proceeded, this third eye retracted into the skull, to the general location of man's pineal, and its main duty changed from evaluation of input to control of output.

The pineal gland of man did not develop directly from the pineal eye of amphibia. That structure is next to, not within, the amphibian pineal organ. But the two are very closely related, as are other structures, such as the subcommissural organ, the subfornical organ, and other "parapineal" or "parietal" organs.

Miline[86] emphasizes the need to consider these structures if we are to discover the function of the pineal gland:

> The day will come when we find we must discuss all these structures together. The structure of the subfornical organ is very similar to that of the pineal gland. We are reaching the point where we will not be able to speak definitively of the function of the pineal gland without taking these other structures of the epithalamus into account.

In the frog, the pineal eye, lying on top of the head, picks up light impulses from above. Light inhibits electric signals running along the pineal nerve to the diencephalon, where the pineal probably interacts with other incoming stimuli to determine whether the frog will jump toward or away from light.[87]

In mammals, the pineal no longer is equipped to get light readings directly under normal circumstances. If rat pineal bodies are implanted directly into the anterior chamber of the eye, they do not react to incident light or to darkness.[88] But as the pineal gland loses its own photoreceptors, it latches on to fibers coming from the optic system, and so its hormone output continues to be under light-dark control.[89]

As a general rule in evolutionary neuroanatomy, when an organ ceases to carry out a certain function, its other functions take on primary importance.[90] In the case of the pineal, as the abilities of evolving vertebrates become more complex, information on light becomes less important and patterning of hormones more important.

RETINA TO PITUITARY. Continuous illumination changes the cell picture not only of the pineal but also of the hypothalamus and of the pituitary.[91] We can assume that light acts on gonads and other sources of hormones via both members of the pineal-pituitary neuroendocrine system.[92] A retinopituitary pathway symmetrical to the retinopineal pathway is needed to accomplish this.

Pathways running from retina to gonads via pituitary are well known. Hill and Parkes[93] proved thirty-five years ago that the gonadal response of the ferret to light is correlated with activation of the pituitary body.

The unmyelinated fibers of the retinopituitary pathway start with Becher's[69] small retinal nerve cells. They travel with the optic nerve, leaving the main mass of fibers near the optic chiasm.[94] They probably leave the upper and anterior part of the chiasm,[95] but there is some evidence against this.[79]

The pathway then runs through the lamina terminalis to the hypothalamus and the posterior lobe of the pituitary.[96] Many of these fibers can be distinguished at a glance under the microscope because of a peculiar series of nodules which gives them a beaded look.[95]

Hollwich[76] has long stressed the difference between two optic input systems, one transmitting information corresponding to our sense of sight (visual pathway), the other instructions from environment to autonomic and endocrine systems (energetic pathway). He provides considerable clinical and experimental evidence to show that this "energetic" (heliotropic, external optic messenger) system is fully functional in man.

The pituitary also receives light-dark signals by a less roundabout route. Benoit and Assenmacher[97] find that in the duck, light directed to the pituitary, hypothalamus, or rhinencephalon affects function of the sex glands. Sunlight also penetrates through the skull into the hypothalamus of sheep, dog, rabbit, and rat.[98] When light is introduced into the hypothalamus of eyeless rats, an estrus-like vaginal cycle appears.[99] The presence of all these alternate pathways underscores the importance of light-dark input to the body economy.

The amount of light reaching the brain decreases as the size of the animal increases.[98] In man, very little light should reach the hypothalamus. But this does not rule out human light receptors in the brain. The effect of light on sexual maturity in all living things, plants as well as animals, depends far more on the duration than on the intensity of illumination. As with external chemical messengers which often operate in infinitesimally small concentrations, external optic messengers need little strength to trigger potent reflexes.

Olfactory input

There are close phylogenetic links between olfaction and the pineal organ. In fishes, the lateral forebrain bundle (lateral olfactohypothalamic tract) is linked to the nucleus paraventricularis, with cells lying near the pineal stalk which are believed to control chromatophore expansion.[100] This tract is the forerunner of the olfactory pathway which we call medial forebrain bundle in man.

We have already seen how in a simple form of the nervous system, olfactory supply to pineal (via epithalamus) and to pituitary (via hypothalamus) is remarkably symmetrical (Fig. 4). Even in these simple life forms, the pineal receives both olfactory and retinal input. Keith pointed this out in 1940[101]:

> Hypothalamus and epithalamus, so widely separated by the thalamus in the human brain, were anciently close neighbors, both being associated with olfactory tracts and connections.

Miline, Deceverski, and Krstic[102] have provided detailed evidence of the presence and importance of olfactory input to the pineal body. Olfactory stimulation produces pineal changes, including atrophy of pinealocytes, decrease in their nuclear and nucleolar volumes, and a drop in the number of intranuclear corpuscles. "These observations support the idea of the histophysiological connection between the rhinencephalon and the pineal gland for the purpose of adapting the system to different conditions." Soulairac and Soulairac[103] also stress the importance and complexity of the connections between the rhinencephalon and the pineal.

Relkin[28] has called attention to the fact that two systems have a direct bearing on the function of gonads in mammals, the pineal gland and the limbic system or "visceral brain." Linking this to the tracts known to run from the limbic system into the pineal gland, he advances the hypothesis that the two are closely related:

> It is proposed that limbically conducted visual impulses may control the pineal gland itself via direct habenular and posterior commissural-pineal neural connections. If this is indeed the case the pineal gland may be considered a specialized functional part of the limbic system.

There are other tie-ins between limbic lobe and the pineal-pituitary system. LSD (lysergic acid diethylamide), as noted in the preceding article, Part III, in this series,[29] opens pathways between conscious awareness and normally nonconscious processes, including ECM perception. When LSD level is measured in the brain, it turns out that it concentrates mostly in the pineal and pituitary glands; secondarily in structures of the limbic system such as hippocampus, amygdala, and fornix; and in the hypothalamus.[104] In amphibia, LSD affects pigment-cell function by inhibiting production of MSH.[105]

The olfactory system may even play a part in the development of the embryonic pineal gland, as suggested by a case of a man with congenital absence of olfactory bulbs and tracts, associated with a bilobed pineal body.[106]

Like the retina-to-pineal pathway, the rhinencephalon-to-pineal pathway is a two-way street. Pineal lesions alter hippocampal activity.[107]

This is a good place to re-emphasize that the stimuli which reach pineal and pituitary from the rhinencephalon, the stimuli I call external chemical messengers, are not smells—they are social signals. Changes in social cues should do as much to upset the pineal as changes in light-dark input.

In the case of man's pituitary, social and perceptual isolation seems to activate the gland.[108] For the pineal, I predict that animals kept apart from cagemates, exposed to strange ones, or subjected to other social stress, will show marked changes in melatonin output. So far, there is only a suggestion that when Rhesus monkeys are disturbed, more melatonin is produced.[109]

NERVE PATHS FOR OLFACTION INPUT. The pineal is physically linked to the brain by the epithalamus in the same way as the pituitary is attached to the hypothalamus. On each side, the epithalamus contains two deep groups of nerve cells, the habenular nuclei, collectively called the habenula.

The habenula is one of the major centers of the rhinencephalon,[110] receiving heavy input from the olfactory system via the stria medullaris. Man has the same olfactohabenular pathways as lower animals, but they are somewhat less developed.[111] Phylogenetically, the habenula is one of the earliest brain structures to link up to the olfactory apparatus.[112] But this physical link between epithalamus and pineal is less solid than the link between hypothalamus and pituitary. "Habenulae" means "little reins," the fragile attachments of the pineal to the brain.

Symmetry suggests that production of pineal hormones should be controlled by the epithalamus in the same way that production of pituitary hormones is controlled by the hypothalamus. Roussy and Mosinger[37] first suggested that there is an "epithalamo-epiphyseal complex" of this type. Soulairac and Soulairac[103] stress that an important group of nerve fibers, all adrenergic, reaches the pineal from the habenula.

Oksche[113] cautions that since the days of Roussy and Mosinger, no new positive evidence for the existence of this connection has been uncovered and doubts that it exists in vertebrates. Miline,[114] however, finds that infant rats kept in obscurity show hyperactivity and hypertrophy both of the pineal gland and of the medial nucleus of the habenula. This further suggests that the two areas are directly linked with each other.

Gerebtzoff[115] intensively studied the nerve fibers leaving the hippocampus. He found that an important contingent of these fibers goes to the habenula, and some neurons starting in the hippocampus go straight into the pineal organ without synapsing on the way (Fig. 7).

Gerebtzoff finds it hard to understand why olfactory data should feed into a visual organ, but:

> If the epiphysis is an endocrine gland regulating the appearance and development of puberty. . .it would be easy to explain why such important olfactory input should reach it. It is enough to remember the considerable importance of olfaction in the sex life

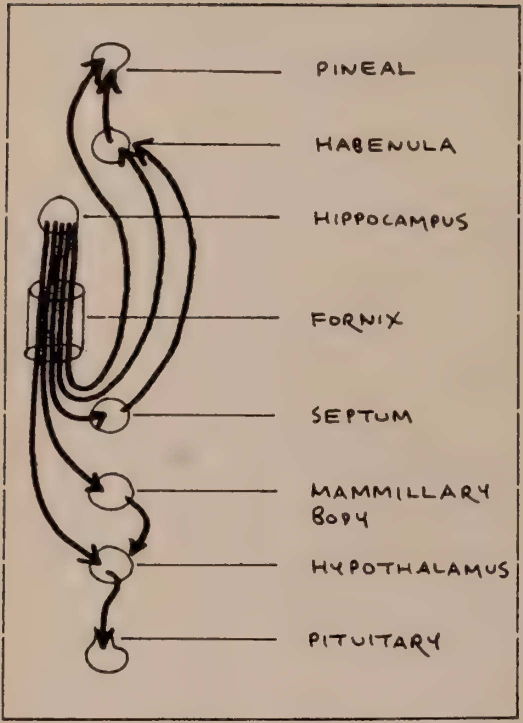

FIGURE 7. Some connections between hippocampus and pineal-pituitary system.

> of animals. The influx of sexually oriented olfactory input to the pineal gland would then control the development of the genital organs and the budding of the sexual appetite.

Gardner[34] finds that when he removes the superior cervical ganglia on both sides in hooded rats, there is no noticeable decrease in the rich nerve supply of the pineal gland. But when he cuts through the fibers running from the habenula and from the posterior commissure into the pineal, there is a very marked decrease in the number of nerve fibers there. The nerve endings normally seen on the parenchymal cells completely disappear. Gardner concludes that, contrary to some reports, an abundant number of nerve fibers run from the epithalamus into the pineal body.

Other authors who have provided evidence tracing olfactory fibers to the pineal body include Darkschewitsch,[116] Lotheisen,[117] Uemura,[1] Ikuta,[118] and Wartenberg and Gusek.[119]

If the pineal gland is as important in body function as I think, its controller, the habenula, should also show some visible evidence of specialized function. In fact, electron microscopy of the habenula shows a number of puzzling features which have not been seen before in the central nervous system.[120] These include an extraordinarily complex type of synapse which has since been found also in the subfornical organ, whose function is probably associated with that of the pineal gland.[121]

The pineal may sniff at the world not only through the regular nose or snout but also through chemoreceptors directly in its substance, the "pineal nose," as will be shown. In addition, we have seen that it receives important hormonal output from the subcommissural organ. But what is the input to the SCO? Herring's[3] findings suggest that it provides yet a third "nose" for the pineal gland, this one primarily concerned with hormones and electrolytes in the cerebrospinal fluid:

> The whole epithelium (of the SCO) presents an appearance which closely resembles that of the olfactory mucous membrane, and in sections stained by a silver impregnation the likeness is close indeed. The histological picture is one of a specialized receptor consisting of hair cells and supporting cells.

CONTRADICTORY EVIDENCE. The existence of a bridge from habenula to pineal has been denied by a number of neuroanatomists such as Herring:[3]

> In those animals in which the habenular commissure is anatomically more or less bound up with the pineal body, such as cat, monkey, and man, occasional nerve fibers may enter the pineal body from the commissure, but have probably no functional significance. . . . In the rat, the pineal body is anatomically widely separated from the habenular commissure, and no nervous connection persists between them.

Clark[30] observes that in the macaque monkey, fibers which seem to run from habenula to pineal are mostly aberrant commissural fibers. They take a false start up the pineal stalk, but in reality they just travel between the right and left habenulae. Furthermore, he states:

> Even those observers who have convinced themselves that the commissural fibers do in fact terminate in the gland in most cases agree that these fibers only reach the proximal part. It would be unusual, however, for the proximal part of the pineal parenchyma to receive a secretory nerve supply different from the distal part, since its intrinsic structure is everywhere the same.

But, as we have begun to see, many things about the pineal gland are unusual. Furthermore, this lack of nerve supply to all of the gland may be an age effect, like calcification. Uemura[1] does find that in adult man, the nerve fibers from the epithalamus do not penetrate far beyond the base of the gland. But in a three-year-old child, these fibers were diffusely distributed throughout the entire pineal gland, right up to its tip.

More recently, Kappers[122] has performed detailed studies of the innervation of the pineal gland of the albino rat. He concludes that there is almost no nervous connection between the epithalamus and the pineal. He also believes that the fibers of the commissuro-epiphysial tract are, in reality, aberrant commissural fibers. They loop up toward the pineal but come down again without doing anything to innervate the gland (Fig. 8).

Kappers' work is frequently cited in United States reports on the pineal organ, to the exclusion of other work, as showing that the pineal does not get any nerve supply directly from the brain:

> On the basis of careful anatomical studies, Kappers has proposed that the pineal gland is innervated chiefly, if not completely, by fibers of the autonomic nervous system.[123]
>
> They (autonomic nerves) originate bilaterally in the superior cervical sympathetic ganglia, reach the pineal body by way of the nervi conari and constitute the sole nervous innervation of the rat pineal body.[124]

But the strong evidence that there is heavy influx of rhinencephalic fibers to the pineal conflicts with the views of Kappers. What could be the reason for these contradictory findings? This is a problem common to both brain glands, for in the pituitary, too, there seems to be no common ground between those who deny any innervation to the anterior lobe and those who find in it a dense network of fibers deriving from the hypothalamohypophysial tract.[125]

Perhaps the clue is that Kappers' work was done on the albino rat. Other studies which did show a habenulopineal tract were done on other animals. Could there be a species or strain difference here? There are enormous variations in the pineal glands of different mammals.[25,126]

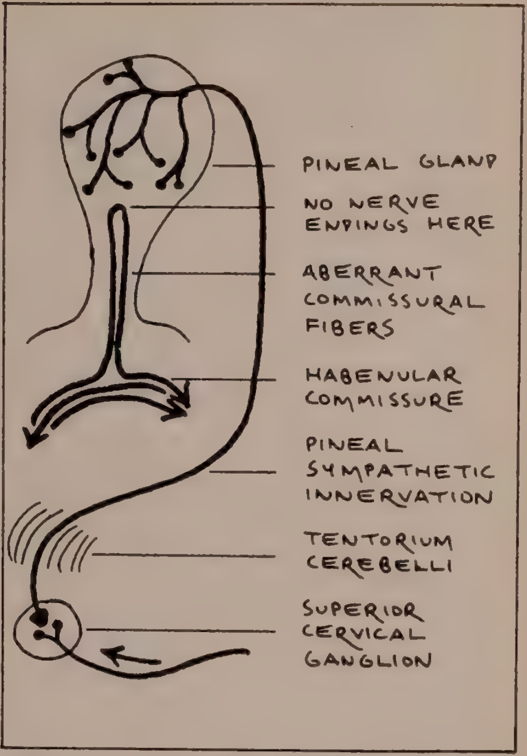
PINEAL GLAND
NO NERVE ENDINGS HERE
ABERRANT COMMISSURAL FIBERS
HABENULAR COMMISSURE
PINEAL SYMPATHETIC INNERVATION
TENTORIUM CEREBELLI
SUPERIOR CERVICAL GANGLION

FIGURE 8. Failure of habenula to innervate pineal in albino rat.

If the habenulopineal tract deals with olfactory input and pigmentary output and with ECM exchanges involved in emotional behavior, its function may be restricted in an albino animal. Albinism in rodents entails not only lack of pigment but also clear-cut behavioral differences[127] and dulling of the olfactory sense.[128]

In line with this thought, Wolfe[129] reported a detailed electron microscopic study of intercellular relationships and intracellular morphology in the pineal body of the albino rat. After presenting this report at a symposium on structure and function of epiphysis, he said in discussion:

> In view of the evidence for the involvement of the pineal body in pigment cell regulation, it is ironic that I have studied the epiphysis of the albino rat.

Perhaps this species difference is the reason why in the dog Roussy and Mosinger[31] find not only that there are fibers reaching the pineal gland from the pineal stalk, but also that these fibers form a massive nerve tract and can be subdivided by eight sites of origin: stria medullaris, posterior commissure, habenula, habenular commissure, periventricular thalamus, tectum, superior cervical ganglion, and roof of fourth ventricle. They conclude: "The powerful range of this innervation, and the great number of brain centers which come into play, all serve to demonstrate the importance which must be attributed to the pineal gland."

Also in the dog, Greving[40] found that three bundles of nerve fibers enter the pineal gland, one from the habenular and two from the posterior commissure. These fibers then split up to provide the pineal with an exceptionally dense innervation: "The nerve network in the epiphysis is so extensive and so markedly developed as to exceed anything I have seen in any other gland of internal secretion, except in the posterior lobe of the hypophysis."

RHINENCEPHALON TO PITUITARY. Olfactory input, like retinal input, goes to the pituitary as well as to the pineal gland. Again, the evidence is both physiologic and anatomic.

If the olfactory tract of goldfish is stimulated electrically for only one minute, all neurosecretory granules disappear from hypothalamic cells in which pituitary hormones are produced.[130] When rats are exposed to strong odors for several hours, marked changes in the supra-optic and paraventricular nuclei of the hypothalamus can be seen.[131] Hippocampus and fornix contain elements which inhibit ACTH release from the pituitary.[132]

The pituitary is a well-known way station for pathways from the olfactory areas to various endocrine glands. Stimulation of the hippocampus activates the thyroid by way of the pituitary.[133] Numerous studies show that rhinencephalic influence is exerted on the gonads via hypothalamus and pituitary. Heimer and Larsson[134] point out that the region of the preoptic nuclei, in the anterior hypothalamus, is a particularly important relay point for messages addressed to the gonads from the olfactory brain. Relatively few synapses intervene between the olfactory epithelium and the preoptic area. These fibers come from the olfactory tubercle and the prepyriform cortex by way of the medial forebrain bundle and from the amygdala by way of the stria terminalis.

Unlike the pathways from the olfactory brain to the pineal gland, the pathways from rhinencephalon to hypothalamus and from hypothalamus to pituitary have never been in doubt. But there has been doubt as to what they stand for, as Krieg[135] points out:

> It is strange that strongest afferent connections of the hypothalamus should be of an olfactory nature. Thus, it is in connection with the amygdala, both directly and through the stria terminalis; and it receives fibers from the hippocampus.

Recently, Powell, Cowan, and Raisman[136] have proved that only two synapses intervene between the olfactory receptors and the cells of the hypothalamus, by discovering a major nerve tract running from the pyriform cortex to the hypothalamus:

> As the pyriform cortex represents the principal site of termination of secondary olfactory fibers, a corollary of this finding is that the hypothalamus must be considered as one of the main sites of influence of the olfactory system. At the same time it may provide an anatomical basis for the known relationship between olfaction and reproductive behaviour, and in this context it is relevant to note that the pyriform cortex projects primarily on the anterior hypothalamus, which appears to be the critical area involved in several aspects of the hypothalamic control of reproduction.

And more specifically, Raisman[137] has suggested that "these extensive and, in some cases, very direct olfactory connections of the hypothalamus may be cited as an anatomical correlate of the marked effects of olfactory stimuli on central endocrine mechanisms," such as the Bruce effect. This places the pituitary gland squarely within the effector apparatus for the Bruce effect, the most dramatic example of ECM activity now known in mammals.

Proof of this suggestion has come from Dominic,[138] who finds that the Bruce effect can be prevented by implanting ectopic pituitary grafts. The Bruce ECM cannot reach these uninnervated glands and cannot, as it normally does, suddenly stop them from producing the prolactin which is necessary for survival of the embryo.

As for man, Scharrer[64] points out,

> . . . the human species operates with the same equipment that is available to animals. In man, as in other vertebrates, pathways conducting acoustic, photic, or olfactory stimuli, stressful sensations of pain, and so on, converge on the hypothalamus, where neuro-

> secretory cells constitute the final common path which converts nervous excitation into chemical messages.

It has been suggested that man's hypothalamus is more complex than that of other animals, largely because of increasing number of channels linking it to the olfactory system.[100]

Hypothalamus and pituitary, like epithalamus and pineal, respond to a wide variety of sensory stimuli, not just the two main ones, photic and olfactory. For example, secretion of prolactin by the rat pituitary is inhibited by olfactory (oil of peppermint), optic (intermittent bright light), and auditory (low-voice conversation) stimuli.[139] We can be sure that this does not exhaust the list of incoming messages which affect the pituitary-pineal system.

Phylogenetically, the pituitary may even be considered as part of the olfactory system.[140] In the hypothetical common ancestral vertebrate, the adenohypophysis and the olfactory organ may have an identical origin.[141] Carlisle[142] showed that in ascidians, the homologue of the pituitary gland is a sense organ involved in reproductive processes; in fact, it seems to be the organ of olfaction in these lower forms.

Commenting on Carlisle's work, Kloek[143] says:

> . . . I am convinced that the genetic connection between the olfactory epithelium and the anterior pituitary gives an indication of something essential and still insufficiently understood, and that it will be possible to penetrate deeper into these problems.
>
> Let us consider the complex organ which is found in Ascidians and primitive fishes as a sense organ which confronts the outer world and the inner world. From the outer world it is informed of that which indicates sexuality and mating possibilities in potential partners; from the inner world it is informed about the animal's own sexual needs and possibilities. In other words: this complex organ is situated, as far as its significance for the sexual life is concerned, between the partner's gonads and its own.
>
> . . . And now we see that in the course of development this complex gets a more complicated structure. A part undergoes an inward movement and becomes an endocrine gland. As such it perceives stimuli from the animal's own gonads; there is a close connection between its own activity and the level of gonadal hormones in the blood. The other part, the olfactory epithelium of higher vertebrates, goes on acting as a confronting organ between the partner's gonads and the animals' own.

MINGLING OF RETINAL AND OLFACTORY INPUT. Pineal and pituitary both receive input from retinal and olfactory receptors. They are probably able to do only part of the work of correlating these two sense modalities. We can expect that light-dark input and olfactory input are symmetrically intermingled in some higher association center of the brain.

The symmetry between light and scent has been noted by Parkes and Bruce:[144]

> In the last few years evidence has accumulated that odor can constitute an exteroceptive factor affecting the oestrous cycle and pregnancy, and that in doing so it acts through neurohumoral mechanisms analogous to those evoked by visual stimuli in birds and by light and dark in certain mammals.

There is anatomic evidence to suggest that stimuli from eye and nose mix before reaching the pineal. The response of the pineal melatonin-forming enzyme, HIOMT, to darkness and light is suppressed not only by cutting the pathway at the retina (its starting point) or at the superior cervical ganglion (near its end point), but also by cutting the medial forebrain bundle.[145,146] But this cerebral association tract is known to be one of the chief pathways of the rhinencephalon. It carries messages away from such olfactory structures as the septum and the pyriform area.[147]

More evidence for photic pathways running through the rhinencephalon is supplied by the fact that stimulation of the amygdala produces dilation of the pupil, and that this effect is diminished by removal of the superior cervical ganglion.[148] Visual and olfactory data also intermingle in the entorhinal cortex and are then relayed to the hippocampus.[149] The septal area of the rhinencephalon is involved in the processing of photic information.[150] The accessory optic system is a projection from the retina to the diencephalon which travels right through the olfactory brain, probably delivering light-dark data to it on the way.[151]

Some cells in this optic pathway through the olfactory brain are themselves light-sensitive. Illumination of the rhinencephalon in ducks produces gonadal growth, suggesting activation of an olfactopituitary or olfactopineal pathway.[152]

The parallel between olfactory and optic input to pineal and pituitary is illustrated by the fact that both affect the activity of pineal enzymes. The activity of the pineal enzyme, succinic dehydrogenase, can be reduced both by cutting the olfactory bulbs and by exposing rats to continuous illumination.[153]

Reiter, Hoffman, and Hester[154] also find that social contact and olfactory stimuli modify pineal responses to photoperiod in hamsters. The effect of short light periods on gonadal function, mediated by the pineal, "can be considerably modified (reduced) when two or more animals are in the same cage with the males. Thus social contact, olfactory stimuli, or hormonal compensating mechanisms all appear to potentially interfere with or modify the primary inhibitory effects of an active pineal gland in short photoperiods."[155]

This symmetry between input from nose and eye makes it possible that the sympathetic fibers running up to the pineal from the superior cervical ganglion carry not only photic but also olfactory information. This might account for the reports of absence or near-absence of direct pathways from habenula to pineal in some species.

On the other hand, some photic information uses the short route via habenula, rather than the long route via superior cervical ganglion and nervus conarius. In rats pineal activity of the enzyme succinic dehydrogenase is reduced by continuous light. Cutting the optic tracts eliminates this effect, but cutting the nervi conarii does not.[156]

Light-dark is not the only type of external optic messenger that is correlated with ECM input. In insects, olfaction and color perception work together in many ways to control group behavior.[157] And in man olfactory stimuli affect color vision. Geraniol and oil of bergamot increase sensitivity to green and decrease sensitivity to red.[158]

Other input

Direct photoreception and chemoreception. If the pineal body is as important in the control of intramural and extramural chemical communication as I suggest, it would be well served by having sensory receptors right within its substance, rather than having to depend exclusively on chemical and electrical gauges elsewhere.

Hughes and Smith,[159] reporting a case of chemodectoma in the pineal region, have proposed the hypothesis that the pineal body might be a chemoreceptor organ, and Costero, Barroso-Moguel, and Earle[160] support this hypothesis on the basis of histochemical studies. Survival of the chemodectoma patient for over ten years confirms that this was not a metastatic tumor; linked with some similarities in structure between normal pineal and carotid body, this provides strong support for the notion of chemoreceptor cells in the human pineal gland.[161]

Hungerford and Pomerat[162] find an unexpected and surprising responsiveness of pineal cells to chemical messengers such as thyroxin and angiotensin. Clearly, the vigorous gland activities of the pineal body do not exclude the presence, to some extent, of a pineal eye and a pineal nose. And, by analogy, there may even be a pituitary nose, reflecting the olfactory origin of the pituitary gland: Barnes[163] suggests that cilia in some cells of the anterior pituitary indicate a possible sensory function.

Until recently, it has seemed obvious that one specific cell in the pineal can be receptor or secretor, but not both. In one amphibian, however, it has just been shown that the epiphysial cell periodically changes to and from a receptor and secretor type.[164] At certain times the electron microscope shows its structure to be that of a rudimentary photoreceptor; at other times, that of an active gland cell.

Wolfe,[129] also on the basis of electron microscope studies, even supports the notion of simultaneous double function:

> It is quite possible that the epiphyseal parenchymal cell in the rat combines features both of a secretory and a sensory cell, as if these distinct cell types in lower forms had been combined into one cell type in the mammalian pineal body. . . . Perhaps mammalian epiphyseal cells are specialized morphologically both for receiving a particular stimulus and for executing a particular response. I find attractive the speculation that mammalian epiphyseal cells are directly sensitive to some class of radiations between the ultraviolet and the infrared, and that its activation as a receptor somehow controls

the synthesis and/or release of a secretory product, possibly melatonin.

MISCELLANEOUS INPUT. If the pineal body adjusts production of internal and external chemical messengers according to the state of the world around it, then its input must reach far beyond vision and olfaction. For example, sounds should act directly on the pineal without intervention of conscious awareness. In animals, auditory stimuli are known to affect reproduction in a manner analogous to olfactory stimuli such as the Bruce effect.[165] But I know no brain tracts linking ear to pineal.

There is some evidence that the pineal gland is involved in thermoregulation. This might be expected, by analogy with the important role played by rhinencephalon and hypothalamus in the febrile response to chemical messengers (pyrogens) released by leukocytes during infections.[166] On the output side, it has been suggested that thermoregulation is one possible function of the rapid color change in lower invertebrates.[167]

Temperature affects the response of melanocytes to MSH.[168]

Another link between temperature and light-dark input is suggested by the spectacular reversals in photoperiodic effects which chilling produces in some insects.[169] In other insects, reproductive behavior is affected both by temperature and by light.[170]

Stebbins and Eakin[171] found that the reptilian pineal eye acts as a thermoregulator. Steyn and Steyn[172] also give evidence for thermal reception in the pineal eye of the lizard which it uses to orient itself while basking in the sun. They believe that the third eye is both a light-sensitive and a temperature-sensitive structure. But in the rat, the pineal gland does not seem to be concerned with temperature regulation.[173]

Finally, I would suggest that the pineal-pituitary system plays an important role in the response of the body to x-rays. It is now known that mammals respond to x-rays promptly, within fractions of a second[174]; that the receptor site is in the olfactory epithelium[175]; that news of this radiation travels through the rhinencephalon[176]; that x-rays affect gonadal function[177]; and that a blood-borne humoral factor is involved in the behavioral changes which follow exposure to x-rays.[178]

It would not be unreasonable to think that the pathway from x-ray receptor to gonad uses all, not just some, of the paths linking olfactory cells to the sex glands, and that the endocrine and exocrine response to x-ray is under control of pineal and pituitary. Deep x-ray exposure of the head in animals leads to pineal congestion, hemorrhage, and degeneration.[179] A few days after x-irradiation, there are hypertrophic changes in habenula and pineal, followed a few weeks later by involution of both.[180]

Pineal to pigment cells

PINEAL EFFECT ON PIGMENT CELLS. In lower animals, the pineal gland has a very striking effect on skin color. Fifty years ago, McCord and Allen[181] first fed pineal tissue to tadpoles. Within thirty minutes, the animals, which had been uniformly dark, became so translucent that the larger viscera were plainly visible through the body wall. Mammalian pineal extract also produces changes in pigmentation of fishes[182] and toads.[183]

These experiments involve giving mammalian pineal material to amphibians, leaving some doubt as to whether or not this represents a natural function. But Bagnara[184] cites evidence to support the hypothesis that in amphibian larvae, too, the pineal controls body blanching in response to darkness.

These rapid color changes are not seen in mammals. But the pineal gland clearly has some influence on mammalian melanocytes. In hamsters, for example, removal of the pineal gland promotes the growth and spread of melanotic melanoma.[185]

MELATONIN. Lerner *et al.* in 1958[186] isolated the pineal substance which contracts frog melanin granules. This hormone, melatonin, is extremely powerful. It takes only the incredibly small quantity of 10^{-13} Gm. per milliliter to lighten the skin of the frog. Melatonin is the most powerful skin-lightening substance known. As measured by contraction of frog melanocytes, 0.45 micrograms of melatonin does the job of 20 micrograms of epinephrine or of norepinephrine. Serotonin, the melatonin precursor, does not have any skin-lightening effect in doses up to 4,000 micrograms.[187]

Besides causing melanin granules to huddle together, melatonin also reduces the perimeter and volume of the pigmented cell[188] and, more slowly, decreases the formation and deposition of melanin in the skin.[189] No doubt it has other effects as well.

Most work on melatonin has been done on lower vertebrates and not on mammals. Daily injections of guinea pigs with melatonin for one month failed to produce any visible change in color.[190] But Rickards[189] gave melatonin to three dogs with melanosis and found an effect on mammalian pigment cells:

> The response was dramatic. In all cases there was a visible lightening of the melanotic areas which could be detected macroscopically within forty-eight hours. Dark scales from the skin indicated that melanin deposits were being desquamated. Later biopsy specimens disclosed that melanin was in fact being extruded. . . . These findings agree with the hypothesis that pathological pigmentation is under the control of the pituitary-pineal axis.

A suggestion that melatonin has some similar effect in man comes from Starr,[191] who gave intravenous melatonin to a patient with recurrent melanoblastoma of the leg. There was a rapid, visible, and palpable increase in size of the malignant lesion. It mostly affected fresh rather than older areas: "The clinical behavior of the lesion strongly suggests that melatonin could be the specific hormone of the melanoblast." But in another human subject, melatonin had no observable effect on skin color.[192]

ECM HYPOTHESIS OF MELATONIN ACTION. This brings us face to face with the main question of pineal function. Melatonin production is elaborately balanced and intricately controlled. Although we do not know what it does, this evidence should make us think that it is part of some important activity of the human body that has so far been overlooked.

In this series of reports, I started out by hypothesizing such an activity: chemical communication, exohormone exchange, or ECM system, "thoroughly studied in insects, recognized in mammals, and overlooked in man."[29] In Parts II and III,[29] this hypothesis served to throw light on some inexplicable aspects of schizophrenia. Could it not also shed light on this unexplained aspect of pineal function?

MATCHSTICK PROBLEM. All pituitary and pineal hormones that we know, except for MSH and melatonin, exert some trophic or antitrophic effect on other secretory cells. The MSH-melatonin pair, on the other hand, seems to act largely on pigmented cells of the skin periphery, not to regulate production of any known chemical messengers, but to push and pull pigment granules around the cell, and that in frogs rather than in man.

Because this seems like a dead-end problem, it reminds me of another seemingly insoluble task, the matchstick problem. You are given six matchsticks lying on a table and told to form four equilateral triangles. You can be at this problem forever and not solve it if you assume that you are restricted to two dimensions. But the moment you cease to think like a flatlander and realize that you can lift some of the matchsticks off the table into three-dimensional space, the problem is solved.

This may be the lead to the problem of MSH-melatonin function. The pigment cell makes no important hormone that acts on its owner's body. But it is located at the surface of the skin. Could it be making a hormone that acts on someone else's body, an exohormone rather than an endohormone?

PINEAL AND ECM CELLS. The time may be ripe for the idea of exohormone production in the skin, for the thinking of physiologists about the skin has undergone a major change. No longer is it considered an unyielding barrier; Montagna[193] calls it a "huge glandular system," and says:

> Skin is the barrier as well as the principal organ of communication between the animal and its environment. It reflects the well-being or the disorders of the organism. It is a turbulent tissue and it grows, differentiates, and renews itself at all times.

Part I in this series, page 3156, has given reasons why the glandular structures of man's skin can be considered as dermal ECM organs.[29] Part VI in this series will give reasons why individual pigmented cells of man may be considered as miniature ECM factories.[29]

If melatonin and MSH have an action on odor glands and pigment cells, it is probably to set the general tone or "chemical mood."

Exactly what chemical messengers these cells produce, and when, is dictated by their inbuilt programs, by local factors, and by the nervous system; melatonin-MSH and other hormones decide whether this response is to be alert or sluggish. The light-dark change in melanocytes of lower animals is merely a visible sign of this chemical mood.

The proposed MSH-melatonin system would therefore be slow in responding to chemical communication needs, but it would have the advantage over the nervous system of providing a steady stimulus without fatigue. This is the tonic type of neurosecretory control which depends on the slow continuous release of a slowly degraded hormone.[194]

The pineal gland is known to regulate the activity of mast cells and of various wandering cells which produce chemical messengers. Pinealectomy in the rat increases the number of mast cells in thymus and lymph nodes and inhibits production of antibodies.[195] Blood eosinophils, known to be linked to allergic phenomena, probably are active emitters of chemical messengers. Pineal extract reduces and pinealectomy increases the eosinophil count in blood.[196] Blood counts of lymphocytes, eosinophils, and neutrophils show a rhythmic response to light, modified but not abolished by removal of the pituitary.[197]

The intestinal epithelium, like glands and pigment cells of the skin, may well function as an ECM emitter (Part I, page 3158).[29] If so, it should be partially under pineal control. In vitro, melatonin affects functioning of intestinal cells.[198] In vivo, rats whose pineal glands are destroyed on the sixteenth day of fetal life show marked changes in the epithelium of the ileum.[199]

PITUITARY EFFECT ON PIGMENT CELLS. In 1916 Smith[200] and Allen[201] independently reported that normally dark tadpoles turn a translucent silvery white when their anterior pituitaries are removed. When these animals are exposed to extracts of the intermediate lobe of the pituitary, they darken rapidly.

Studying this reaction in more detail, Huxley and Hogben[202] found that it was slow at first but speeded up after a few repetitions. When axolotls were fed whole pituitary, there was a very gradual darkening, taking eighteen hours to maximum; after four weeks of such feedings, the maximum was reached in one hour.

A curious feature was that after the darkening effect had completely worn off, the animals were of a ghostly pallor, considerably lighter than their normal shade. We would now ascribe this to compensatory pineal hyperactivity and pituitary hypoactivity. The pituitary factor acts directly on the pigment cell and not on nerve endings, for drugs such as atropine and curare fail to affect this reaction.[203]

When these changes are followed under the microscope, it turns out that in translucent larvae, many melanocytes (pigment cells of the skin) are contracted into dense spherical masses, while in normal (dark) larvae, the same cells are greatly expanded, so that processes of neighboring cells are almost in contact. In changing from light to dark, the melanocyte can be seen to expand slowly by sending out pseudopods into which pigment granules stream.[204]

This expansion of the melanocyte is largely an optical illusion. The pigment cell itself is as translucent as any other cell and requires staining to become visible under the microscope. When pituitary extract makes the melanin granules move from the cell center into the outlying pseudopods (dendrites), they act as a living stain and the whole of the cell can then be seen.

If the pigment cell function is a communication function, then the color of lower vertebrates should change in response to the social significance of their environment and not just its color. And in fact, stress causes increased formation of melanin in normal but not in hypophysectomized fish, showing that there is a pathway from social environment to pigment cells and that the pituitary is part of this pathway.[205]

MSH. MSH (melanocyte-stimulating hormone, melanotrophin), produced by the pituitary, darkens frog skin, in opposition to pineal melatonin, which lightens it. Zondek and Krohn in 1932[206] reported this effect of MSH, then called intermedin because of its origin from the intermediate lobe of the pituitary.

Since then it has been found that there are different types of MSH. The two main forms, alpha MSH and beta MSH, are polypeptides. Their structure is known, and they have been synthesized. Alpha

MSH is made up of 13 amino acids; beta MSH of 18 in a number of mammals and of 22 in man.[207] Several other pituitary components with MSH activity are known to exist.[208]

A wide variety of polypeptides related to MSH have been synthesized, some with much, others with little melanocyte activity. It seems that the amino acids his-phe-arg-try-gly form the sequence which determines the presence of MSH activity.[209]

What is the function of the MSH peptides in mammals? It is still widely believed that they persist as chemical fossils without any particular function, having failed to change as their target cells evolved away from them.[210] But the control mechanism for MSH is at least as complicated in rats as in frogs, as will be shown, supporting the concept that MSH is functional in mammals.

If MSH in mammals affects chemical communication, its behavioral effects should appear in groups rather than in individuals, for it takes two to communicate. Sakamoto[211] finds that MSH produces many behavioral effects, such as hyperexcitability, in albino mice. But when mice are tested individually rather than in groups, it is difficult to obtain consistent results.

In addition, Bronson and Clarke[212] find that adrenalectomy in deer mice produces a slow but profound darkening of fur. They suggest that this is caused by increased MSH output and relate this to the possibility of group stress:

> Since functional level of the adrenal cortex in rodents is related to population density and a host of other environmental factors, differences in pigmentation patterns between populations and among individuals within populations could, in some cases, be due to stress-MSH effects.

Like melatonin, MSH also has a moderate hormonal effect on the gonads.[213] The function is probably the same: control of the ECM aspect of gonadal secretions.

MSH output in women varies with the stage of the menstrual cycle, showing significant peaks on the second and tenth days.[214] These two peaks may stand for a preliminary and a final notice, via ECM, of sexual receptivity.

Production of MSH. As befits an important function, the production of MSH by the pituitary is under tight and complex control. First of all, there is inhibition by the hypothalamus. When the hypothalamus of the frog is destroyed, melanin granules disperse to a maximum, darkening the skin.[215] Direct assay of MSH also shows that the hypothalamus inhibits pituitary secretion of MSH.[216]

But besides this MSH-release inhibiting factor, the hypothalamus produces a hormone which speeds up MSH output: MSH-releasing factor.[217] This is a small polypeptide, molecular weight about 2,000.[218] It is found in two areas of the hypothalamus, the paraventricular nucleus and the median eminence.[219]

One or the other of these two hormones predominates, depending on the species.[220] In man, hypothalamic inhibition of MSH release prevails.[221]

The pigment hormone does not have to come from the pituitary. MSH is also produced by the placenta of man[222] and of other mammals.[223] This is probably one of the reasons for hyperpigmentation of pregnancy. In addition, it is possible that some hypothalamic neurons themselves secrete MSH for storage and discharge in the pituitary.[224]

These details are relevant to our discussion only in that they point to an intricate correlation mechanism, suggesting that MSH in mammals must be doing more than providing material for endocrinologists to use on frogs. The true control mechanism for MSH is probably far more complex. For example, Kastin and Schally[51] find that MSH output from the pituitary is under the control of circulating melatonin and, by a feed-back mechanism, of circulating MSH. They conclude:

> This demonstration of regulatory mechanisms of pituitary MSH release in albino rats supports the concept that MSH may have an extrapigmentary function in mammals.

Function of MSH in man. Current belief is that MSH is an atavistic hormone in mammals and man:

> It is possible that both the presence of MSH and the capacity of mammalian melanocytes to respond to this hormone are vestigial traits.[167]
>
> Certain molecules may even subsist as fossils without any particular function. For example . . . the intermedins, whose action on the melanocytes of the frog is so spec-

> tacular, do not appear to have any biological significance in mammals, where, nonetheless, they are present in very appreciable quantities.[210]
>
> One may well question the biological significance of MSH in an organism as complex as man. Perhaps the hormone is just another vestigial remnant that originally had the function of controlling protective coloration. No one really knows the answer.[225]

In spite of this belief, the last ten years have brought proof that MSH has a definite effect on the melanocytes of man. At first, the frog color change was thought to mean nothing in our case. But Lerner, Shizume, and Bunding[226] put together a number of apparently unrelated clinical facts to suggest that the pigment hormone acts in man as well: (1) During pregnancy, the pituitary hypertrophies and the skin darkens; (2) after infection and stress, more nevi appear in children; (3) in Addison's disease, existing nevi become darker even before generalized hyperpigmentation appears; and (4) the skin of patients with panhypopituitarism lacks melanin and has a washed-out appearance.

MSH in man darkens skin and nevi. It acts on human melanocytes to increase size, produce more melanin, and put out longer, wider, and more complex dendritic processes.[227] In a bilaterally adrenalized subject, MSH produced intense darkening of the skin.[228] The plasma level of beta MSH in man rises from a normal of 20 to 90 picogram (one trillionth gram, 10^{-9} mg.) to a level of 500 to 5,000 in hyperpigmented patients.[229]

McGuinness[225] gave MSH to two white volunteers with long-standing hypopituitarism and depigmentation. "The only effect it produced was a most striking pigmentation of the skin that transformed the sickly, dead-white complexion of hypopituitarism into a heavily tanned, sunbeaten appearance. This provoked much admiration and astonishment in the patient's relatives and friends. The pigmentation was specially marked in exposed places."

The response to MSH tends to be greater in dark individuals. Lerner and McGuire[230] gave synthetic alpha MSH and natural beta MSH to four Negro volunteers and found that both could darken the skin promptly and in small doses.

As part of the belief that MSH is vestigial in man, it is generally held that only in the frog is darkening of the skin caused by dispersion of pigment granules throughout the melanocyte; in man, any darkening after MSH is supposedly caused by new pigment formation, since the human melanocyte seems not to have any dispersion mechanism. But Pinkus points out that in skin inflammation in the Negro, melanin granules can be seen to spread out into the dendrites of the melanocyte within about a day, and that the effect of MSH in clinical experiments is so fast that new pigment formation could hardly account for it all.[231] Lerner and McGuire[230] also suggest that pigment granules in human melanocytes may disperse in response to MSH, as do granules of pigment cells in frog and fish.

Beta MSH is the principal pigmentary hormone in man,[229] but alpha MSH and ACTH also can cause darkening of the skin in patients with endocrine disease.[228] Both these peptides show striking hyperpigmentation effects when given systemically.[231]

Although, then, MSH is clearly not vestigial in man and mammals, its function remains a blank. This is graphically illustrated by a chapter on "possible physiological functions of intermediate lobe hormones in mammals" in a three-volume treatise on the pituitary gland.[232] Among 56 chapters averaging 34 pages, it has the distinction of being by far the shortest, requiring just 3 pages.

Jores[233] vigorously advocated the idea that MSH was a major cog in the human twenty-four-hour biologic clock. In the light of current findings this is probably true, but exactly what is it that the melatonin-MSH component of the twenty-four-hour clock regulates? It is not skin color. I think it is emission of external chemical messengers from pigment cells of the skin surface.

If changes in pigment cells indicate changes in chemical messages sent out, then there should be changes in our reaction to patients with pigmentary disturbances caused by endocrine disease. It is possible that such changes exist but have been overlooked so far. Only rarely is there a hint at unusual reactions of physicians to patients with endocrine diseases.[234] Even in depression, where depression in the bystander is a major diagnostic symptom, it is hardly ever described in clinical publications.

In the human menstrual cycle, behavioral changes accompany changes in pigmentation. The output of MSH varies during the cycle.[235] It would be interesting to see if the menstrual "behavior changes" of the human female are really changes in the behavior of others toward her and, if so, whether or not similar changes can be elicited in her absence by body fluids alone.

If pigment cells of frog and man function to produce packages of external chemical messengers, how are we to interpret the fact that in the frog, the pigment change after melatonin-MSH is clearly visible while in man this response is hard to detect?

I think there are several factors to consider here. First, the increasing complexity of nervous controls and of effector mechanisms as we go up the evolutionary ladder. We may find that in man, there are so many more types of pigment cell function and so many more hormonal and neural checks and balances that melatonin and MSH, at any given time, affect only a small fraction of pigment cells.

In the frog, pigment cells are not much differentiated in function, most react to the melanohormones, and the effects of these hormones are seen at once. In fish, color control is already more complex. When the spinal cord is cut, however, the color effects are no longer like those in the unoperated fish; they tend rather to resemble, in timing and extent, the color change of the frog.[236]

The second factor is that in many lower vertebrates, a camouflage and visual communication function has been superimposed on the ECM function of the ECM cells, exerting evolutionary pressure toward vivid color changes. To serve this specialized function, it is possible that frog melanin granules have become sessile; some disperse in response to MSH, but are not actually discharged.[190] Such a cell is an ideal indicator for the melatonin-MSH system, responding like litmus paper without the need for long rest periods during which new melanin granules are built.

Third, the color change in the frog provided a useful and convenient test object and made it possible to isolate MSH and melatonin. When other methods to screen for action on pigment cells become available, we may well find that the MSH-melatonin system is only one of many such pairs of pineal and pituitary hormones with effects on secretory cells and organs of the periphery of the body.

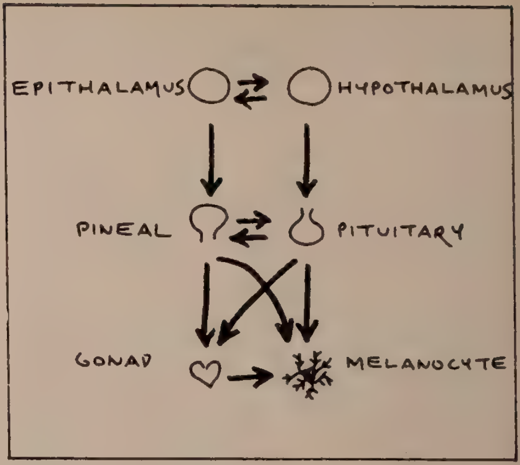

FIGURE 9. Direct and indirect control of pigment cell function by pineal-pituitary system.

Indirect effects on pigment cells. The action of the pineal-pituitary system on ECM-emitting skin elements is either a direct one or indirect by way of gonads, adrenals, or other glands of internal secretion. Figure 9 shows a few of the many pathways probably involved in this network.

Some clinical illustrations exemplify this indirect effect. A pineal cell tumor may produce delayed puberty, absence of testicular development, and absence of axillary and pubic hair.[237] The male gland, inhibited by pineal hormone, fails to stimulate growth of those hairs which emit signals of sexual attraction.

About one woman in two has some increase in skin pigmentation during the last days of the menstrual cycle.[238] A more marked version of this hormone-controlled pigmentation is chloasma: symptomless, symmetrical, sharply outlined patches of yellow-brown skin on forehead, temples, cheeks, nose, areolae, and perineal skin. These changes are probably caused by changes in melanocyte activity.[239]

In hamsters, Hamilton[240] has shown that androgens regulate size and maturation of sebaceous glands. Ovariectomy in female guinea pigs decreases the number of melanocytes and the quantity of free melanin, particularly in the areola, and estrogen-progesterone reverses these changes.[241] In hamsters, estrogens increase the number of small pigmented spots and decrease the size of the costovertebral spot,[242] suggesting that these two are antagonistic odor glands, emitting ECM messages on the same subject but of opposite meaning.

The glands of the skin not only form their own exohormones, but also excrete various endohormones which have an extramural chemical communication function. In the case of gonadal hormones, Kloek[243] suggests:

> If we compare the sex gland and its hormone production with a man speaking into a microphone, the odour gland can be seen as an amplifier. If, as scientists who are interested in the problem of smell and sexuality, we concentrate on odour glands and their products, we behave like primitive people who expect to find the speaker in the loudspeaker.

Adrenal hormones also are involved in control of skin ECM output. In rats, adrenalectomy produces a marked but temporary hyperplasia of hair bulbs and follicles, with increased deposition of melanin.[244] In mice, crowded together in a small space, the adrenal glands increase in size, and the epidermal mitotic rate falls to less than half.[245] Besides exerting a direct effect on pigmented cells, the adrenals have an indirect effect via the pituitary,[229] and perhaps also via the pineal.

The thymus gland, controlled by pituitary and pineal hormones, seems to be concerned in the regulation of antibody production by cells of the reticuloendothelial system, itself an external chemical messenger function. It may play a role in regulation of other ECM functions. Like the pineal, the thymus is a gland whose chemical shops work away at a remarkable rate,[246] no doubt directing some activities still unknown to us.

This notion was expressed by Parrott and East,[247] who found that removal of thymus in mice at birth impaired immunologic development and drastically shortened life:

> What is the relation between the immunological role of the thymus and the fatal consequences of its removal? We would suggest that thymocytes or lymphocytes carry out vital functions in addition to those concerned with immune reactions and that the impaired immune response of thymectomized mice is but one symptom of a wide metabolic dysfunction.

It is also possible that these effects of gonad, adrenal, and thymus are but special cases of a general rule that pigment cells of the skin are responsive to chemical messengers produced throughout the body, whatever their source. For example, we have seen that the nerve-growth factor of Levi-Montalcini may well be an ECM produced by saliva. This nerve-growth factor, it now appears, inhibits the activities of skin melanocytes.[248]

It would be wrong to draw a mental picture of all these hormones acting separately and independently on ECM production in the skin. Chemical messages are usually transmitted by mixtures of many different substances. True control of function of melanocytes and skin glands is likely to be vested in such mixtures.

An example of this mixture effect is provided by testosterone, which normally increases production of sebum. In hypophysectomized rats, testosterone has no effect on sebaceous glands. Neither does growth hormone alone or prolactin alone. But if either of these pituitary hormones is combined with testosterone, the full response is restored.[249]

So far, we have seen that pigment cell function is controlled by hormones from the pineal-pituitary system and from peripheral endocrine glands. In addition, many lower vertebrates possess varicolored pigment cells which do not respond to melatonin and MSH, although they evidently are under central hormonal control. A chromatophorotropin has been found in amphibian hypothalamus which is not identical to MSH.[250] A third major source of chemical messengers directing pigment cell activity may therefore be the brain itself, with different neurohormones coming from different areas. The hypothalamic sialogen mentioned falls into this category.

Interim note

We have begun to examine the anatomy of ECM function by considering the pigment cell hormones melatonin and MSH. If these two substances control production and emission of external chemical messengers in man, various other functions of the pineal gland also fall into place as mirror images of pituitary functions. But the tasks of the pineal-pituitary system go well beyond those listed so far. We will complete review of these two brain glands with the next article, "External Chemical Messengers. V. More Functions of the Pineal Gland."

For references, see Part V in this series, which will appear in the April 15 issue of the JOURNAL.

235 EAST 42ND STREET
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Venereal disease—penicillin-resistant gonorrhea

Studies carried out on two aircraft carriers in the Far East appear to confirm reports of a high proportion of failures in treating male gonorrheal urethritis with a single intramuscular dose of procaine penicillin G of 2,400,000 units, as recommended in 1965 by the U.S. Public Health Service and armed forces. These studies, conducted by K. K. Holmes, M.C., D. W. Johnson, M.C., and T. M. Floyd, M.S.C., and reported in a recent issue of *J. A. M. A.*, also indicate that where there is gonococcal resistance to penicillin, initial treatment with (1) the recommended dose of the latter given in combination with oral probenecid or (2) with tetracycline hydrochloride produces a high rate of success. Of 58 patients treated with the penicillin-probenecid combination, there was only 1 treatment failure, and in 30 patients treated with tetracycline, no failures.

The study population consisted of personnel in the Pacific. All patients who reported at sick call with symptoms of urethritis and a history of recent sexual exposure were evaluated, and from this number all of those in whom a diagnosis of gonorrhea was made were included in the study group. The total number of cases of acute urethritis was 313; of these, gonococci were found in 160.

For a total dose of 2,400,000 units, procaine penicillin G was given as 2 intramuscular injections, 1 in each hip. Fourteen treatment failures were given a subsequent single dose of twice that amount. In addition, 1 Gm. of probenecid was taken orally one hour before the injection. Then, 500-mg. doses were taken orally at six, twelve, and eighteen hours after the injection. For tetracycline hydrochloride, the initial oral dose was 1,500 mg., followed by 500 mg. every six hours for 16 doses.

Although there is a limit to the amount of penicillin that can be injected intramuscularly, the time-action curve of penicillin can be affected by decreasing its rate of excretion by administering probenecid. The renal tubular excretion of penicillin can be continuously inhibited in the adult by giving an oral dose of 500 mg. probenecid every six hours. The potentiation of procaine penicillin G as demonstrated in this study supports the observations of others.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Knickerbocker Hospital
New York City
November 29, 1967

Conducted by MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D.

Discussed by MARDOQUEO I. SALOMON, M.D.,
and WILLIAM B. OBER, M.D.

Pleural Effusion and Abnormal Protein Electrophoresis

Case history

Montague D. Brantley, M.D.: A fifty-eight-year-old Negro male was admitted to Knickerbocker Hospital for the first time complaining of shortness of breath. He had first noticed this symptom about nine months previously and had been admitted to another hospital soon thereafter. At that time he had slight fever. He was told he had fluid in his chest, and a thoracentesis was done which partially relieved his symptoms. A moderate amount of greenish-yellow fluid was removed. He was discharged after three weeks in hospital, but shortness of breath recurred, and he sought the advice of a private physician who gave him several injections of antibiotics to no avail. This physician referred him to Knickerbocker Hospital for further study.

Dyspnea was never severe nor was there orthopnea. The patient denied any chest pain or swelling of the ankles. He claimed he had lost 9 pounds since the onset of illness. System review and past history were not contributory.

Examination revealed a well-developed, well-nourished man, conscious, and cooperative. The temperature was 98.6 F., pulse 84, respirations 20, and blood pressure 120/70. A few discrete, moderately enlarged lymph nodes were palpable in both supraclavicular fossae, somewhat more prominent on the left; none was more than 1 cm. in size, and they were firm, nontender, freely movable, and not matted. The heart was not enlarged; the rate and rhythm were regular; there were no murmurs. The left hemithorax was dull to percussion, and breath sounds were not audible on that side; the right hemithorax was normal to percussion, and breath sounds were slightly accentuated. The trachea was deviated to the right. The abdomen was soft, scaphoid, and free of tenderness or palpable organs. Neurologic examination was within normal limits. No abnormalities were seen on the extremities.

A chest roentgenogram showed homogeneous opacity of the left hemithorax; the mediastinum was displaced to the right (Fig. 1). The right lung field was clear, and there was no fluid in the right costophrenic angle. The left border of the heart was completely obscured, and there was a suggestion of a mass in the upper left side of the chest and mediastinum. The roentgenographic picture remained unchanged in films taken over the succeeding week. An electrocardiogram showed sinus tachycardia, no deviation of the electrical axis, and uniformly low T waves.

Urinalysis on admission revealed a specific gravity of 1.020, 2 plus protein, a faint trace of glucose, no acetone, and 4 to 6

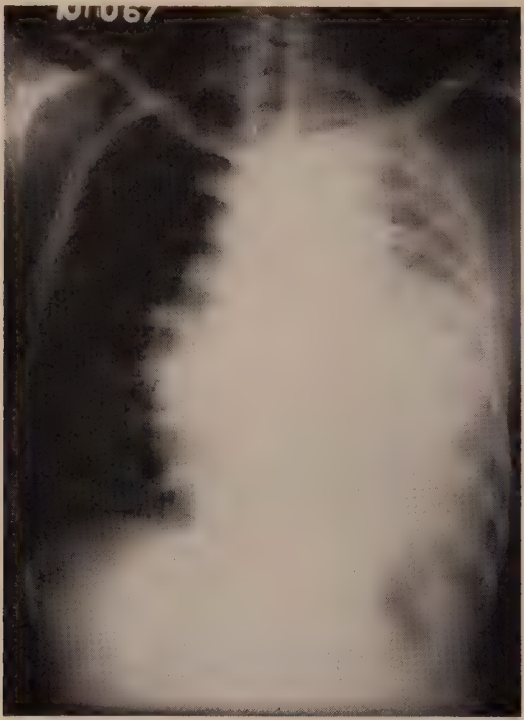

FIGURE 1. Admission chest roentgenogram showing diffuse opacity of left chest; mediastinum shifted to right, with suggestion of mass in medial aspect of left upper chest continuous with cardiac silhouette and projection of great vessels.

white blood cells per high-power field; an undiluted specimen showed positive results for urobilinogen, and a trace of bile was detected. The hemoglobin was 11.3 Gm. per 100 ml., the hematocrit 35, and the white blood cell count 9,400 with 61 per cent polymorphonuclear leukocytes, 30 per cent lymphocytes, 6 per cent monocytes, and 3 per cent eosinophils.

The blood sugar was 87 mg. per 100 ml., urea nitrogen 18 mg., and a battery of liver function tests showed results within normal limits. The total protein on admission was 8.3 Gm. per 100 ml. with 3.1 Gm. albumin and 5.2. Gm. globulin. Serum protein electrophoresis revealed albumin 20.7 per cent, alpha-1 globulin 2.3 per cent, alpha-2 globulin 5.2 per cent, beta globulin 5.7 per cent, and gamma globulin 66.1 per cent. There was a tall spike in the gamma globulin zone with a relatively broad base (Fig. 2). The urine gave negative results for Bence Jones protein.

Bronchoscopic examination revealed narrowing of the main bronchi to the upper lobe of the left lung, but no endobronchial lesions were encountered on either side; a biopsy showed only minimal chronic bronchitis. The patient's condition remained unchanged during investigation. On one occasion his temperature rose to 100.4 F. He received no specific medication. On the eighth hospital day an operation was performed.

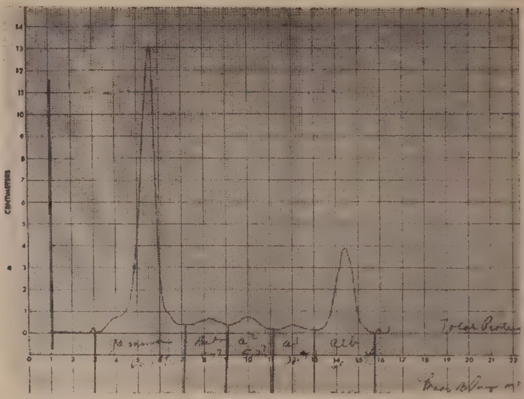

FIGURE 2. Serum protein electrophoresis showing tall spike in gamma globulin zone (left) with relatively broad base.

Discussion

Mardoqueo I. Salomon, M.D.:* The patient under discussion is a middle-aged Negro who first became ill about nine months ago. He had a pleural effusion at that time and was examined at another hospital. Thoracentesis yielded greenish-yellow fluid. I shall assume that bacteriologic studies showed no microorganisms and that a cell block showed negative results for malignant cells. Certainly his illness did not progress rapidly in the interval between that hospital admission and this one; indeed, he did not seem very ill when he was admitted here. However, his dyspnea was still present, possibly increasing, and fluid had reaccumulated in the left side of his chest. The x-ray films show opacity of the left side of the chest with displacement of the heart and mediastinum to the right, as observed with effusions and tumors; opacity due to pulmonary fibrosis and thickened pleura would draw the mediastinum toward the involved side. In the left upper side of the chest and in the apex of the upper lobe of the left lung one can see a bit of the lung parenchyma which is not obscured by fluid; in this area the lung seems fairly well aerated. The zone of density lying medial to and below the relatively clear area is continuous with the cardiac silhouette. It might be a loculated effusion, a zone of pachypleuritis, or a mediastinal mass. Was thoracentesis attempted during this admission?

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Dr. Brantley: Yes, about 4 cc. of sanguineous fluid were obtained by pleural tap. We did not dignify this specimen by laboratory study.

Dr. Salomon: The other important datum we are given is the serum protein electrophoresis showing pronounced hypergammaglobulinemia. That is a ten-syllable word, and we should consider it with respect. Gamma globulin may be elevated per se in many diseases, including such a congeries as rheumatoid arthritis, cirrhosis of the liver, hypothyroidism, and sarcoidosis; the list can be extended almost indefinitely. But a spike of this height, albeit a broad-based one, immediately suggests that the patient had one of that mysterious group of maladies called rather loosely plasma cell dyscrasias. We subsume under this heading such entities as multiple myeloma, Waldenström's macroglobulinemia, the recently described "heavy chain" disease, and all the borderline stages and intermediate syndromes in which abnormal amounts of gamma globulin are synthesized.

Given the electrophoretic data, the clinician immediately asks about Bence Jones protein, lytic lesions in bone, anemia, splenomegaly, hepatomegaly, lymphadenopathy of major proportions, and abnormal cells in the peripheral blood or bone marrow. This patient does have mild anemia, and lymph nodes were felt in the supraclavicular fossae, but neither observation is impressive enough to point to a specific diagnostic entity. If one includes the plasma cell dyscrasias among the many forms of lymphoma and lymphoma-like diseases, I can make out no case for any of them except one, and I shall return to it later on.

Descending from the giddy heights of latter-day electrophoresis and the biochemistry of the globulin molecule, let us return to the pedestrian, humdrum fact of an adult Negro with fluid in the chest. The first disease one should think of is tuberculosis and the second sarcoidosis. Recurrent pleural effusion is very common as an early symptom of tuberculosis, possibly more frequent a generation ago than today. I shall assume that the fluid tapped from this man's chest at another hospital was cultured for tubercle bacilli and that there was no growth. But I cannot make a diagnosis of pulmonary or pleural tuberculosis without some suggestion of cough, fever, or a chest x-ray film consistent with that disease. In this patient both apices are clear. The nodes in the supraclavicular fossae do not suggest caseous disease or scrofula. Weight loss of 9 pounds is not a very specific clue. The electrophoretic tracing remains a decisive determination; gamma globulin may be elevated in tuberculous disease, but never with a spike like that.

Similar reasoning enables me to exclude sarcoidosis from serious consideration. The reversed albumin-globulin ratio is suggestive and so is the mediastinal widening. But the mediastinal lesion is not bilateral, and although the clinical spectrum of sarcoidosis is very broad, pleural effusion is not common.[1] One could imagine sarcoidosis producing unilateral mediastinal lymphadenopathy and an effusion on the same side, but it would be rare. The patient has no lesions of his skin, mucous membranes, or uveal tract to help us. I suppose the supraclavicular lymph nodes could have noncaseating epithelioid granulomas on biopsy, but I do not think that was the operation performed on the eighth hospital day. Again, gamma globulin is usually elevated in sarcoidosis but not to 66 per cent and not with a spike like that.

Now, returning to the plasma cell dyscrasias, there is one exceptional type which may apply in this patient. Whether one decides to call this exception essential monoclonal gammopathy, paraimmunoglobulinopathy, or, as Osserman[2] prefers, plasma cell dyscrasia of unknown significance, is of secondary importance. Parenthetically, the nosographic classification of "primary" amyloidosis is still under consideration: should it be included as a subgroup in the myeloma syndrome? The main point is that such an entity, plasma cell dyscrasia of unknown significance, is more than occasionally associated with serious chronic infection, biliary disease, and nonreticular neoplasms including pleural tumors.[2]

As one tries to concatenate the data in this case, reconciling the hematologic and electrophoretic information with the clinical and radiologic evidence of chest disease, one has to call for Occam's razor. Who knows what Occam's razor is?

JOHN SALISBURY, M.D.: That is the instrument you use to cut off Descartes' beard and circumcise Spinoza!

DR. SALOMON: We should never invite barber-surgeons to these conferences! Occam's razor is the symbol for the precursor of our current law of parsimony. William of Occam was a Franciscan monk who flourished in the first half of the fourteenth century. He was an English scholastic who was accused of heresy by the Chancellor of Oxford and was summoned to Avignon by Pope John XXII to account for some of his doctrines. He seems to have come out the winner in a running battle with several popes and within his own Order, for he was one of the first to argue effectively that kingly authority was independent of spiritual authority. He is best known for his maxim, *pluralites non est ponenda sine necessitate*, that is, multiplicity need not be postulated unless necessary. Transferring the maxim to the field of clinical diagnosis, we construe it as a directive not to make two or more diagnoses when one will suffice. We are to construct the simplest explanation that will cover the observed facts. Now, returning to the patient, I shall try to make one diagnosis to explain both the chest findings and the dysproteinemia. I can only do so by assigning both effects to an intrathoracic neoplasm, a tumor involving the left lung. Such a tumor might be bronchogenic; it might be mediastinal; it might be pleural.

I cannot find much to support a diagnosis of bronchogenic carcinoma. The usual lung cancer is not so indolent for nine months. There is no description of hemoptysis or cough. The x-ray film does not suggest a bronchial obstruction with atelectasis and infection behind it, the effusion being secondary to that sequence of events. Bronchoscopic examination failed to disclose an endobronchial tumor. Many lung cancers are beyond the reach of the bronchoscope, but I attach considerable significance to the statement that the bronchi leading to the upper lobe of the left lung were narrowed. If the bronchoscopist is here, may I ask what his impression was?

ADRIAN LAMBERT, M.D.: We could visualize the right side with ease, and we had little difficulty exploring the bronchi leading to the lower lobe of the left lung, but the branches to the upper lobe of the right lung seemed constricted.

DR. SALOMON: Could they have been compressed by a tumor which was spreading around the bronchi?

DR. LAMBERT: An extrinsic tumor is a strong possibility.

DR. SALOMON: From what part of the bronchial tree did you take your biopsy?

DR. LAMBERT: There was no lesion of any sort seen in the mucous membrane of the bronchial tree. Hoping to get as close to the pathologic condition as possible, we took our biopsy as far out as we could get along the left upper bronchial ramus. Every now and then, even though the mucosa looks smooth, the pathologist can see a lesion infiltrating the submucosa. That maneuver was not helpful in this patient, but it seems a sound general rule.

DR. SALOMON: That reinforces my willingness to exclude bronchogenic carcinoma. We have all read about bronchogenic carcinomas that secreted unusual hormones; several cases of Cushing's syndrome have been reported in which a primary bronchogenic carcinoma, and even a bronchial adenoma, was elaborating ACTH (adrenocorticotropin hormone). Cases have been reported in which primary lung tumors were even elaborating gonadotropic hormones. But I have never heard of an epithelial tumor which elaborated large amounts of gamma globulin or was accompanied by it.

The mediastinum is a region in which one may find neoplasms of many different types: thymomas, hamartomas, teratomas, neurofibromas, neurilemmomas, lipomas, and other benign tumors. Benign mediastinal tumors rarely produce pleural effusion, although pericardial effusion is not uncommon. I do not think this patient had a benign tumor: he had lost weight, and the fluid had recurred. Malignant tumors in the mediastinum may be primary or metastatic. It is perfectly possible that this patient had an occult primary cancer with mediastinal metastases. If so, I cannot derive such a diagnosis from the protocol. I do note there is no mention of his genitalia.

Were they examined?

Dr. Brantley: The external genitalia were normal. Both testes were present in the scrotum and showed no enlargement or tenderness.

Dr. Salomon: Thank you. I shall exclude metastatic carcinoma to the mediastinum. Somewhat less firmly I shall also exclude primary malignant tumors of the mediastinum. Like benign tumors in this location, they embrace a wide variety of histologic types. I see no real evidence which would enable me to distinguish such lesions as fibrosarcoma, liposarcoma, neurogenic sarcoma, embryonal carcinoma, malignant thymoma, or teratocarcinoma. Thoracotomy might disclose such a tumor, but I cannot make the diagnosis on clinical grounds nor would it explain the electrophoretic pattern.

I am attracted to the idea of a primary pleural neoplasm. If I were given a history of exposure to asbestos, I would make a diagnosis of mesothelioma without hesitation. What was this man's occupation?

Dr. Brantley: Most of his working days had been spent as a retail clerk and an office worker. There was no history of exposure to asbestos.

Dr. Salomon: None the less, I have had in my own practice a case of pleural mesothelioma without such a history. Let me add at this point that benign mesotheliomas frequently "sweat out" transudates; in the malignant variety a mesothelioma behaves like a real cancer. Be that as it may, Osserman[2] had a patient with a similar clinical history, including a pleural effusion with a greenish color, and a similar electrophoretic pattern; the patient turned out to have a primary pleural tumor, the histologic nature of which was not definitely established. Thus, on the strength of this analogy, I would put a pleural neoplasm high on my list of diagnoses. Other neoplasms might account for this patient's symptoms, but I strongly suspect a primary pleural origin in this case, and I believe it was the cause of the plasma cell dyscrasia.

Juan Mendez, M.D.: You do not seem to be very impressed by the patient's anemia and lymphadenopathy.

Dr. Salomon: The anemia seems nonspecific, the sort one may see in almost any chronic disease, and the degree of lymphadenopathy in the supraclavicular area can be found with almost any sort of chest disease. I do not mean to minimize these findings, but they do not point to any specific diagnosis.

Dr. Mendez: Can we characterize the anemia any further?

Dr. Brantley: It was interpreted as a normochromic, normocytic anemia without any distinctive features in the peripheral smear.

Dr. Mendez: Was there no bone marrow aspiration?

John Kwittken, M.D.: Yes, but only after the operation on the eighth hospital day. We did not include it in the protocol because it was done "after the fact," that is in retrospect, and after a histopathologic diagnosis had been made.

Dr. Mendez: I should like to speculate that this might be a case with two diagnoses: multiple myeloma and lung cancer. It might even be a case of primary lung cancer with a monoclonal gammopathy.

Dr. Salomon: Multiple myeloma has about a 17 per cent chance of being associated with another primary neoplasm, that is, a tumor arising de novo in a nonmyeloid and nonlymphoid tissue.

Dr. Mendez: A case of multiple myeloma and lung cancer was presented at one of these conferences a few years ago.[3] Could we be having a second example? By the way, I am not convinced that the opacity of the left side of the chest is all due to effusion; the left costophrenic angle is not filled.

Benjamin E. Krentz, M.D.: Before asking for the pathologic report, let us hear what happened at the operating table.

Dr. Lambert: The x-ray films and the observations at bronchoscopic examination suggested a mediastinal mass either primary there or secondary to a pulmonary neoplasm which had either metastasized to regional lymph nodes or else extended directly into the mediastinum from the upper lobe of the left lung. We elected to perform an exploratory thoracotomy. The left lung did not collapse and was bound by dense adhesions to the parietal pleura.

There was some loculated fluid between bands of adhesions but not a free pleural effusion. It was very difficult to mobilize the lung. The upper lobe seemed adherent to mediastinal structures by gelatinous tissue. It was very difficult to determine where lung ended and mediastinum began, but there was a diffuse density of the upper lobe suggesting tumor surrounded by inflammatory infiltrate. It is not uncommon to find such a state of affairs at thoracotomy, and there was also some consolidation in the lower lobe of the left lung. But the operating theater is no place for an epistemologic debating society. After a few minutes of palpation and dissection, it was evident that whatever lesion this patient had, it could not be resected. Hoping that pathologic study would reveal a tumor which might be palliated by radiotherapy, I took a biopsy from the area of the upper lobe near the mediastinum.

Dr. Salomon: Was your impression one of a primary lung tumor, or do you think it arose in the mediastinum or pleura?

Dr. Lambert: I could not tell with any degree of certainty whether the tumor began in the mediastinum and encroached on the lung or whether it began in the lung and extended into the mediastinum. I am sorry to disappoint you, but it did not suggest a primary pleural tumor to me; at least it did not resemble any of the few mesotheliomas I have had a chance to see.

Clinical diagnoses

1. *Bronchogenic carcinoma involving mediastinum*
2. *? Primary malignant mediastinal neoplasm with pleural effusion*

Dr. Salomon's diagnoses

1. *Primary pleural malignant tumor, ? mesothelioma*
2. *Plasma cell dyscrasia with dysproteinemia*

Pathologic discussion

William B. Ober, M.D.: The biopsy was a piece of tan tumor tissue without identifying landmarks, received in formalin. Microscopic examination revealed a tumor composed of sheets of small cells with no real architectural pattern. It was clearly not a bronchogenic carcinoma and even at low magnification it was quite evidently a malignant lymphoma. The tumor was seen to infiltrate between striated muscle fibers, and it was composed chiefly of lymphocyte-like cells with an admixture of plasma cells and reticulum cells (Figs. 3, 4, and 5). The question speedily resolved itself to one of classifying a malignant lymphoma.

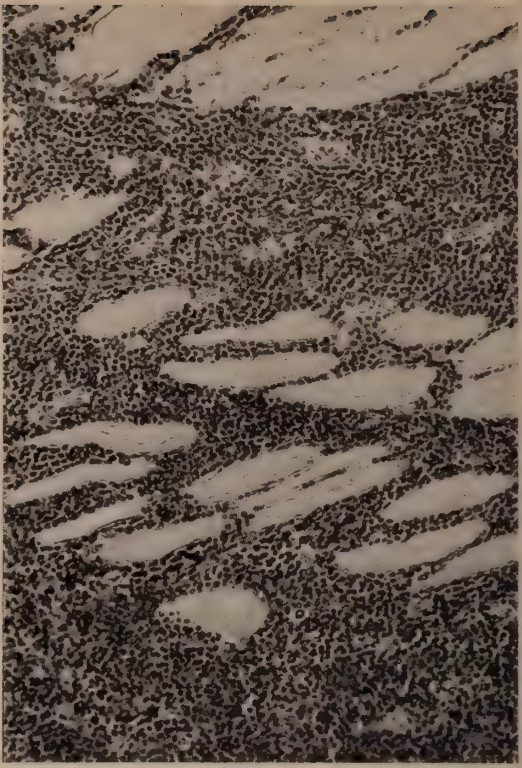

FIGURE 3. Low-power view of tumor biopsied at thoracotomy showing sheets of small cells without discernible pattern infiltrating between skeletal muscle fibers.

Taxonomy of tumors can be tantalizing on occasion. As one examined the slide, one could see at one pole a few poorly demarcated zones which bore a resemblance to enlarged germinal centers in lymphoid tissue, and one toyed with a diagnosis of giant follicle, or follicular lymphoma, but not quite. Here and there one could see cells with two large nuclei which looked something like Reed-Sternberg cells, but not quite. The predominant cell was lymphoid in general configuration, and one thought of the common label, lymphosarcoma, but not

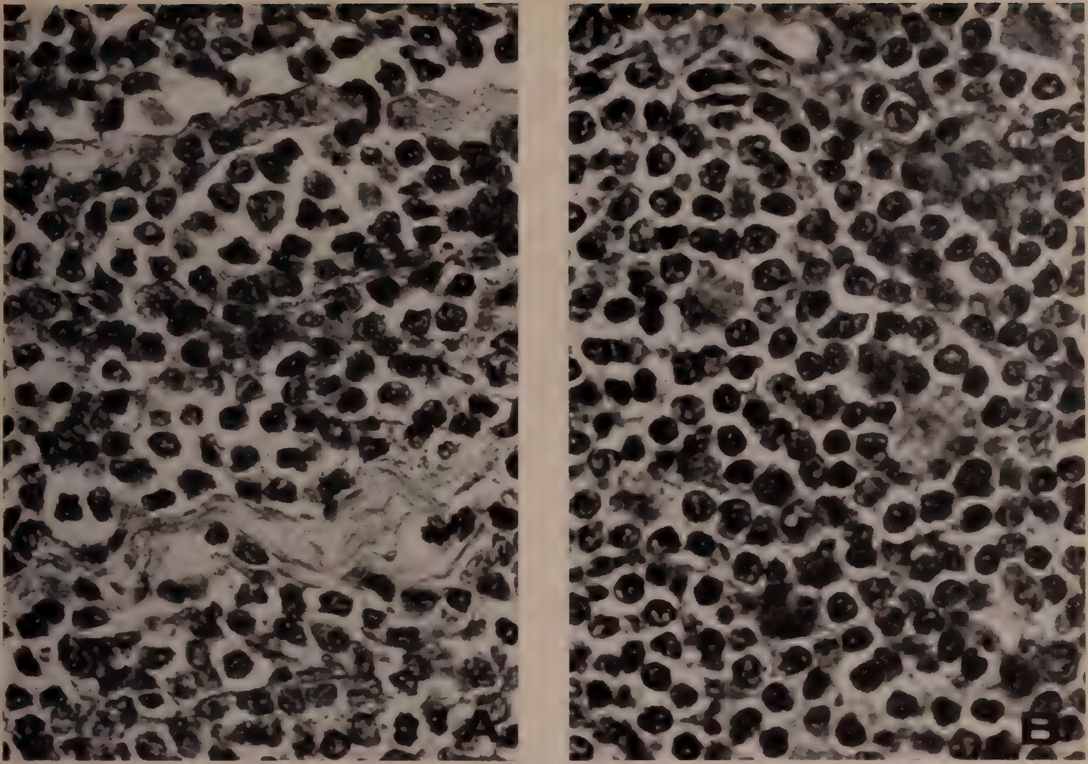

FIGURE 4. (A) High-power view showing tumor cells resembling lymphoid cells. (B) Some fields showing more pleomorphism; cells resembling plasma cells, cells with vesicular, indented nuclei resembling reticulum cells, and cells with clear cytoplasm and well-defined cell membranes.

quite; the cells were too large and had too much cytoplasm for the usual small-cell variety (as seen in nodes in chronic lymphatic leukemia and the lymphosarcoma of Kundrat), and they were too small and had too little cytoplasm to be called lymphoblastoma. It was not difficult to find abnormal reticulum cells, but the predominant cell type did not resemble that seen in reticulum cell sarcoma. An occasional plasma cell was seen, even an atypical plasma cell on occasion, but the principal cell in the tumor did not look enough like those seen in multiple myeloma groups to fall into the temptation of classifying it as "malignant lymphoma, mixed cell type," but this is a taxonomic entity which is too vague, is used in different senses by different writers, and is not generally desirable. It is the easy way out, and one likes to do better if one can.

The clue to the correct diagnosis was evident in hematoxylin and eosin-stained section, consisting of spherical intranuclear and intracytoplasmic bodies within the tumor cells. These bodies were homogeneous and eosinophilic, identical in character with those described by Dutcher and Fahey[4] in Waldenström's macroglobulinemia (Fig. 5A). They stained positively with fuchsin in Schiff's periodic acid method (Figs. 5B, 6, and 7). The positive PAS (periodic acid-Schiff) reaction results from the presence of vicinal diol groups, chiefly in the form of hexoses in the carbohydrate portion of the immunoglobulin, which may account for up to 10 per cent of its weight. An additional advantage of the PAS technic is that with an alum hematoxylin counterstain the nuclear detail of the tumor cells is seen quite clearly, since no eosin is used and the PAS reaction brings about almost no nuclear staining. Most of the nuclei resembled altered lymphocyte nuclei; here and there an unmistakable reticulum cell or an unmistakable plasma cell could be seen (Figs. 6 and 7). In a later communication Dutcher and Fahey[5] used fluorescent antibody to show that the intranuclear and intracytoplasmic material was

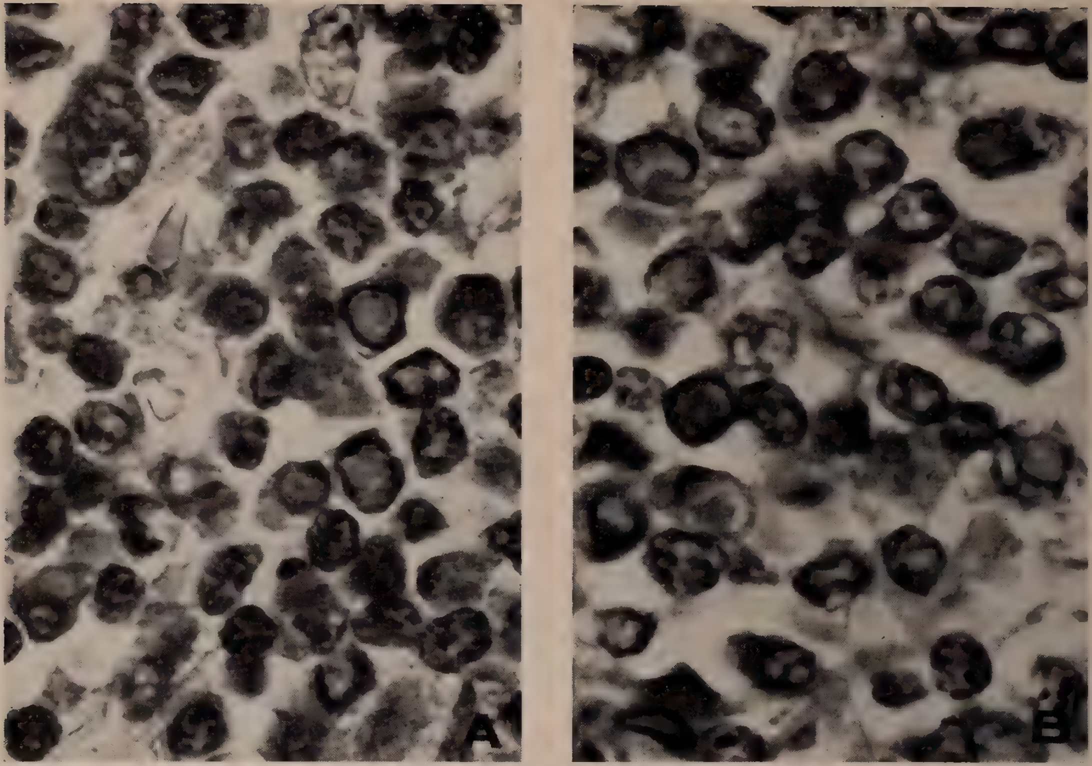

FIGURE 5. (A) Some tumor cells show spherical, eosinophilic intranuclear bodies. Binucleate tumor cell shown in upper left-hand corner of field. (B) The intranuclear bodies stain with fuchsin in Schiff's periodic acid method for mucopolysaccharides and glycoproteins; intracytoplasmic PAS-positive bodies also seen.

an 18S gamma globulin, and they concluded that macroglobulins were being actively synthesized by cells that they labeled "lymphocytoid plasma cells." I find it difficult to make the chief tumor cell in this case and in similar cases fit into the Procrustean bed of the taxonomy of lymphomas I was taught as a boy. The cells look different and are doing something different.

The differences are of degree rather than of kind. We are all familiar with Russell bodies in plasma cells, and the idea that they represent an immunoglobulin is scarcely new. That myeloid, lymphoid, and plasma cells can and do synthesize immunoglobulins is likewise well known. The use of electrophoretic methods to study the proteins quantitatively is largely a development of the past three decades. In the 1950's Azar, Hill, and Osserman,[6] using filter paper electrophoresis, were able to describe a group of patients with malignant lymphoma and lymphatic leukemia who had a myeloma-like protein in their blood. We have developed more sophisticated laboratory technics to study such proteins. In an intensive study of a number of patients with neoplasms showing abnormal globulin synthesis, using touch preparations, conventional light microscopy, and electron microscopy, Brecher *et al*[7] concluded that "no consistent correlation was found between the type of protein produced and any particular morphologic feature (that is of the tumor cells)." The literature contains such terms as lymphocytoid plasma cells, lymphocytoid cells, plasmacytic lymphocytes, and the like, terms which reflect the microscopist's problems. Even though Waldenström[8] could hypothesize that "one gene, on protein" was a better formulation than "one gene, one enzyme," we have not yet attained the morphologist's nirvana of being able to say "one cell, one protein." The dismaying fact is that neoplasms in this family can elaborate any or all of eight (or possibly more) abnormal proteins, and it is not always easy to be certain of cell types. There is even some evidence that in these

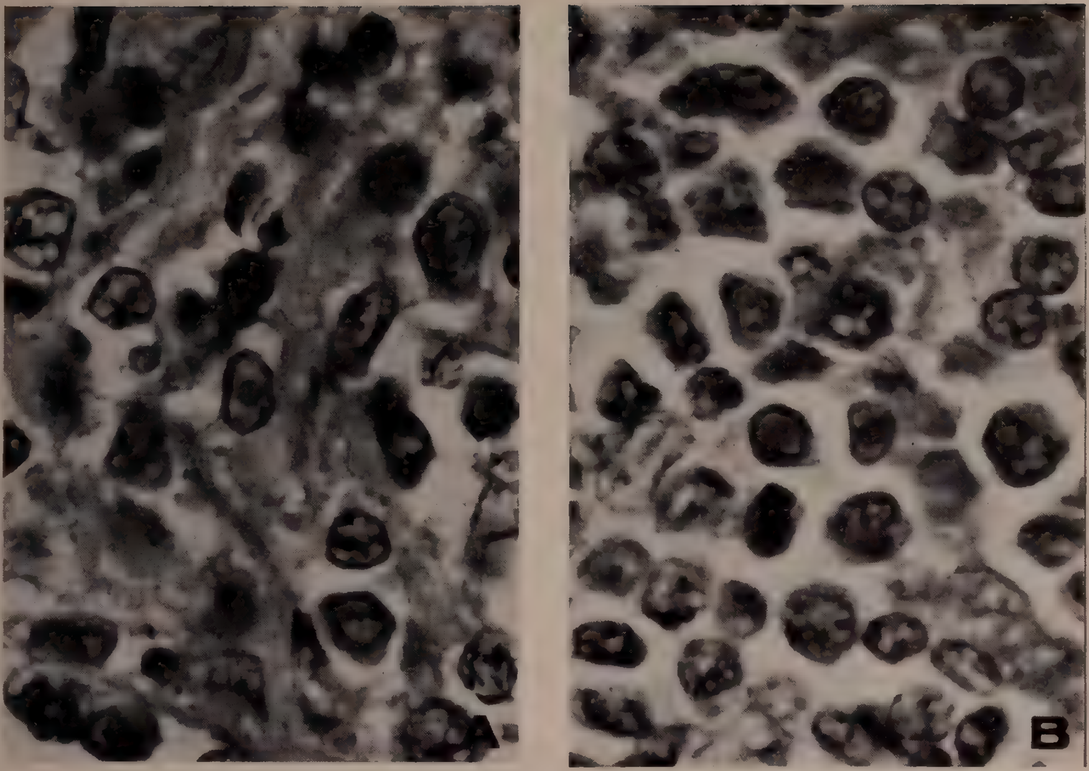

FIGURE 6. (A) Cell in center of field contains small PAS-positive body inside its nucleus. Nuclei of nearby cells appear morphologically intermediate between lymphocyte and reticulum cell types. (B) Cell in center contains PAS-positive intranuclear body. Cell just below it is in mitosis. Cell slightly above it shows nuclear chromatin arranged as in plasma cell nuclei. At right-hand margin is cell with eccentric nucleus intermediate between that of reticulum cell and plasma cell.

tumors cell types may become transformed from one category into another.

But the dilemma is more apparent than real. Now that significant advances have been made in the chemistry of these tumors, it is no longer sufficient to classify them morphologically alone. Chemical and immunologic characteristics do not contradict morphologic classification; they complement it. We have now reached the stage where it is good judgment to classify these tumors under both their morphologic and immunochemical names.

Dr. Mendez: What was found in the bone marrow examined after the operation?

Dr. Ober: Ah yes, I had forgotten about that. After we examined the biopsy, it was suggested that a radiologic bone survey be done and that the sternal marrow be examined. Dr. Moynahan is not here today, but I can tell you that the x-ray survey of the skeleton showed no osteolytic lesions anywhere. The bone marrow was examined by Capt. Alan N. Goodman (MC) USA, of the First U.S. Army Medical Laboratory, who was kind enough to help out with immunoelectrophoretic studies as well. I have invited him here to tell us what he found.

Alan N. Goodman, M.D.: The bone marrow showed a slight increase in plasma cells (5 to 8 per cent), insufficient in number, distribution, or morphology to warrant any definite diagnosis.

The elevated serum globulin level directed our attention to further study of the "immunoglobulins," that is, the fraction of the serum concerned with antibody formation. We performed electrophoresis on cellulose acetate. This yielded a slightly different proportion of serum proteins from the one done in your laboratory using paper as supporting medium, but such differences are inherent in the two technics (Fig. 2). The important feature was the same, namely, a pronounced increase in the globu-

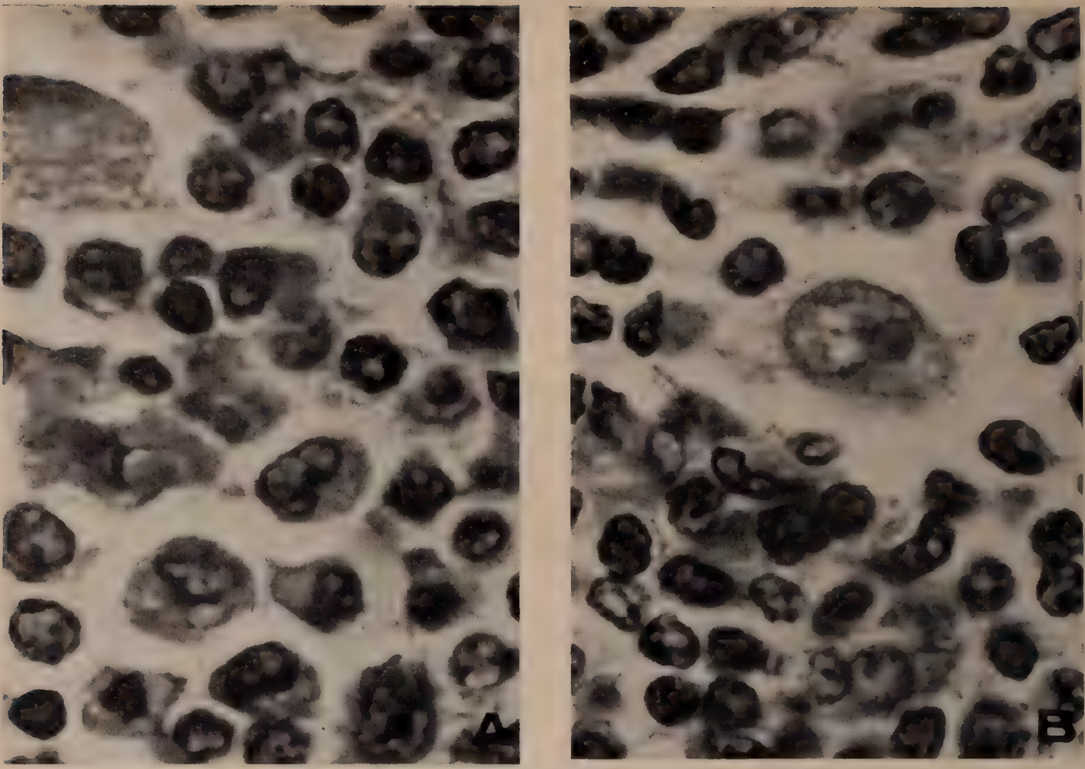

FIGURE 7. (A) Mixture of tumor cells of some diversity showing plasma cell and reticulum cell types as well as basic lymphoid tumor cell. PAS stain shows many cells with intracytoplasmic PAS-positive bodies. (B) Single reticulum cell seen in center with well-defined PAS-positive body in cytoplasm abutting eccentrically situated nucleus.

lin fraction, demonstrated in the densitometer as a relatively broad-based peak or "spike" in the gamma globulin fraction.

The next step was to further fractionate the gamma globulins. We did this by immunoelectrophoresis, which enables us to visualize the four main subdivisions of gamma globulin: gamma IgG (G), gamma IgM (M), gamma IgA (A), and gamma IgD (D). In this technic, antiserum is applied to the supporting agar gel medium and allowed to diffuse toward the patient's serum which has been previously separated into its components by electrophoresis. When the antigens combine with their specific antibodies, zones or bands of visible precipitation are formed.

This patient has an increase in three fractions of immunoglobulin, IgG, IgM, and IgA, the increase in IgM or macroglobulin being the most prominent (Fig. 8). Increases in the proportion of immunoglobulins to the rest of the serum protein is associated with increased production of plasma cells. This may be recognized in such specific disease entities as multiple myeloma, Waldenström's macroglobulinemia, and heavy chain disease. In the usual case of Waldenström's macroglobulinemia the IgM fraction is markedly increased, as in this case, but at the expense of the other three fractions. When a typical clinical or electrophoretic pattern is absent, as in this case, we can only continue to follow the patient closely, watching for the later development of a more specific pattern. Zawadzki and Edwards[9] have reported on 18 patients with dysgammaglobulinemia only 4 of whom had plasma cell myeloma. Nine of their patients merely showed elevated immunoglobulins on electrophoretic study but had no evidence of hematologic disease; 3 patients had isolated Bence Jones proteinuria; one had dysimmunoglobulinemia with immunoglobulin deficiency; and one had lanthanic macroglobulinemia.

In Waldenström's macroglobulinemia we

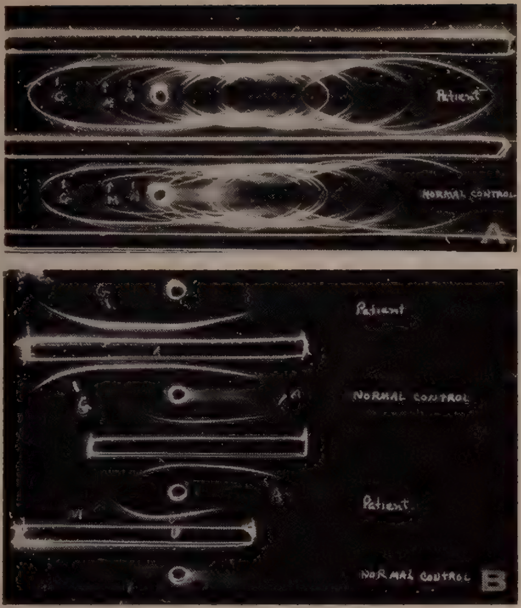

FIGURE 8. (A) Immunoelectrophoretic pattern showing increase and upward displacement of IgM in patient's serum compared with normal control. Note also increase of IgA appearing as heavier, more prominent band in comparison with normal. (B) Immunoelectrophoretic pattern obtained using antisera specific for IgG, IgM, and IgA considerably clarifies markedly increased IgM, moderately increased IgA, and increased IgG.

expect to find a decreased IgG and a decreased IgA. Clinically, we might see symptoms related to the large size of the IgM macroglobulin molecules which have a molecular weight of over 1 million. These symptoms might include increased blood viscosity with congestive heart failure and distention of the retinal veins (sausage effect), cryoglobulin effects such as Raynaud's phenomenon, protein complexing with coagulation defects, rouleaux formation, and a positive Coombs' test result with cross-matching difficulties. Bleeding manifestations such as petechiae, epistaxis, and even purpura may develop. Transient neurologic defects may result from a combination of any of these conditions. By the time the patient is symptomatic, anemia is almost always prominent, and hepatomegaly and splenomegaly may be present. Bence Jones proteinuria occurs in about 10 per cent of cases.

The indications for treatment are symptomatic and may require urgent plasmapheresis to decrease serum viscosity. Chemotherapy with chlorambucil or melphalan may then be instituted.

It is also possible that this patient might go on to develop one of the clinical forms of myeloma. In the classical form this should be accompanied by multiple punched-out lesions in the bony skeleton. In recent years, however, it has become apparent that there are forms of myeloma in which there is diffuse infiltration of the marrow by neoplastic plasma cells without any osseous lesions. Extraosseous plasmacytomas have also been described[10]; these are tumor-like accumulations of plasma cells outside the bone and bone marrow, and they may occur in almost any organ in the body.[8]

It should not be forgotten that increased levels of immunoglobulins have been reported in a number of patients with nonreticular neoplasms.

Final anatomic diagnosis

Atypical malignant lymphoma with macroglobulinemia

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Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Value of Autopsy

PRUTTING[1] STATED THAT "nothing is more instructive than autopsy. Autopsy is needed to correct false diagnoses and to enhance medical knowledge and diagnostic skill." This is particularly pertinent when death occurs unexpectedly during or following anesthesia, because this is too often automatically classified as an anesthetic death.

Two cases of sudden death, 1 prior to and 1 following spinal anesthesia, are reported with the respective autopsy findings "refuting, clarifying, modifying, or elaborating" the antemortem diagnoses.[1]

Case reports

CASE 1. *Sudden death prior to spinal block.* A sixty-nine-year-old man was scheduled for inguinal herniorrhaphy. His past history was irrelevant except for occasional complaints of precordial discomfort and treatment for elevated blood pressure some months previously. No antihypertensive drugs had been taken for the past eight weeks. There had been no prior hospitalization.

Examination revealed a man appearing considerably older than his stated age, lying comfortably in bed, without dyspnea or orthopnea. Heart and lungs were normal. Blood pressure was 150/100, pulse 76 and regular. The electrocardiogram showed a left bundle branch block. Hematocrit was 45 and electrolytes were within normal limits.

The patient consented to spinal anesthesia. He was medicated with meperidine hydrochloride (Demerol) 25 mg., hydroxyzine (Vistaril) 25 mg., and atropine 0.4 mg. forty-five minutes prior to operating time. On arrival in the operating room, his blood pressure was 130/90, pulse 88 and regular. With a slow infusion of 5 per cent dextrose and water running, he was placed in the left lateral lumbar position, and lumbar puncture was easily performed in the third lumbar interspace. At this time, the patient started to clear his throat "forcibly," and on inquiry did not seem able to speak. The nurse was instructed to take his pulse rate which was 160. The spinal needle was immediately withdrawn, and the patient was turned to the supine position. No spinal drug had been injected, and no vasopressor had been used. The patient expectorated pinkish sputum, and coarse moist rales were audible over both lungs. A diagnosis of acute pulmonary edema was made. Oxygen was administered under pressure, while lanatoside C (Cedilanid) 1.2 mg. in divided doses, meralluride (Mercuhydrin) 2 ml., and morphine sulfate 10 mg. were injected intravenously. The patient improved rapidly, was able to answer questions, and denied having had any chest pain. However, some thirty minutes later, he lost consciousness. An endotracheal tube was inserted. Copious amounts of frothy fluid were suctioned alternating with the administration of 100 per cent oxygen by positive pressure. The cardioscope disclosed a rate of 100 with an irregular irregularity. His blood pressure fell to 80/60, and a metaraminol (Aramine) infusion was started. Shortly there-

Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, June 26, 1967. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

after ventricular fibrillation developed. Despite repeated electric defibrillation and intravenous sodium bicarbonate and calcium gluconate, the patient expired approximately one hour after the initial episode. Clinical impression was acute massive myocardial infarction.

Necroscopy revealed acute pulmonary edema secondary to acute left ventricular failure as the cause of death. Principal findings were: (1) acute severe pulmonary congestion and edema, (2) bilateral pleural effusion, (3) myocardial hypertrophy, hypertensive type, (4) recent coronary thrombosis involving the left anterior descending branch of the left coronary artery, (5) old myocardial infarction, and (6) severe atherosclerosis of the coronary arteries with an old occlusion of the right coronary artery.

Case 2. *Sudden death following spinal block.* An eighty-four-year-old man was admitted to the medical service with vague abdominal pain, nausea, and vomiting. Twenty-four years before x-ray examination had revealed a duodenal ulcer, but no therapy had been undertaken. The patient was a rather heavy smoker and suffered from chronic bronchitis. While awaiting a radiographic gastrointestinal series, the patient fell and fractured his right hip. Preoperative physical examination disclosed an alert and cooperative man looking younger than his stated age. Blood pressure was 135/75, pulse 80 and regular. The heart was moderately enlarged, and there was a systolic apical murmur. Electrocardiogram showed occasional premature ventricular contractions and nonspecific S-T segment changes. The lungs had occasional dry rales, but the chest radiogram showed results within normal limits. It was elected to perform a unilateral spinal block. No premedication was given. Spinal anesthesia was accomplished uneventfully with tetracaine hydrochloride 8 mg. in dextrose 80 mg. with the patient in the lateral recumbent position lying on the diseased side, which position was maintained for twenty minutes. A sensory level to the ninth thoracic segment on the diseased side resulted with no sensory loss on the unaffected side. His blood pressure was maintained between 140/90 and 120/80 and pulse rate was 80 to 88 without drug therapy. The electrocardiogram, monitored continuously, was unchanged from the preoperative record. Five hundred ml. of whole blood were transfused to replace blood loss. The patient left the operating room in good condition following two and one-half hours of surgery. He continued to do well in the recovery room. About one hour later, he could move both legs, and no sensory level was demonstrable. Three hours after the end of surgery, he was signed out to return to his ward. Approximately ten minutes later, still in the recovery room, he was found dead. Resuscitative measures were unsuccessful. Clinical impression was pulmonary embolism, attributable to either fat or blood clot.

Autopsy revealed an acute perforation of a large duodenal ulcer with moderate bleeding into the peritoneal cavity. There was no embolization or myocardial infarction.

Comment

The first case is interesting inasmuch as the patient had two apparently painless coronary occlusions. His preoperative electrocardiographic finding of a left bundle branch block is indicative of organic cardiac disease. Left bundle branch block is a common occurrence in coronary artery disease. However, it may also be seen in those diseases which produce left ventricular hypertrophy, such as hypertension. The prognosis of this electrocardiographic finding depends on the underlying heart disease.[2] From the electrocardiographic report alone, a more thorough preoperative work-up did not seem indicated. In retrospect, however, the extent of the patient's preoperative assessment should have been influenced by the observation that he appeared so much older than his actual age.

Clinical experience has suggested that emotional excitement or unusual physical exertion may precipitate the development of myocardial infarction in patients suffering from coronary artery disease.[3] It may be postulated that apprehension and fear of the operation acted as a predisposing factor in this patient. Furthermore, the incidence of recurrence of a coronary occlusion is greater when the interval between infarction and surgery is less than two years and greatest if the interval is less than six months.[4]

Since the patient's first myocardial infarction was not diagnosed clinically, its occurrence within the last two years cannot be excluded.

The second patient died from perforation and bleeding of an old duodenal ulcer. Increased emotional tension plays an important role in the cause of ulcer formation. One may hypothesize that the anguish associated with an operation performed under adequate regional pain relief but without mental sedation may have been related to the fatal complication of the ulcer.

A better understanding of the relationship between surgery, anesthesia, and the development of lethal complications, that is, coronary occlusion, stress ulcer, and so on, can only be gained by postmortem examination of all patients who die in the preoperative period.

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Number one hundred seventy-six in a series of Clinical Anesthesia Conferences

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Cutaneous complications of smallpox vaccination

Some forms of dermatitis are contraindications to smallpox vaccination. R. J. Coskey, M.D., and H. G. Bryan, M.D., writing in a recent issue of *Michigan Medicine*, state that this vaccination should also be avoided in tuberculosis, open skin lesions, hypogammaglobulinemia, dysgammaglobulinemia, lymphoma, blood dyscrasias, pregnant women, and patients who are under treatment with corticosteroids, antimetabolites, and radiation therapy.

Vaccinia necrosum may occur in vaccinated patients with Hodgkin's disease, leukemia, blood dyscrasias, and other conditions in which corticosteroids, radiation, and antimetabolites may be given. Patients with this complication usually have no neutralizing antibodies to the vaccine virus. In this condition, the vaccination site fails to heal and gets progressively larger and necrotic.

Generalized vaccinia most usually develops from auto-inoculation, more rarely as a result of general infection. In the latter, it develops in four to ten days, progressing from papules to vesicles, involving any part of the skin surface.

Eczema vaccinatum is usually a complication of atopic dermatitis, but it may occur in other types of dermatitis. For the patient who has had atopic dermatitis which has cleared, some suggest the use of attenuated vaccine or concomitant use of immune globulin. In eczema, some have recommended vaccination if the child is over five years old and the eczema has not manifested itself for one year.

Auto-inoculation may produce secondary vaccinal lesions. If this occurs around the eye, it may cause relatively painless ulcerative blepharoconjunctivitis which may lead to cilia loss, lid scarring, keratitis, and corneal opacities. It may also lead to generalized vaccinia.

Roseola vaccinia is a minor complication, appearing first at the vaccination site and spreading to other parts. Erythema multiforme and urticaria are less common. Secondary infections may produce impetigo, cellulitis, erysipelas, furunculosis, and lupus vulgaris.

Complications such as eczema vaccinatum, generalized vaccinia, vaccinia necrosum, and auto-inoculation, should be treated with human vaccinia immune globulin in a dose of 0.6 to 1.22 cc. per kilogram. With this, methisazone (Marboran), 200 mg. per kilogram may be used. Nonviral eruptions are generally treated symptomatically with antihistamines and soothing lotions. Corticosteroids must be avoided. Bacterial infections are treated with the appropriate antibiotic.

Electrocardiograms of the Month

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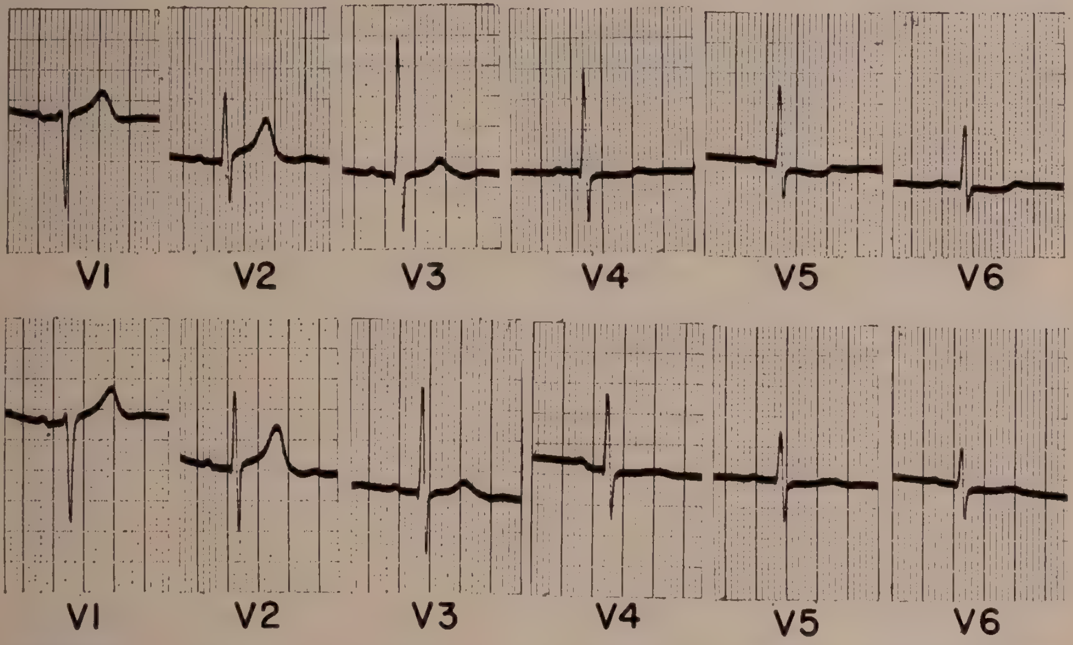
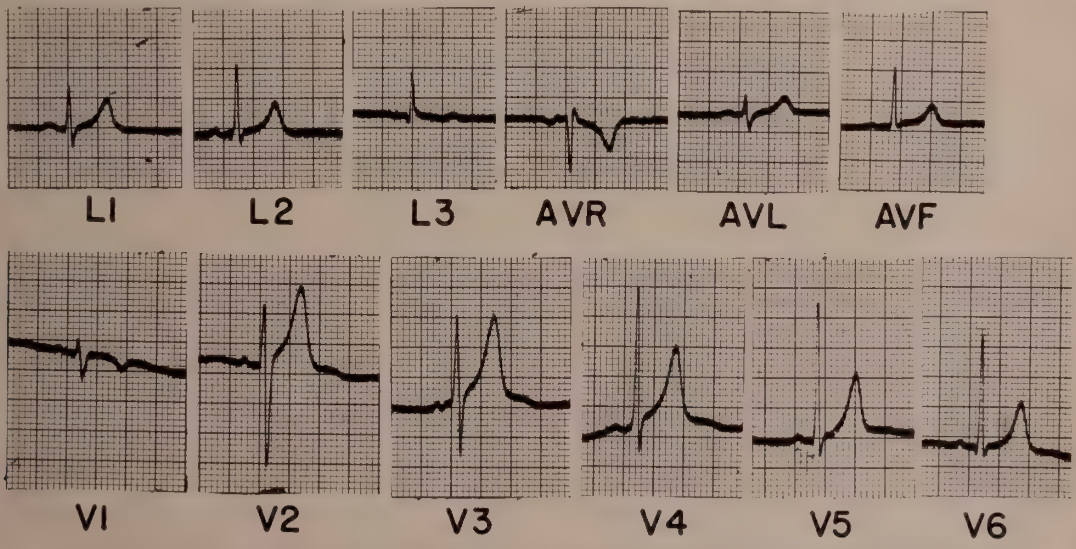


QUESTION 17. Two sets of V leads taken from a sixty-eight-year-old hypertensive female with known arteriosclerotic heart disease. She entered the hospital with atypical chest pain and possible recent myocardial damage.



QUESTION 18. A routine tracing obtained on an eighteen-year-old boy with vague chest pain.

Electrocardiograms of Month

ELUCIDATION

QUESTION 17. V_1, V_2, and V_3 are similar in both tracings. However, in V_4, V_5, and V_6 there are differences. In the upper tracing the S-T segment is slightly depressed and the T wave appears diphasic. In the bottom tracing the T waves are low but upright. To determine whether changes are significant, it is important that precordial electrodes be placed properly. The bottom tracing was taken one interspace below the top tracing, giving a false appearance of significant S-T and T-wave changes.

In comparing serial electrocardiograms, careful placement of the precordial leads is important.

QUESTION 18. There is regular sinus rhythm. The T waves in leads V_2 to V_4 are tall and peaked; otherwise the electrocardiogram appears unremarkable. Such tall T waves may occur in patients with acute posterior wall infarction or hyperkalemia. They may also occur in normal young people. This patient had no evidence of heart disease.

Vincristine sulfate in Wilms's tumor

Histories of 4 children with unilateral Wilms's tumor are presented in a recent issue of *J.A.M.A.* by M. P. Sullivan, M.D., W. W. Sutow, M.D., A. Cangir, M.D., and G. Taylor, M.D., to illustrate the effectiveness of vincristine sulfate (Oncovin) in converting inoperable tumors to operability within a relatively short period after start of therapy. The conventional approach to these situations is the use of irradiation, often combined with the administration of dactinomycin. After 2 to 4 doses of vincristine, regression was dramatic in all 4 cases, with tumors rapidly becoming operable. Periods elapsing from the start of therapy to nephrectomy ranged from twelve days to three weeks. After the operation, weekly injections of vincristine sulfate were continued for twelve weeks, and the abdominal tumor was irradiated.

Of the 4 children, there were 3 girls and 1 boy. In all cases there was abdominal pain, hematuria, and demonstrable mass in the left flank. The rapid antitumor effect of vincristine, even against large masses, suggests its use in children with inoperable primary or metastatic Wilms's tumor.

The preoperative dose was 0.05 mg. per kilogram of body weight. Two to 4 injections were given and spaced at five-day intervals. Fever, which occurred in all 4 patients, was presumed to be related to the breakdown and excretion of tumor cells, since there was no clinical or laboratory evidence of infection. There was some hematopoietic depression in each of these children, occurring late in the course of postoperative treatment. Other complications were: hematuria, 1; hyperuricemia, 1; intussusception, 1; postradiation obstruction, 1; and ileus, 1. All 4 children had, to some extent, alopecia, weight loss, and diminution of deep tendon reflexes, particularly in the lower extremities. These were reversible in all cases. Hyperplasia of the thymus gland occurred in 1 case, the biologic significance of which was not known.

Case Report

Symptomatic Cascade Stomach Treated Surgically

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CASCADE STOMACH is a rarely symptomatic anatomic variant seen occasionally on upper gastrointestinal series. Often it is associated with distention and gas in the splenic flexure of the colon. A recent case seen at the University of Rochester Medical Center is unusual in that the patient was incapacitated by symptoms from a cascade stomach, and surgery was required for relief. In reviewing the English literature, reference was found to only 2 previous cases with this condition which were treated surgically.

Case report

A sixty-three-year-old unmarried, white, female advertising writer was first seen in October, 1965, with a three-year history of postprandial bloating, nausea, and occasional regurgitation. These symptoms were preceded by a sensation of "bubbling" and at times by hiccups. At the onset, the symptoms occurred two or three times a month but then increased in frequency so that during the preceding year they were experienced a few hours after each meal, particularly when eating in the sitting position. Toward the end of the day, the patient would often become violently ill and start retching but rarely vomit. She found that she could be partially relieved of her symptoms by semirecumbency on her right side while eating which the patient characterized as "assuming the Cleopatra position." Her symptoms were much less severe on Sundays when she stayed in bed until noon and were made worse by long periods of walking or driving her automobile. Because of her need to "recline while dining" or to lie down soon after meals, the patient's social and business life was critically curtailed. She feared eating and, as a consequence, had lost 20 pounds in the preceding year.

In addition to these complaints, the patient also gave a history of constipation since early childhood. At times she would go seven or eight days without a bowel movement. She took a variety of cathartics as well as daily enemas with only partial success. In 1950 a sigmoid colectomy had been done because a barium enema showed a megacolon with a markedly redundant sigmoid loop. Her constipation had improved for several years following surgery but then had recurred. She noted that her postprandial symptoms were particularly severe if her bowels had not functioned for five or six days and were less significant the day or two after a bowel movement.

Her past history and review of systems were negative except for a right radical mastectomy for carcinoma of the breast performed in 1951.

On physical examination she was found to be a tall, lean, brisk, and alert female in no distress. The abdomen was thin, soft, and flaccid. Several gas-filled loops of bowel were palpable in the lower abdomen. Bowel sounds were of normal quality. Pelvic and rectal examinations gave negative findings.

The admission complete blood count and urinalysis gave normal results as did the serum electrolytes. A stool guaiac test gave negative findings. Total protein was 7.4 Gm. per 100 ml. with 5 Gm. per 100 ml. of

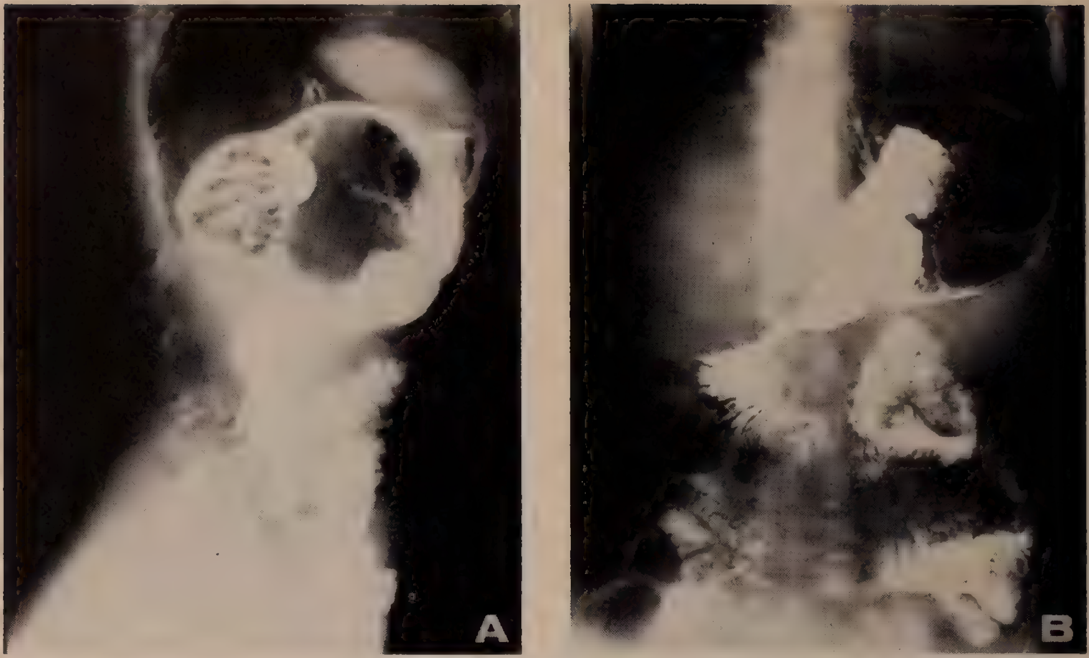

FIGURE 1. Cascade stomach. (A) Upper gastrointestinal series at six hours on lateral view with three separate loculations. Large air bubble "trapped" in middle locule. Stomach lies transversely as result of high fixation of antrum which has assumed anterior position. (B) Anteroposterior view on upper gastrointestinal series. Anterior and high positions of antrum can be seen in front of two large air-filled loculi.

albumin, and the serum cholesterol was 220 mg. per 100 ml. Overnight gastric analysis yielded a volume of 156 ml. with 12 units of free acid and 19 units total acid.

A chest x-ray demonstrated no cardiac or pulmonary abnormal condition. Considerable gas was noted in distended bowel beneath the left hemidiaphragm.

An upper gastrointestinal series showed a well-outlined esophagus without lesions. No hiatus hernia was present. The stomach filled readily and was seen with a high cascade deformity (Fig. 1). The esophagogastric junction was normal in position while the pars media was displaced upward and anteriorly lying directly beneath the dome of the left diaphragm at a level higher than the cardia. The antrum lay anterior to this at the level of the lower margin of the xiphoid process of the sternum, and the pylorus and duodenal bulb were in a partially inverted position. Barium first filled a large posterior pouch and subsequently overflowed into the body and then into the antrum. The duodenal loop and ligament of Treitz were in normal position, and the upper small intestine was unremarkable. There were no intrinsic lesions of the stomach or duodenum. Films were taken in the standing and recumbent positions, and it was noted that the posterior pouch was more prominent when the pa-

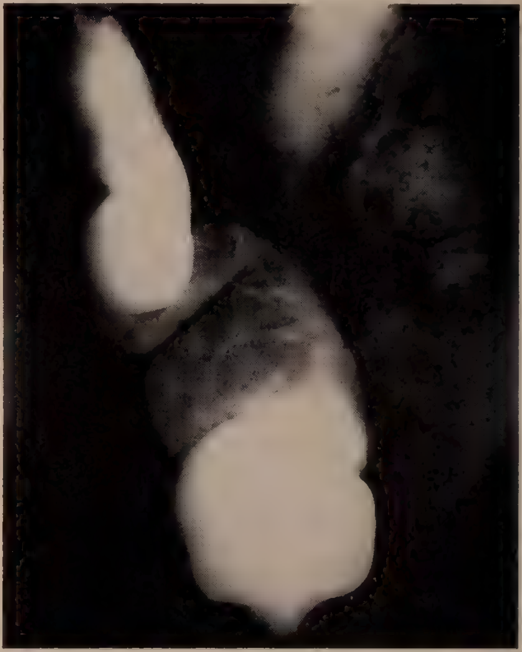

FIGURE 2. Barium enema showing markedly redundant and dilated descending colon and rectum with poor haustral markings. Poor filling reflection of degree of dilatation of bowel.

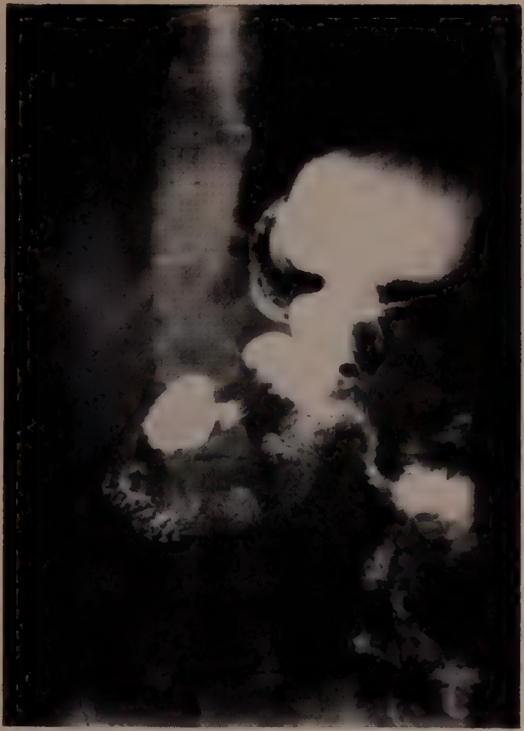

FIGURE 3. Postoperative upper gastrointestinal series immediately after swallowing barium. Although cascade deformity still persists, stomach empties readily through both pylorus and gastrojejunostomy.

tient was erect. Several fluid levels were seen in the colon in the upright position with a large gas bubble in the splenic flexure lying directly beneath the upwardly displaced pars media of the stomach.

A barium enema demonstrated a large, moderately atonic megacolon (Fig. 2). Three thousand milliliters of barium did not completely fill the colon. No intrinsic or extrinsic lesions of the large bowel were present.

It was felt that the dilated splenic flexure of the colon was contributing to the cascade deformity and interfering with proper emptying of the stomach. Conservative therapy with enemas and many drugs provided no relief, and the patient actively sought surgical help. After considerable deliberation, it was elected to operate on her with the primary objective of removing the left colon.

At surgery, a rectal biopsy was done initially, and frozen section showed ganglion cells, thus ruling out Hirschsprung's disease. The abdomen was then entered through a midline incision. The most remarkable finding on entering the peritoneal cavity was the presence of an immensely dilated and redundant large intestine. This involved the entire colon from the cecum to the upper rectum. There appeared to be some tone to the rectal segment as opposed to marked flaccidity of the more proximal large intestine. The stomach was in a transverse position with fixation of its distal portion high under the liver. There were no intrinsic lesions of the stomach or duodenum.

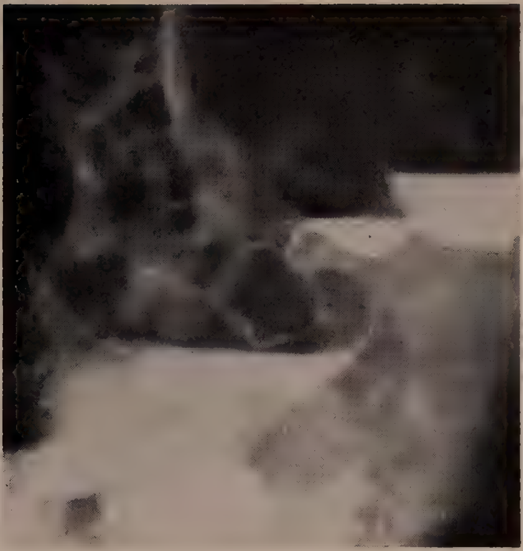

FIGURE 4. "Cup and spill" feature of cascade stomach in patient presented. Larger air-filled level in posterior locule behind smaller anterior pouch.

The hepatic flexure, transverse colon, and splenic flexure were resected and an end-to-end anastomosis carried out between the midascending and sigmoid colon. A short loop of jejunum was then anastomosed to a dependent portion of the distal part of the stomach.

The patient's postoperative course was uncomplicated except for a period of prolonged paralytic ileus lasting nine days.

When seen five months following surgery, she was still experiencing occasional bouts of nausea. However, she was now able to eat in the upright position, her bowels were functioning normally, and she had gained 16 pounds. She appeared remarkably healthy. An upper gastrointestinal series showed persistence of the cascade deformity of the stomach, although it was now less pronounced and emptied readily (Fig. 3).

Comment

Cascade stomach is seen on 5 to 10 per cent of upper gastrointestinal series. It is generally regarded as a variant of the normal gastric contour. The stomach lies transversely as a result of high fixation of the pylorus and duodenum and is separated into two pouches or loculi. Loculation is caused by elevation and forward displacement of the greater curvature and is frequently produced by gaseous distention of the splenic flexure of the colon. On rare occasion, intragastric or extragastric organic disease may distort the shape and position of the stomach to simulate the appearance of the cascade deformity on x-ray film. The pars cardia and fundus form the upper or posterior pouch which is dependent in the upright position. With a barium meal, the posterior pouch fills first and then overflows or "cascades" into the anterior or lower pouch composed of the pars media and pars pylorica; hence the term "cup and spill stomach" (Fig. 4).

The intimate relationship of the cascade stomach to the distended splenic flexure can be demonstrated by (1) disappearance of the cascade deformity when the stomach is distended with barium so as to overcome the pressure of the gas-filled colon, (2) disappearance of symptoms when the colon is emptied of gas with the administration of an enema or cathartic, and (3) introducing gas into the colon and reproducing the cascade deformity of the stomach.

It is generally agreed that the cascade stomach per se causes no symptoms. However, if the person with such a deformity should become aerophagic, he is seen with the "magenblase syndrome." This syndrome consists of postprandial epigastric fullness, bloating, or pressure relieved by eructation of air caused by an enlarged gastric air bubble. Aerophagia leads to trapping of air in the abnormal stomach that often cannot be relieved by belching because of anatomic reasons. The stomach, dilated with a gas bubble, becomes overdistended following a meal and produces symptoms of pressure and nausea. The swallowed air, which cannot be eructated, passes through the gastrointestinal tract and is frequently held up in the splenic flexure, particularly if the patient is constipated. A "traplike" mechanism occurs in the sharply angulated splenic flexure which is attached high to the diaphragm. This is aggravated by a sagging transverse colon and the weight of the stool-filled descending colon. Distention of the splenic flexure then exaggerates the cascade deformity, and a vicious cycle of symptoms is produced. Characteristically the severity of distress increases with passage of the day as aerophagia increases the size of the gastric and splenic flexure air bubbles. The case presented demonstrates clearly the cascade stomach with three rather than the usual two loculations. Reclining on the right side in the "Cleopatra position" aided drainage of the proximal pouches. Aerophagia, constipation, and dilatation of the colon aggravated her condition.

Treatment of symptomatic cascade stomach is directed primarily toward overcoming the aerophagic habit. The ill effects of air swallowing must be explained to the patient and appropriate psychotherapeutic measures applied if necessary. The diet should be bland, and small meals with between-meal feedings are tolerated best. Assumption of the right lateral recumbent position during and for a brief time after meals will aid in emptying of the upper locule during the period of active symptoms. Adequate bowel regulation to avoid constipation is particularly important.

Surgery for cascade stomach is most unusual. In the only report found, Bockus mentions 2 patients with symptomatic cascade stomach treated successfully with subtotal gastric resection.* Surgery relieved the symptoms of the patient presented in this report by eliminating the gas-filled splenic flexure of the colon and by producing better drainage of the dilated stomach. It is possible that relief could have been obtained solely by colon resection. The patient's residual symptoms of eructation following surgery confirm aerophagia as a significant contributing factor to the magenblase syndrome.

Summary

An unusual case of symptomatic cascade stomach produced by gaseous distention of the splenic flexure is discussed. Effective treatment consisted of colon resection and gastrojejunostomy.

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* Bockus, H. L.: Gastroenterology, 2nd ed., Philadelphia, W. B. Saunders Company, 1963, vol. 1, p. 905,

Letters to the Editor

Nestorians in medical history

To the Editor: Recently the readers of this JOURNAL were privileged to read a charming history written by the Reznikoffs[1] depicting the great role played by remnants of the ancient Assyrians in the preservation of classical Greek and medieval medical knowledge, and also in its transmission to modern medical writers. The article written by these distinguished physicians was so comprehensive and convincing that I hesitated to write this addendum. But in view of the fact that their article did not bring the reader up to date and because the more recent developments in the history of these people are of a very tragic nature, I decided to write the following note on this subject.

During the Middle Ages, the Assyrians (the name the Nestorians preferred to be called) had enjoyed a relative degree of freedom from religious or ethnic persecution, and their life at the time of the Ottoman Empire was essentially the same as that of other ethnic and religious minorities in that vast Empire. Thus, from 1516 until the dismemberment of the Turkish Empire they lived, more or less undisturbed, mainly in Iraq. Unfortunately, once Iraq became independent, the persecution of the minority groups living in that country was not late in making its appearance. While the Jews were able to leave for Palestine (later Israel) and while the million Kurds could defend themselves fairly well in their mountainous strongholds in Northern Iraq, the Nestorians were out of luck: they had nowhere to go, nobody to care for them, and they were too weak to repel the brutal onslaught of the inhospitable Moslem hosts. In fact out of approximately 100,000 Assyrians who lived in Iraq about three decades ago, perhaps only 30,000 still survive. The remainder have been "taken care of" by various means. In fact Stafford,[2] British administrative inspector in Iraq, gives the following eye-witness account of one of the massacres perpetrated under hapless Assyrians: "Machine gunners set up their guns outside the windows of the houses in which the Assyrians had taken refuge, and fired among them until not a man was left standing in the shambles. Women were ripped open with knives and then made sport of while they were in a state of agony. Little girls of nine were raped and burned alive."

This and similar massacres and pogroms were executed by regular Iraqi troops. . . .

Perhaps at this point we should mention the fact that about twenty years ago when the United Nations was born in San Francisco, a delegation was sent by the Nestorians to confer with the representative of the Jewish agency, Dr. Abba Hillel Silver. They asked him, as "the Great Leader of the Great Jewish People," to help them, the Assyrians, in their struggle for freedom and independence, just as he was struggling for an independent Jewish State in Palestine. It was pathetic to hear the descendants of Tiglat-Pilesser, Sargon, Asurbanipal, and other great warriors of the ancient past imploring the descendants of those same Jews whom the Assyrians vanquished twenty-eight centuries ago. They invoked the eternal bonds of friendship between the two Semitic peoples. . . . I must admit that since ancient history is my hobby, I had tears in my eyes when I looked at these people.

Unfortunately, nothing was done, and nothing is being done for the unhappy victims of Moslem intolerance and fanaticism. If that great debating club, the United Nations, would show even the slightest interest in the welfare, nay in the very survival, of the pitiful remnants of that old and glorious race of warriors, perhaps a place under the sun could be found for them. But time is running out very fast.

MARDOQUEO I. SALOMON, M.D.

1350 Madison Avenue
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References

1. Reznikoff, P., and Reznikoff, D. G.: Role of Nestorians in preservation of Greek medicine, NEW YORK STATE J. MED. 67: 3263 (Dec.) 1967.

2. Stafford, A. S.: The Tragedy of the Assyrians, London, 1935, pp. 174–177.

Necrology

Albert William Beck, M.D., of Monroe, died on May 12, 1967, at the age of eighty-five. Dr. Beck graduated in 1905 from Long Island College Hospital. He was a consulting physician at Cornwall Hospital. Dr. Beck was a member of the American Geriatrics Society, the Orange County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Lloyd S. Benedict, M.D., of Wellsville, died on October 1, 1967, at the age of seventy-seven. Dr. Benedict graduated in 1913 from University and Bellevue Hospital Medical College.

Benjamin Berger, M.D., of New York City, died on January 30 at the age of eighty-four. Dr. Berger graduated in 1906 from Long Island College Hospital. He was a member of the American Academy of Dermatology, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Frank Paul Calabro, M.D., of Mastic Beach, died on January 11 at the age of sixty-seven. Dr. Calabro graduated in 1924 from Tufts University School of Medicine.

Albert Henry Faber, M.D., of New York City, died on January 28 at the age of seventy-three. Retired, Dr. Faber graduated in 1918 from Albany Medical College. He was a member of the Association of Life Insurance Medical Directors of America.

Harry Fabricant, M.D., of Brooklyn, died on January 20 at the age of fifty-nine. Dr. Fabricant graduated in 1935 from the University of Durham Medical School, Kings College, Newcastle-upon-Tyne, England. He was an associate attending physician in peripheral vascular disease at Coney Island Hospital, an attending physician in general practice at Unity Hospital, an assistant attending physician at Caledonian and Jewish Chronic Disease Hospitals, and an associate attending physician in peripheral vascular disease at Brooklyn Hebrew Home and Hospital for the Aged. Dr. Fabricant was a member of the American Geriatrics Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Henry Allen Firestone, M.D., of North Miami Beach, Florida, formerly of Brooklyn, died on January 12 at the age of seventy. Dr. Firestone graduated in 1923 from the University of Pennsylvania School of Medicine. Retired, Dr. Firestone was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Joseph Freedman, M.D., of Lakeland, Florida, formerly of Brooklyn, died on January 17 at the age of sixty-seven. Dr. Freedman graduated in 1924 from McGill University Faculty of Medicine, Montreal. He had been an associate attending obstetrician and gynecologist at Coney Island Hospital. Dr. Freedman was a Fellow of the American College of Obstetricians and Gynecologists and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Harry Gans, M.D., of New York City, died on January 11 at the age of eighty-six. Dr. Gans received his medical degree from the University of Wurzburg in 1906. He was an emeritus gynecologist at Lenox Hill Hospital Outpatient Department. Dr. Gans was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edith R. Hatch, M.D., of Buffalo, died on January 22 at the age of ninety-one. Dr. Hatch graduated in 1906 from the University of Buffalo School of Medicine. Retired, she had been an organizer of the Babies Milk Clinic. Dr. Hatch was a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Joseph Hicks, M.D., of Middletown, died on February 6 at the age of seventy-nine. Dr. Hicks graduated in 1913 from the University of Toronto Faculty of Medicine. He was a consulting eye, ear, nose, and throat physician at the Elizabeth A. Horton, Arden Hill (Goshen), St. Francis (Port Jervis), and St. Anthony (Warwick) Hospitals. Dr. Hicks was a Diplomate of the American Board of Otolaryngology, a Fellow of the American College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology, the Orange County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

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PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, paresthesias, purpura, rash, urticaria, photosensitivity or other hypersensitivity reactions may occur. Cutaneous vasculitis precipitated by thiazide diuretics has been reported in elderly patients on repeated and continuing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice. Whenever adverse reactions are moderate or severe, the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, and pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS (including ocular) sensitization have been noted. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure. Since reserpine may increase gastric secretion and motility it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other gastrointestinal disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Anxiety, depression, or psychosis may develop. Pre-existing depression may be aggravated.

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Franklin L. Kessler, M.D., of White Plains and Peekskill, died on February 12 at the age of sixty-eight. Dr. Kessler graduated in 1925 from Albany Medical College. He was a consulting psychiatrist at Peekskill Hospital. Dr. Kessler was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

W. Ross McCarty, M.D., of New York City, died on February 17 at the age of sixty-two. Dr. McCarty graduated in 1932 from Queen's University Faculty of Medicine, Kingston, Ontario. He was an attending surgeon at University and Doctors Hospitals, a consulting surgeon at Booth Memorial (Queens) and St. Agnes (White Plains) Hospitals, and an associate professor of surgery at New York University Medical Center. Dr. McCarty was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the American Geriatrics Society, the Pan-American Medical Association, the New York Academy of Medicine, the New York Surgical Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Lorraine Asselin McGauley, M.D., of Schenectady, died on September 18, 1967, at the age of sixty. Dr. McGauley graduated in 1932 from the University of Vermont College of Medicine and was a member of the Schenectady County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Thomas Hugh McGrail, M.D., of Albany, died on February 4 at the age of eighty-one. Dr. McGrail graduated in 1914 from Albany Medical College. Retired, he was a member of the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Philip Taylor McGreevy, M.D., of Massena, died on February 2 at the age of sixty-five. Dr. McGreevy graduated in 1927 from the University of Vermont College of Medicine. He was an attending radiologist at Massena Memorial Hospital. Dr. McGreevy was a member of the Radiological Society of North America, Inc., the Radiological Society of New York State, the St. Lawrence County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Russell Perry Morrison, M.D., of Brooklyn, died on July 9, 1967, at the age of eighty-four. Dr. Morrison graduated in 1908 from Long Island College Hospital.

Melchior Vincent Okie, M.D., of Buffalo, died on January 7 at the age of sixty. Dr. Okie graduated in 1931 from the University of Buffalo School of Medicine. He was a senior attending surgeon at Mercy Hospital. Dr. Okie was a Diplomate of the American Board of Surgery, a Fellow of the International College of Surgeons, and a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Victor A. Pchellas, M.D., of Buffalo, died on October 25, 1967, at the age of eighty-five. Dr. Pchellas graduated in 1905 from the University of Buffalo School of Medicine. He was a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Boris Pollock, M.D., of New York City, died on January 12 at the age of seventy-nine. Dr. Pollock received his medical degree from the University of Moscow in 1913. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harry Roth, M.D., of Brooklyn, died on November 30, 1967, at the age of eighty-two. Dr. Roth graduated in 1908 from University and Bellevue Hospital Medical College.

Isadore Roth, M.D., of Brooklyn, died on July 6, 1967, at the age of seventy-nine. Dr. Roth graduated in 1920 from New York Homeopathic Medical College and Flower Hospital.

Victor Edward Singer, M.D., of New York City, died on February 15 at the age of seventy. Dr. Singer received his medical degree from the University of Vienna in 1923. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

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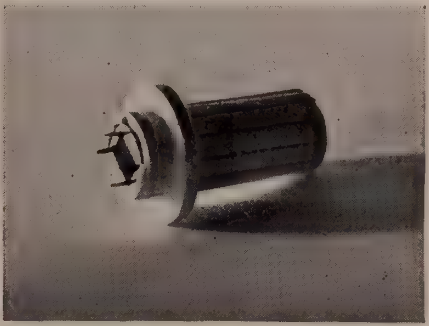

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When somatic symptoms persist despite negative objective findings, you may suspect a psychogenic cause. As a useful measure, consider adjunctive Valium (diazepam). It helps relieve the psychic tension that often finds its outlet in somatic symptoms. In some patients it's the heart. In others, the troublesome symptoms may be gastrointestinal, genitourinary, respiratory, dermatologic or musculoskeletal.

cardiac symptoms...often the somatic voice of psychic tension

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in: skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders; athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

Contraindications: Known hypersensitivity to drug; children under 6 months of age; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in treatment of psychotic patients, and should not be employed in lieu of appropriate treatment. As with most CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may also be associated with temporary increase in frequency and/or severity of seizures. Advise patients against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance. Keep addiction-prone individuals (such as drug addicts or alcoholics) under careful surveillance because of their predisposition to habituation and dependence. Use of any drug in pregnancy, lactation or in women of childbearing age requires that potential benefit be weighed against possible hazard.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium, such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants. Employ usual precautions in the severely depressed or in those with latent depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed or tolerated).

Adverse Reactions: Side effects most commonly reported: drowsiness, fatigue and ataxia. Infrequently encountered: confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo and blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, use of the drug should be discontinued. Because of isolated reports of neutropenia and jaundice, periodic blood counts and liver function tests are advisable during long-term therapy. Minor changes in EEG patterns (low-voltage fast activity) observed during and after therapy and are of no known significance.

Dosage: Individualize for maximum beneficial effect. *Adults:* Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See **Precautions.**) *Children:* 1 to 2 ½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

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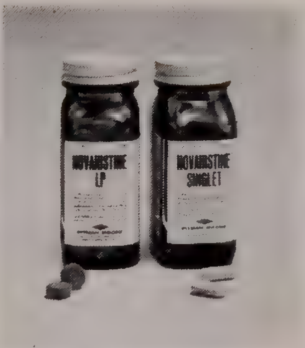

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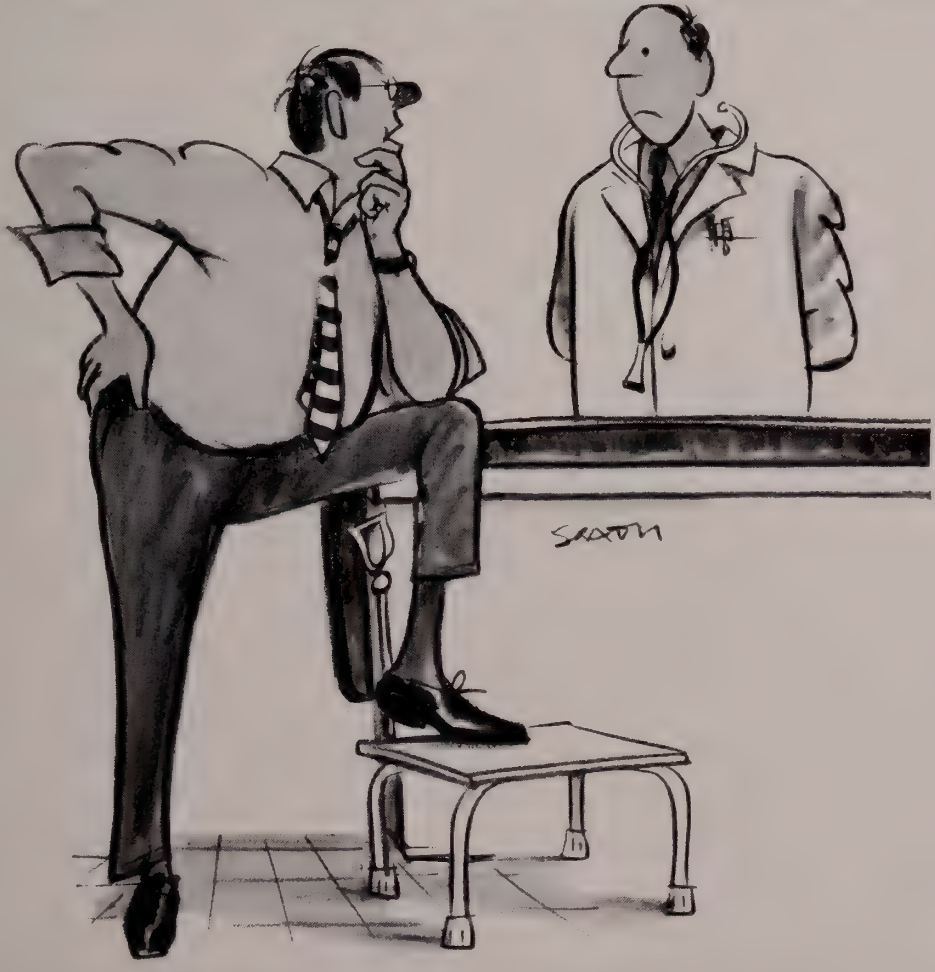

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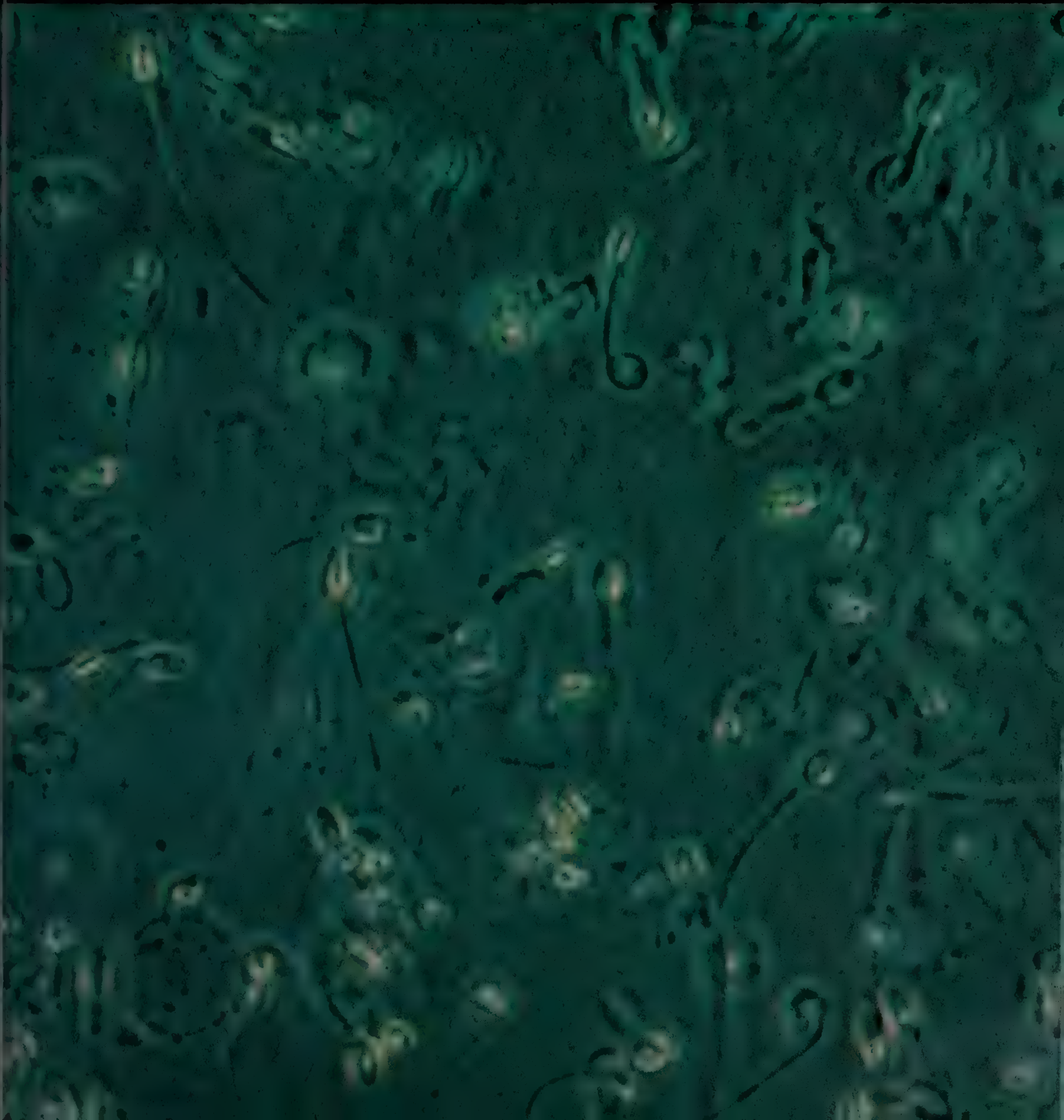
When the talk turns to oral contraceptives, it makes medical sense to remember low-dose Norinyl®-1.

(norethindrone 1mg. c̄ mestranol 0.05mg.)

Turn page for contraindications, precautions and side effects.



Reduction of oral contraceptive dosage to the lowest effective levels is a well-accepted principle of conservative medical practice. In keeping with this view, Norinyl is now also available as Norinyl-1, containing exactly one half the previous dosage of norethindrone and mestranol. Clinical experience has established that effective fertility control can be achieved with the same degree of reliability and safety with new Norinyl-1 when taken as directed.

What about switching patients from higher dosage forms?

In transferring patients to low-dose Norinyl-1 from higher-dosage oral contraceptives, some breakthrough bleeding may occur in the early cycles. In the majority of cases the bleeding episode is mild and self-limited. The long-term advantages of the lower dosage form should be weighed against the inconvenience of possible breakthrough bleeding in the individual patient.

Contraindications: 1. Patients with thrombophlebitis or with a history of thrombophlebitis or pulmonary embolism. 2. Liver dysfunction or disease. 3. Patients with known or suspected carcinoma of the breast or genital organs. 4. Undiagnosed vaginal bleeding.

Warnings: 1. Discontinue medication pending examination if there is sudden partial or complete loss of vision or if there is a sudden onset of proptosis, diplopia or migraine. If examination reveals papilledema or retinal vascular lesions, medication should be withdrawn. 2. Since the safety of NORINYL-1 (norethindrone 1 mg. with mestranol 0.05 mg.) in pregnancy has not been demonstrated, it is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. 3. Detectable amounts of the active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this dose to the infant has not been determined.

Precautions: 1. The pretreatment physical examination should include special reference to breast and pelvic organs, as well as a Papanicolaou smear. 2. Endocrine and possibly liver function tests may be affected by treatment with NORINYL-1. Therefore, if such tests are abnormal in a patient taking NORINYL-1 it is recommended that they be repeated after the drug has been withdrawn for two months. 3. Under the influence of estrogen-progestogen preparations, preexisting uterine fibromyomata may increase in size. 4. Because these agents may cause some degree of fluid retention, conditions that may be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation. 5. NORINYL-1 should be used with caution in patients with a history of cerebrovascular accident. 6. In relation to breakthrough bleeding, and as in all cases of irregular bleeding *per vaginam*, nonfunctional causes should be borne in mind. In cases of undiagnosed vaginal bleeding, adequate diagnostic measures are indicated. 7. Patients with a history of psychic depression should be carefully observed and the drug discontinued if the depression recurs to a serious degree. 8. Any possible influence of prolonged NORINYL-1 therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. 9. A decrease in glucose tolerance has been observed in a small percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be carefully observed while receiving NORINYL-1 therapy. 10. Because of the occasional occurrence of thrombophlebitis and pulmonary embolism in patients taking oral contraceptives, the physician should be alert to the earliest manifestations of the disease. 11. Because of the effects of estrogens on epiphyseal closure, NORINYL-1 should be used judiciously in young patients in whom bone growth is not complete. 12. The age of the patient constitutes no absolute limiting factor, although treatment with NORINYL-1 may mask the onset of the climacteric. 13. The pathologist should be advised of NORINYL-1 therapy when relevant specimens are submitted.

Side effects observed in patients receiving oral contraceptives: The following adverse reactions have been observed in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement and secretion), change in weight (increase or decrease), changes in cervical erosion and cervical secretions, suppression of lactation when given immediately postpartum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals, mental depression.

Although the following side effects have been reported in users of oral contraceptives, no cause and effect relationship has been established: anovulation post-treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption, itching.

The following occurrences have been observed in users of oral contraceptives (a cause and effect relationship has been neither established nor disproved): thrombophlebitis, pulmonary embolism, neuro-ocular lesions.

The following laboratory results may be altered by the use of oral contraceptives: increased sulfobromophthalein and other hepatic function tests, coagulation tests (increase in prothrombin, Factors VII, VIII, IX and X), thyroid function (increase in PBI and butanol extractable protein-bound iodine and decrease in T^3 values), metyrapone test, pregnanediol determination.

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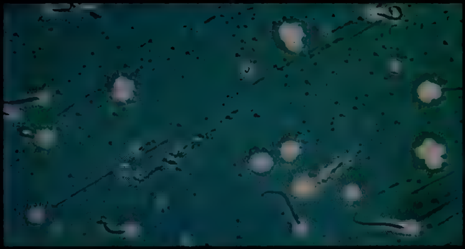
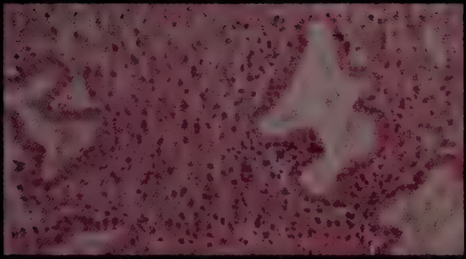
Untreated Patient

Cervical mucus at midcycle is usually thin and watery, with Spinnbarkeit (stretchability) of 15 to 20 cm.



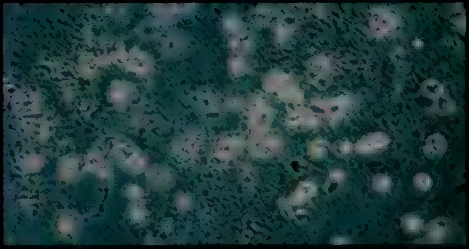
Spermatozoa appear healthy, active, freemoving.



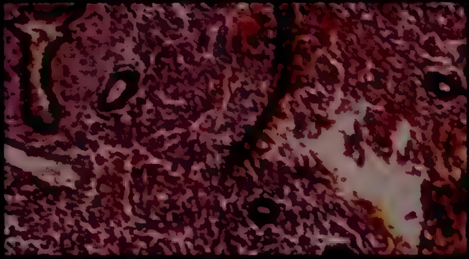
Endometrium of untreated patient is receptive to the fertilized ovum during secretory phase.

Norinyl-1 Patient

Cervical mucus at midcycle is scanty, viscous—with Spinnbarkeit of 1 cm. or less.



Immobile spermatozoa as they appear in cervical mucus taken from patient treated with Norinyl-1.



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Book Notes

Diabetes Mellitus: Diagnosis and Treatment. Volume II. Edited by George J. Hamwi, M.D., and T. S. Danowski, M.D. Octavo of 250 pages, illustrated. New York, American Diabetes Association, 1967. $2.50.

This volume is a supplement to volume I, published in 1964. Prepared under the auspices of the Committee on Professional Education of the American Diabetes Association, it aims to provide practical, concise, and up-to-date information to a greater number of physicians. There are over 40 contributors to this new volume, and many new chapter titles have been added. It is planned that the first volume will be reprinted so that it will also be available.

Emergencies in Medical Practice. Edited by C. Allan Birch, M.D. Eighth edition. Octavo of 852 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd. (Baltimore, The Williams and Wilkins Company), 1967. $12.50.

The form of this new edition remains the same as before but the contents have been thoroughly revised and pruned. The aim of this work also remains the same—to provide information as accurate and explicit as possible for the practitioner and hospital physician faced with an acutely ill patient or a critical situation. As a mere list of treatments would be dull, some discussion has been included on diagnosis and the principles on which treatment is based.

Boyd's Pathology for the Surgeon. By William Anderson, M.B. Eighth edition. Quarto of 842 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $18.50.

As in previous editions the content of this work is directed towards the graduate rather than the undergraduate, the surgeon rather than the pathologist. In this new edition, considerable portions have been entirely rewritten, one example being the chapter on inflammation and repair. Also, the subject of shock has been revised and updated, and a new chapter is concerned with degenerations and infiltrations of various kinds. In the area of regional pathology, the chapter on the neck and salivary glands includes a discussion of the chemoreceptor system and its tumors, a review of current concept of Milulicz's disease and a revised classification of salivary gland tumors. Additional material on embryologic and developmental anomalies of the thyroid gland has been added as well as a discussion of iodine metabolism.

Labat's Regional Anesthesia: Techniques and Clinical Applications. By John Adriani, M.D. Third edition. Quarto of 565 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. $14.

Labat's Regional Anesthesia has for many years been a classic on this subject in the United States. However, the book has been out of print since its author passed away over thirty years ago. In this new edition it has been necessary, of course, to make a number of additions and deletions. However, the present author has attempted to retain the identity of the book as Labat wrote it. For example, one of the most important features of the original work was the diagrams and plates. As many of these as possible have been retained. Descriptions of new drugs and new concepts of technic have been interspersed here and there, and these have been worded as closely as possible in the style of Labat.

Orthopaedics: Principles and Their Application. By Samuel L. Turek, M.D. Second edition. Quarto of 996 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1967. $27.

This book is designed to provide a guide to the principles and practice of orthopaedic surgery. This second edition has been expanded and updated in line with the advances made in medical science. Much space is given to the description of general orthopedic conditions such as osteoporosis, metabolic bone diseases, and orthopedic neurology. Discussion of each orthopedic condition follows the same pattern: Definition, etiology, pathology, clinical picture, laboratory procedures, differential diagnosis, and treatment. This organization, combined with disease classifications, indexing and cross-indexing provides the reader with a quick identification of any diagnostic problem.

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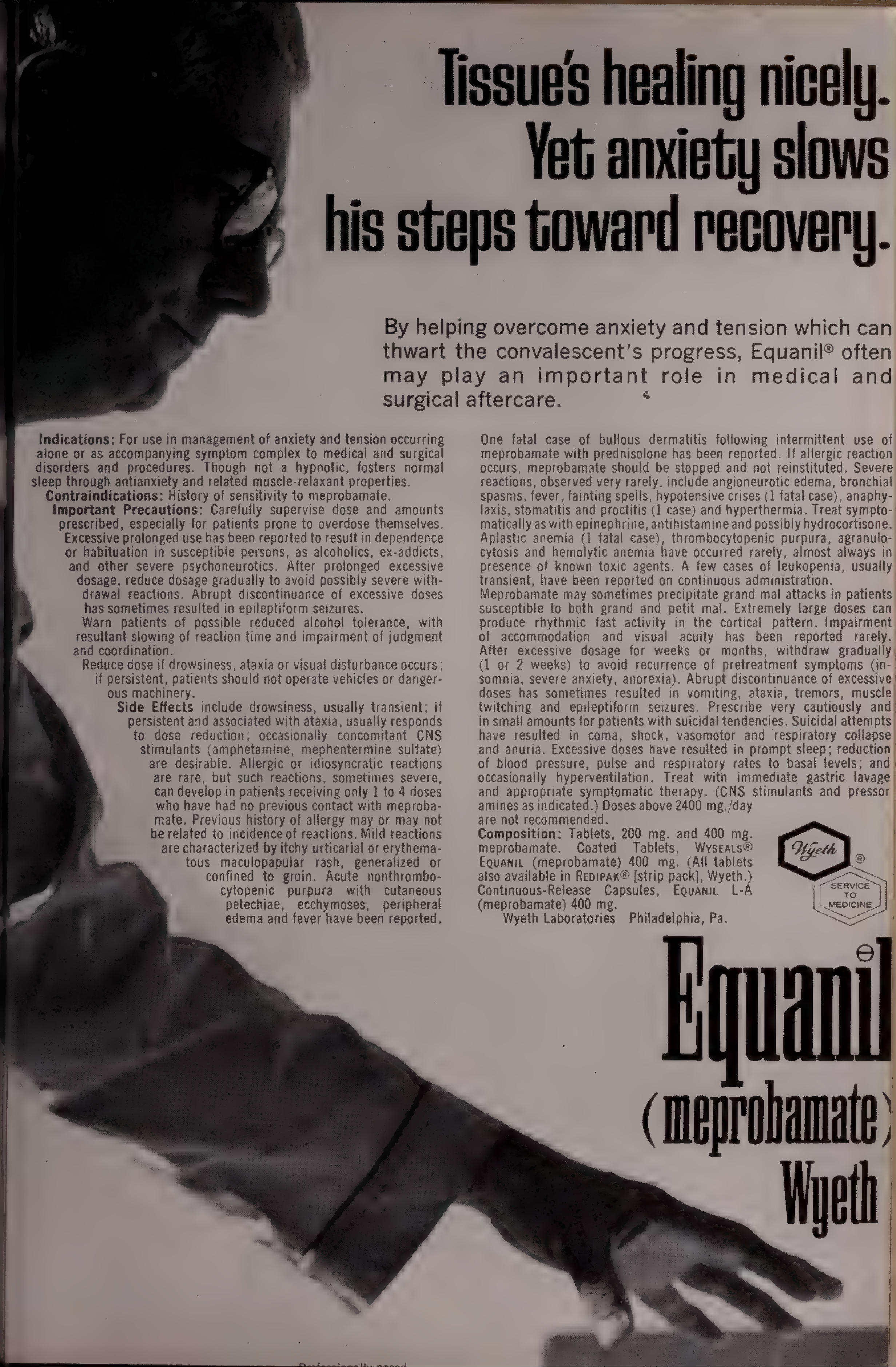

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By helping overcome anxiety and tension which can thwart the convalescent's progress, Equanil® often may play an important role in medical and surgical aftercare.

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Important Precautions: Carefully supervise dose and amounts prescribed, especially for patients prone to overdose themselves. Excessive prolonged use has been reported to result in dependence or habituation in susceptible persons, as alcoholics, ex-addicts, and other severe psychoneurotics. After prolonged excessive dosage, reduce dosage gradually to avoid possibly severe withdrawal reactions. Abrupt discontinuance of excessive doses has sometimes resulted in epileptiform seizures.

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Reduce dose if drowsiness, ataxia or visual disturbance occurs; if persistent, patients should not operate vehicles or dangerous machinery.

Side Effects include drowsiness, usually transient; if persistent and associated with ataxia, usually responds to dose reduction; occasionally concomitant CNS stimulants (amphetamine, mephentermine sulfate) are desirable. Allergic or idiosyncratic reactions are rare, but such reactions, sometimes severe, can develop in patients receiving only 1 to 4 doses who have had no previous contact with meprobamate. Previous history of allergy may or may not be related to incidence of reactions. Mild reactions are characterized by itchy urticarial or erythematous maculopapular rash, generalized or confined to groin. Acute nonthrombocytopenic purpura with cutaneous petechiae, ecchymoses, peripheral edema and fever have been reported. One fatal case of bullous dermatitis following intermittent use of meprobamate with prednisolone has been reported. If allergic reaction occurs, meprobamate should be stopped and not reinstituted. Severe reactions, observed very rarely, include angioneurotic edema, bronchial spasms, fever, fainting spells, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia. Treat symptomatically as with epinephrine, antihistamine and possibly hydrocortisone. Aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis and hemolytic anemia have occurred rarely, almost always in presence of known toxic agents. A few cases of leukopenia, usually transient, have been reported on continuous administration.

Meprobamate may sometimes precipitate grand mal attacks in patients susceptible to both grand and petit mal. Extremely large doses can produce rhythmic fast activity in the cortical pattern. Impairment of accommodation and visual acuity has been reported rarely. After excessive dosage for weeks or months, withdraw gradually (1 or 2 weeks) to avoid recurrence of pretreatment symptoms (insomnia, severe anxiety, anorexia). Abrupt discontinuance of excessive doses has sometimes resulted in vomiting, ataxia, tremors, muscle twitching and epileptiform seizures. Prescribe very cautiously and in small amounts for patients with suicidal tendencies. Suicidal attempts have resulted in coma, shock, vasomotor and respiratory collapse and anuria. Excessive doses have resulted in prompt sleep; reduction of blood pressure, pulse and respiratory rates to basal levels; and occasionally hyperventilation. Treat with immediate gastric lavage and appropriate symptomatic therapy. (CNS stimulants and pressor amines as indicated.) Doses above 2400 mg./day are not recommended.

Composition: Tablets, 200 mg. and 400 mg. meprobamate. Coated Tablets, WYSEALS® EQUANIL (meprobamate) 400 mg. (All tablets also available in REDIPAK® [strip pack], Wyeth.) Continuous-Release Capsules, EQUANIL L-A (meprobamate) 400 mg.

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Books Received

*The following books were received during the month of February, 1968.**

An Atlas of Surgery of the Face, Mouth, and Neck. By Robin M. Rankow, D.D.S., M.D. Quarto of 292 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $25.

An Atlas of Advanced Surgical Techniques. By Edward J. Beattie, Jr., M.D., and Steven G. Economou, M.D. Quarto of 422 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $20.

Textbook of Endocrinology. Edited by Robert H. Williams, M.D. Fourth edition. Quarto of 1,258 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $24.

Current Therapy 1968. Edited by Howard F. Conn, M.D. Quarto of 898 pages. Philadelphia, W. B. Saunders Company, 1968. Cloth, $14.

Cardiac Function in Health and Disease. by Robert J. Marshall, M.D., and John T. Shepherd, M.D. Octavo of 409 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $15.

Surgery of the Small Intestine in the Adult. By Bentley P. Colcock, M.D., and John W. Braasch, M.D. **Major Problems in Clinical Surgery—Volume VII.** Octavo of 220 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $10.50.

Treatment of Heart Disease in the Adult. By Ira Lloyd Rubin, M.D., Harry Gross, M.D., Sidney R. Arbeit, M.D., and Duncan E. Hutcheon, M.D. Quarto of 393 pages, illustrated. Philadelphia, Lea & Febiger, 1968. Cloth, $17.50.

Fifth World Congress of Gynaecology and Obstetrics. Held in Sydney, Australia, September, 1967. Editor Carl Wood, M.B. Associate Editor William A. W. Walters, M.B. Quarto of 934 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $42.50.

Modern Trends in Pathology—2. Edited by T. Crawford, M.D. Octavo of 323 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $16.75.

Handbook of Bacteriological Technique. By F. J. Baker, F.I.M.L.T., F.I.S.T. Second edition. Octavo of 482 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Fabrikoid, $14.75.

Modern Trends in Pharmacology and Therapeutics—1. Edited by W. F. M. Fulton, M.D. Octavo of 372 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $16.60.

Virological Procedures. By J. Mitchell Hoskins, Ph.D. Octavo of 358 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $13.75.

A Primer of Pathology. By F. A. Ward, L.R.C.P.I., M.C.Path. Second edition. Octavo of 116 pages. New York, Appleton-Century-Crofts, 1967. Fabrikoid, $4.50.

The Palms and Soles in Medicine. By Maurice J. Costello, M.D., and Richard C. Gibbs, M.D. Quarto of 686 pages, illustrated. Springfield, Ill., Charles C Thomas, 1967. Cloth, $47.50.

Advanced Techniques of Hypnosis and Therapy. Selected Papers of Milton H. Erickson, M.D. Edited by Jay Haley. Quarto of 557 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $14.75.

Psychopathology of Mental Development. Edited by Joseph Zubin, Ph.D., and George A. Jervis, M.D. Octavo of 658 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $22.

Doctors of The Old West. A Pictorial History of Medicine on the Frontier. By Robert F. Karolevitz. Quarto of 192 pages, illustrated. Seattle, Superior Publishing Company, 1967. Cloth, $12.95.

Relativity for Psychology. By D. G. Garan, Ph.D., J.U.D., LL.D. Octavo of 338 pages. New York, Philosophical Library, 1968. Cloth, $7.95.

Physician Service Patterns and Illness Rates. By Helen Hershfield Avnet. Quarto of 452 pages, illustrated. New York, Group Health Insurance, Inc., 1967. Cloth.

Life After Fifty: The Prostatic Age. By Henry M. Weyrauch, M.D. Octavo of 175 pages, illustrated. Los Angeles, Calif., The Ward Ritchie Press, 1967. Cloth, $6.95.

continued on page 991

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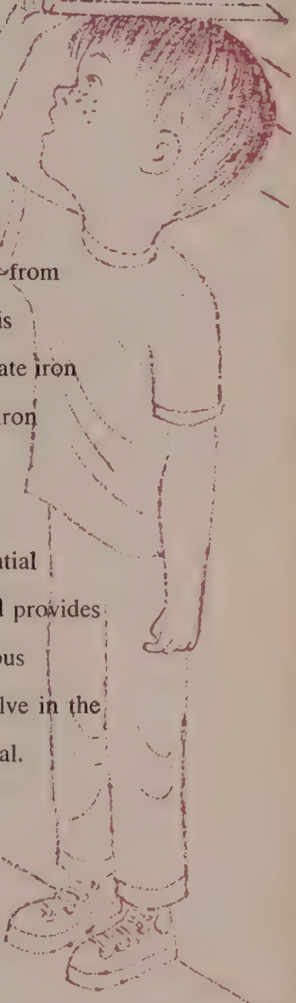
* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

In the normal child, iron balance is precarious[1-8] due to the metabolic

demands of rapid growth and total body development. Growth spurts increase the need for iron so that the recommended daily iron intake[5] in both boys and girls between ages three and six is equal to that for the adult man—from ages six to nine it is twenty per cent greater. Since only about 10% of dietary iron is absorbed,[2,6] this need is often greater than that provided by dietary intake. Inadequate iron intake may lead to subtle tissue changes[7] due to the metabolic interrelationships of iron absorption and utilization with other essential nutrients.



Nutritional support of rapid growth with supplementary amounts of iron and essential vitamins deserves consideration. Supplementation with **Chocks® plus iron** provides maintenance amounts of eight needed vitamins plus 10 mg. of iron supplied as ferrous fumarate (31 mg.). For ingestion, the soft tablet may be chewed, allowed to dissolve in the mouth, or crushed and placed in food or liquids. Samples are available for clinical trial.

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Each cherry-flavored chewable tablet provides:

		Multiples of Minimum Daily Requirements (MDR) by Ages: 2-6	6-12	Adults
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Vitamin C (as sodium ascorbate)	50 mg.	2.5	2.5	1.7
Niacinamide	20 mg.	4.0	2.7	2.0
Vitamin B_1 (Thiamine)	2 mg.	4.0	2.7	2.0
Vitamin B_2 (Riboflavin)	2.5 mg.	2.7	2.7	2.0
Pyridoxine HCl (B_6)	1 mg.	*	*	*
Cyanocobalamin (B_{12})	1 mcg.	*	*	*
Iron (as Ferrous Fumarate 31 mg.)	10 mg.	1.3	1.0	1.0

*MDR for these vitamins has not been determined.

References: 1. Beutler, E.; Fairbanks, V.F.; and Fahey, J.L.: Clinical Disorders of Iron Metabolism. New York, Grune & Stratton, 1963. 2. Moore, C.V.: Iron and the Essential Trace Elements, Chapter 10. In Wohl, M.G., and Goodhart, R.S. (eds.): Modern Nutrition in Health and Disease. 3rd edition. Philadelphia, Lea & Febiger, 1964. 3. Moore, C.V.: Iron Malnutrition, Chapter 9, page 329. In Jolliffe, N. (ed.): Clinical Nutrition. 2nd edition. New York, Hoeber-Harper, 1962. 4. Merivale, Wm. H.H.: Mineral Metabolism, p. 281-288. In Duncan, G.G. (ed.): Diseases of Metabolism. 5th edition. Phila. and London, W.B. Saunders, 1964. 5. Recommended Dietary Allowances, Sixth Revised Edition, 1964. A report of the Food and Nutrition Board, National Academy of Sciences, National Research Council, Publication 1146, Washington, D.C., 1964. 6. Herbert, V.: Iron and Iron Salts, Chap. 9, p. 1394-1409. In Goodman, L.S., and Gilman, H. (eds.): The Pharmacological Basis of Therapeutics. 3rd edition. New York, Macmillan, 1965. 7. Beutler, E.: Tissue Effects of Iron Deficiency, p. 256-272. In Iron Metabolism, Symposium. Gross, F. (ed.). Springer-Verlag, Berlin, 1964. 8. A.M.A. Council on Foods and Nutrition: Iron Deficiency in the United States. Jour. Amer. Med. Assn. 203:119-124 February 5, 1968.

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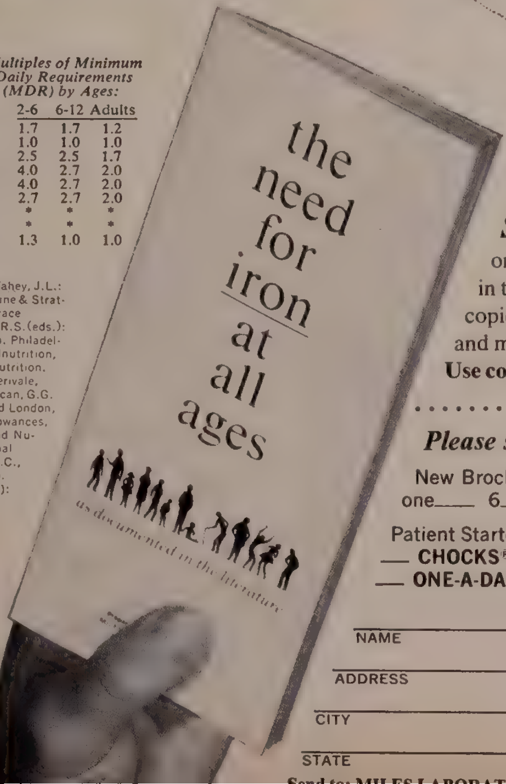

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Contraindications: *Increased Intracranial Pressure, Head Injury, or Pathologic Brain Conditions in which clouding of sensorium is undesirable.* Talwin (brand of pentazocine) should not be administered in these cases, since drug-induced sedation, dizziness, nausea, or respiratory depression could be misleading.

Precautions: *Pregnancy.* No teratogenic or embryotoxic effects attributable to the use of Talwin have been seen in extensive reproductive studies in animals; however, like all new drugs, Talwin should be given with caution to pregnant women. A large number of patients in labor have received the drug with no adverse reactions other than those that occur with commonly used strong analgesics. However, as with other strong analgesics, Talwin should be used with caution in women delivering premature infants.

Ambulatory Patients. Since sedation, dizziness, and occasional euphoria have been noted, ambulatory patients should be warned not to operate machinery, drive cars, or unnecessarily expose themselves to hazards.

Certain Respiratory Conditions. The possibility that Talwin (brand of pentazocine) may cause respiratory depression should be considered in treatment of patients with bronchial asthma. Talwin (brand of pentazocine) should be administered only with caution and in low dosage to patients with respiratory depression (e.g., from other medication, uremia, or severe infection), obstructive respiratory conditions, or cyanosis.

Patients Dependent on Narcotics. Because Talwin is a narcotic-antagonist, patients dependent on narcotics and receiving Talwin may occasionally experience certain withdrawal symptoms. Talwin should be given with special caution to such patients. It has been observed that some patients previously given narcotic-analgesics for one month or longer had mild withdrawal symptoms when the drug was replaced with the analgesic, Talwin. After a short period of adjustment the subjects were usually able and willing to continue taking Talwin, and relief of pain was satisfactory.

Nonaddicted Patients Receiving Narcotics. Symptoms believed to be indicative of antagonism to the opiate may be observed rarely with administration of Talwin to patients receiving opiates for a short time. Intolerance or untoward reactions are seldom observed after administration of Talwin to patients who have received single doses or who have had limited exposure to narcotics.

Impaired Renal or Hepatic Function. Although laboratory tests have not indicated that Talwin causes or increases renal or hepatic impairment, the drug should be administered with caution to patients with such impairment. Extensive liver disease appears to predispose to greater side effects (e.g., marked apprehension, anxiety, dizziness, sleepiness) from the usual clinical dose, and may be the result of decreased metabolism of the drug by the liver.

Myocardial Infarction. As with all drugs, Talwin (brand of pentazocine) should be used with caution in patients with myocardial infarction who have nausea or vomiting.

Biliary Surgery. Until further experience is gained with the effects of Talwin on the sphincter of Oddi, the drug should be used with caution in patients about to undergo surgery of the biliary tract.

Adverse Effects: Talwin is relatively free from the undesirable side effects associated with morphine, such as constipation, urinary retention, or severe respiratory depression. Furthermore, Talwin produces less nausea, vomiting, and diaphoresis than meperidine.

In over 12,000 patients who received Talwin intramuscularly, subcutaneously, or intravenously, nausea, the most frequent adverse effect, occurred in approximately 5.0 per cent. In decreasing order of occurrence were vertigo, dizziness or lightheadedness; vomiting; and euphoria. Respiratory depression was reported as an adverse reaction in 1.0 per cent.

The incidence of each of the other adverse effects was well below 1.0 per cent: constipation, circulatory depression, diaphoresis, urinary retention, alteration in mood (nervousness, apprehension, depression, floating feeling), hypertension, sting on injection, headache, dry mouth, flushed skin including plethora, altered uterin

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ATEVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

in should not be used for patients with
sed intracranial pressure,
injury or pathologic brain conditions.
sufficient experience is gained, it should not
ministered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

Talwin acts as rapidly as morphine; its duration of action may sometimes be less. Relief of pain with Talwin usually lasts three hours or longer.

Less constipation than with morphine
Less urinary retention than with morphine
Less risk of severe respiratory depression than with morphine
Less nausea than with meperidine
Less vomiting than with meperidine
Less diaphoresis than with meperidine

With Talwin—no narcotic controls

Talwin does not require a narcotic prescription or narcotic records. The World Health Organization Expert Committee on Dependence-Producing Drugs concluded that "...there was no need at this time for narcotics control of pentazocine [Talwin] internationally or nationally." (*WHO Tech. Rep. Ser.*, no. 343, 1966, p. 6.)

Talwin relieves pain of all types and all degrees—mild, moderate, and severe—in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ctions during labor, dermatitis including pruritus, dreams,
hesia, and dyspnea occurred rarely after administration of
. Furthermore, each of the following adverse reactions oc-
in less than 0.1 per cent: tachycardia, visual disturbance
d vision, diplopia and nystagmus), hallucinations, disorienta-
veakness or faintness, muscle tremor, chills, allergic reactions
ing edema of the face, taste alteration, insomnia, diarrhea,
s, and miosis; laryngospasm in one patient.

(brand of pentazocine) has not produced severe respiratory
rrassment in adults (never apnea), even with large amounts. A
number of newborn infants whose mothers received Talwin
labor had transient apnea. The incidence of temporary dim-
n in the rate or strength of uterine contractions is low after
istration of Talwin, similar to that following meperidine hydro-
de. (In reporting no interference with normal labor in patients
ing Talwin, one investigator further stated that the drug may
ase uterine activity.) Generally, no significant fetal heart rate
ge occurs.

atory tests of blood and of liver and kidney functions have
led no significant abnormalities. A minimum and probably
ificant increase in the per cent of eosinophils in peripheral
counts and bone marrow occurred occasionally.

n is well tolerated by patients with diabetes mellitus, and no
ges in insulin requirements have been observed.

ge and Administration: *Adults, Excluding Patients in Labor.*
ge recommended single parenteral dose is 30 mg., by intra-
ular, subcutaneous, or intravenous route; may be repeated
three to four hours. Pain has been relieved in most patients
not more than three doses daily. Infrequently, selected patients
received single doses as high as 60 mg.

nts in Labor. A single, intramuscular 30 mg. dose has been most
nonly administered. An intravenous 20 mg. dose has given adequate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

Duration of Therapy. Patients with chronic pain who received Talwin for prolonged periods (e.g., over 300 days) experienced no withdrawal symptoms even when administration was stopped abruptly; furthermore, there was no tolerance to the analgesic effect.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Talwin has not produced apnea or severe respiratory embarrassment in adults, even in large doses. Occasionally, however, moderate respiratory depression may occur. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

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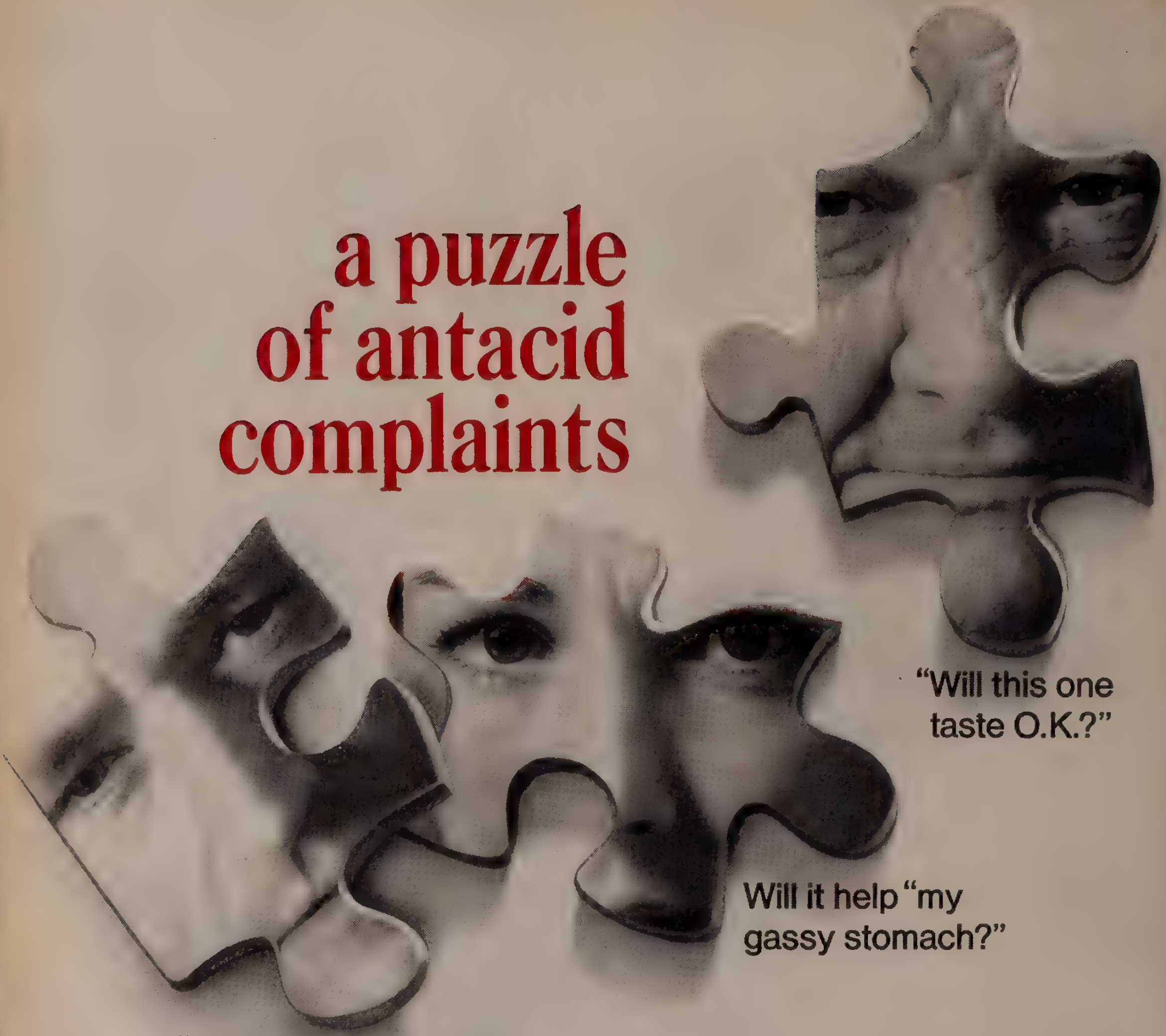
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Will it help "my gassy stomach?"
"Will it stop the pain?"

Mylanta®
aluminum and magnesium hydroxide *plus* simethicone

a solution to peptic ulcer distress

Effective neutralization— with the two most widely prescribed antacids: aluminum and magnesium hydroxides.

Concomitant relief of G.I. gas distress— with the proven[1] defoaming action of simethicone.

Prolonged acceptance confirmed— in 87.5% of 104 patients after a total of 20,459 documented days of therapy.[2]

Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. Dosage: One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

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continued from page 986

Dysphasia: Professional Guidance for Family and Patient. By McKenzie Buck. Octavo of 145 pages. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1968. Cloth, $5.95.

Treatment of Common Acute Poisonings. By Henry Matthew, M.D., and Alexander A. H. Lawson, M.B. Duodecimo of 151 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd., (Baltimore, The Williams & Wilkins Company), 1967. Fabrikoid, $5.25.

The Safe Way to Drink. How to Prevent Alcohol Problems Before They Start. By William B. Terhune, M.D. Octavo of 222 pages. New York, William Morrow & Company, Inc., 1968. Fabrikoid, $4.95.

Psychotic Conflict and Reality. By Edith Jacobson, M.D. Octavo of 80 pages. New York, International Universities Press, Inc., 1967. Cloth, $3.00.

Acute Barbiturate Poisoning: Treatment With Modern Methods of Resuscitation. By Privatdozent Dr. med. Sverre J. Loennecken. Quarto of 78 pages, illustrated. Bristol, John Wright & Sons Ltd., (Baltimore, The Williams & Wilkins Company), 1967. Paper, $3.50.

Symposium on Coronary Heart Disease. Edited by Herrman L. Blumgart, M.D. Second Edition-Revised. Quarto of 161 pages, illustrated. New York, The American Heart Association, Inc., 1968. Paper, $3.00. (American Heart Association Monograph Number Two)

Modern Treatment. Volume 4, Number 6, November 1967. Treatment of Obesity. Guest Editor Charles H. Hollenberg, M.D. **Treatment of Burns.** Guest Editor Charles L. Fox, Jr., M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1967. Published Bi-Monthly (six numbers a year). Paper, $16 per year.

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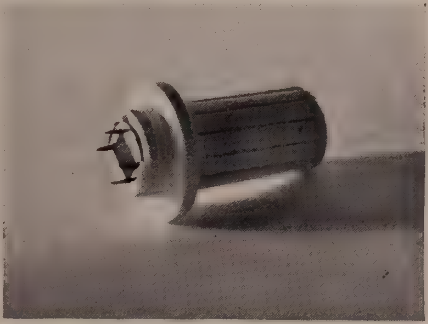

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Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

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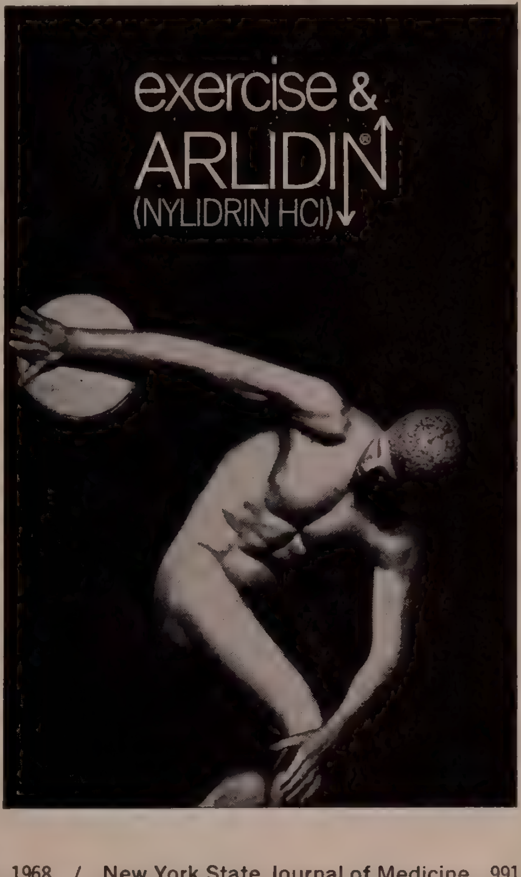


Month in Washington

The American Medical Association and the Association of American Medical Colleges announced a joint policy statement calling for a substantial increase in the number of medical students. Milford O. Rouse, M.D., president of the AMA and John Parks, M.D., president of the A.A.M.C., reviewed the joint statement at a news conference in Washington.

The statement "emphasized the urgent and critical need for more physicians if national expectations for health services are to be realized." The statement said:

"National policy which would best meet this need, and would be consistent with the American ideal of equal educational opportunity for all, would provide such educational resources that every young person interested in and qualified for entry to the study of medicine would have this opportunity. Both Associations endorsed the position that all medical schools should now accept as a goal the expansion of their collective enrollments to a level that permits all qualified applicants to be admitted. As a nation, we should address the task of realizing this policy goal with a sense of great urgency.

"In their endorsement of and call for broadening educational opportunity for the study of medicine, both Associations stressed that the length of time necessary to realize such a goal does not minimize the need to respond to today's critical shortage of physician manpower. In order to enable the nation's medical schools both to meet today's crisis and to attain the longer-range goal of unrestricted educational opportunity, those responsible for allocation of resources must recognize the magnitude of these tasks."

The two Associations said both immediate and long-range steps should be taken. The immediate steps are:

1. To increase the enrollment of existing medical schools.
2. To foster curricular innovations and other changes in the education programs which could shorten the time required for a medical education and minimize the costs.
3. To meet the need for innovation in education programs, and to encourage diversity in the character and objectives of medical schools. The development of schools of quality where a primary mission is the preparation of able physicians for clinical practice as economically and rapidly as possible is to be encouraged . . . .

"A longer-range approach to the need for physicians is the development of new medical schools," the statement said. "This approach will not solve our immediate, urgent need for more physicians, but it is essential for meeting the national needs of 1980 and beyond."

The two associations said the longer-range program would require adequate financial support from government and various private sources for:

1. Construction of facilities to expand enrollment of existing schools and to create new schools.
2. Support of the operation costs of medical schools.
3. Stimulation and incentive for education innovation and improvement.

"To implement these measures will further require that each medical school and its university re-examine its objectives, its educational program, and its resources to determine how it can contribute most effectively to the national need for more physicians and what financial help it will need to make this contribution," the statement said. "Also required is understanding by the public, the private foundations, industry, local and state governments, and the national Congress—groups which must provide the financial support which is necessary.

"Initiative for development of new schools and expansion of the established institutions should be locally determined. Only the governing bodies of schools with ongoing programs in medical education can decide to expand such programs. Institutions wishing to organize new medical schools must assume the responsibility for marshalling the necessary support. Both associations are prepared to lend any assistance they can to such efforts."

* * *

In a health message to Congress, President Johnson proposed control of prices of drugs bought for government programs and asked for authority for the Food and Drug Administration to publish a drug compendium financed by drug manufacturers. He also asked for more money for health manpower and the maternity and child health programs.

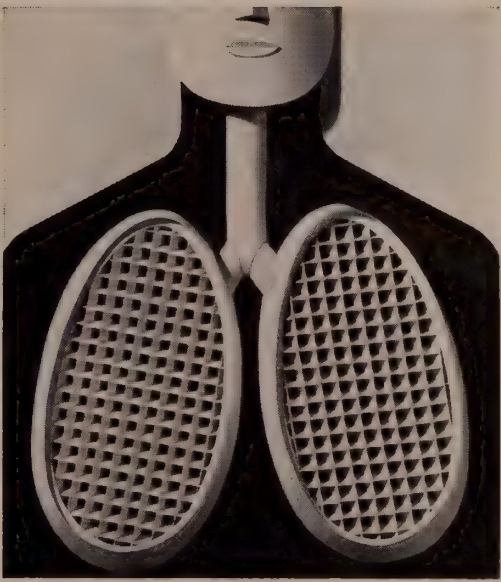
With an objective of lowering costs, he also asked for authority for the U.S. Department of Health, Education, and Welfare to establish new formulas for reimbursement of hospitals and physicians under Medicare, Medicaid, and maternal and child health programs. The Social Security Administration immediately announced that it would begin "an experimental program to find methods of reimbursing hospitals and doctors that will have built-in incentives to efficiency and economy."

Participation in such experiments would be entirely voluntary, the Social Security Adminis-

continued on page 994

Prepared by the Washington, D.C., Office of the American Medical Association.

The ventilator pill



DainiteKI **bronchodilator/expectorant**

Each tablet contains: Aminophylline 3.00 gr, Phenobarbital 0.25 gr, (WARNING: May be habit forming), Ephedrine HCl 0.25 gr, Potassium iodide 5.00 gr, Dried Aluminum Hydroxide Gel 2.50 gr, Benzocaine 0.25 gr.

Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

It helps reduce frequency and severity of asthma attacks, too. And, because it's systemic, you know you get action where you want it . . . in the system.

You might say The Ventilator Pill is a good name for DAINITE KI. Your patients will probably say the same thing.

Indications: For the treatment of mild or severe bronchial asthma, and in pulmonary emphysema, in chronic asthma, in chronic bronchitis and in those patients who consistently develop a thick, viscous, tenacious sputum and thus have difficulty in expectorating accumulated secretions from the bronchial tree during and following an asthmatic attack. DAINITE® KI has been specifically formulated to provide extensive therapeutic action in the asthmatic patient. Anti-nauseant factors afford the administration of a therapeutic dose of aminophylline without the high frequency of gastric intolerance usually associated with this drug. *Contraindications:* Should not be administered to patients sensitive to aminophylline or sympathomimetic drugs and should be used with caution in patients with cardiovascular disease and hypertension. Also contraindicated in those patients who have had a severe reaction or are sensitive to or have an idiosyncrasy to potassium iodide. *Precautions:* See contraindications. In some elderly patients, barbiturates may cause excitement rather than depression. *Side Effects:* Occasionally nausea, vomiting and gastric irritation occurs. In addition, side effects attributable to potassium iodide may occur, acne, rhinorrhea, metallic taste and parotitis. Prolonged use of iodides may rarely lead to hypothyroidism. Skin rash may be observed in patients hypersensitive to barbiturates. *Dosage:* Adults—1 tablet on arising, 1 tablet at 4 P.M., and 1 or 2 tablets at bedtime.

Neisler Laboratories, Inc., Decatur, Ill.
Subsidiary of Union Carbide Corporation.

NEISLER UNION CARBIDE

continued from page 992

tration said. And Congress would have to approve the necessary legislation before new methods of reimbursement could be put in effect on a mandatory basis.

Under Medicare, a physician now is reimbursed on the basis of his usual and customary fee if it is considered reasonable. HEW said two methods of reimbursement involving physicians that might be tried are the following:

1. Group practice prepayment plans which offer comprehensive health services to their members could be reimbursed on a set per capita rate for the ensuing period.
2. For physicians' services, experimental bases of payment might be a single fee related to total illness services rather than individual fees for each individual visit and individual service, agreed-on fees held stable for specified periods, fees related to physician-time, or retainer, or per capita payments per year for services of a specified kind.

Commenting on Mr. Johnson's health message, Dr. Rouse said: "There is great need for expanded health care service in the United States. Meeting this need requires devoting attention to all the elements involved in the supply of resources and manpower, the distribution of health care, and costs. The AMA supports private and governmental programs that help those who need help. Health care for all the people should be expanded in an orderly way so resources and needs are increased together and at comparable rates of growth. Government can and should support the construction and renovation of hospitals and extended care facilities, and together with the states and private sources, should promote a rapid increase in medical manpower.

"As for drug prices, we believe that every patient should be able to buy high quality prescription drugs at the lowest possible price. The way to accomplish this is to promote more effective price competition at the retail level, which will result in lower prescription drug prices for everyone. This should be the thrust of government programs—not price fixing for one group. Everyone should be encouraged to be more price conscious in buying prescription drugs. The physician should include both medical and price considerations in writing prescriptions and the patient should patronize that pharmacy that can furnish dependable service and the prescribed product at the lowest possible price . . . .

"The President's message contains little essentially new. It concentrates again on pouring additional millions of dollars into a health care system that is already facing requirements well beyond what it can now meet. Government expenditures for health care should be moderated during this period of acute shortage to control rapidly rising cost. Government can be most helpful by controlling inflation and by providing tax deductions and credits for people purchasing health insurance . . . .

"The physicians of this country will welcome a genuine partnership in health, where the Federal government will sincerely and continually seek the advice and active collaboration of those whose special services lie in medical education and the planning and provision of superior quality medical care for all citizens."

* * *

The Board of Medicine of the National Academy of Sciences stated that the transplantation of human hearts still is in the experimental stage and proposed three guidelines for the procedure. The Board said human cardiac transplantation should only be carried out in institutions in which these three criteria can be met:

1. The transplant teams should be highly skilled and have had extensive laboratory experience.
2. The work should be carefully planned, and the results should be rapidly communicated to others in the field.
3. Both the teams and the patients should be protected by "rigid safeguards."

* * *

A check is being made to determine how many alien physicians, dentists, and "allied specialists" are now subject to draft laws. A new law for the first time makes aliens in the medical and dental professions subject to draft up to age thirty-five.

* * *

President Johnson asked Congress for $571.7 million more for Medicaid for the 1968 fiscal year ending July 1, 1968. The administration said the initial appropriation proved inadequate because of a complete lack of data and experience as to costs of such a program and a larger increase than expected in costs of hospital and other medical care.

tones down the
"explosive gut"

helps restore normal motility and tone

CANTIL®

(mepenzolate bromide)

Diarrhea and other symptoms of common G.I. disorders can often be curbed with Cantil (mepenzolate bromide), bringing welcome relief to the harassed patient. Relatively specific for the hyperactive colon, it helps reduce diarrhea, pain and spasm with minimal effect on other viscera. Cantil (mepenzolate bromide) is indicated whenever these symptoms are associated with irritable colon, gastroenteritis, diverticulitis, and mild to moderate ulcerative colitis.

It is an anticholinergic drug without narcotic properties. Side effects are usually mild.

LAKESIDE

CONTRAINDICATIONS: Sensitivity to Cantil® (mepenzolate bromide), glaucoma, G.I. or G.U. obstruction, toxic megacolon. **WARNINGS:** Possibility of adverse reactions in advanced severe ulcerative colitis and atypical agitated reactions to phenobarbital in the elderly (Cantil with Phenobarbital). **PRECAUTIONS:** Cantil is of adjunctive use only; treatment of the underlying condition is indicated, be it organic or functional. Observe caution in conditions known to be incompatible with atropine-like drugs, e.g., open-angle glaucoma or prostatic hypertrophy. **ADVERSE EFFECTS:** Dry mouth; blurred vision; constipation; nausea; vomiting; bloating; dizziness; urinary retention. All are anticholinergic effects and usually tolerable. Habituation and idiosyncratic reactions to phenobarbital (Cantil with Phenobarbital) are possible, as is generalized rash. **DOSAGE:** One or two tablets three times a day and one or two at bedtime usually provide prompt relief. Cantil with Phenobarbital may be prescribed if sedation is required. **HOW SUPPLIED:** CANTIL (mepenzolate bromide)—25 mg. per scored tablet. Bottles of 100 and 250. CANTIL with PHENOBARBITAL—containing in each scored tablet 16 mg. phenobarbital (warning: may be habit forming) and 25 mg. mepenzolate bromide. Bottles of 100 and 250.

LAKESIDE LABORATORIES, INC., Milwaukee, Wisconsin 53201

Here's what you do to get samples of the

anticostive* hematinic

Your Prescription Blank

Dear Lederle
Send me samples
of Peritinic

℞

(Mail to Department 150
Lederle Laboratories,
Pearl River, New York 10965)

*

anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic?)

PERITINIC®
Hematinic with Vitamins and Fecal Softener

A tablet-a-day provides:

● Elemental Iron (as Ferrous Fumarate)	100 mg
● Dioctyl Sodium Sulfosuccinate (to counteract constipating effect of iron)	100 mg
Vitamin B_1	7.5 mg
Vitamin B_2	7.5 mg
Vitamin B_6	7.5 mg
Vitamin B_{12}	50 mcgm
Vitamin C	200 mg
Niacinamide	30 mg
Folic Acid	0.05 mg
Pantothenic Acid	15 mg

Bottles of 60

Lederle

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NEW 1968 BOOK!

Rubin, Gross & Arbeit—Treatment of Heart Disease in the Adult

By IRA LLOYD RUBIN, M.D., Associate Clinical Professor of Medicine; and HARRY GROSS, M.D., Associate Clinical Professor of Medicine; Einstein College of Medicine, Bronx, New York; and SIDNEY R. ARBEIT, M.D., Associate Professor of Clinical Medicine, New Jersey College of Medicine, Jersey City. *Clinical Pharmacology* by DUNCAN E. HUTCHEON, M.D., Assoc. Prof. of Pharmacology, New Jersey College of Medicine.

This is a complete guide to office, bedside and hospital management of every phase of heart disease. Each type of heart disease is considered separately with detailed descriptions of management, treatment of underlying causes, surgical implications, and prevention of recurrences. Dr. Duncan E. Hutcheon has written the sections on the pharmacological actions of the drugs used in treatment of heart disease. Each drug is evaluated for its clinical effectiveness, its toxicity, and side effects. Such newer modalities as electronic monitoring, pacing, electric countershock, and intensive care units are described fully.

Answers Such Questions as:

What drug shall I give this patient? When shall I use it? What dosage should I prescribe? How shall I administer it? What results can I expect? What are the indications for change of drug or dosage? Why is one drug preferred to another in a given situation? What signs of response or toxicity should I look for? What complications should I watch for in the early stages of a cardiac disease? In later stages? How do I modify therapy when complications develop? Which patient should be hospitalized and which should be sent to the intensive care unit? What are the criteria for the use of electric countershock, new antiarrythmic drugs and cardiac pacemakers?

xiii plus 393 pages, 8½" x 11". 128 illustrations. New. $17.50.

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Easy on the Budget...
Easy on the Mother

Tablets & Elixir

For Iron Deficiency Anemia

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Fergon®
brand of FERROUS GLUCONATE

BREON
BREON LABORATORIES INC.
Subsidiary of Sterling Drug Inc.
90 Park Avenue, New York, N.Y. 10016

Do you have patients who try to hide anger behind charm?

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense. The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you.

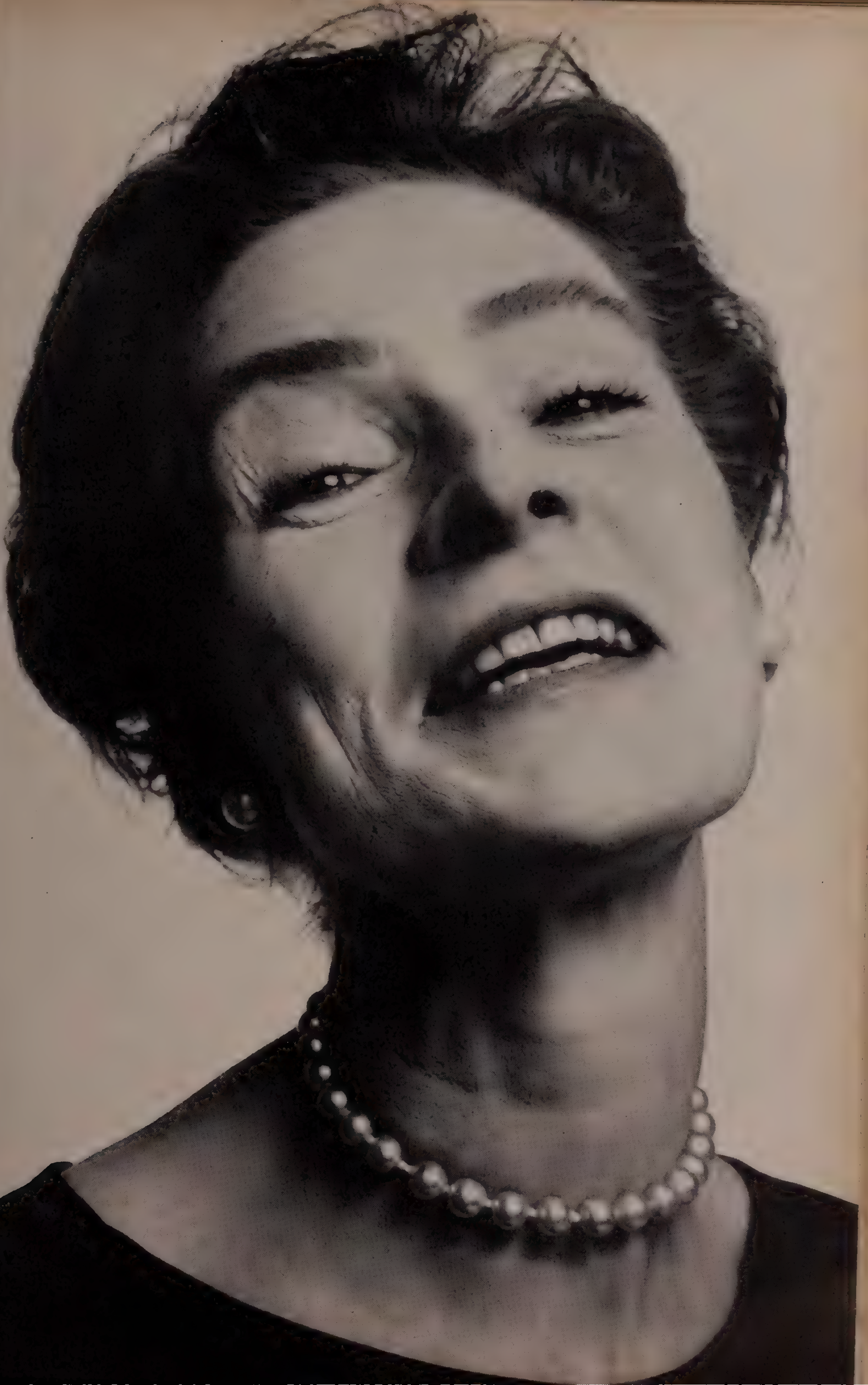
Whether depression is open or secretive, Aventyl HCl assists in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns. 800321

Lilly | Eli Lilly and Company, Indianapolis, Indiana 46206

Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

(See last page for prescribing information.)



Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily

CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

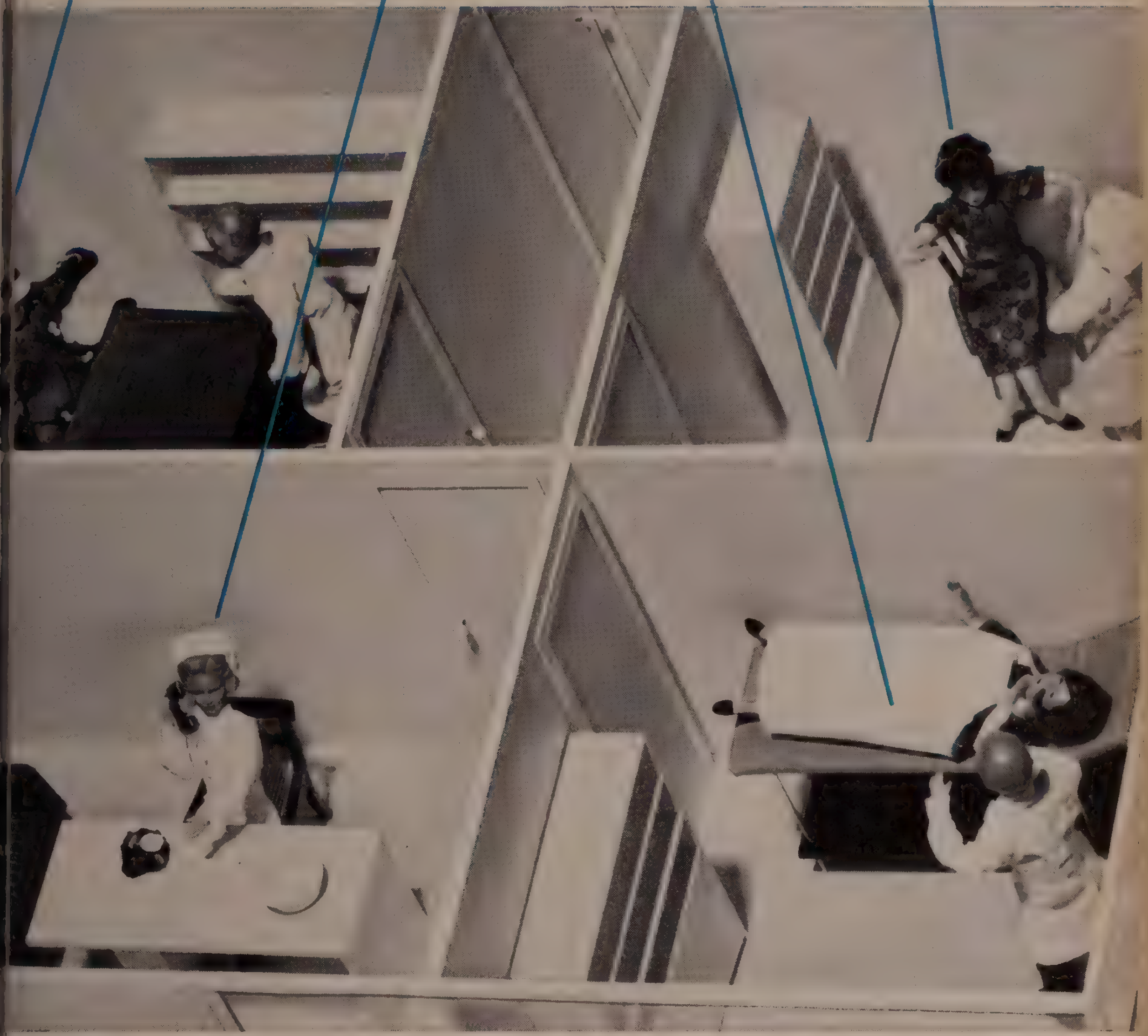
How Supplied: Liquid Aventyl® HCl (nortriptyline hydrochloride, Lilly), 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules Aventyl HCl, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500. [101267A]

Additional information available to physicians upon request. 800321

Lilly Eli Lilly and Company
Indianapolis, Indiana 46206

When the emotionally impaired patient pays an office call...



She asks for your help, but just can't seem to follow through on your advice.

When not at your office, she's constantly on the phone: can't sleep, headache, G.I. upset.

She often seeks a physical explanation for her distressing emotional state.

She's excessively apprehensive; demands much more of your nurse's attention.

In moderate to severe anxiety...

- Mellaril helps control the most frequent symptoms: marked tension, agitation, apprehension, restlessness, hypermotility
- Mellaril often alleviates anxiety-induced somatic complaints
- Mellaril frequently helps strengthen emotional resources
- Mellaril helps the patient maintain realistic contact with environment, closer harmony with family

Contraindications: Severely depressed or comatose states from any cause, and in association with or following MAO inhibitors; severe hypertensive or hypotensive heart disease.

Precautions: Hypersensitivity reactions (e.g., leukopenia, agranulocytosis) and convulsive seizures are infrequent. Pigmentary retinopathy has been observed where doses in excess of those recommended were used for long periods of time. May potentiate central nervous system depressants, atropine, and phosphorus insecticides. Where complete mental alertness is required, administer the drug cautiously and increase dosage gradually. In addition, orthostatic hypotension (especially in female patients) has been observed. Epinephrine should be avoided in treatment of drug-induced hypotension.

Side Effects: Pseudoparkinsonism and other extrapyramidal disorders are infrequent; drowsiness, especially in high doses early in treatment, may occur; nocturnal confusion, dryness of the mouth, nasal stuffiness, headache, peripheral edema, lactation, galactorrhea, and inhibition of ejaculation are noted on occasion; photosensitivity and other allergic skin reactions may occur but are extremely rare.

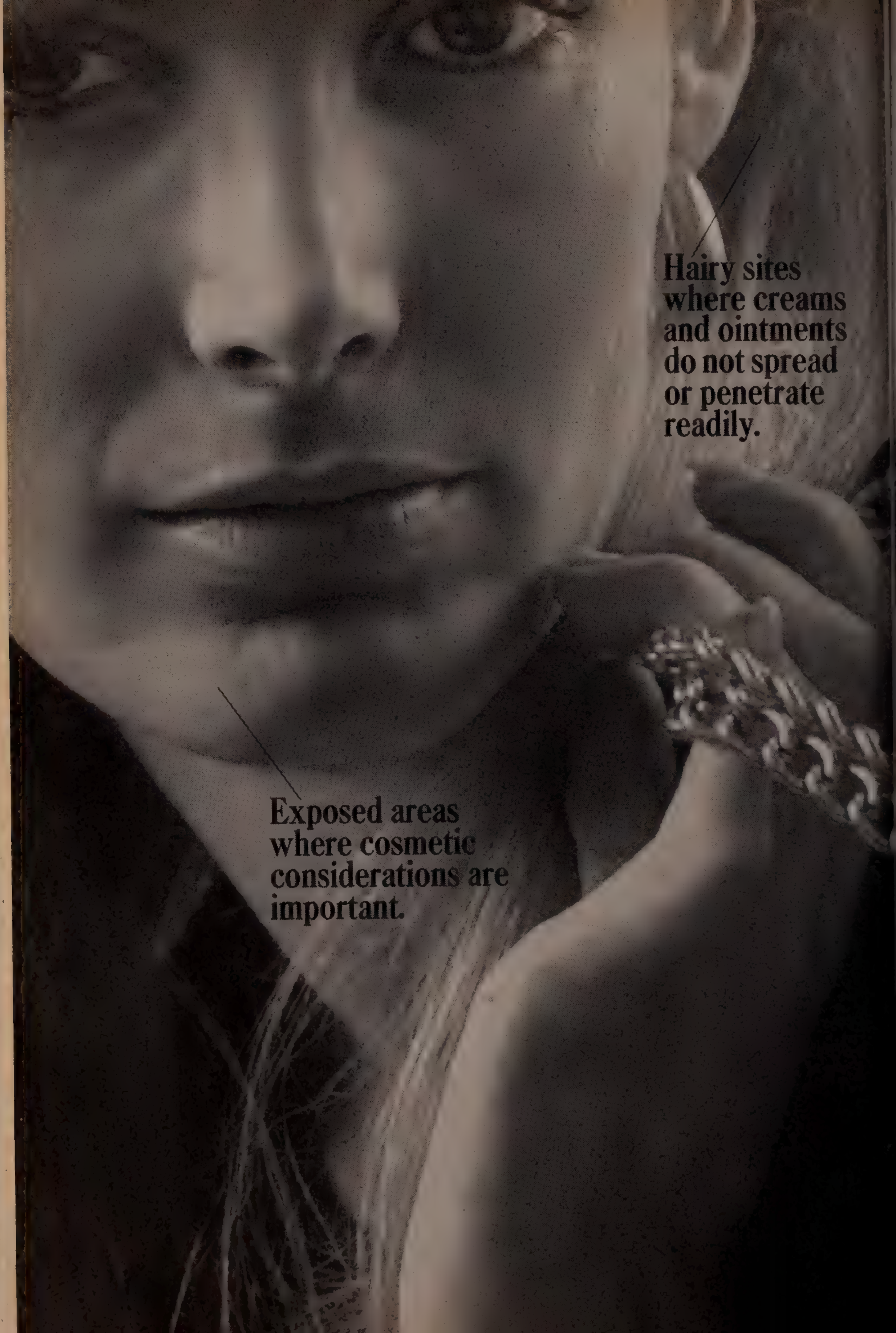
for moderate
to severe anxiety

Mellaril®
(thioridazine)
25 mg. t.i.d.

SANDOZ

Before prescribing, see package insert for full product information.

68-115


Hairy sites where creams and ointments do not spread or penetrate readily.
Exposed areas where cosmetic considerations are important.

An invisible topical

for many dermatologic problems

Moist or intertriginous areas where drying action is desirable.

See last page for contraindications, precautions and side effects.

Structurally unique topical steroid in propylene glycol vehicle produces rapid response in many dermatoses.

Synalar Solution produces rapid antiinflammatory, antipruritic action through its unique topical corticosteroid, fluocinolone acetonide. The propylene glycol vehicle provides additional benefits for therapy at problem sites where it is difficult to achieve contact between the lesion and medication – or where creams or ointments may make the lesions worse. Synalar Solution has proved particularly valuable in the symptomatic treatment of seborrheic dermatitis of the scalp, nasolabial folds, eyebrows, ears, and in flexural folds such as the axillae, inframammary, umbilical and anocrural areas. It has also been reported to achieve excellent results in the adjunctive management of atopic dermatitis, contact dermatitis, neurodermatitis, nummular eczema, psoriasis, and sweat retention syndromes in these problem sites.

Penetrates the hairy sites.

In many areas of the body, hair gets in the way of treating the underlying dermatitis. The propylene glycol vehicle of Synalar Solution permits penetration and dispersion at sites where creams and ointments do not readily penetrate. May be applied without matting of hair.

Ideal for moist or intertriginous areas.

Propylene glycol is strongly hygroscopic and is especially useful where sweat retention is a problem. Its low surface tension permits easy spreadability in difficult-to-treat body areas. A number of studies have also shown that propylene glycol has inherent antimicrobial activity.

Cosmetically acceptable for exposed areas.

The propylene glycol vehicle of Synalar Solution possesses many useful cosmetic properties. Clear and greaseless, it is not sticky or messy, will not stain clothing or skin.
In exposed areas of the body where cosmetic appeal is important, Synalar Solution shows nothing but results.

Economical—a little goes a long way.

Because of the properties of propylene glycol and the milligram potency of fluocinolone acetonide, a small quantity of Synalar Solution goes a long way. Also, the prescription price of a 20 cc. plastic squeeze bottle of Synalar Solution is surprisingly low. Thus, your patients obtain economy with the proved efficacy of a potent, truly advanced topical corticosteroid.

Contraindications: Tuberculous, fungal, and most viral lesions of the skin (including herpes simplex, vaccinia, and varicella). Not for ophthalmic use. Contraindicated in individuals with a history of hypersensitivity to any of the components.

Precautions: In some patients with dry lesions, the solution may increase dryness, scaling, or itching. Application to denuded or fissured areas, such as genital or perianal sites, may produce a burning or stinging sensation. If this persists and dermatitis does not improve, discontinue medication. Although propylene glycol has antiseptic activity, there should be careful initial evaluation and follow-up of infected sites. Incomplete response or exacerbation of lesions may be due to true infection, which requires susceptibility testing and appropriate therapy. On the other hand, saprophytic or low grade infections may clear spontaneously under the influence of Synalar Solution alone. Where severe local infection or systemic infection exists, the use of systemic antibiotics should be considered, based on susceptibility testing. While topical steroids have not been reported to have adverse effect on pregnancy, the safety of their use on pregnant females has not absolutely been established. Therefore, they should not be used extensively on pregnant patients, in large amounts, or for prolonged periods of time.

Side Effects: Side effects are not encountered ordinarily with topically applied corticosteroids. As with all drugs, however, a few patients may react unfavorably to Synalar under certain conditions.

Availability: Synalar (fluocinolone acetonide) Solution 0.01% in a propylene glycol vehicle with citric acid as preservative. 20 and 60 cc. plastic squeeze bottles. *Also available:* Synalar (fluocinolone acetonide) Cream 0.025% — 5, 15 and 60 Gm. tubes and 425 Gm. jars. Cream 0.01% — 15, 45 and 60 Gm. tubes and 120 Gm. jars. Ointment 0.025% — 15 and 60 Gm. tubes. Neo-Synalar® (neomycin sulfate 0.5% [0.35% neomycin base], fluocinolone acetonide 0.025%) Cream — 5, 15 and 60 Gm. tubes.

fluocinolone acetonide – an original steroid from
SYNTEX
LABORATORIES INC. PALO ALTO, CALIF.

Synalar®
(fluocinolone acetonide)
Solution
0.01%

An invisible topical

Medical News

Tuberculosis association changes name

The National Tuberculosis Association will now be known as the National Tuberculosis and Respiratory Disease Association. Since the association and many of its 1,700 affiliated associations throughout the country have been engaged in a wide range of respiratory health activity, in addition to the control of tuberculosis, the Board felt the association's new name better reflects this expanded activity.

With its increased interest in the problems caused by such other crippling lung conditions as emphysema and chronic bronchitis, the association has become concerned about certain environmental factors affecting respiratory health, particularly air pollution and cigaret smoking. Thus, the association is now committed to campaign for clean air and against the hazards of cigaret smoking, as well as for the eradication of tuberculosis and the control of such respiratory diseases as emphysema and chronic bronchitis.

Fight for Sight Awards announced

The National Council to Combat Blindness, Inc., has awarded a total of $269,734 for basic and clinical research projects in ophthalmology and its related sciences to institutions in the United States and foreign countries.

This year the Fight for Sight Awards included the following institutions and physicians in New York City:

—A special award of $15,000 to the Children's Eye Clinic, Columbia-Presbyterian Medical Center, for continuation support for annual maintenance of this eye clinic.

—Grants-in-aid to Andrew de Roetth, Jr., M.D., Columbia University, for research in Cholinesterase Activity of the Lens ($2,875); and to Ronald E. Carr, M.D., and Irwin M. Siegel, Ph.D., New York University Medical Center, for research in Analysis of the Early Receptor Potential and Its Application to the Detection of Retinal Pathology ($4,344.50).

—Postdoctoral research fellowships to Hajime Inomata, M.D., Columbia University, for research in Electron Microscopy of the Eye ($6,500); and to Sotiris V. Liaricos, M.D., Columbia University, for research in Alterations in Corneal Thickness in Patients Wearing Corneal Contact Lenses. Use of the new Cardona-DeVoe Pachymeter ($3,000).

Geriatrics society offers grants

Three $1,800 grants, covering the period between July, 1968, to June, 1969, are being offered by the American Geriatrics Society to resident physicians who want to devote more time and effort to studying the medical problems of the aging. The grants inaugurated by Lederle Laboratories in 1962, will supplement the salaries the physicians receive.

Application for the grants should be sent to: chairman, fellowship committee, American Geriatrics Society, 10 Columbus Circle, New York, New York 10019. Deadline for applications is May 15, and recipients will be notified on or about June 1, 1968.

Personalities

Appointed. Guy Owens, M.D., chief of the Department of Neurosurgery, Roswell Park Memorial Institute, Buffalo, as head of the Department of Surgery, University of Connecticut School of Medicine.

Named. Joseph Wortis, M.D., president-elect, American Academy of Mental Retardation, as director of developmental studies and services of Maimonides Medical Center's Community Mental Health Center, Brooklyn.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Night Leg Cramps . . . Unwelcome Bedfellow

In Diabetes,[1] Arthritis,[2] and Peripheral Vascular Disorders[2]

now . . . specific therapy for night leg cramps

Walker

QUINAMM™

Consistently effective, QUINAMM provided complete relief in 94% of 200 patients studied, many of whom were severe cases refractory to other medication.[3] Your prescription for one tablet at bedtime often controls painful night cramps with the initial dose . . . helps restore restful sleep.

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Films Reviewed

Multiple Sclerosis Documentary. Sound, color, 16 mm., twenty-nine minutes.

The film, a Hollywood production, is designed primarily for clinicians and students of neurology who are not intimately familiar with multiple sclerosis. It serves as a comprehensive review of current knowledge of the disease and provides an excellent introduction to a more intensive teaching session than is included in the average medical school curriculum. Nurses and physiotherapists will also profit by seeing the film.

Source and producer: National Multiple Sclerosis Society, 257 Park Avenue South, New York, New York 10010.

Thyroid Deficiency—Current Concepts of Diagnosis and Treatment. Sound, color, 16 mm., thirty minutes.

This is a film in which five prominent endocrinologists discuss recognition, treatment, and the major clinical aspects of hypothyroidism in the adult and the child in a unique symposium. It is an excellent aid for physicians and nurses and particularly useful for educational purposes.

Source and producer: Ideal Pictures, 321 West 44th Street, New York, New York 10036.

The Home Health Aide. Sound, color, 16 mm., twenty minutes.

"The Home Health Aide" is the story of the newest member of the medical team. The selection, training, and responsibilities of the aide are described in detail. A variety of patients are shown in real situations. The relationship between the aide and other members of the medical team is dramatically illustrated. Aide trainees make observation visits with the public health nurse to see experienced aides performing their duties. Supervision and the degree to which an aide can administer care are clearly outlined. This film is designed as a training tool for the home health aide, the physician, and allied professional groups. It can also be used effectively for community groups to describe services of the home health aide.

Source and producer: Thomas J. Barbre Productions, 2130 South Bellaire Street, Denver 22, Colorado.

LSD: Insight or Insanity. Sound, color, 16 mm., eighteen minutes.

The film describes the harmful effects of LSD, the careless use of which is extremely dangerous. It is excellent for use with teen-agers and youth to point up the effects and dangers of using LSD. It emphasizes the unknown aspects, leading often to permanent brain damage and personality destruction.

Source and producer: Bailey Films, Inc., 6509 DeLongpre Avenue, Hollywood, California 90028.

Hands of Action. Sound, color, 16 mm., forty-two minutes.

The film is directed to the ambulance attendant and allied disciplines. The four major areas of concern as to procedure and priority of care, for instance blocked airways, bleeding, open wounds, and broken bones, are clearly demonstrated when such personnel arrive at the scene of an accident. The film has potential as a tool for instruction in emergency medical care.

Source and producer: The Surgeon General, U.S. Public Health Service, Public Inquiries Branch, Washington 25, D.C.

Moles and Melanomas. Sound, color, 16 mm., twenty-six minutes.

In this film the following aspects of the problem are discussed: the incidence and regional distribution of moles and melanomas; the influence of complexion on the character and behavior of moles; the hormonal relationships of moles and melanomas including the prepuberal melanoma and melanomas of pregnancy; the treatment of melanomas including the monobloc operation and the indications for amputation; and considerable data on the end results of treatment related to the site of origin, stage of disease, age and sex distribution, and method of treatment.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

Hospital Housekeeping—Wet Pickup. Sound, color, 16 mm., seven minutes.

Wet vacuuming is the best method for cleaning many types of floor areas in an institution. The film shows the complete step-by-step procedure for wet vacuuming a floor.

Source and producer: DuArt Film Laboratories, 245 West 55th Street, New York, New York 10019.

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Medical Meetings

Arthritis topic of teaching conference

A teaching conference on Arthritis, sponsored by the Page and William Black Post-Graduate School of Medicine of the Mount Sinai School of Medicine and by the American Academy of General Practice, is to be held on May 18, 9:00 A.M. to 1:00 P.M., in Blumenthal Auditorium, The Mount Sinai Hospital, New York City. Faculty members of the Departments of Medicine, Orthopedics, and Rehabilitation Medicine of the Mount Sinai School of Medicine will conduct the conference.

This program is approved for four hours of Category One Credit by the American Academy of General Practice.

There is no fee. For applications and information write to: Registrar, The Page and William Black Post-Graduate School of Medicine, Mount Sinai School of Medicine, Fifth Avenue and 100th Street, New York, New York 10029.

Library association to meet

The annual meeting of the Medical Library Association will be held at the Brown Palace Hotel, Denver, Colorado, June 9 through 13. Chairman of the convention committee is Frank B. Rogers, M.D., of the University of Colorado Medical Center, and Scott Adams, Bethesda, Maryland, is president of the Association.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Nutrition institute to be held at Cornell University

Current developments and research in nutrition will be presented at the biennial New York State Nutrition Institute at Cornell University, Ithaca, on July 11 and 12.

The two-day institute is sponsored by the Graduate School of Nutrition and the New York State Colleges of Home Economics and Agriculture, Cornell University, in cooperation with the New York State Nutrition Council.

The program has been planned particularly for professional workers engaged in nutrition education or associated with agencies concerned with nutrition. Several outstanding advances in laboratory-oriented nutrition research will be discussed, but emphasis this year will be given to new information on the increasingly important behavioral and social science aspects of nutrition.

For information and registration write to: Nutrition Institute, Department of Food and Nutrition, New York State College of Home Economics, Cornell University, Ithaca, New York 14850.

Ice and air conditioning

Everyday luxuries such as air conditioning in our homes and ice in our drinks that we take for granted are the result of the efforts of a little-known physician from Apalachicola, Florida, John Gorrie, M.D., who invented the first ice-making machine in a quest for an artificial room-cooling device, when he, as a young physician, treated patients suffering from malaria. As he cared for the fever-ridden victims, he felt that if he could lower the room temperature, he might control the temperature of the sick as well.

The first step toward room air conditioning was a device, invented by him, which hung from the ceiling of the patient's room. This was filled with ice, and a current of air was allowed to pass over it, cooling the air. This, in turn, cooled the room. Since all the ice at that time had to be shipped from the Great Lakes, Dr. Gorrie built a cold air machine, the forerunner of the compression refrigerator.

In 1844 he was cooling two rooms, and found that the pipes of the machine were clogged with ice. In 1845 artificial ice was invented in blocks of 8 by 10 inches.

In recognition of his achievements, the State of Florida has placed his statue in Washington, D.C., two Florida schools are named after him, and since 1957 there exists a museum honoring Dr. Gorrie. Housed in this is a replica of his first ice machine.

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IN BRIEF: ACTION AND USES: A single dose of Imferon (iron dextran injection) will measurably begin to raise hemoglobin and a complete course of therapy will effectively rebuild iron reserves. The drug is indicated only for specifically-diagnosed cases of iron deficiency anemia and then only when oral administration of iron is ineffective or impractical. Such iron deficiency may include: patients in the last trimester of pregnancy; patients with gastrointestinal disease or those recovering from gastrointestinal surgery; patients with chronic bleeding with continual and extensive iron losses not rapidly replenishable with oral iron; patients intolerant of blood transfusion *as a source of iron;* infants with hypochromic anemia; patients who cannot be relied upon to take oral iron.

COMPOSITION: Imferon (iron dextran injection) is a well-tolerated solution of iron dextran complex providing an equivalent of 50 mg. in each cc. The solution contains 0.9% sodium chloride and has a pH of 5.2-6.0. The 10 cc. vial contains 0.5% phenol as a preservative.

ADMINISTRATION AND DOSAGE: Dosage, based upon body weight and Gm. Hb/100 cc. of blood, ranges from 0.5 cc. in infants to 5.0 cc. in adults, daily, every other day, or weekly. Initial test doses are advisable. The total iron requirement for the individual patient is readily obtainable from the dosage chart in the package insert. Deep intramuscular injection in the upper outer quadrant of the buttock, using a Z-track technique (with displacement of the skin laterally prior to injection), insures absorption and will help avoid staining of the skin. A 2-inch needle is recommended for the adult of average size.

SIDE EFFECTS: Local and systemic side effects are few. Staining of the skin may occur. Excessive dosage, beyond the calculated need, may cause hemosiderosis. Although allergic or anaphylactoid reactions are not common, occasional severe reactions have been observed, including three fatal reactions which may have been due to Imferon (iron dextran injection). Urticaria, arthralgia, lymphadenopathy, nausea, headache and fever have occasionally been reported.

PRECAUTIONS: If sensitivity to test doses is manifested, the drug should not be given. Imferon (iron dextran injection) must be administered by deep intramuscular injection only. Inject only in the upper outer quadrant of the buttock, not in the arm or other exposed area.

CONTRAINDICATIONS: Imferon (iron dextran injection) is contraindicated in patients sensitive to iron dextran complex. Since its use is intended for the treatment of iron deficiency anemia only it is contraindicated in other anemias.

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Editorials

Drink and be saved

The Scots in their telluric wisdom have 69 reasons why you should drink whiskey and the sixty-ninth is that it won't do you any harm anyway. Now it seems a seventieth reason may be added. It has been found that judicious use of alcohol can delay the onset of premature labor for from one to eight weeks. The alcohol is given intravenously until uterine contractions quiet down and then is continued orally. This technic has proved significantly useful with no ill effects among 100 cases at one maternity center and is now having wider trial.

Alcohol has a bad name because of its abuses. It has an honored reputation in medicine because of its therapeutic value in a number of conditions ranging from anginal spasm to the rigidity of Parkinson's disease.

After all grandmother's sovereign remedy for menstrual cramps had a high percentage of alcohol.

Perhaps the watchword in the maternity section will now be "skoal" rather than "take a deep breath." And what of the infant delayed to his betterment. He truly can say like the inebriate lying in the fountain, "There are two men holding me down—Haig and Haig."

The edentulous

Figures just in from National Health Surveys conducted by the United States Public Health Service show a dismaying number of our population completely lacking teeth.

An earlier estimate based on a questionnaire to 36,000 households comprising 115,000 people yielded a result of 13 per cent edentulous.

During 1960 to 1962, a definitive study based on dental examinations of 6,653 men and women, which statistically represented a probability of 111 million men and women, noninstitutional and ranging in age from eighteen to seventy-nine years, showed that 19.7 per cent of women and 16.5 per cent of men were edentulous.

As might be expected the relative number of toothless persons increased rapidly with advancing age, rising from 1 in 100 amongst the youngest, to 1 in 5 amongst the middle aged, to 1 in 2 of those over age sixty-five. The vulnerability related to age reflects the excessive tooth loss which inevitably occurs whenever dental disease is extremely common and negligence in seeking periodic care is persistently widespread.

Tooth loss also is related to economic status and educational level. Thirty-three per cent were edentulous at the income level of $2,000 per year and decreased to around 10 per cent at the $9,999 level. With an educational level below fifth grade the edentulous condition existed in 38 per cent and dropped step wise to 9 per cent in those who had completed one or more years of college.

No significant difference was found in the prevalence of toothless people in various sections of the country although the percentage was higher in rural areas than in urban areas.

Dental care is more likely to be optional than medical care because dental conditions seldom threaten life.

We conclude from this survey that dental neglect is related to low income level, low educational level, and the availability of dental services.

Government programs are moving into this area, and it is to be hoped that the availablity of dental care for those who formerly neglected it will make for improvement in the appalling numbers of the edentulous.

We confidently expect that future surveys will show this.

Who calls the tune

"Who pays the piper calls the tune" is a pragmatism of long and honored lineage. We have it on good authority that the Federal government now lays down the rules covering one third of all the funds Americans spend for health protection. This is a heavy interest and carries considerable weight in the market place. Public agencies are accountable for all the funds they spend. When buying service they look for quality.

In the simpler economy of times past it behooved the doctor to keep up his competence. He was measured by his peers and the community gauged his reputation by his results. Now the community has grown so large that he and his work can become almost unknown. His peers, however, have maintained an active interest in his competence and have provided many opportunities for the individual doctor to inform himself in order to move forward with advances in knowledge and technic.

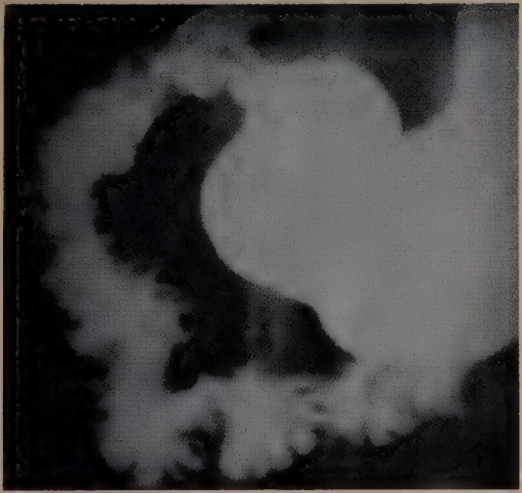
The opportunities range widely. For the lone wolf there is the medical library and audio-visual materials which can be used in the privacy of his own home. For the more gregarious there are lectures and seminars as close as his own home town or as far away as a cruise ship to the Orient.

The table is richly spread and the invitations are out. There has been little compulsion to date. Some hospitals require attendance at monthly staff meetings in order to maintain staff rank; one society requires postgraduate credits to maintain membership; and one specialty group is at present engaged in a program of voluntary self-analysis of its members.

Are efforts of this nature enough? The President's Advisory Commission on Health Manpower, which had among its members leaders of the medical profession, does not think so.

The Commission calls for back-to-school refresher courses or periodic relicensing examinations to compel doctors to keep their skills up to date.

If everyone made full use of the opportunities available in postgraduate education we would have no need for regimentation. We would have rededication.



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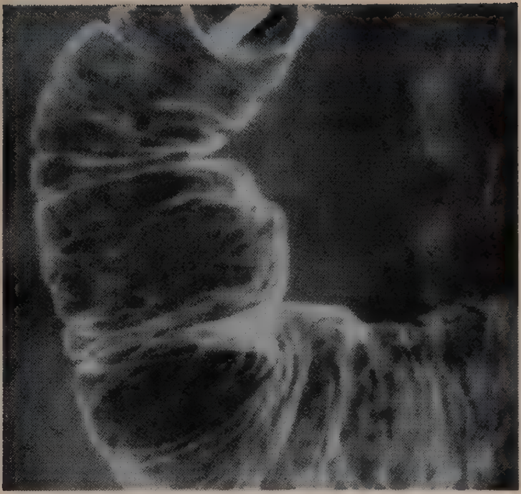

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In the hypotonic duodenograph[1,2] reproduced above, the gastrointestinal tract was relaxed with Pro-Banthīne. The duodenum was intubated. Pro-Banthīne in a dose of 60 mg. intramuscularly was used to assure prompt aperistalsis and double-contrast visualization was achieved with ordinary barium and air.

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Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most *adult* patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthīne (brand of propantheline bromide) is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology, 89:438-443 (Sept.) 1967.

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Scientific Articles

External Chemical Messengers

V. More Functions of the Pineal Gland

HARRY WIENER, M.D.
New York City

Clinical Instructor in Pediatrics, New York Medical College

PART IV of this series on "External Chemical Messengers" appeared in the April 1, 1968, issue of the JOURNAL. It dealt with the input functions of the pineal gland and proposed that its main output function in man is control of ECM (external chemical messengers) effectors. Additional output functions of the pineal are considered in this report. Estimates of probability are shown in Table I.

TABLE I. Estimates of probability

Estimate	Statement
0.80	Pineal hormones inhibit function and development of gonads
0.70	Melatonin is not the major pineal antigonadotropic hormone
0.80	Pineal-pituitary system affects central nervous system activity
0.70	Melatonin tends to depress, MSH to excite the central nervous system
0.80	Pineal hypofunction in children causes mental precocity
0.10	This mental precocity involves access to normally nonconscious processes
0.60	Pineal-pituitary system is actively involved in response to stress
0.80	Pineal-pituitary system acts as biologic clock
0.30	This timing mechanism acts in spurts rather than continuously
0.05	Individuals with pineal predominance are slow, steady, and introverted
0.05	Individuals with pituitary predominance are fast, mercurial, and extraverted
0.40	Man, like insects, undergoes a series of metamorphoses
0.40	Pineal-pituitary system controls these metamorphoses

Pineal to gonads

CLINICAL EVIDENCE. Over the last hundred years, there have been many cases reported of boys with precocious puberty, apparently caused by a pineal tumor. The impression is that the pineal produces a hormone which blocks pubescence, and that destruction of the gland by a nonparenchymal tumor removes this block.

More rarely, in girls as well as in boys, a pineal tumor delays puberty. The impression is that in these cases there is a true pinealoma, a tumor of pineal hormone-producing cells, and that the puberty-delaying hormone is produced in excess.

Kosaka encountered a man of twenty-one who looked like a boy of thirteen, with marked retardation of growth of gonads and bones.[251] When this man died, his endocrine glands were found to be normal except for the pineal. The pineal gland was grossly overdeveloped, and histologically its structure resembled that of a baby's.

In one fourteen-year-old boy with delayed puberty, no testicular growth, and a pineal tumor, the pinealoma metastasized to the skin and could be biopsied.[237] The tumor turned out to be producing melatonin, the first time this pineal hormone was found in tissue other than normal pineal gland.

Rodin and Overall[252] find that the human pineal weighs most in the prepubertal and postmenopausal periods when sexual activity is the least.

PHYSIOLOGIC EVIDENCE. Long ago,

numerous experiments suggested that the pineal gland inhibits sexual development and function in the mammal.[253,254] By 1946 Jullien[255] felt that there could no longer be any doubt of this function. But doubt does persist,[256] and the notion that pineal inhibits gonads is best viewed as a hypothesis, not as an established fact.

Some rat data supporting this hypothesis are that pinealectomy causes enlargement of gonads in males[257] and females.[258] The phospholipid content of the pineal varies with the estrous cycle.[53] Offspring born to females pinealectomized while still immature have markedly enlarged ovaries.[259] The frequency of estrus is markedly increased when eight-week-old females are pinealectomized, and pineal transplants abolish this effect.[260]

Orbach and Kling[261] find that surgically produced olfactory sensory deprivation retards sexual maturation in the female and disturbs mating behavior in the male rat. Visual sensory deprivation causes less marked inhibitory effects on sexual maturation and function. Orbach and Kling ascribe these effects to pituitary disturbances, but it seems equally reasonable to assume that these reproductive defects come from a failure to supply critical olfactory and photic signals to the pineal-pituitary system.

Herbert[262] has shown that in the ferret, extra exposure to light brings on precocious estrus, but that removing the pineal or cutting its sympathetic nerves prevents this change. At first sight, it would seem that here the pineal gland exerts a progonadal effect, stimulation of estrus. But another explanation is that extra light or the advent of summer block pineal production of antigonadal hormones; this rapid drop in inhibition is the trigger for estrus. Similarly, in the young rat, a sudden slowdown in pineal growth seems to trigger the onset of spermatogenesis.[49]

These effects on gonads, impressive as they are, cover only situations studied fairly easily in the laboratory. No doubt there are other, far more intricate, links between pineal and gonads. For example, when a female rat is fed pineal extract, the weight of the litter is increased. When the male is fed the extract before mating, the weight of the litter is decreased. When both are given pineal extract, litter weight is also decreased, suggesting that this effect is exerted more strongly on the male than on the female.[6]

ANTIGONADOTROPIC HORMONE. The belief that the antigonadal effect of the pineal is exerted by way of a specific hormone is not new. In 1923 Izawa[251] stated that "it appears that the pineal body's chief function is to repress the premature development of the sexual organs in the female as well as in the male." And by 1935 there was enough evidence to enable Engel[263] to assert that the pineal gland produces a specific hormone with antigonadotropic action.

What is this hormone? A likely candidate is melatonin, the first pineal hormone to be discovered. Wurtman, Axelrod, and Chu[264] find that melatonin, given to immature female rats, causes marked decreases in ovarian weight and other signs of gonadal inhibition. Kappers[265] reports that it reduces seminal vesicle weight in mature rats. Adams, Wan, and Sohler[50] show that melatonin-treated rats have small ovaries, delayed vaginal opening, and small pituitaries containing more LH (luteinizing hormone) than normal.

There is then no doubt that melatonin exerts antigonadal effects. But is it the hormone we are looking for? It was found by searching for the pineal hormone that lightens the color of skin, in opposition to the action of pituitary MSH (melanocyte-stimulating hormone). Somehow, it seems difficult to accept the idea that one pineal hormone should control not only skin color but also gonadal secretion. And some experiments do not confirm the antigonadal effect of melatonin.[266,267]

Lloyd and Weisz,[268] reviewing the assertion that melatonin may represent the means by which light regulates the estrous cycle, state: "Considering the significance of such an interpretation, the experimental data are tantalizingly incomplete." And Thiéblot, Berthelay, and Blaise[269] conclude: "It is not possible to equate melatonin with the pineal antigonadotropic hormone."

This apparent contradiction, I believe, can be resolved by assuming that the pineal gland does have marked effects on the reproductive system; that these effects tend to oppose those of the pituitary gland; that they are mediated by one or more as yet undiscovered pineal hormones; that melatonin takes part in some of these effects, just as ACTH takes part in some effects of MSH; and that the regulatory function melatonin exerts on the gonads deals with the production of exohormones rather than of endohormones.

Some recent reports support this scheme. Pineal transplants completely counteract the effect of pinealectomy on gonads, although they are very low in HIOMT (hydroxyindole O-methyltransferase) melatonin-forming activity.[260] The administration of melatonin to animals in constant light does not restore ovarian cyclicity.[270] Beef pineal extracts inhibit the stimulation of mouse uteri by human gonadotropin, but melatonin is unable to do so.[271] The same biologic activity is exhibited by a "gonadotropin-inhibiting substance" normally found in human urine, suggesting that both substances are the same.[272] The urinary gonadotropin inhibitor is diminished or absent in boys with pineal tumors and sexual precocity,[273] in patients with the Stein-Leventhal syndrome,[274] and around days seven to nine of the menstrual cycle.[275]

There already are some leads to the nature of the pineal antigonadal substances. Pavel and Petrescu[56] have isolated a polypeptide from pineal extracts, identified it as arginine vasotocin, and shown that it inhibits the stimulation of mouse uteri and ovaries by mare's serum gonadotropin. Thiéblot[196] has obtained a partly purified gonadotropin inhibitor from pineal glands, apparently distinct from melatonin. An indole compound, 5-methoxytryptophol, is present in pineal tissue.[276] It inhibits estrus and retards ovarian growth.[277] In addition, there is reason to suspect that one of the major pineal antigonadal hormones is a lipid. Lipid material is a vital component in pineal metabolism,[278] and pituitary gonadotropic hormones affect the lipid content of the pineal.[279] It seems that at least one of the pineal antigonadotropic hormones is excreted in saliva rather than in urine.[280]

Besides the antigonadal hormones which dominate the clinical effects of pineal disease, there are one or more pineal progonadal factors. In some cases, pineal hormones can stimulate gonadal growth and function.[281] And Thiéblot[196] has been able to fractionate pineal extract into an antigonadotropic factor, a progonadotropic factor, and a folliculin. Perhaps this is the reason for conflicting reports such as that of Kincl and Benagiano,[282] who note only a minor regulatory function of the pineal gland with respect to gonadal activity.

Reiss *et al.*[283] also were able to partially separate the two factors by exposing crude gland suspension to trichloroacetic acid. The supernatant liquid had a primarily inhibitory action on gonads, while the stimulatory factor was found mainly in the precipitate. Whether the predominant effect of the pineal gland will be stimulant or inhibitory depends not only on its output of these two factors, but also on age-dependent changes in target cells or in other hormones.

While the pineal gland affects sexual function, sexual function in turn affects the pineal. In pregnant rats, the weight of the pineal decreases in proportion to the size of the litter.[284]

PITUITARY-PINEAL SYSTEM TO GONADS. The best-known function of the pituitary is its control of gonadal activity. The agents it sends out to exert this control include LH, FSH (follicle-stimulating hormone), prolactin, and oxytocin.

In 1933 Hill and Parkes[93] showed that the effect of light on gonads in the ferret is markedly reduced by hypophysectomy. Maric, Matsuyama, and Lloyd[270] placed female rats under constant illumination. There was an increase in pituitary weight, a marked decrease in pituitary LH concentration, ovaries became smaller, and there was persistent instead of cyclic vaginal estrus. The authors recognize the probability that the presence or absence of pineal hormones in some way participates in these events.

There is some direct evidence for pituitary-pineal antagonism in gonadal control. When rats are pinealectomized, pituitary gonadotropic activity rises to 2 times normal; when they are then given a potent pineal extract, it falls to 0.5 of normal.[285] When adult human beings are given this pineal extract, there is a prompt and marked drop in the level of gonadotropins in the urine.[286]

The two known pineal hormones, melatonin and adrenoglomerulotropin, inhibit development of the immature rat.[287] They counteract LH at the level of the ovary and may also inhibit its production by the pituitary.

In the fall, with its shortened days, the sex glands of hamsters become nonfunctional. In the laboratory, shortened periods of illumination produce the same result. Hoffman and Reiter[155] have found that this effect is handled by the pineal; no pineal gland means no gonadal atrophy. But if one of the two testes is removed before the short photoperiods start, there is no atrophy of the other one. Compensatory processes are brought into play which counteract the inhibitory action of the pineal. Presumably, removing one gonad arouses the pituitary, which then proceeds to cancel out the effect of the antigonadotropic hormone of the pineal.[155]

If melatonin and MSH control exohormone rather than endohormone aspects of gonadal function, then they should play a particularly important role in one reproductive function, nursing, with its transmission of ECM from mother to infant in milk. Taleisnik and Orías[288] show that in rats, the suckling stimulus leads to an outpouring not only of prolactin from the anterior lobe, but also of MSH from the intermediate lobe of the pituitary. They ask: "It would be of interest, in view of the present results, to establish what effect MSH has in production and secretion of milk."

Effects on brain cells

Light-dark stimuli regulate not only sex function and ECM activity but also brain performance. In man, subliminal stimuli emerge more readily into imagery in the dark,[289] suggesting that access to normally nonconscious areas is easier when illumination is low. There is also evidence that one thing can be learned in the light, and the opposite response in the dark, without having the two interfere with each other.[290]

This ties in with the fact that melatonin and MSH, as well as other pineal and pituitary hormones, affect central nervous system activity. Melanocytes are displaced nerve cells, immigrants to the skin from the neural crest in early fetal life. It is therefore not surprising that the melanocyte hormones also have marked effects on the cells of the brain.

MELATONIN-MSH EFFECTS ON NERVOUS SYSTEM. A useful rule of thumb to sort out effects of the two pigment cell hormones on the nervous system is that here, too, the pineal hormone inhibits and the pituitary hormone stimulates.

In the electric fish, MSH excites the central nervous system, producing a startle reaction, the emission of an electric shock.[291] MSH makes albino mice hyperexcitable. They move in short, fast bursts, and are hard to catch. They struggle more vigorously than other mice and often attempt to bite the experimenter. They can easily be told from other mice because of the uproar they create in their cages.[211] In man, MSH given intravenously to patients with Parkinson's disease causes aggravation of the tremor.[292]

Beta-MSH modifies the state of activity of some nerve networks in the brain.[293] MSH produces definable effects on specific brain pathways, not a nonspecific alteration of neuron activity.[294] Presumably, the same thing holds true for melatonin. This specific effect may involve pigment cells in the brain. Bazelon, Fenichel, and Randall[295] have called attention to the often overlooked importance of neuromelanin in man and its probable involvement in the metabolism of chemical messengers.

When melatonin is injected into the hypothalamus of cats, they lose interest and go to sleep, while marked electroencephalographic changes develop.[296] A study of the pharmacology of melatonin shows that its only acute effects seem to be on the brain.[297]

Melatonin also has an effect, direct or indirect, on mental ability. Mice made phenylketonuric from birth show an abnormally low maze-learning ability when they mature. Continuous administration of melatonin from birth to maturity largely prevents this mental defect.[298]

PINEAL-PITUITARY EFFECTS ON NERVOUS SYSTEM. The rule of thumb for pineal and pituitary hormones in general is the same as for melatonin and MSH: Pineal slows, pituitary speeds brain activity. It is not known whether melatonin and MSH are just two of many hormones involved or whether they are the major factors transmitting pineal-pituitary signals to central neurons.

Pineal extract considerably decreases the activity level of treated rats, and pinealectomized rats are more active than their nonoperated littermates.[299] Substance P, a kinin, is also found in pineal extracts and may participate in this tranquilizing action.[41]

Quay[300] sees this as a primary function of the pineal gland. He has shown that the upset in electrolyte balance due to pinealectomy is far more marked in the brain than elsewhere and suggests that many functions of the pineal may be mediated by way of its effect on the brain. His results "tempt my temerity to suggest that the mammalian pineal's primary activity may be centripetal."

Some of these pineal effects may have clinical significance. Reiss reports that an extract from animal pineal exerts sedative effects in rats.[301] A high concentration of this "endogenous tranquilizer" is found in the urine of some mentally retarded children.

It has long been known that destructive tumors of the pineal gland cause striking mental precocity.[302,303] The pineal factors which dull the mind of each of us are lacking. But this mental precocity is of a peculiar type. It is well described in an early case report:[304]

> At the age of three, the child suddenly began to grow at a remarkable rate; at five, he had reached the size of a seven-year old. At about this time, his unusual mental development began to be noticed. The boy preoccupied himself mainly with questions of immortality and life after death, questions that as far as is known no one around him raised. He seemed extraordinarily kindhearted. One day he asked: "Why is it that I am so happy when I can give something to someone?"

And Leiner[305] pointed out that the mental precocity found only in the pineal type of pubertas praecox is characterized by reserve, thoughtfulness, and quiet. The children like to sit in a corner by themselves.

All this is vaguely reminiscent of some phases of the predisposition to schizophrenia I have discussed in preceding reports, in particular the tendency of schizophrenic patients to be excessively involved in questions of ideology, philosophy, good, and evil.[29] Perhaps this provides yet another point of contact between schizophrenia and the pineal gland.

PINEAL-PITUITARY SYSTEM IN STRESS. Melanocyte function, and its control by the pineal-pituitary axis, is involved in the response to stress. When goldfish are placed under stress, the concentration in the melanocyte of tyrosinase and of melanin granules increases markedly.[306] In rats, the stress of ether inhalation induces a prompt and persistent decrease in the level of pituitary MSH.[307]

Lingjaerde *et al.*[308] suggest that the pineal, showing increased activity in times of stress, might be concerned in the body's adaptation to unusual circumstances around it. They see confirmation of this in the fact that immediate operative mortality in rats is four times greater after pinealectomy than after sham operation.[309]

Miline and Stern[310] believe that the biologic antagonism between the habenular-pineal complex and the hypothalamic-pituitary complex is particularly apparent in the case of the response to stress, the general adaptation syndrome. Hares kept in fear showed regressive changes in pineal and habenula during the first few days, followed after a week by compensatory progressive changes.

When the hares were given reserpine before this experiment, the changes did not occur. In all runs, the changes in the supraoptic nucleus of the hypothalamus were the opposite of those seen in habenula and pineal:

> Obtained results show that the habenular-pineal complex has an important role in the neuroendocrinology of the general adaptation syndrome. They also demonstrate the active part of the habenula in integration and in adaptation.[310]

Social isolation of animals often increases aggressiveness, mediated by overproduction of pituitary hormones such as gonadotropin[311] and corticotrophin.[312] Tranquilizers such as the rauwolfias or phenothiazines reduce both aggressiveness and pituitary activity. It seems conceivable, then, that the rule of thumb "pineal slows down, pituitary speeds up" could be extended to the notion that pineal hormones promote peaceful and pituitary hormones warlike behavior.

This is in line with the views of Soulairac and Soulairac,[103] who suggest that the violent behavior following lesions in the rhinencephalon (sham rage) is due, at least in part, to failure to activate the epithalamus (habenula and pineal). The epithalamus, in turn, fails to do its job of suppressing such aggressive acts. Extirpation of the pineal in rats produces a marked increase in violence and aggressiveness and an explosion of motor unrest.[313] This occurs before there is any stimulation of general or sexual development.

Biologic clock. Jores[233] suggested long ago that the pituitary in mammals serves as a clock mechanism, using rhythmic input such as light-dark to regulate the output of endocrine glands. More recently, Wurtman and Axelrod[21] have made the same suggestion for the pineal.

Because of current interest in melatonin, the pineal is widely referred to as the biologic clock. But clearly it is not the pineal alone but the pineal-pituitary system which serves as the clock mechanism for glands producing internal and external chemical messengers. Both MSH and melatonin are involved. Giersberg and Usinger[314] find that mice under constant illumination lose their normal day-night rhythm. When they get MSH, though, the original rhythm reappears.

This pineal-pituitary chronometer is best viewed as a timer which goes off at scheduled intervals rather than a clock which moves steadily all day. For example, the occurrence of a circadian pattern of plasma 17-hydroxycorticosteroids is well known in man and in lower animals.[315] The daily increase in plasma 17-OHCS level is triggered by an outpouring of pituitary corticotrophin. This in turn is stimulated by a flurry of activity in the hypothalamus. During this critical period only, drugs which block nervous transmission can prevent the daily rise in steroid levels.[316]

The levels of steroids and other biochemicals are known to be closely related to our emotional state, and perhaps they serve as external olfactory cues to our mood. And so this critical period sounds like the time of day, such as getting out of bed, where the mood of the day is set for some of us. As we shall see, action at critical periods is an important characteristic of the long-range (structural) effects of the pineal-pituitary axis.

The function of the pineal-pituitary timer may not be limited to twenty-four-hour (circadian) and 29.5-day (lunar, synodic) rhythms. Pengelley and Kelly[317] have studied twelve-month (circannian) rhythms in the hibernating ground squirrel. If this animal started to store fat after the weather got cold, it would be doomed. The circannian clock enables it to prepare for winter in advance. Similar long-term clocks may exist in man as well.[317,318]

Pineal-pituitary genetics. These effects on the central nervous system raise the question whether or not inherited predispositions toward different forms of behavior, mood, or rhythm are related to inherited variations in pineal-pituitary activity.

Reiss, Sideman, and Plichta[319] measured spontaneous activity of rats in revolving cages. The difference between individuals, even littermates, is enormous, up to 600 per cent. But in the same individual, variation on different runs tends to be below 20 per cent.

Reiss, Sideman, and Plichta[319] then examined endocrine glands of these rats and found a very clear difference between fast and slow. The slowpokes had more cells in the pineal gland: "The difference in cell number between the fastest and the slowest runners was so obvious that cell counts seemed unnecessary." Slow rats also showed adrenal changes reminiscent of those seen in hypophysectomized animals.

This surprising link between behavioral genetics and neuroendocrinology would have been no news to von Kup,[320] a Hungarian pathologist, who examined pineal glands of various breeds of pigs. The breed which had less pineal tissue per body weight was quicker to grow and more fecund. Von Kup drew some obvious analogies to human behavior, but his work seemed unbelievable and was promptly forgotten.

Now we may have to begin thinking in terms of a typology which goes beyond Kretschmer's correlations between behavior and body structure. If serial clinical examination of pineal-pituitary balance becomes possible, we might begin to distinguish the pineal type—slow, steady, introverted, and active mornings—from the pituitary personality—fast, mercurial, extroverted, and active evenings. The daily rhythm of body temperature correlates with morning-evening activity and with introversion-extroversion.[321]

Structural effects

The effects of the pineal-pituitary system listed so far can be measured in terms of minutes, hours, or days, the usual range of a laboratory experiment. There are also structural changes which may take years or decades to take effect.

Metamorphosis in man. These long-term effects need not be limited to fine control by the two brain glands, the pituitary speeding up development and the pineal slowing it down. The main function of the structural pineal-pituitary system may be to guide the great critical periods or metamorphoses of human development.

The notion that man metamorphoses, like insects, sounds as outrageous as the hypothesis with which this series began, that man emits and receives pheromones, like insects. But it is not a new notion. Psychiatrist, entomologist, and physiologist have independently expressed this thought, probably not suspecting that representatives of the other two disciplines were converging to the same conclusion.

The psychiatrist Dunbar[322] has pointed out that man and child are essentially different creatures: "Infant, child, adolescent, and adult differ from one another in somewhat the same way as do hatching larva, caterpillar, chrysalis, and butterfly."

The entomologist Wigglesworth[323] says:

> For anyone who has thought at all closely about insect metamorphosis in all its grades, slight and extreme, it is impossible not to be reminded of the metamorphosis that occurs in man at puberty. And those of us who have been working in the field have often speculated on whether there may not be a "juvenile hormone" in mammals.

The physiologist Wald[324] emphasizes that biochemical as well as structural changes occur in metamorphosis. In frogs, for example, there are transformations of visual pigment and of hemoglobin. In man and mammals, too, fetal hemoglobin is a different species of molecule than adult hemoglobin. Wald concludes that "the phenomenon of metamorphosis, biochemical as well as anatomical, extends therefore beyond the amphibia and fishes to include the land vertebrates, both egg-laying and placental," and that puberty should be regarded as an example of this phenomenon.

Insect-vertebrate analogies. If man undergoes metamorphoses analogous to those of insects, are there also likenesses between the glands which control these functions in insect and in man?

In insects, the corpora allata secrete juvenile hormone (neotenin), which delays metamorphosis; the corpora cardiaca secrete moulting hormone (ecdysone), which promotes metamorphosis. Proper development of the insect requires proper timing and balance between these two hormones.

In 1944 Scharrer and Scharrer[325] called attention to the parallelism between the brain glands of insects and vertebrates:

> A comparison of the hypothalamo-hypophyseal system of vertebrates with the intercerebralis-cardiacum-allatum system of insects reveals a parallelism which is the more striking because insect and vertebrate organs differ so greatly that no true organ homology can exist between these phyla.
>
> On the basis of these morphological relationships the hypothalamic nuclei (nucleus preopticus and its homologues) and the pars nervosa of the hypophysis appear as one closely interconnected system. Likewise, the pars intercerebralis and the corpus cardiacum of insects may be viewed as one neuroendocrine complex rather than as two separate sources of hormones.
>
> The parallelism in the organization of the two systems here compared could be merely a coincidence. However, it seems more likely that the comparison is significant in that it indicates a fundamentally similar relationship between the "master glands" and the central nervous system in invertebrates and vertebrates.

Since this report by Scharrer and Scharrer, pituitary research has focused on the odd system whereby active principles are produced in the neurons of the hypothalamus and then conducted to the neurohypophysis which serves as the gateway for their escape to the circulating blood. But such structures, "neurohemal organs," were first recognized in invertebrates.[326] The corpus cardiacum is the most important neurohemal organ of the insect, and the pituitary is the most important neurohemal organ of man. The secretory granules in the neurosecretory nerve endings in the corpora cardiaca, when looked at under the electron microscope, are similar in size and structure to the secretory granules found in the neurosecretory nerve endings of the posterior lobe of the pituitary.[327]

Recently, Wigglesworth[328] has pointed to

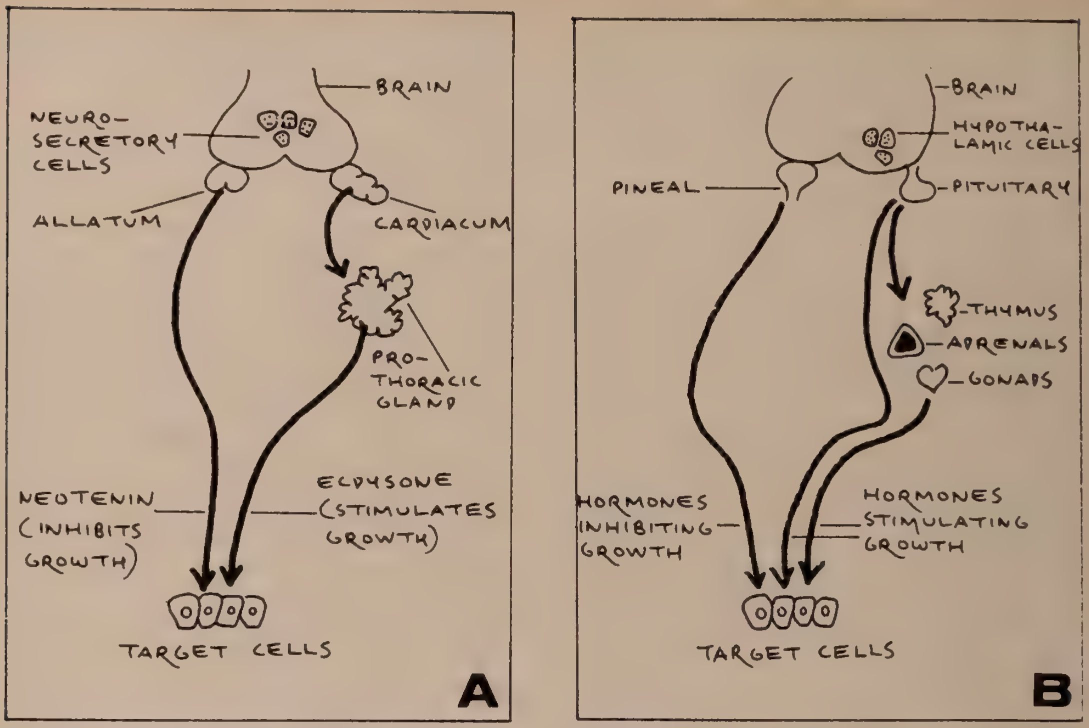
BRAIN
NEURO-SECRETORY CELLS
ALLATUM
CARDIACUM
PRO-THORACIC GLAND
NEOTENIN (INHIBITS GROWTH)
ECDYSONE (STIMULATES GROWTH)
TARGET CELLS
A
BRAIN
HYPOTHALAMIC CELLS
PINEAL
PITUITARY
THYMUS
ADRENALS
GONADS
HORMONES INHIBITING GROWTH
HORMONES STIMULATING GROWTH
TARGET CELLS
B

FIGURE 1. Hormones. (A) Controlling growth in insects. (B) Controlling growth in man.

a surprisingly large number of similarities between the hormone systems of insects and mammals. Gabe, Karlson, and Roche[329] see this as similarity of structure, not of function, but Highnam[330] sees the resemblance as including function as well:

> The insect neurosecretory system is clearly functionally analogous to the hypothalamus-median eminence-posterior pituitary neurosecretory system of vertebrates.

This analogy is supported by the fact that, in vitro, ecdysone causes marked alterations of the growth of mammalian cells[331] and almost doubles the rate of protein synthesis in liver cell.[332]

Like the pineal, the corpus allatum is deeply involved in the control of reproductive processes: It acts as a neurotransducer, getting light-dark input from eyes and light-sensitive cells in brain, to put out hormones controlling various twenty-four-hour rhythms; and it is associated with the function of the autonomic nervous system. In some insects, the corpora allata fuse to form a single midline structure, like the pineal.[328]

In worker bees, the corpora allata are almost twice as big as in queens.[333] This suggests an analogy to the function of the pineal gland in man, inhibition of growth and of sexual development (Fig. 1).

In insects, the corpora allata can control mating behavior by regulating the emission of pheromones, volatile sex attractants.[334] If the pineal gland, as proposed here, does regulate emission of ECM in man, then the analogy between allatum and pineal becomes even closer. Barth[334] points out for insects that "it seems quite appropriate that the same endocrine organ which controls egg maturation should also be involved in informing the male of the female's readiness to mate"; the same thing should hold true for man, the endocrine organ being the pineal gland.

PINEAL-PITUITARY SYSTEM AND GROWTH. The well-known effect of the pituitary on growth is not caused by pituitary growth hormone (somatotrophin) alone. As with all chemical messengers, we are dealing with mixtures rather than with individual chemicals. Growth response is a result of the integration of a number of complex factors, including at least four different hormones produced by the anterior lobe of the pituitary: growth hormone, prolactin, TSH, and

ACTH.[335] In addition, hypothalamic and other hormones are involved. At least one well-defined hypothalamic factor promotes production of growth hormone by the pituitary.[336]

Not so well known is the opposite effect of the pineal, inhibiting growth. But knowledge of this effect is not new. Fifty years ago, McCord[337] said:

> Current descriptions of the pineal gland attribute to this organ the function of producing a secretion which inhibits growth of body and restrains mental and sexual development from exceeding the rate looked on as normal for preadult life.

Inhibition of growth of reproductive organs by pineal hormones is one example of growth inhibition. There is also control of bone structures. In young guppies, pinealectomy induces spinal curvature.[338] In newborn chickens, pinealectomy produces prompt and severe disturbances of bone growth, including scoliosis and kyphosis.[339]

Some of these effects are indirect. Pineal inhibition of the parathyroid glands may be one reason for bone changes after epiphysectomy. Removal of the pineal gland causes a slow, gradual hypertrophy and cell hyperplasia in the parathyroid; administration of pineal extract or of melatonin causes atrophy.[340] In addition, both pineal and pituitary control thyroid function, and the thyroid affects growth by its output of thyrocalcitonin.[341]

Since pituitary hormones promote growth, early injury to this gland can produce a "pituitary dwarf." The pineal produces the opposite effect, and injuries to it might produce a "pineal giant." Most cases of pineal injury, however, are caused by invading tumors, and these children live only long enough to give an inkling of the size they might have attained in adulthood.

One of the earliest well-studied cases of this type was, in fact, reported as an instance of pineal gigantism.[342] A boy who died at four with a pineal tumor the size of a small apple had been normal and lively until the age of three. He then became retiring and quiet, sat in a corner, and wept a great deal. During the year remaining to him, he grew at a great pace. Sexual changes were particularly marked. The relaxed penis was 9 cm. long; breasts were hypertrophic, and colostrum could be expressed from them.

One reason for our ignorance of structural effects of the pineal gland is that they may take more than one lifetime to show up. When successive generations of rats are pinealectomized, a distinct increase in weight appears only in the third and fourth generations.[343] And when rats are treated with pineal extract, retardation of growth and acceleration of differentiation are amplified by the treatment of successive generations.[344] By the third generation, the rats take on a bizarre appearance, the "Hercules in miniature" effect: a squat, compact figure with small body, large feet, and bulldog face. This picture is sometimes seen in human functioning pineal tumors.

The presence of the pineal antigrowth hormone in man may explain a number of puzzling observations.[345] For example, in African pygmies secretion of pituitary growth hormone seems normal, but in some other ways these small people act as if they were deficient in this hormone.[346] Many children with constitutional growth failure cannot be distinguished from normal children on the basis of pituitary growth hormone levels or responses, suggesting that some factor other than growth hormone is involved.[347] Treatment of growth failure with human growth hormone is often followed by a fading of the initial brisk response; while this is commonly thought due to antibodies, there is little correlation between growth response and antibody binding capacity[348]; an unsuspected pinealoma has been found in a child with poor response to growth hormone.[349]

PINEAL GLAND AND METAMORPHOSIS CLOCK. In the metaphor of computer language, the pineal is programmed to be active while no major transformation is in progress and to rest when preparations for a new critical period begin.

First, there are the metamorphoses which occur in utero. Kelly[350] points out the importance, usually overlooked, that pineal organs may assume during immature and embryonic ages. In the rat fetus, pineal activity is high between the sixteenth and nineteenth days post coitum when the genital tract becomes differentiated ("prenatal puberty").[351] In the unhatched chicken, the seventeenth and nineteenth days see a speed-up of pineal and a slowdown of pituitary growth.[352] These sound like periods of continuous growth, preceded and followed by metamorphosis-like spurts in development. In man, the posterior part of the pineal shows secretory activity and carries out some unknown glandular function during prenatal life.[353]

The two main metamorphoses of mammals, however, are birth and puberty. Quay and Levine[354] have shown that in the rat, some pineal cells undergo a peculiar process of degeneration shortly after birth, and only then; and that there is a precipitous fall in mitotic activity of the pineal gland during the first weeks of life.

The next time so great a degenerative change is seen in the pineal is around the age of seven to ten years, when "brain sand," calcareous granules, begin to accumulate in it. At this time, perhaps, the signals from the pineal which have blocked preparation for puberty begin to fade out.

The fact that there is visible degeneration rather than generalized hypofunction suggests that the pineal gland elaborates at least two, and perhaps a whole series of growth-delaying hormones, produced by specialized cells and acting as "juvenile hormones" by delaying metamorphosis until the right time, postnatal and prepuberty.

Inhibition of gonadal growth in childhood is one of the structural actions of the pineal, and its antigonadal hormones may be considered to take part in its puberty-delaying role. Pineal transplants in young male guinea pigs prevent the appearance of puberty,[255] just as juvenile hormone in an insect prevents the appearance of the next instar.

In addition, a protein hormone is probably involved. The pineal contains much amino peptidase activity, suggesting production of a protein hormone.[16] This activity is highest in the prepuberal period and diminishes to almost nothing when puberty has occurred.[355]

Marburg[356] realized sixty years ago that two ages of man are particularly subject to pineal disturbances: the period of genital evolution and the period of genital involution. There are no reports of changes in pineal function during menopause or early senescence, but there is evidence that pituitary hormones are required for the development of aging and of some diseases of old age.[357]

AGE EFFECT. The pineal gland is programmed to be active at some periods, inactive at others, and to emit different hormone mixtures at different times. But it does not act alone. At any point, it is in gear with the pituitary, with other endocrine glands taking part in these growth processes, and with target cells. Each of these has its own program of activity and susceptibility. A pineal or pituitary hormone may be effective in preventing activity by a target cell at one time, and be completely ineffective a short time later.

In particular, the relations of the two master glands to each other vary. If we find that the pineal has a certain effect on the pituitary at age three, we can bet it will have a different effect at birth. For example, pinealectomy produces a significant increase in MSH content of the pituitary; in nine-week old rats, it takes many weeks more for this effect to disappear than in three-week old rats.[358]

Pecile *et al.*[359] compared the effect of hypothalamic substances from young and old animals on "young" and "old" pituitaries. In all cases, chemical messengers from the hypothalamus stimulate the release of growth hormone. But "old" pituitaries are less responsive than "young" ones, and "old" hypothalamic substance is far less effective than "young." Removal of the pineal gland in sheep aged one month produces some lasting cases of diabetes, but not in sheep aged four months.[360]

The thymus is another gland much involved with growth and development, and many contradictory results of thymus studies can be explained by the fact that thymus hormones have different actions depending on the age of the individual. Thymectomy in mice at birth markedly retards development of the lymphoid system[361]; in the older animal, it has little or no effect.

The point of these examples is that the brain glands and other endocrine glands are not standing still with respect to each other. Their interaction can be described as a stately minuet, with the chemical position of each of the glands changing slowly but steadily from month to month, and with rapid spurts of change during critical periods. The structural effects of the pineal are exerted on a tight time schedule. We must hit the right time on target in our studies, or we will be misled into thinking that the hormone or the gland is nonfunctional.

MALIGNANT GROWTH. The structural role of the pineal gland has an important clinical implication. If pineal antigrowth hormone, like insect juvenile hormone, brakes the tendency of body cells toward runaway growth and change, it must face a difficult task when some cells or tissues undergo malignant metamorphosis. There is some evidence that pineal hormones are involved in either the prevention or the control of tumor growth.

Engel[362] showed in 1934 that alkaline aqueous extracts of pineal gland can block the tumor-promoting action of pituitary growth hormone. In his experiments, the antitumor effect of pineal factors was greatly enhanced if they were given in combination with pituitary gonadotropic hormone.

More recently, Rodin[363] has found that pinealectomized rats have significantly shorter survival times, larger tumor diameters, and more extensive metastases following injection with Walker 256 carcinoma; there is evidence of pineal overactivity in rats with normal pineal glands who have died of this tumor. Human pineal bodies in patients with malignant tumors are enlarged.[252]

Other output

THYROID. The pituitary gland produces thyrotropin, a hormone which stimulates thyroid activity. The pineal has the opposite effect.

Houssay, Pazo, and Epper[364] find that hypertrophy of the thyroid is a constant result of pinealectomy in the mouse. Melatonin, given as replacement therapy, counteracts this effect. Other studies also show that removal of the pineal stops a braking effect it exerts on the thyroid gland.[365, 366]

Pineal hormones inhibit the secretion of thyroxin in immature rats.[367] Pineal extract[368] and melatonin[369] prevent the thyroid hyperplasia caused by methylthiouracil. Melatonin depresses thyroid secretion rate in mammals.[370] In general, the evidence is strong for a functional connection between pineal and thyroid,[196] and Kastin[51] notes: "In addition to exerting opposite effects on skin pigmentation in the frog, melatonin and MSH may also have opposite effects on the rat thyroid." But evidence for a specific pineal hormone antagonist to pituitary thyrotropin has not yet been found.

The habenula, controlling pineal function from the epithalamus, also affects thyroid function. Mess[371] finds that the habenula is a primary center for regulation of thyrotropin secretion. Matsuda[372] denies this result; Hungerford and Pomerat[162] find that lesions in the habenular-pineal area prevent the usual response of the thyroid to antithyroid drugs or to iodine deficiency.

Pineal agents may also exert an indirect effect on thyroid function by stimulating the paraventricular nucleus of the hypothalamus to secrete a neurohormone which inhibits activation of the thyroid by the pituitary gland.[373]

The action of the pineal-pituitary system on the thyroid gland is, in part, an indirect route for structural effects. The thyroid has long been known to have long-range morphogenetic functions.[374]

THYMUS. The pituitary promotes activity of the thymus, perhaps by way of a specific thymotropin. In turn, thymus factors act on brain receptors to inhibit pituitary production of thymotropin.[375, 376]

The pineal, as usual, works in the opposite direction. The weight of the thymus decreases rapidly in newborn mice, but when the pineal is removed at birth, regression of the thymus is greatly slowed down.[377]

ADRENALS. ACTH (corticotrophin) is one of the main trophic hormones of the pituitary. It stimulates production of corticosteroids by the adrenal cortex. If pineal-pituitary antagonism extends to this area, the pineal should produce anticorticotrophic factors.

Some studies suggest that pineal hormones are antagonistic to the action of pituitary corticotrophin[4] and that the pineal inhibits activity of the adrenal glands.[47] Pinealectomy can lead to adrenal enlargement,[378] and intravenous administration of pineal tissue to dogs inhibits secretion of steroids.[379]

Perhaps there is a whole line-up of pineal-to-adrenal hormones, each with a different mission. Lommer[380] has prepared pineal extracts in organic solvents which reduce production of 11-beta-hydroxycorticosteroids and augment formation of 11-desoxycorticosteroids.

Electrolyte balance. The hormone aldosterone plays an important part in the regulation of water and electrolyte balance. It is the agent most responsible for sodium retention in the human being and is produced by the zona glomerulosa, a well-defined part of the adrenal cortex.

In 1958 Farrell[381] summarized considerable evidence for the hypothesis that the secretion of aldosterone by the adrenals was stimulated by a trophic hormone of unknown origin. It evidently did not come from the pituitary gland. Soon thereafter, he was able to extract two different hormones from pineal tissue. One, adrenoglomerulotrophin, selectively stimulates secretion of aldosterone. The other inhibits output of aldosterone and of corticosterone.[382]

In an initially unrelated investigation, McIsaac, Khairallah, and Page[383] showed that removal of a molecule of water from melatonin converts it to the carboline derivative 10-methoxyharmalan, an analog of the hallucinogen harmine. Strong behavioral and physiological effects were found to occur from 10-methoxyharmalan, and the thought was put forward that carbolines might be formed in the pineal gland and might cause some psychotic states.

Pooling these two approaches, Farrell and McIsaac[384] found that pineal adrenoglomerulotrophin is, indeed, a carboline derivative. This was, after melatonin, the second pineal hormone to have its structure identified.

Giordano and Balestreri[385] confirm that aqueous pineal extract produces increased secretion of aldosterone; ACTH and angiotensin have the same effect, but by a different mechanism. On the other hand, Wurtman *et al.*[378] were unable to find any effect of the pineal on the zona glomerulosa or on electrolyte metabolism; others also dispute these results,[386] or believe that the effect of pineal gland on aldosterone is due to its serotonin content.[387] But perhaps these conflicting results are caused by the presence in pineal tissue of antagonistic hormones, such as those isolated by Farrell.[382]

There is evidence that a factor stimulating aldosterone production originates in the subcommissural organ, while an inhibitory influence comes from the pineal,[388] and that a pineal hormone may act to cause loss of sodium, an effect opposite to that of aldosterone.[389]

Farrell[379] and Palkovits[38] suggest that the hormone stimulating aldosterone is produced by the subcommissural organ and transported to the pineal gland for storage and release. Subcommissural organ extract produces increased activity of the zona glomerulosa of the adrenal cortex, and destruction of the subcommissural organ causes marked atrophy of the zona glomerulosa, without change in the pineal gland.[38]

As for pineal inhibition of aldosterone secretion, Fabre *et al.*[390] have isolated a lipid-soluble substance, ubiquinone or coenzyme Q, which may be in large part responsible for this phenomenon.

Control of urine flow. To counteract the pituitary antidiuretic hormone, the pineal should show prodiuretic activity, particularly if urine is an important vehicle for ECM emission. It does: When rats are pinealectomized, their rate of diuresis falls to 0.5 of normal; when they are then treated with potent pineal extract, it rises to 6 times normal.[285]

On the other hand, as in the case of some other pineal functions, the opposite effect, antidiuresis, is also present. And again, this antidiuretic activity probably originates in the subcommissural organ and is transported from there into the pineal. An aqueous extract of subcommissural organ has an antidiuretic effect.[38]

Carbohydrate metabolism. Light-dark input, besides its many other effects on the human body, alters carbohydrate metabolism.[75] This neural input may well be transferred to the chemical message system by the pineal-pituitary relay.

In addition to the better-known effects of other pituitary hormones on carbohydrate metabolism, MSH has marked hypoglycemic activity.[391] As for the pineal, there are at least two hormones with opposing action. Milcou, Milcou, and Nanu[392] find that the pineal gland secretes a hypoglycemic hormone, pinealin, which acts even in the absence of pituitary, adrenal, and pancreas. Buttaro and Rottini[393] report that administration of pineal extract produces moderate hyperglycemia.

Miscellaneous output. If the pineal is as active a producer of chemical messengers as it seems to be, there are many pineal hormones yet to be discovered. For example, there probably is a pineal hormone elaborated in the lipoid granules of pineal parenchyma. Drugs such as noradrenalin or nialamide particularly affect these granules, indicating that some as yet unknown pineal secretion product is made there.[394]

The kinin polypeptides must also be considered as possible pineal hormones. Substance P, a kinin, is present in large quantity in the pineal gland, and its level there changes as light input changes.[41]

The pineal is likely to have a far greater range of action than that listed so far. Three examples of other structures or functions under its control are: blood pressure, fat metabolism, and liver.

An antagonistic effect of pituitary and pineal on blood pressure is suggested by the fact that MSH causes a fall in blood pressure and dilation of the peripheral blood vessels,[395] and a pineal polypeptide hormone with pressor activity has recently been isolated.[54] In man, blood pressure shows twenty-four-hour rhythmicity.[396]

Marburg[356] described "adipositas cerebralis" as a major symptom of pineal hyperfunction. He pointed out that pineal antigrowth and proobesity effects go hand in hand, since getting fat while eating normally implies a slowing of cell metabolism. To counter this, the pituitary exerts an antiobesity effect. Chronic administration of pituitary growth hormone to experimental animals leads to a reduction in total body fat, probably caused by inhibition of lipid synthesis.[397] The pituitary, on the other hand, produces a number of polypeptides which have both lipotropic and melanotropic activity.[398]

If the pineal gland is a master gland of the ECM system, it should have control over the functions of the liver, probably a major source of these chemical messengers. Pineal extract doubles the level of free methionine in the liver.[399] The pineal antigonadotropic factor reduces phosphorus turnover in the liver.[283] The activity of tyrosine transaminase in the rat liver is four times greater near dusk than near dawn, even after removal of the pituitary, and the enzyme rhythm may be related to cyclic changes in pineal function.[400]

Summary

The pineal gland is widely viewed as an organ of mystery, a sport of nature in the center of man's brain.

Despite this public image, there is now evidence to support the old hypotheses that pineal and pituitary are antagonistic in action, and that pineal hormones delay reproductive growth and inhibit reproductive function.

In addition, I suggest that the pineal-pituitary system controls two functions which so far have been overlooked in man, recognized in vertebrates, and thoroughly studied in insects: chemical communication between individuals, and body development by metamorphosis.

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Hysterosalpingography

Indications and Advantages

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HYSTEROSALPINGOGRAPHY *is helpful in studying and diagnosing dysmenorrhea, unruptured tubal pregnancy, adenomyosis, pelvic pain, abnormal uterine bleeding, tubal patency, and in planning proper treatment. Abnormal states which preclude conception are delineated: hydrosalpinx, salpingitis isthmica nodosa, isthmospasm, kinks and tortuosities of the tubes, and such abnormal conditions as congenital uterine anomalies and intrauterine synechiae which are not obvious clinically. Misplaced intrauterine devices for contraception can be located. Possible therapeutic advantages are destruction of pathogenic microorganisms in the fallopian tubes by iodized oil and restoration of patency to impaired tubes.*

THE ESSENTIAL PRINCIPLES of good treatment are based on correct diagnosis. Hysterosalpingography is a proficient method for ascertaining structural and functional characteristics of the female genital organs in both the normal and abnormal states.

Generally, infertility and abnormal uterine bleeding are the major indications for hysterosalpingography. The use of the procedure should not be limited to the study of tubal patency.[1] It is helpful in diagnosing many gynecologic conditions and in planning their proper treatment. Dysmenorrhea, the unruptured tubal pregnancy, adenomyosis, pelvic pain, and abnormal bleeding have been studied. Hysterosalpingography is potentially as valuable a diagnostic procedure as the radiologic observation of the bronchial tree, the urinary tract, and the gastrointestinal tract. The science of radiology has advanced rapidly, but its possibilities and limitations in the field of gynecology should be further explored and evaluated.

Salpingography not only enables visual corroboration of anatomically normal or occluded tubes in infertility studies but also delineates asymptomatic abnormal states which preclude conception. Such conditions include hydrosalpinx, salpingitis isthmica nodosa, isthmospasm, and kinks and tortuosities of the tubes. The use of this procedure in the study of sterility is shown in the extensive literature on the subject.[2]

Hysterography reveals such abnormal conditions as congenital uterine abnormalities and intrauterine synechiae which are not obvious clinically. It is safe and provides a method for definitive diagnosis. Intrauterine abnormal conditions undetected after several curettages can be shown by hysterography. Operative abnormal findings often are depicted clearly in the preoperative films, but in some hysterograms shadows are overlooked or misinterpreted.

With good technic and awareness of contraindications, the physician will find that hysterography and salpingography offer maximal information with minimal discomfort to the patient in the nonoperative examination of the cavities of the uterus and tubes. Weisman[3] performed 1,400 consecutive hysterosalpingograms with iodized oil (Lipiodol) without a single incident of venous intravasation or embolism.

Indications for use

ABNORMAL UTERINE BLEEDING. Impressive contributions indicating the value of hysterography for use in selected cases of abnormal uterine bleeding have been published.[4,5]

Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Obstetrics and Gynecology, February 16, 1967.

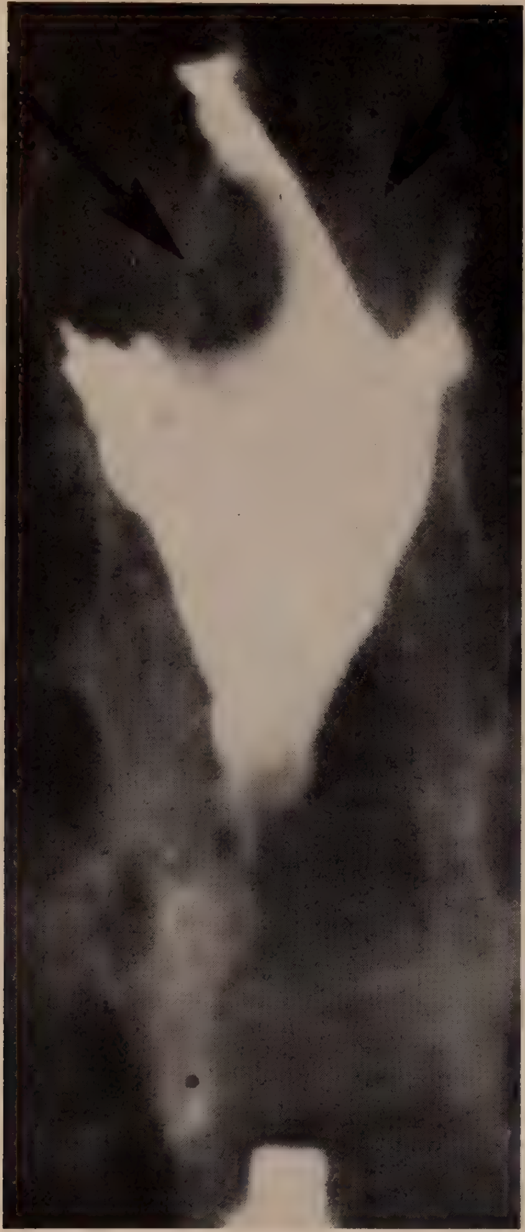

FIGURE 1. Patient aged forty-two, para 0-0-0-0, complained of recurrent intermenstrual bleeding. She had two previous curettages for same symptom. Slightly enlarged irregular uterus felt. After 2 ml. dye injected, multiple defects (arrows) seen in fundus.

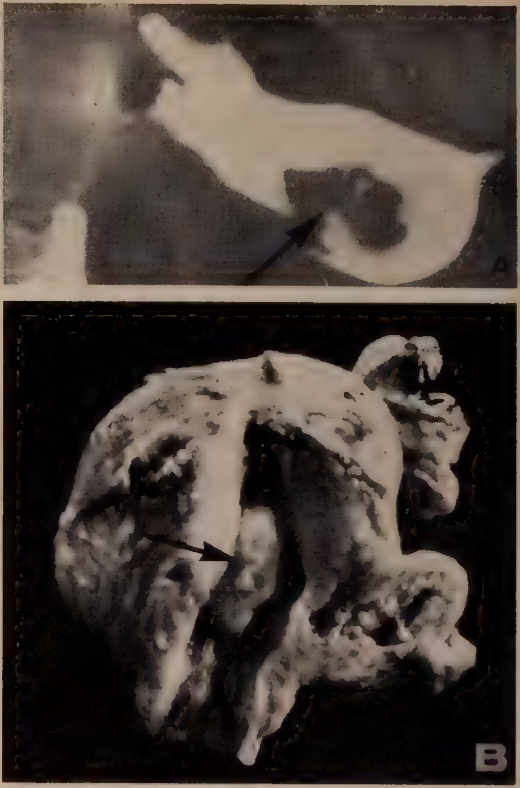

FIGURE 2. Patient aged forty-four, para 3-0-0-3, complained of pain in pelvis for two days, and on examination 7-cm. cystic mass felt in cul-de-sac. One year previously she had curettage because of hypermenorrhea and menorrhagia. (A) After 4 ml. contrast fluid introduced, large oval central defect (arrow) seen in dextroverted uterus. (B) Uterine cavity opened, and 4-cm. pedunculated submucous myoma (arrow) found. Ovarian cystic teratoma present as well.

Substitute for curettage. In patients younger than forty years of age who have a history of menorrhagia, hysterography can be utilized with safety and reliability in the absence of active uterine bleeding. When the contours of the uterine cavity outlined by radiopaque media are normal, the underlying cause of the bleeding is presumed to be dysfunctional. Prerequisite to this hysterographic interpretation, a normal pelvis, an endometrial biopsy specimen, and a negative result of a Papanicolaou smear must be shown. Thus, under conditions previously outlined, hysterography may substitute for curettage. Such patients are treated by nonoperative methods.

Guided curettage. Béclère and Fayolle[4] employ the term "guided curettage" to denote preoperative hysterographic delineation of intracavitary lesions and subsequent curettage of the diseased areas. These authors, as well as Dalsace and Garcia-Calderon,[5] believe that the procedure is helpful, especially in locating endometrial carcinoma. The possible dissemination of malignant cells and an evaluation of the ef-

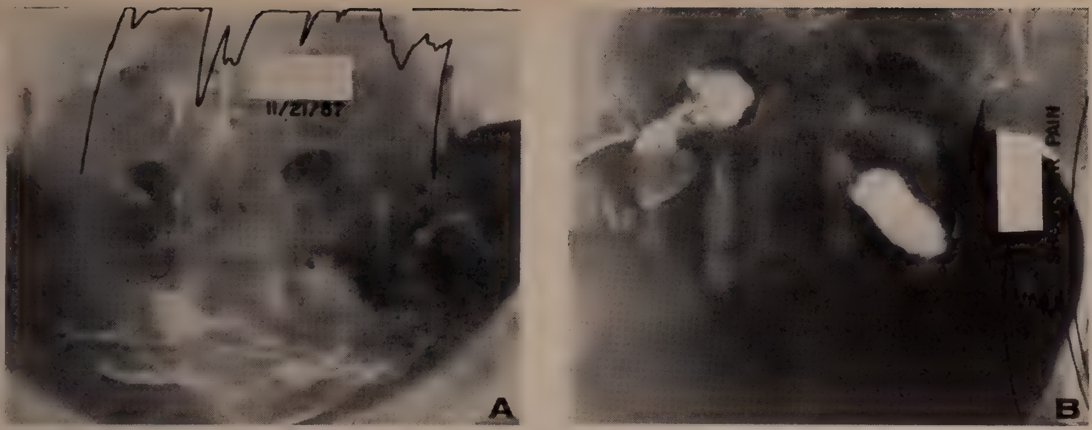

FIGURE 3. (A) Patient aged twenty-two, para 0-0-0-0, complained of sterility of two years duration. Hysterosalpingography done with 8 ml. dye, and delayed film twenty-four hours later shows good dispersion, but kymographic tracing still shows obstruction. False negative insufflation test result. (B) Patient aged thirty-four, para 1-0-1-1, sterile six years, with normal pelvis. Bilateral dilated ampullae seen on x-ray film. Since follow-up film seventy-two hours later discloses large bilateral pelvic collections of contrast material, insufflation study which shows normal tracing false positive.

fectiveness of radiation treatment by hysterography are other points for discussion.

Failed curettage. A patient having recurrent abnormal bleeding despite one or more previous curettages should have a hysterogram prior to surgical re-exploration. Endometrial polyps and submucous myomas missed with the initial curettage are revealed by hysterography. Such cases can be verified at subsequent hysterotomy or hysterectomy (Figs. 1 and 2).

PATENCY OF THE FALLOPIAN TUBES. Tubal patency or location of the occluded segment may be observed on the salpingogram. The diagnosis, prognosis, and treatment in patients with sterility should not be determined without prior proper salpingography. The practical conclusion from such a policy is that all infertile patients require hysterosalpingography. One group of investigators performed hysterosalpingography only if patency could not be established by insufflation.[6] After further clinical experience, their plan was altered so that salpingography with an oil medium was performed on each patient as the final test. In some patients, these insufflation tests revealed tubal occlusion, but unilateral or bilateral patency was seen during salpingography (Fig. 3A). Conversely, normal insufflation tests were not verified by salpingography which discloses significant tubal disease (Fig. 3B).

Salpingography is indicated after tubal pregnancy so as to ascertain the patency of the residual oviduct. Only one third of these patients subsequently produce living children because of disease in the remaining tube. Salpingography is of special value in those patients on whom a conservative (restorative) operation is performed on the affected tube.[7]

Many significant tubal lesions are not palpable. Tubal tuberculosis can form a unique image on the salpingogram (Fig. 4A). Salpingitis isthmica nodosa creates a characteristic lace-like pattern (Fig. 4B). Small, terminal, saccular dilatations are noted, and cornual obstructions and peritubal adhesions are found with salpingography.

Salpingography is a valuable test for diagnosing the peritubal factor in infertility by studying the peritoneal dissemination of contrast media.[8] Periodic x-ray films of the pelvis following hysterosalpingography help to measure pelvic retention by demonstrating changes in location, intensity, and outline of the medium. The incidence of the peritoneal factor as the cause of sterility is about 10 per cent. Pelvic and adnexal adhesions are identified also by means of gynecography.

CONGENITAL UTERINE ANOMALIES. Hysterography is a reliable nonoperative method for detecting congenital uterine anomalies. Only direct vision enables study

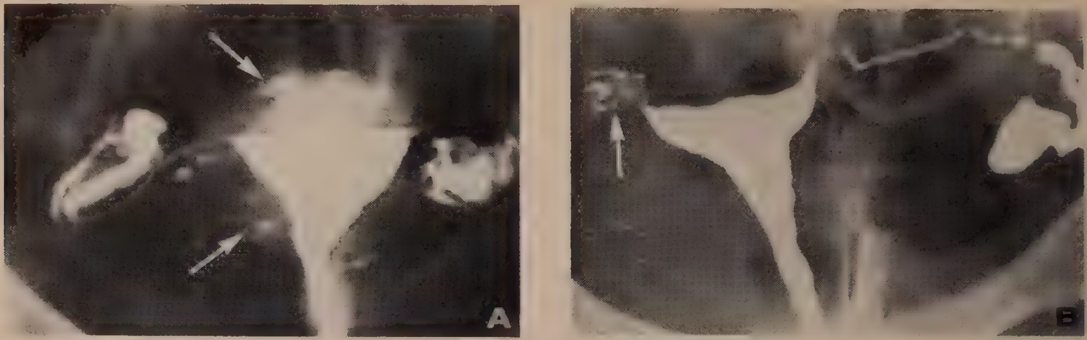

FIGURE 4. (A) Patient aged twenty-eight, para 1-0-0-1, infertile eleven years, and had oligomenorrhea and palpable tender adnexae. Her endometrium positive histologically for tuberculosis. Uterine shadow surrounded by fine network of lymphatic channels (arrows). Both tubes have multiple sinus tracts, ragged contours, and ampullary occlusion. (B) Honeycombed shadow seen in left tubal isthmus (arrow) which denotes site of tubal diverticulosis.

of the serosal uterine surface. Some uteri judged as bicornuate radiologically proved to be septate at laparotomy or culdoscopy.

Abortion. Structural abnormalities of the uterus such as isthmic incompetence may cause abortions in the second trimester (Fig. 5). Intrauterine synechiae which may produce repeated abortions can be demonstrated by hysterography (Fig. 6). Retained products of conception in an incomplete abortion are revealed on the hysterogram of patients in whom the external os is closed and bimanual palpation is normal.

Amenorrhea. The relationship of amenorrhea to postpartum or postabortal curettage is revealed by the hysterographic disclosure of intrauterine adhesions. Amenorrhea is also a symptom of endometrial tuberculosis, a disease which often produces a characteristic hysterogram.

Preoperative and postoperative use. Preoperative hysterosalpingography can guide the surgeon by localizing the segment of obstructed tube or the site of the uterine tumor. Postoperative studies can show anatomic results of operative intervention.

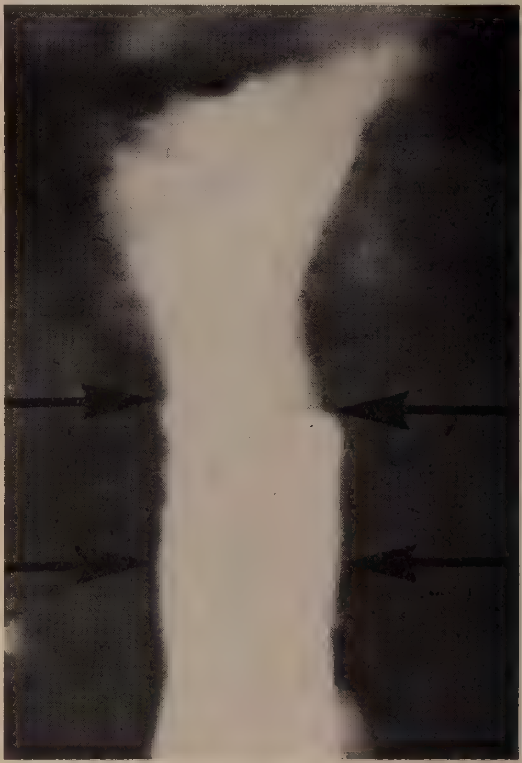

FIGURE 5. Patient aged nineteen, para 0-0-4-0, had four spontaneous abortions between sixteen to twenty weeks of gestation. Onset of last two occurred with rupture of membranes. Uterine isthmus measures 1.5 cm. in width. Isthmic canal located between upper and lower arrows. No congenital uterine abnormalities or adhesions in corpus.

Myomectomy. In certain types of leiomyoma, a more logical operative plan is possible if hysterography is first performed. For example, when uterine bleeding is caused by a sessile submucous myoma, the patient will not be cured by curettage. Hysterotomy or hysterectomy are usually necessary. Furthermore, in young women who require a laparotomy for multiple myomas, tubal patency observed preoperatively helps the physician to decide between a myomectomy or a hysterectomy. After a multiple myomectomy, hysterography can ascertain whether or not the uterotubal junction has been compromised and illustrates the configuration of the endometrial cavity.

Metroplasty. Postoperative hysterography evaluates the efficacy of metroplasty or reasons for its failure.[9, 10]

Functional cures shown by viable offspring or re-established menses do not always attest to an anatomic postoperative correction of the original lesion.

Salpingoplasty. Jarcho[11] located the area for tubal resection and the site for the artificial stoma in diseased tubes by salpingography. The films showed the segment of the affected tube, cornual obstruction, or bilateral, terminal, or ampullar occlusion.

When the proximal segment of the oviduct is occluded and the remainder of the tube is not opacified, it is impossible to evaluate the integrity of that portion without culdoscopy or laparotomy. It may be diseased or normal.

OTHER USES. Cervicoisthmography can delineate those changes not detectable by physical examination. Congenital diverticula or ulcerations of the endocervical canal, cesarean section scars, polyps, unusual constrictions, and dilatations are lesions of clinical importance.

With the renascence of intrauterine devices for contraception, the hysterogram serves in another capacity.[12-14] The location of a misplaced or "lost" spiral was portrayed strikingly in 1 patient. In another, the coil could neither be seen nor palpated, and the hysterogram showed the device clearly outside of the uterine cavity. In one instance the lost bow was located in the posterior wall of the uterus (Fig. 7A); in another, the coil was shown to be displaced to one side by an intrauterine pregnancy (Fig. 7B).

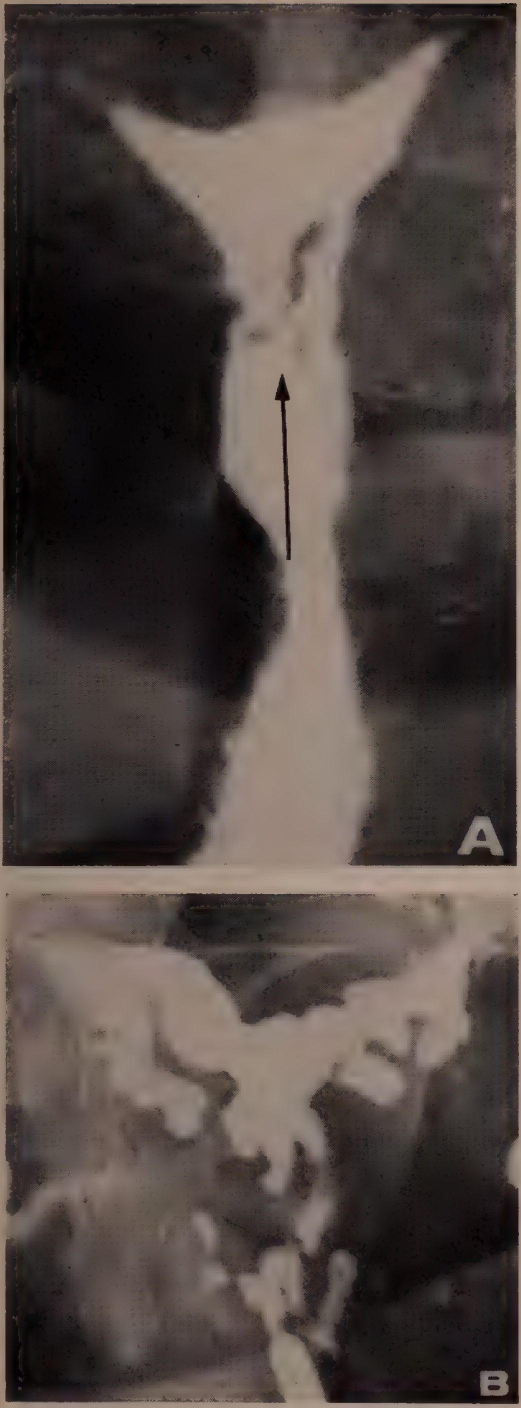

FIGURE 6. (A) Patient aged thirty-seven, para 0-0-2-0, had two spontaneous abortions followed by curettage in each instance. Film reveals irregular, inverted, Y-shaped lesion typical of intrauterine adhesions (arrow). (B) Patient aged thirty-two, para 0-0-1-0, had postabortal hemorrhage followed by curettage and endometritis. Amenorrhea persisted for subsequent five years. Multiple canalicular defects caused by adhesions in corpus and lower uterine segment noted on hysterogram.

Therapeutic advantages

A possible therapeutic effect from hysterosalpingography has been noted in some infertile patients. Cotte and Bertrand in 1926[15] observed that iodized oil destroys pathogenic microorganisms in the fallopian tubes. On the basis of these observations, they advised its therapeutic use early in the course of the inflammatory process to aid recovery and to prevent tubal obstruction. Furthermore, in some women, salpingography can restore patency to oc-

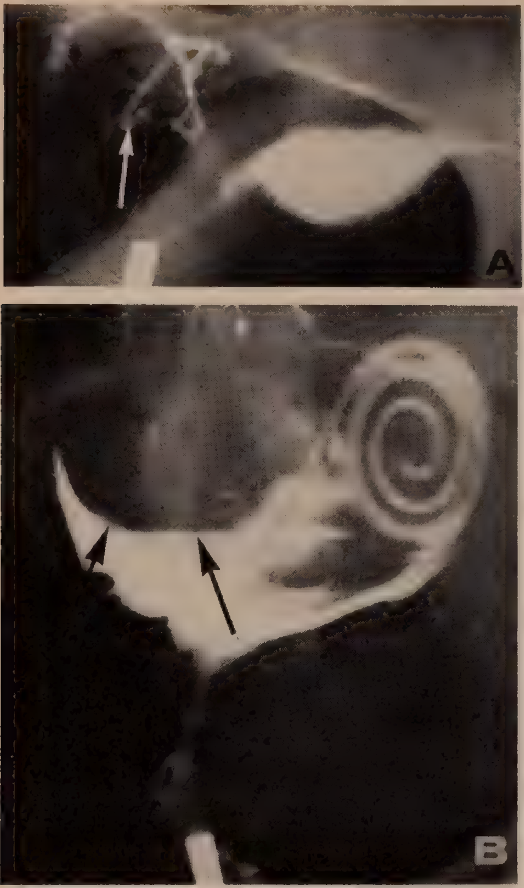

FIGURE 7. (A) Patient aged thirty-six, para 6-0-0-6, had plastic contraceptive bow inserted into uterine cavity. After two months, attempt made to remove it, first with aid of specially designed metal hook and then by curettage because of increasing abdominal pain. Film taken after 3 ml. water-soluble dye instilled, and uterine cavity outlined clearly. Device seen in left cornual region. In oblique film, uterine cavity located anteriorly, and bow (arrow) seems embedded in posterior wall. At laparotomy, bow found in posterior wall of corpus beneath serosa. (B) Plastic coil displaced laterally by early intrauterine pregnancy which causes semilunar defect (arrows) in hysterogram.

cluded tubes and prevent a surgically created stoma from closing secondarily.[11] Fluid media under constant pressure can establish patency in spastic tubes by overcoming adherent mucous membranes.

Injection of fluid (hydrotubation) for therapeutic purposes is employed by a number of gynecologists, some of whom use antibiotics with the contrast media. Hydrotubation with cortisone,[16] antibiotics, and hyaluronidase may overcome impaired tubal function or tubal adhesions.[17]

A type of sequential gas-oil-gas procedure also is employed to establish tubal patency.[18] With the aid of a water-soluble medium in the combined method, patency resulted in 1 of 5 patients who had obstruction at the fimbriated end, in 1 of 7 with obstruction at the cornu, and in 1 of 13 with obstruction at the isthmus.[19] Grant[20] treated blocked tubes by the injection of carbon dioxide and iodized oil at pressures of 250 to 300 mm. Hg. During some stage of the pressure injection, 42 per cent developed a degree of tubal patency. Pregnancy followed in 44 of 258 women who were treated for tubal occlusion. Many others have claimed a therapeutic value from hysterosalpingography.[21-23]

In a study of 258 infertile women, 57 per cent became pregnant within one year.[24] However, other therapeutic procedures were also employed. Feldman[25] treated 200 women by hysterosalpingography only. Three and one-half ml. of medium were instilled under fluoroscopic control during gynecography. Another group of 50 patients had uterotubal insufflation alone, and a third group of 50 patients had neither insufflation nor hysterosalpingography. Results in six months disclosed that pregnancy occurred in 41 per cent of the salpingographic series and 24 per cent pregnancies in the other two groups combined. In the latter group of 76 nonpregnant patients, 57 subsequently were subjected to hysterosalpingography with conception occurring in 40 per cent.

The type of infertility in patients who are selected for the procedure is specified in some studies but not in others, and usually no control data are available. Pregnancy was the criterion for ascribing credit to the method as a cure for sterility, but the mechanism of the therapeutic action from the test remains obscure. Pregnancy rates following various procedures in infertility are difficult to evaluate. The spontaneous cure rate in infertility is estimated at 20 per cent.[26] Thus the therapeutic value of hysterosalpingography suggested from the results of these investigators remains to be proved conclusively.

Summary

Indications for hysterosalpingography were described. The diagnostic advantages

of this procedure for selected gynecologic patients during the course of investigation of their symptoms were illustrated by the use of hysterosalpingograms.

The potential therapeutic value of the method was also discussed.

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Poliomyelitis associated with virus

Twenty-three days after his two-year-old son was given trivalent live oral poliomyelitis vaccine, a twenty-nine-year-old man suffered the first symptoms of an attack of paralytic disease clinically diagnosed as poliomyelitis, apparently caused by type 2 poliovirus. P. D. Swanson, M.D., R. McAlister, M.D., and D. R. Peterson, M.D., writing in a recent issue of *J.A.M.A.*, state that two days after the child was given the vaccine, he had an attack of febrile disease with diarrhea, loss of appetite, and restlessness. This lasted several weeks, during which time the father helped care for the child. The man had severe paralysis during the acute phase, involving upper and lower extremities. Six months after onset he could walk without a leg brace, but he still needed crutches for stairs. There was no record of poliomyelitis vaccination for the father.

The man was hospitalized because of fever leg cramps, and weakness of the left arm. The patient's temperature was 103 F., pulse 104, and blood pressure 160/110. During the first week in the hospital, complete paralysis developed in the right and left deltoid, supraspinatus, and infraspinatus muscles. There was marked weakness of flexion and extension of the left elbow and wrist and hand movements. Biceps, triceps, and wrist extensors of the right arm also showed weakness.

There was marked weakness of the right hip and knee flexors and moderate weakness of the left hip flexors. By the tenth hospital day, the left deltoid, supraspinatus, and infraspinatus muscles were definitely atrophied.

Specimens were taken from the throat, stool, and cerebrospinal fluid on the day of admission, or four days following the onset of illness. A cytophatic agent, subsequently identified as type 2 poliovirus, was isolated from the stool cultures both at the hospital and public health laboratory.

Correlation Between Hypoxemia and Physical and Radiologic Examinations in Atelectasis

Association with Abdominal Surgery, Coma, and Open-Heart Surgery

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PATIENTS FOLLOWING ABDOMINAL *surgery (27), following open-heart surgery (20), and in coma (31) were studied to compare the value of physical, radiographic, and physiologic examinations. The correlation between hypoxemia and the physical examination was significant in patients following abdominal surgery, poor in patients following open-heart surgery, and fair in patients in coma. Daily physical examination is important in detecting pulmonary atelectasis following abdominal surgery; when physical and radiographic examinations give negative results following abdominal surgery, significant shunting is probably not present. Routine blood gas analysis is essential following open-heart surgery.*

THE VALUE OF PHYSICAL and radiographic examinations in detecting pulmonary atelectasis is not clear. Years ago when blood gas analysis was not readily available, daily examination of the chest was considered most important in detection of pulmonary complications in patients with acute poliomyelitis.[1] Recently, measurement of arterial oxygen tension was found to be the best method to determine the presence of pulmonary atelectasis.[2] Several authors have reported that radiographic examinations failed to correlate with blood gas values.[3-5] Few reports can be found concerning correlative studies between blood gas studies and the physical examination. Hamilton *et al.*[6] reported that hypoxemia following abdominal and inguinal operations was not accompanied by radiographic evidence of atelectasis; increase in temperature, pulse, or respiratory rate; or abnormal physical findings.

If significant pulmonary shunting and hypoxemia occur without physical evidence of abnormalities, perhaps every surgical patient should have daily blood gas analysis. Obviously, such a routine would not be practical.

To compare the value of physical, radiographic, and physiologic examinations of the lung, three groups of patients were studied: group A, patients following abdominal surgery; group B, patients following open-heart surgery; and group C, patients in coma.

Method

GROUP A. Twenty-seven patients who had had abdominal surgery were studied. Age and type of surgery are listed in Table I. Endotracheal anesthesia with halothane

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TABLE I. Group A; patients following abdominal surgery; arterial oxygen tension and physical and chest x-ray examinations*

			Arterial Oxygen Tension							
				Postoperative						
Case Number	Age (Years)	Operation	Pre-operative	Thirty Minutes	Three Hours	One Day	Two Days	Three Days	Physical Examination Result	Chest X-Ray Result
1	54	Cholecystectomy	85	...	70	...	...	...	–	–
2	77	Gastrectomy	65 (460)	63	...	47 (175)	53 (235)	...	Crepitant rales, right lung, first p.o. day	Elevation of diaphragm, second p.o. day
3	41	Hysterectomy	65 (440)	67 (415)	...	70 (415)	69	...	–	–
4	40	Colectomy	77 (505)	74 (410)	...	76 (500)	77	...	–	–
5	61	Cholecystectomy	89 (445)	...	78 (440)	74 (475)	71	...	–	–
6	20	Gastrectomy	93 (510)	...	81 (480)	71 (295)	75 (400)	70 (430)	Crepitant rales, right lung base, first p.o. day; sputum second p.o. day	–
7	39	Cholecystectomy	90 (405)	...	77 (385)	76 (390)	80	...	–	–
8	47	Herniorrhaphy	73 (420)	...	70 (400)	74 (385)	79 (405)	...	–	–
9	75	Splenectomy	65 (340)	54	48 (360)	42 (185)	40 (220)	44 (275)	Crepitant rales, right lung base, first p.o. day; diminished b.s., right base, second and third p.o. days	Elevation of diaphragm second and third p.o. days
10	60	Cholecystectomy	60 (350)	...	...	54 (126)	50 (275)	50 (300)	Crepitant rales, right lung base, first and second p.o. days	–
11	74	Exploratory laparotomy	79 (430)	...	77 (375)	50 (235)	63 (255)	...	Crepitant rales, both lung bases, first p.o. day; b.s. diminished, second p.o. day	–
12	61	Hemicolectomy	68 (400)	...	61 (300)	59 (210)	73 (375)	...	Crepitant rales, right lung base, first p.o. day	–
13	76	Choledocho-jejunostomy	78 (425)	34 (92)	...	37 (143)	41 (180)	49 (300)	Crepitant rales, both lungs immediately p.o., b.s. diminished third p.o. day	Diffuse infiltration
14	35	Cholecystectomy	80 (550)	...	77 (475)	70 (540)	74 (545)	...	–	–
15	54	Ureteroplasty	84 (515)	79	70 (440)	60 (195)	48 (255)	63	Crepitant rales, left lung, first p.o. day; b.s. diminished in left first, second, and third p.o. days	Infiltration on left lung second and third p o. day
16	52	Cholecystectomy	85 (540)	...	64 (390)	67 (430)	70 (415)	...	–	–
17	46	Cecostomy	79 (560)	...	...	75 (455)	...	...	–	–
18	76	Exploratory laparotomy	78 (435)	...	80 (410)	68 (370)	...	...	–	–
19	63	Gastrectomy	69 (515)	...	69 (490)	83 (525)	...	...	–	–
20	88	Cholecystectomy	66 (455)	...	54 (445)	52 (325)	43 (355)	72 (420)	Crepitant rales, right lung, second p.o. day	–
21	70	Gastrectomy	65 (475)	..	49 (305)	51 (320)	52 (455)	66 (500)	B.s. diminished in right lung second p.o. day	–
22	81	Cholecystectomy	89 (525)	...	82 (535)	74 (495)	56 (385)	59 (400)	B.s. diminished in right lung second p.o. day	–
23	77	Appendectomy	69 (490)	...	71 (525)	68 (500)	...	...	–	–
24	56	Gastrectomy	72 (445)	...	82 (455)	66 (410)	74 (475)	...	B.s. diminished in right lung first p.o. day	–
25	82	Abdominoperineal	68 (550)	...	71 (535)	50 (305)	58 (395)	71 (475)	Crepitant rales, both lung bases, first and second p.o. day	–
26	73	Abdominal aneurysm	69 (470)	...	68 (420)	69 (395)	61 (290)	...	B.s. diminished second p.o. day	–
27	67	Cholecystectomy	64 (510)	66 (495)	...	47 (220)	51 (300)	60 (345)	Crepitant rales, both lung bases, first p.o. day; b.s. diminished first and second p.o. days	Elevation of diaphragm, right lung lobe infiltrated, third p.o. day

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* Figures without parentheses indicate arterial oxygen tension breathed with room air. Figures in parentheses indicate arterial oxygen tension breathed with 100 per cent oxygen. – denotes negative findings. B.s. indicates breath sounds, and p.o. indicates postoperative.

TABLE II. Group B; patients following open-heart surgery; arterial oxygen tension and abnormal findings in physical and chest x-ray examinations*

Case Number	Age (Years)	Operation	Arterial Oxygen Tension								Physical Examination Results	Chest X-Ray Examination Results
				Postoperative								
			Preoperative	Thirty Minutes	Three Hours	Six Hours	Twelve Hours	One Day	Two Days	Three Days		
1	30	Atrial septal defect repair	83 (605)	58 (550)	69 (550)	77	64	65	...	...	—	—
2	22	Interventricular septal defect repair	90 (540)	70	70	60	60	62 (405)	...	...	Right lung base, b.s. dim., twelve hours p.o.	—
3	58	Repair anomaly of venous return	85 (445)	...	48 (375)	52	48	49 (175)	45 (210)	49	C.r. second p.o.d., b.s. dim., third p.o.d.	—
4	66	Open mitral valvuloplasty	81 (495)	(215)	(325)	(270)	(275)	(160)	(235)	(320)	Minute c.r., first p.o.d.	Density both lung bases, second and third p.o.d.
5	41	Open mitral valvuloplasty	80 (605)	...	72	71	71	...	...	...	—	Right lung infilt., third p.o.d.
6	35	Aortic valvuloplasty	72 (425)	73	80	80 (405)	65	65 (400)	59 (320)	59 (380)	C.r. left lung second p.o.d., b.s. dim. right lung, third p.o.d.	—
7	40	Open mitral valvuloplasty	76 (370)	(260)	...	(154)	(100)	48 (130)	65	67	B.s. dim. left lung base, first p.o.d.	—
8	57	Aortic valve replacement	71 (515)	(180)	(75)	(55)	40 (50)	(93)	48 (150)	46 (200)	—	Left lung linear atelectasis, third p.o.d.
9	41	Open mitral annuloplasty	82 (550)	...	80 (370)	...	...	...	...	...	—	Miliary infilt., third p.o.d., both lungs
10	59	Mitral valve replacement	47	59	...	55	...	...	...	...	C.r. right lung base, preoperatively	—
11	43	Mitral valve replacement	54 (395)	(142)	(150)	(104)	(119)	(117)	(250)	46 (305)	C.r. both lung bases, six hours p.o.	—
12	39	Open mitral commisurotomy	74 (350)	(485)	...	(420)	...	(410)	...	...	—	—
13	57	Open mitral commisurotomy	62 (415)	...	(370)	...	...	49 (162)	63 (305)	64 (385)	B.s. dim. left lung, first p.o.d.	—
14	21	Interatrial septal defect	87 (535)	...	70	65	...	68	...	...	—	—
15	31	Mitral valve replacement	66 (253)	(215)	...	(380)	...	77 (400)	...	70 (465)	—	—
16	8	Interatrial septal defect	89 (560)	(490)	...	84	...	78	75 (515)	...	—	—
17	45	Mitral and tricuspid annuloplasty	51 (505)	56 (275)	...	(150)	(80)	(60)	(57)	(63)	C.r. both lung bases, second p.o.d.; pulmonary edema	Diffuse, patchy shadow, second and third p.o.d.
18	61	Open mitral commisurotomy	83 (515)	...	...	...	...	45 (148)	55 (205)	...	—	Infilt., both lung bases, second p.o.d.
19	15	Interatrial septal defect	84 (615)	87	90	...	...	61	79	82	B.s. dim. left lung, first p.o.d.	—
20	52	Mitral valve replacement	75 (505)	60 (305)	(180)	(150)	44 (200)	(208)	(240)	(115)	B.s. dim., both lung bases, second and third p.o.d.	—

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* C.r. = crepitant rales, b.s.: breathing sounds, pod. = postoperative day, numbers in parentheses = arterial oxygen tension breathed with 100 per cent oxygen, infilt. = infiltration, and dim. = diminished, — = negative findings.

TABLE III. Group C; patients in coma; blood gas tensions and abnormal findings in physical and chest x-ray examinations*

Case Number	Age (Years)	Cause of Coma	pH	Arterial Oxygen Tension Breathed with Room Air	Arterial Carbon Dioxide Tension	Arterial Oxygen Tension Breathed with 100 Per Cent Oxygen	Physical Examination Results	Chest X-Ray Result
1	53	Glutethimide (Doriden) intoxication	7.37	84	39	. . .	B.s. left lung base dim.	–
2	24	Barbiturate intoxication	7.36	90	35	. . .	–	–
3	50	Carbon monoxide intoxication	7.52	55	36	295	C.r., both lung bases	–
4	19	Drugs (not known)	7.51	58	32	425	–	Left lung base infiltration
5	30	Barbiturate intoxication	7.42	52	37	350	B.s., dim. left lung base	–
6	35	Glutethimide intoxication	. . .	. . .	. . .	325	–	–
7	38	Barbiturate intoxication	7.37	85	36	. . .	–	–
8	78	Diabetes mellitus	7.36	55	46	. . .	–	–
9	41	Drugs (not known)	7.34	81	43	. . .	–	–
10	62	Drugs (not known)	7.53	63	28	. . .	C.r., right lung base	Density, right lung
11	59	Drugs (not known)	7.55	52	35	250	–	Infiltration, right lung
12	38	Glutethimide intoxication	7.28	75	35	. . .	–	–
13	36	Barbiturate intoxication	7.35	75	40	. . .	–	–
14	50	Ethchlorvynol (Placidyl) intoxication	7.46	68	29	230	–	–
15	27	Glutethimide intoxication	7.37	86	43	. . .	–	–
16	60	Brain injury	7.23	42	27	100	B.s. dim., both lung bases	Elevation of diaphragm
17	84	Hepatic failure	7.49	. . .	32	119	–	Infiltration, both lungs
18	72	Hepatic failure	7.38	73	27	118	C.r., right lung base	–
19	45	Salicylate intoxication	7.28	71	58	395	B.s., dim. right lung	–
20	60	Hepatic failure	7.40	84	20	. . .	–	–
21	66	Cerebrovascular accident	7.43	46	24	. . .	B.s. dim., both lungs, and moist rates	Density, both lungs
22	51	Salicylate intoxication	7.45	68	36	. . .	–	–
23	64	Carbon monoxide intoxication	7.43	55	22	63	C.r., left lung base	–
24	25	Barbiturate intoxication	7.37	56	27	. . .	C.r., both lung bases	Infiltration, right lung
25	62	Glutethimide intoxication	7.52	56	32	250	B.s. dim., right lung base	Density, right lung
26	16	Barbiturate intoxication	7.42	45	40	. . .	–	. . .
27	43	Barbiturate intoxication	7.38	24	47	116	B.s. dim., right lung base	Infiltration, right lung
28	32	Chlordiazepoxide hydrochloride (Librium) intoxication	7.43	70	43	. . .	–	–
29	41	Cerebrovascular accident	7.41	42	42	. . .	C.r., both lung bases	–
30	46	Glutethimide intoxication	7.48	95	36	. . .	–	–
31	60	Tetanus	7.36	41	37	. . .	–	–

* B.s. = breath sounds, dim. = diminished, and c.r. = crepitant rales, – = negative findings.

and nitrous oxide was administered to the majority of the patients. The patients were premedicated with pentobarbital, 50 to 100 mg., meperidine hydrochloride, 25 to 50 mg., and scopolamine, 0.2 to 0.3 mg. Arterial blood gas tension measurements were done before induction of anesthesia and postoperatively at thirty minutes, three hours, one day, two days, and three days. Arterial blood samples were obtained while the patient was breathing room air and repeated after he had breathed 100 per cent oxygen for seven minutes. The determination of pH, oxygen tension, and carbon dioxide tension was done immediately after the withdrawal of the samples by an I.L. 113S blood gas analyzer. A reduction of arterial oxygen tension of the patients breathing 100 per cent oxygen has been considered to represent physiologic shunt most likely due to atelectasis.[7] Physical examinations were done daily by two of the authors before arterial samples were withdrawn. Auscultation of the chest was performed with a Littmann stethoscope. Crepitant rales or diminution of breath sounds were considered as abnormal signs. A portable chest x-ray film was taken daily. It was interpreted by the radiologist. Elevation of the diaphragm

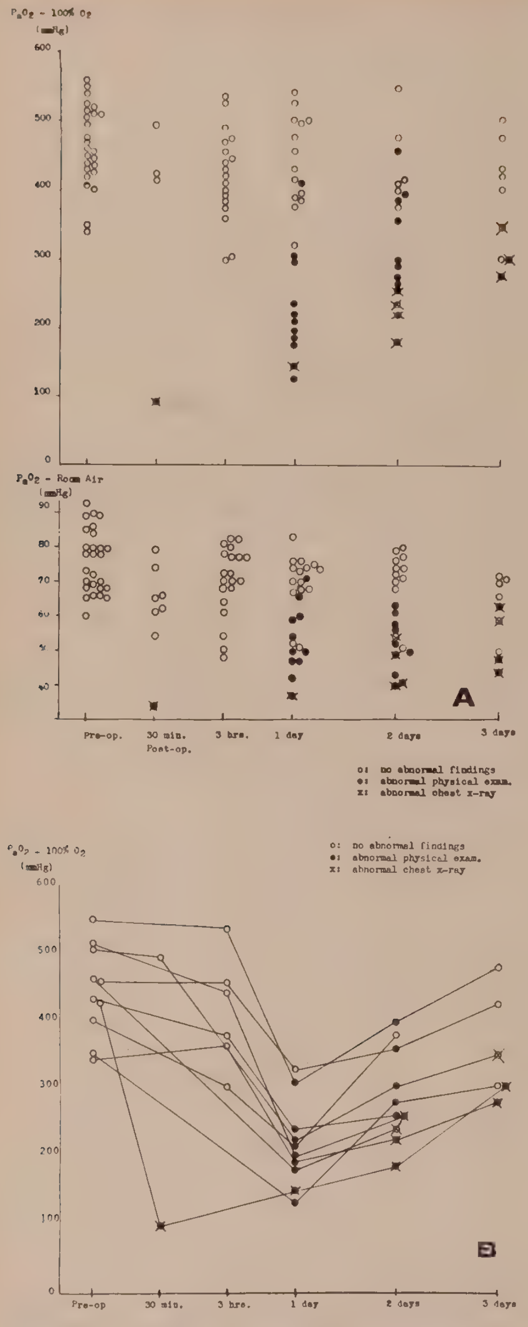

FIGURE 1. Results of study of patients following abdominal surgery. (A) Arterial oxygen tension and abnormal physical and chest x-ray examination results. (B) Ten patients who developed significant shunting following abdominal surgery; arterial oxygen tension and its relationship to abnormal physical examination and chest x-ray results.

or density in the lung fields was interpreted as an abnormal finding.

Group B. Twenty patients who had undergone open-heart surgery were studied. Age and type of surgery are listed in Table II. Postoperative examinations were done more frequently at thirty minutes, three hours, six hours, twelve hours, one day, two days, and three days. When arterial oxygen tension was lower than 60 mm. Hg at the end of surgery, the patient was placed on a respirator with nasal endotracheal intubation.

Group C. Thirty-one patients who were admitted to the intensive care unit in coma were studied. Age and cause of coma are listed in Table III. Examinations were done on the day of admission.

Result

Group A. *Post-abdominal surgery.* Results of the study are reported in Table I and Figure 1. During the early postoperative period, thirty minutes to three hours, reduction of arterial oxygen tension was minimal. Significant reduction of arterial oxygen tension in 100 per cent oxygen was seen on the first or second postoperative day. Arterial oxygen tension of 300 mm. Hg of patients breathing 100 per cent oxygen indicates the presence of significant pulmonary shunting, approximately 20 per cent of the cardiac output when arterial-venous oxygen difference is assumed to be 4.4 volume per cent. In 9 patients, arterial oxygen tension breathed with 100 per cent oxygen was lower than 300 mm. Hg on the first postoperative day. All of these patients had abnormal findings on auscultation of the chest. Crepitant rales were heard over the base of the lungs, usually on the right side, and were the most constant finding associated with the onset of shunting. On the second postoperative day crepitant rales were heard in only 3 patients, but diminution of breath sounds at the lung bases were found in 8 patients. A portable chest x-ray film examination did not reveal any evidence of atelectasis on the day of the onset of shunting except in Case 18 who vomited and aspirated gastric contents during the induction of anesthesia. However, on the second and third postoperative days, 4 patients showed elevation of diaphragm or density on x-ray film. Arterial oxygen tension of the patients breathing room air

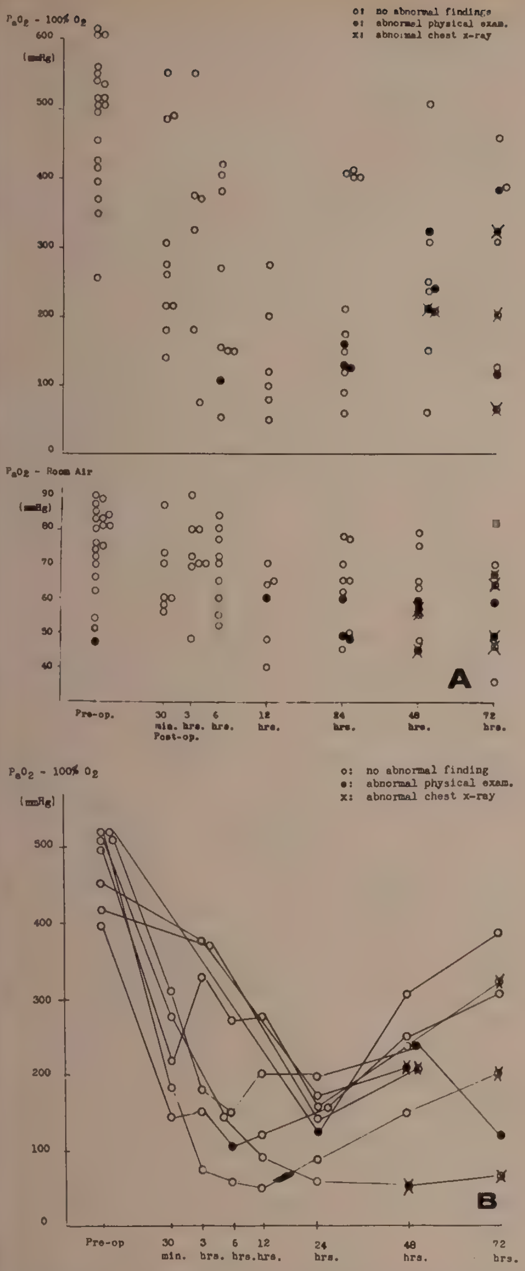

FIGURE 2. Results of study of patients following open-heart surgery. (A) Arterial oxygen tension and abnormal physical and chest x-ray examination results. (B) Postoperative period. Eight patients who developed significant shunting following open-heart surgery; arterial oxygen tension and its relationship to abnormal physical examination and chest x-ray results.

was lower than 60 mm. Hg in 11 patients on the first postoperative day. In 9 patients abnormal findings were present on auscultation. Arterial carbon dioxide tension was not elevated beyond 45 mm. Hg in any patients following surgery.

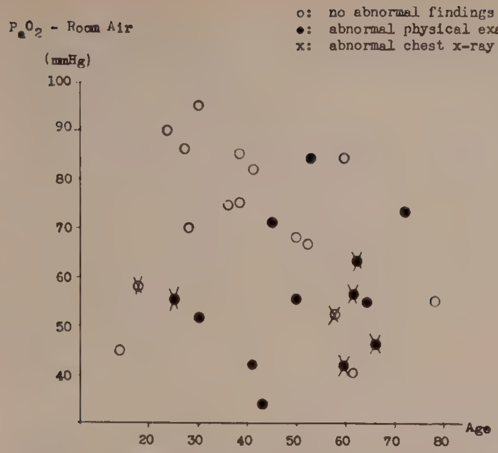

FIGURE 3. Patients in coma; arterial oxygen tension and abnormal findings in physical and ches x-ray examinations.

Group B. *Patients following open-heart surgery.* The results of patients following open-heart surgery are shown in Table II and Figure 2. Arterial oxygen tension of the patients who underwent open-heart surgery showed different patterns from those observed in patients following abdominal surgery. In abdominal surgical cases the shunting appeared on the first postoperative day, and its correlation to physical examination was significant. In open-heart surgical cases, shunting was seen immediately following surgery and persisted for twenty-four hours or more. In 10 patients, arterial oxygen tension breathed with 100 per cent oxygen was lower than 300 mm. Hg, and correlation with the physical and portable chest x-ray film examinations was poor. During the early postoperative period, twenty-four hours, abnormal findings were not present on physical examination unless pulmonary edema had developed as in Case 11. On the second or third postoperative day, chest x-ray examination revealed densities in the lung fields in 6 patients. Infiltration was localized in 4 patients, and diffuse miliary or patchy infiltrations were seen in 2 patients, Cases 8 and 17.

Group C. *Patients in coma.* The results of patients in coma are shown in Table III and Figure 3. Arterial oxygen tension breathed with room air was lower than 60 mm. Hg in 14 patients, abnormal findings were present on auscultation in 9 patients, and the chest x-ray examination showed abnormal results in 7 patients. Arterial oxygen tension breathed with 100 per cent oxygen was lower than 300 mm. Hg in 9 patients, of whom 7 patients had abnormal findings in physical and radiologic examinations. Crepitant rales and diminution of breath sounds were the noticeable abnormal findings on physical examination. All of the abnormal findings were localized to the bases of the lungs.

Comment

Dripps and Deming[8] outlined a diagnostic criterion for patchy or lobular atelectasis according to symptoms and signs on physical and chest x-ray examinations. Recently the term atelectasis is being interpreted as gas exchange units of the lungs which are perfused but not ventilated, thus leading to maldistribution and shunting with no implication of the cause of the condition.[9] Measurement of arterial oxygen tension breathed with 100 per cent oxygen has been adopted as the diagnostic test of choice. However, the relationship between shunting and classical signs and symptoms of atelectasis has not been made clear. Measurement of arterial oxygen tension breathed with oxygen does not provide information about the exact nature of the pathologic process in the lungs but indicates when pulmonary dysfunction occurs. If blood gas tensions were measured closely following surgery, its relationship to signs and symptoms of the early atelectasis could be determined.

Our finding of a good correlation between physical examination and shunting in abdominal surgical cases differs from the report of Hamilton and his associates.[6] In this report, data on physical examinations were collected from clinical notes written by surgical residents, whereas our data on physical examinations were obtained by the same two authors who examined the same patients daily. Auscultation of the chest was performed with the patient in a sitting position whenever possible, while the patient was asked to breathe deeply. Hamilton postulated that postoperative hypoxemia was due to miliary atelectasis and was to be considered a precursor to the more classical atelectasis. However, this hypothesis was not supported by our study since significant shunting did not occur prior to the onset of abnormal physical signs in the patients of this group. Crepitant rales heard at the base of the lungs were found to be the earliest signs of atelectasis, although they did not last very long. One or two days later the rales disappeared and were replaced by the findings of diminution of breath sounds on the affected side. Therefore, daily examination of the chest is needed to detect pulmonary atelectasis in patients following abdominal surgery. Percussion was not reliable in the detection of early atelectasis. Radiographic examination was not a reliable method for the detection of atelectasis in its early stage, but one or two days after the onset of shunting abnormal findings may appear in 50 per cent of the cases. It should be noted that radiographic examination was performed by a portable unit. If the examination was done by a standard unit with a patient in the upright position, more abnormal findings could have been detected. Coughing is usually described as one of the symptoms of atelectasis and pneumonia, but in these patients coughing was seldom noted at the onset of shunting; when the patient started to expectorate white thin secretions, there actually was an improvement in arterial oxygen tension.

Correlation between hypoxemia and physical examination was poor in the patients following open-heart surgery. The postoperative pattern of oxygen tension was different from that of the patients following abdominal surgery as has been described previously. Also, in the group of patients in coma, the correlation was not as good as that of the patients following abdominal surgery. These findings suggest that etiologic factors for atelectasis may not be the same in each of the 3 groups of patients. The cause of atelectasis has never been clear in the past, and there have been many theories regarding the cause of atelectasis, including emboli,[10] inflammation,[11] reflex,[12] obstruction,[13] hypoventilation,[14] congestion,[15] and decrease in surfactant.[16] Perhaps atelectasis can be initiated by a variety or a combination of several causes which work together in different degrees of importance at different times, giving rise to corresponding differences in the clinical picture and pathologic condition.[17] An attempt to determine the cause of atelectasis is important since the methods for prevention and treatment of atelectasis vary with etiologic factors.

Atelectasis of the patients following abdominal surgery may represent a type in which the lack of deep breathing secondary to surgical trauma and pain may be a major determinant. Very early presence of crepitant rales at the base of the lungs suggests that the localized condition of the lungs, probably congestion or regional hypoventilation, may play another important role as a causative factor in atelectasis. Therefore, in addition to encouragement of deep breathing and vigorous coughing, prophylactic and therapeutic value of positional change has to be reemphasized. We have observed frequently that the crepitant rales that had been present at the dependent part of the lung disappeared and arterial oxygen tension improved when the position of the patient was changed. The use of a more than 90-degree lateral position with the support of pillows is recommended whenever possible in patients following abdominal surgery or those in coma. It is of interest to note that atelectasis is rare following abdominal surgery in pediatric patients, and the base of the lungs is not necessarily the common site of atelectasis.[18] Probably, the child moves and changes position by himself more frequently compared with elderly patients.

In the open-heart patient, our findings of the lack of correlation between hypoxemia and physical and radiographic evidence of atelectasis agree with reports of Hedley-Whyte and others.[4,5] This would indicate that atelectasis seen following open-heart surgery is diffuse and scattered, probably related to the instability of alveoli. However, there has been no agreement as to whether or not impairment of oxygenation is related to any specific pulmonary damage inflicted during the period of perfusion.[19-21] Hedley-Whyte *et al.*[4] reported that there was no significant difference in the magnitude of shunts regardless of whether extracorporeal circulation was used or not. Our patients 8 and 17, Group B, developed a clinical picture of so-called "postperfusion lung syndrome,"[4,5,19,20] but others had varying degrees of shunting. This would suggest multiplicity of factors affecting pulmonary functions in this group of patients. Preexisting lung disease, bleeding tendency, embolism, pulmonary edema, insufficient re-expansion of the lung during and after the period of perfusion, unfavorable pattern of ventilation, reduction of surfactant, and homologous blood syndrome[21] are some of those factors. However, it should be emphasized that the type of atelectasis in this group of patients differs from that of patients following abdominal surgery in that (1) shunting occurs very early in the postoperative period, and (2) this shunting atelectasis cannot be detected by physical and radiologic examinations. Routine blood gas analysis is essential in this type of patient, and prophylactic use of a respirator for at least twenty-four hours during the postoperative period might be recommended for patients demonstrating significant shunting.

The correlation between hypoxemia and the physical examination of patients in coma was inferior to the group of post-abdominal surgical patients. There may be several reasons for this: (1) Crepitant rales may be absent when the patient in coma and with atelectasis is examined on admission since atelectasis may not be in its early stage. Crepitant rales are present only in the early stage of atelectasis, and later diminution of breath sounds and dullness on percussion occur as described previously; (2) some of the patients were placed on respirators. Diminution of breath sounds by auscultation under this circumstance is more difficult to detect than in patients breathing spontaneously. Probably, breath sounds created by a respirator may be more readily transmitted to the periphery, thus obscuring areas of diminished ventilation; and (3) causative factors of atelectasis in "the coma group" may be different from those in the other groups. It is quite possible that bronchial obstruction due to thick secretions or foreign substance may play an important role. When obstruction is complete, abnormal findings by physical examination may be at a minimum, especially when a patient is placed on a respirator. In patient 31, Group C, physical and radiographic examinations gave negative findings in spite of the presence of severe shunting and hypoxemia. Bronchoscopic examination revealed complete obstruction of bronchi of the lower lobe of the right lung because of blood clots secondary to hemorrhage from a tracheostomy. Radiographic examination revealed an elevation of the right side of the diaphragm two days later. The lack of abnormal findings in the physical and radiographic examinations in atelectasis due to complete bronchial obstruction presents a problem in the management of these patients. Early bronchoscopic examination would be of great therapeutic value if airway obstruction could be detected early. For this reason, bronchoscopy may be indicated in hypoxic patients in coma even though there may not be any localized abnormal findings by physical and chest x-ray examinations.

Conclusion

The correlation between hypoxemia and the physical examination was significant in patients following abdominal surgery, poor in patients following open-heart surgery, and fair in patients in coma.

Daily physical examination is important in detecting pulmonary atelectasis in patients following abdominal surgery. When physical and radiographic examinations give negative results in patients following abdominal surgery, we can be reasonably sure that significant shunting is not present. On the other hand, routine blood gas analysis is essential in patients following open-heart surgery.

Portable chest x-ray examination was not reliable in detecting atelectasis in its early stage. However, one or two days later abnormal findings may appear.

Factors that would affect abnormal findings in the physical and chest x-ray examination are discussed.

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Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Psychological Considerations in Ulcerative Colitis

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MANY OF THE RECENT contributions to the study of ulcerative colitis and the other "psychosomatic" disorders have resulted from a growing appreciation of the relationship between the individual's environment, his emotional reactions, and their neurophysiologic and biochemical end results. Attention has been increasingly directed to a fuller understanding of the stress experienced as related to an organ response, be it disease onset or exacerbation.

One's theoretical approach is not unrelated to the eventual therapeutic approach. This can lead to depriving a patient with ulcerative colitis and with obvious emotional problems of psychotherapy; or, on the other extreme, a patient in psychotherapy who can benefit from the use of steroids may be deprived of them because the disease is primarily "psychological." Since theory is, in the treatment of these conditions, inseparable from therapy, we will review its development.

Too frequently we deal with the idea that similar effects invariably result from similar causes. The terms "psychophysiologic" and "psychosomatic" by definition presuppose several possible etiologic components, and in any such disease the probability exists that one factor may potentiate another or, conversely, be antagonistic to it. The disease process has to be understood in terms of each element concerned, be it hereditary, environmental, constitutional, or psychopathologic.

A genetic component undoubtedly exists in ulcerative colitis. However, as is true in many illnesses, we cannot at present deal with the basic or original cause but rather, as clinicians, must find the cause most accessible to medical treatment. In malaria, for example, there is the parasite, the mosquito, the host, the climate, the living conditions, the presence or absence of a specific type of hemoglobin, and probably many other factors. All of these are necessary if disease is to result, but only one, the parasite, is currently accessible and vulnerable to treatment. So it is here that we direct our medical armamentarium.

In the psychophysiologic disorders, many factors have to be dealt with, and the relative importance of each must be individually evaluated. In one case the psychological may appear the most significant. Here psychotherapy is unquestionably of major value. In another instance, while psychotherapy may not be the primary treatment, it still may be valuable. The psychophysiologic disorder has to be understood as a process which is likely to require more than a single therapy, not as a disease that is the exclusive property of a particular medical approach.

Psychophysiologic considerations

Early hypotheses dealt with the psychophysiologic disorders very much as conversion reactions.[1,2] However, there is

TABLE I. Comparison of conversion and psychophysiologic reactions

Conversion Reaction	Psychophysiologic Reaction
Motor and sensory	Autonomic nervous system
Voluntary muscle	Smooth muscle
No tissue change	Tissue change
Anxiety relieved	Anxiety decreased or increased
Symbolic expression	Not a symbolic expression
Little gross evidence of emotional disturbance	Varies

a considerable difference between the hysteric and the psychophysiologic processes (Table I). The conversion reaction involves only the sensory or motor nervous systems, while the psychophysiologic reaction affects the autonomic system. The structure of the sensory and motor systems allows for symbolic expression, the autonomic does not. Cerebral control, neural pathways, and end organs allowing for symbolic expression are not the same in the sympathetic or parasympathetic nervous systems.

Since the autonomic and motor areas overlap in the cortex, this can play an important role in the conditioning and learning processes as applied to organs innervated by the autonomic nervous system, that is, the stomach and large bowel. With the existence of cortical representation, psychologic mechanisms might well be classified as conversion reactions. However, as yet there is no indication of specific organ representation, either structural or biochemical, in the cerebral cortex.

Recent work by Engel and Schmale[3] disagrees with this concept of conversion: "Conversion is a psychological concept, the definition of which cannot be bounded by neuroanatomy, even though the function and structure of the nervous system may be secondarily involved as a result of the biological meaning of the conversion. The parts or systems of the body capable of being involved in conversions are determined not by the voluntary or involuntary nature of their innervation, but by their capability to achieve mental representations . . . ."[3]

The hypothalamus can modify either directly, or through its connections, the internal environment of the individual. It is the center of autonomic activity, the posterior portion affecting largely the parasympathetic nervous system, which, in turn, can influence other endocrine glands through its direct vascular connection to the pituitary.

The autonomic nervous system, a branch of the peripheral nervous system, innervates both smooth musculature and endocrine glands. It is almost entirely an afferent system and functions below the level of conscious control. The discharge tends to be total, involving most organs, rather than being limited to an individual one. Postganglionic divisions outnumber the preganglionic neurons by a ratio of 32 to 1. Therefore, a single primary neuron discharges to a rather extensive terminal area. The parasympathetic nervous system discharges to a more localized area than the sympathetic, since its preganglionic synapses are embedded in the end organ itself. The viscera receives a dual autonomic supply, the sympathetic and parasympathetic, functioning antagonistically.

An exact regulation of neurohumoral control of the gastrointestinal tract remains to be demonstrated. Most of our understanding of the hormonal relationship between the cortex and the end organ comes from experimental work on laboratory animals. Unfortunately, the more complicated visceral response of the human being to his external environment cannot be fully understood in terms of such work. Although emotional stress can produce hyperactivity, vasoconstriction, and increased secretions in the gastrointestinal tract, to explain the occurrence of a disease one would have to then postulate that such changes could become chronic. The concept of "chronicity" has by no means been adequately demonstrated in any of the psychophysiologic disorders. It has been shown that in major catastrophes, physiologic changes can occur in some individuals and be sustained for a period of over two weeks. However, these are relatively acute changes, and a total theoretical framework cannot be established with this as a basis.

The interaction of emotion and physiology will be explained only in terms of an increased understanding of the cortical, hypothalamic, reticular activating system and limbic lobe, together with hormonal activity and its effects on the involved organ. Such understanding eventually has to be related to the specific effect of the individual's external environment.

Factors in ulcerative colitis

The psychiatrist working in a general hospital found himself in the enviable position of being able to correlate external environmental factors with internal results. During the early 1930's, medical psychoanalysts working within a general hospital setting established the basis of many of our present-day psychosomatic theories. Much of this original work was contributed by Murray[4] and Daniels[5] at the Presbyterian Hospital and by Sullivan and Chandler[6] at Yale, in their studies of chronic, nonspecific ulcerative colitis. This disease is characterized by inflammation and ulceration of the colon, its course is marked by remission and exacerbation, and it is frequently accompanied by arthritis, erythema nodosum, or other systemic manifestations. It has been variously attributed to allergic, genetic, infectious, vascular, and psychologic causes.

Diagnosis. Diagnosis is easily established by history, stool examination, x-ray, and proctoscopy. Onset may be at any time of life, but occurs most frequently between twenty and forty years of age in both sexes. It can be an acute, fulminating process, but more often than not is insidious and slow in developing. After the fourth decade, disease generally tends to be moderate; but when it originates in childhood, the prognosis is poor, and the course of illness likely to be severe.[7-9]

Symptoms may range from mild abdominal craps with blood in the stool to anorexia, nausea, vomiting, severe cramps, and stools consisting almost entirely of blood and mucus. Should the disease be confined to the rectum and sigmoid colon, stools will usually be formed, but when it extends further up into the colon, the tendency is toward diarrhea. Physical signs are generally limited to those of infection with associated abdominal tenderness.

Clinical studies. Most of the early studies of ulcerative colitis were limited to individual cases; it was not until the late 1940's that results of larger series were reported and that observations on the over-all course of the disease were available for a representative patient population. The prognosis, in general, was grave. In an extensive medical follow-up, Flood *et al.*[10] found that only 7 of 113 patients were symptom-free for a period of one and a half to three years. Bockus *et al.*[11] in a follow-up study of from three to twenty-five years reported 5 of 125 cases to be symptom-free for three years. Only 4 of these patients improved, and 18 per cent of the total group died. Weinstock[12] in reviewing Crohn's series of 2,500 patients described remissions for as long as ten to fifteen years.

Psychological factors seem to play a particularly important role as trigger mechanism[3] for exacerbation and also in determining the patient's response to, and handling of, the illness. These patients appear to have a more precarious level of emotional adjustment than usually occurs with other psychophysiologic disorders. One suspects that the incidence of schizophrenia is higher in this group than among patients with asthma, rheumatoid arthritis, hypertension, or other such diseases. However, there is no study which adequately demonstrates this.

In describing the psychopathologic factors, both Lindeman[13] and Daniels[5,14] emphasized the depressive aspects of the personality structure of these patients. Lindeman was struck by the similarity of the affect of the colitis patients to that of people "suffering from severe morbid grief reactions."

Sperling[15,16] has stressed the characteristic mother-child relationship where the mother attempts to maintain the child in a state of lifelong dependency. Avoidance of illness for the patient is related to his willingness and ability to find a replacement for the unsatisfactory mother. Being unable to accomplish this, intense frustration ensues, with a sharp increase of repressed destructive impulses which are discharged through the symptom of bleeding. Sperling has equated ulcerative colitis with the somatic dramatization of mother failure, in which the destruction and elimination of the object (mother) through the mucosa of the colon would seem to be the specific mechanism. This concept papears to be based on the older models of conversion hysteria and is not useful, since the autonomic system cannot express symbolization as can the motor or sensory nervous system. Alexander[17] cautioned against such assumptions, suggesting that the symptom, diarrhea, is a secondary utilization of unconscious needs rather than causative in itself. As we have pointed out, ulcerative colitis can be thought of as a systemic process, not just localized to the bowel. Some attention has been given to headaches in the literature[18] but very little to joint or skin complications. Unfortunately, the severity of the bowel symptoms and their easily analogized relationship to existent analytic theory of bowel training and personality development has led many of us in our investigation of individual cases to overemphasize this one aspect. In trying to join the physical and psychologic concepts, perhaps the issue of etiology becomes more clouded.

Engel[19] re-emphasized the symbiotic nature of the mother-child relationship, pointing to the psychologic condition as an affective state, characterized by feelings of helplessness and despair. As a result of the symbiotic relationship, the "major part of the child's ego remains attached to the mother," producing a state of helplessness in which any separation becomes excessively traumatic.

It has further been postulated that these patients have ambitious parents who unconsciously expect their offspring to realize their own frustrated goals. Acceptance and love then becomes based on performance and meeting high parental standards, which are all too frequently ill defined and unclear. Failure to achieve becomes equated to loss of love. The child, then, striving to please the parent, but not knowing how, experiences frustration and a sense of defeat and finally attempts to resolve the conflict by a pseudo self-reliance or a giving up. This pattern, in a more sophisticated way, continues into adult life.

Effects of psychiatric treatment

Various treatment methods have been utilized to alleviate the psychologic stresses associated with ulcerative colitis. Psychopharmacologic agents have had widespread use in the management of emotional conflicts associated with the disease. The use of narcosis has been reported and thought to be helpful in controlling acute exacerbations in 7 patients.[20] Levy *et al.*[21] describes 5 cases treated by prefrontal lobotomy: 3 were doing well one year after (1 died of obstruction and perforation a week after lobotomy, and 1 died six months after colectomy).

During the past fifteen years, the effects of psychotherapy have received more attention. In 1954, Grace, Pinsky, and Wolff[22] published the results of a study of 34 patients with ulcerative colitis whose treatment was directed mainly toward the alleviation of life stresses with a minimum of psychological intervention. The initial response to this form of treatment was considered favorable. Weinstock[23] originally reported poor results of short-term hospital psychotherapy in a group of patients who appeared to be severely ill. In a later study, he[12] described positive effects of long-term psychotherapy and psychoanalysis on the course of disease in 28 patients.

By and large, much of the psychiatric literature describing the effects of psychotherapy and psychoanalysis refer to individual patients or a rather limited number of cases, with no control group used to compare findings.[24–26] While these reports are valuable for establishing hypotheses, it was felt by Daniels that to assess the results of psychiatric treatment adequately larger series would be necessary.

Accordingly, he initiated an intensive study of all patients with ulcerative colitis who had been treated by the psychiatric staff of the Presbyterian Hospital or of the Columbia Psychoanalytic Clinic.[27]

Of the 900 cases reviewed, 104 had been in psychotherapy; however, there were only 57 who had an adequate follow-up period (a minimum of five years) or sufficient therapy* to provide for effective evaluation. This study group of 57 patients was matched to a control group that had no psychiatric treatment on the basis of 4 variables: (1) severity of disease, (2)

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* As used in this study, the term psychotherapy refers to various methods of treatment ranging from short-term directive, environmentally oriented therapy to classical psychoanalysis. The majority of patients (38) were seen in psychoanalytically oriented psychotherapy. Thirteen received brief therapy (less than 20 sessions), and 6 had over three hundred hours of psychoanalysis.

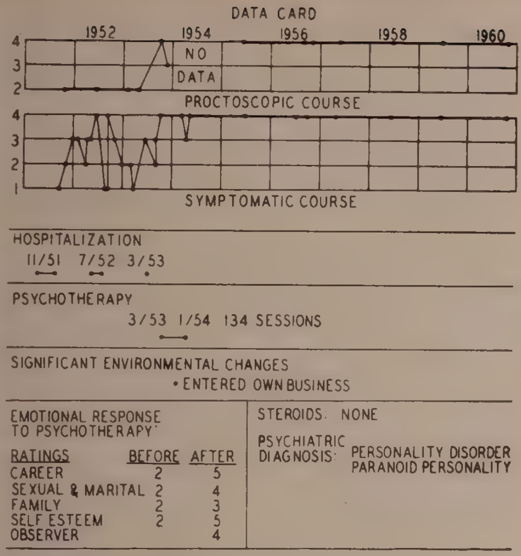

FIGURE 1. Rating of patients in treated group on basis of psychological changes in sexual and marital life, self-esteem, and vocational and social behavior.

sex, (3) age at onset, and (4) use of steroids. Patients in the treated group were also rated on the basis of psychological changes, favorable or unfavorable, in their sexual and marital life, self-esteem, and vocational and social behavior (Fig. 1). The average duration of disease for the series was fifteen years.

The most important prognostic factor found was severity of disease. Accordingly, the treated and untreated groups were matched on the following bases: symptomatic and proctoscopic ratings in the first recorded year of disease and the extent of colitis at that time, whether it was universal, segmental, or partial. Essentially, the patient with proctitis has a good prognosis with or without psychotherapy.

Proctoscopic and symptomatic ratings were recorded only at the time of observation. This eliminated a possibility of retrospective distortion.

CASE 1. During the course of the study, two psychiatrists were questioned as to their patient's response to therapy. One who had analyzed his patient over a span of two and a half years felt she had improved markedly, not only in her life adjustment but also in terms of the colitis. In a separate interview, the patient concurred. However, the recorded data indicated there had been absolutely no change in the severity of the disease process from a point dating back three years before her analysis to ten years after its termination, a thirteen-year period. We could only ascribe the hypothetical change to the fact that the patient was dealing with her colitis in a realistic fashion and not using her symtoms for secondary gain.

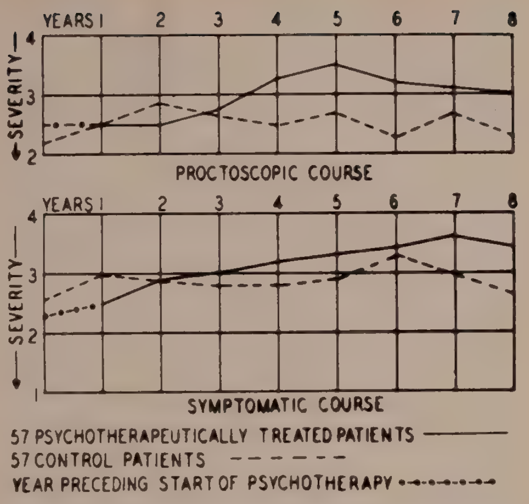

FIGURE 2. Proctoscopic and symptomatic ratings of psychotherapeutically treated and control patients.

CASE 2. The second psychiatrist had treated a patient psychotherapeutically for approximately one and a half years. His comment was "Yes, there has been some physical improvement, but she was never very sick to start with." On reviewing this patient's history, we found that the early physiologic records revealed her illness had indeed been severe and that a follow-up of three years showed marked improvement. Because of the patient's personality structure, in the therapeutic process she had concentrated less on dealing with the colitis and more on her emotional problems: marital difficulties and so on.

Observations such as these indicate how misleading the subjective reports of patients or even of physicians can be, and emphasize the need of currently recorded data to insure accurate evaluation. Psychiatric investigation should be based on the demonstrable, not the undemonstrable or feeling proposition, which more often than not tends to be related to the observer and not the observed.

Figure 2 illustrates the proctoscopic and symptomatic course of the illness over an eight-year period. The patients averaged 3 proctoscopic examinations per year. The first year precedes psychotherapy; the remaining seven years are those following the beginning of psychotherapy. Although data were available to project this curve beyond eight years, it was based on too small a sample of patients to be statistically reliable.

The findings in a single year could indicate that psychotherapy had no effect on the disease, is beneficial, or is deleterious. However, when the over-all course is observed, a definite pattern emerges. In the first year of psychotherapy, the treated patients rated consistently lower than the control group. However, by the third year, a sustained improvement was apparent, and by the time of final observation, the treated group showed considerable improvement, both symptomatically and proctoscopically. The control group, on the other hand, showed no improvement from its initial symptomatic rating and a minimal gain proctoscopically.

As the study progressed, it became evident that those patients who were schizophrenic had a markedly unfavorable prognosis. Accordingly, this group was evaluated separately and their course of illness compared with that of the remaining treated and control patients (Fig 3). Proctoscopically, the schizophrenic patients who started off the eight-year period with the least evidence of disease (minimal inflammation) deteriorated steadily, dropping from their original high rating to the lowest possible one. The treated group* showed definite improvement, while the controls* remained essentially unchanged. Symptomatically, the schizophrenic group showed a slight gain after eight years, while the nonschizophrenic portion of the treated group improved markedly and ended the recorded period with a rating which denotes almost complete absence of symptoms. The controls remained in status quo as of the last year of measurement.

It should be noted that 19 (33 per cent) of the treated patients had a diagnosis of schizophrenia as compared with only 3 (6 per cent) of the controls. Yet, the treated group fared significantly better than the control group, in spite of the high incidence of schizophrenia with its associated poor prognostic implications. These findings not only re-emphasize the value of psychotherapy in the treatment of ulcerative colitis, but also demonstrate the fallibility of using a single patient to assess either positive or negative effects of such treatment.

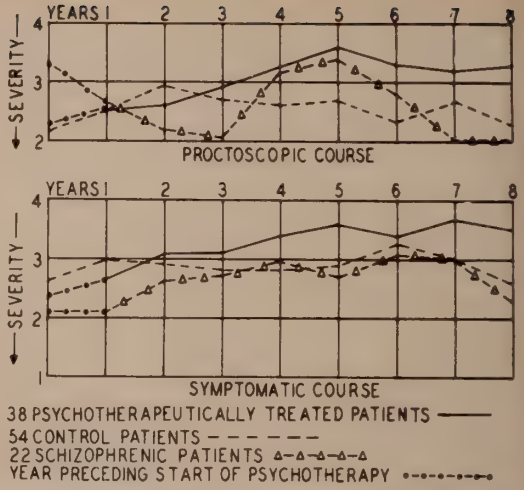

FIGURE 3. Proctoscopic and symptomatic ratings of psychotherapeutically treated and control patients with schizophrenic patients removed and charted as separate group.

In a continuing investigation 40 schizophrenic patients were compared to a nonschizophrenic control group.[28] Matching was on the basis of the previously established variables, with psychotherapy introduced as an additional criterion. The poor prognosis for coexisting ulcerative colitis and schizophrenia was confirmed. Both proctoscopically and symptomatically, the course of illness among the schizophrenic patients was one of decidedly greater severity (Fig. 4). Even more striking was the discrepancy of mortality and surgical rates: the incidence of death and operative intervention for the schizophrenic group more than doubled that of the control group.

Interrelationship of physical and emotional symptoms

The combined presence of ulcerative colitis and schizophrenia raises a question as to the interrelationship of physical and psychologic symptoms. Accordingly, the schizophrenic series was reviewed for the purpose of determining when, during the somatic course of illness, overt signs of emotional disorder appeared most fre-

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*Exclusive of schizophrenic persons.

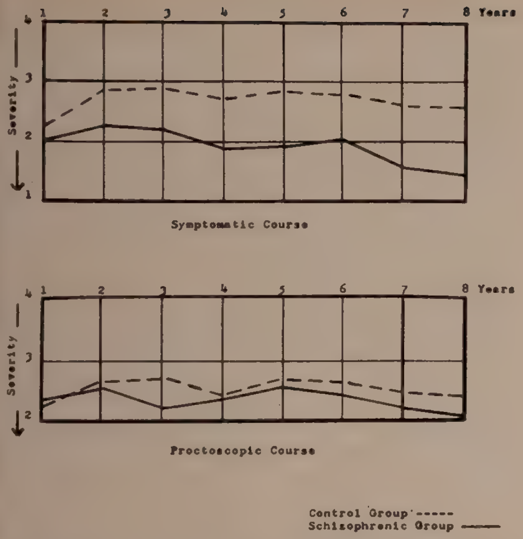

FIGURE 4. Symptomatic and proctoscopic ratings of schizophrenic and control patients over period of eight years.

quently, whether during an exacerbation or during remission of disease.[29]

A distinct correlation was found to exist between the degree of emotional disturbance and the severity of the colitis. In the majority of cases there was a simultaneous increase in emotional and somatic manifestations: a concomitance rather than an alternation of symptoms (Fig. 5). For 36 of the 40 schizophrenic patients (90 per cent), the earliest indication of obvious emotional disorder was at the time of onset or during an exacerbation of colitis. Following the initial schizophrenic episode, 10 of these patients maintained a more or less constant degree of psychotic symptoms over a ten to twenty-year period and showed little if any change in emotional status with fluctuations of the colitis. It is interesting to note that the somatic course of these 10 patients was also characterized more by chronicity than by periodic exacerbation and remission.

In 26 (65 per cent) of the schizophrenic patients, acute disturbances of a psychotic nature occurred coincidentally with physiologic flare-ups. Four patients (10 per cent) showed combined alternation and concomitance, but the attacks of schizophrenia and colitis were too disparate chronologically to be related to each other.

Case 3. During 1943 to 1945, a patient was admitted to the hospital on 6 occasions for colitis. He recovered but in 1946 to 1947 was put in an institution because of a schizophrenic reaction. In 1954, there was a moderate attack of colitis and another schizophrenic episode. He became symptom-free from 1958 to 1962 but then required hospitalization for a severe exacerbation of colitis and an acute schizophrenic reaction. Neither disease process improved, and he died in 1963.

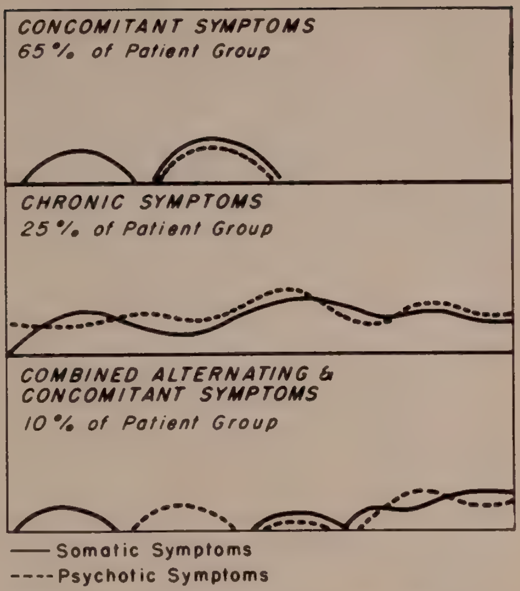

FIGURE 5. Representational graph: chronologic relationship between somatic and psychotic symptoms in 40 patients with schizophrenia and ulcerative colitis.

The coexistence of somatic and psychologic crisis was most strikingly apparent in those patients undergoing surgery. In general, the possibility of psychosis in routine operative procedures is not a source of concern, even in those patients with a previous history of emotional disturbance. A review of the literature indicates that the rates vary from 0.6 to 2 per cent.[30-32] Recently, however, in open-heart surgery, one of the most stressful of surgical procedures, incidences ranging from 38 to 57 per cent have been reported.[33-35] In our group of schizophrenic patients, 52 per cent became grossly psychotic at the time of colectomy, either directly before or after operation. In 6 patients, this was the first sign of overt emotional disorder. Since an operative psychosis can be a major problem in terms of medical management, psychiatric consultation and follow-up should be considered when surgery is contemplated for any patient with ulcerative colitis, and it is essential for the schizophrenic patient.

One would expect to see a higher incidence of psychological signs once surgery had been performed and the target organ removed if symptom alternation were the rule. Such was not our experience. In the 16 cases that were followed for several years after colectomy, only 1 showed evidence of increased emotional disturbance; and this patient also had a steady downhill course somatically, terminating in death eight years later. Eight of the remaining postoperative cases were markedly improved psychologically and 7 slightly so, or essentially unchanged. (A study currently being conducted by Richard Druss, M.D., which involves more than 60 postcolectomy patients and will be reported at a later date, seems to confirm these findings.)

In assessing the interrelationship of psychological and physical symptoms, it was observed that the same pattern of concomitant illness occurred among the nonpsychotic patients in our series. Neurotic traits, that is, severe anxiety, depression, or obsessional manifestations, developed primarily in conjunction with an exacerbation of colitis. In many cases the combined psychological and somatic flareups appeared to be a direct response to an external stress. However, the stress itself has to be further defined. While most patients react to the "normal" anxiety-provoking situations—school examinations, loss of job, divorce, and so on—it is not infrequent to see a patient with a paradoxic stress reaction wherein an apparently pleasurable situation produces an increase in symptoms.

Case 4. One such case was an unmarried young woman seen in our ulcerative colitis clinic. For three summers during vacation time she had experienced an exacerbation of her colitis. The vacation produced two very conflictual situations: It brought her into closer contact with an authoritative mother and made unavailable the normal escape routes of visiting friends, and so on. She was also forced to deal more directly with her sexual feelings toward the young men around her.

While working on medical, psychiatric, or surgical services, one does encounter an occasional patient who demonstrates a symptom alternation. These cases are dramatic and attract the attention of everyone involved. However, they are the exception, not the rule, and a physician cannot afford to formulate a prognosis on the basis of such an hypothesis. Treatment has to be related to the individual patient and the existing medical, psychiatric, or surgical problem, not to a premise that one syndrome, if alleviated, is likely to be replaced by another.

There has been recurrent conjecture as to whether or not steroids tend to precipitate psychosis. The frequency has probably been overestimated. Earlier reports implicated steroids etiologically for psychoses that were actually due to other factors. Of our 114 patients with colitis, 1 had what could be considered a steroid-induced psychosis, and this patient did not have a history of schizophrenia. When a patient becomes psychotic while on steroids, all etiologic avenues should be investigated before medication is cancelled. Even if the patient does experience such a crisis, one might well decide to continue steroids as medically indicated, realizing that the psychosis will doubtless abate when the disease goes into remission. At this time steroids can be safely reduced or withdrawn.

Indications for psychiatric treatment

Engel[19] described patients with ulcerative colitis as being compulsive in nature, neat, orderly, punctual, conscientious, and indecisive. Daniels[5] has emphasized the presence of depression; others have added that these individuals are overly sensitive and susceptible to any hint of rejection or hostility. While it is true that in a large series, the majority may have these character traits, the fact remains that many people who do not have ulcerative colitis show very much the same personality structure and patterns of depression and anxiety. It follows, then, that when one considers psychiatric treatment for a patient, the equivalent factors of selection should apply whether or not the individual has ulcerative colitis. Even in the absence of the physical illness, many of these patients would require psychotherapy.

There appears to be a higher level of emotional, familial, and environmental difficulties than usually accompany the other psychosomatic diseases.

Psychiatric intervention is definitely indicated when the following conditions are present: (1) overt depression or anxiety, (2) a history or evidence of psychosis, and (3) a poor environmental situation that the patient cannot deal with.

Severe depression or anxiety are always cause to suggest psychotherapy. In varying degrees, these reactions are associated with ulcerative colitis and, within limits, are appropriate to the debilitating, threatening aspects of the disease, particularly during exacerbations. Understanding on the part of the physician and nursing staff, rest, tranquilizers or antidepressants, and well-regulated visiting hours can do much to allay such reactions. However, should the depression or anxiety become severe, psychiatric consultation and evaluation are definitely indicated.

The psychiatric diagnosis is a major determinant for referral. The more pervasive the emotional disturbance, the greater the potential for severe anxiety or depression to emerge in a stress situation. Since schizophrenic patients were found to have such a poor prognosis, psychiatric consultation should be routine for these patients. While insight psychotherapy may not be possible, an active program of direction, manipulation of the environment at times, and support can do much to relieve emotional conflicts. It also helps to prevent a severe psychotic episode which can occur at times of exacerbation or surgery.

Poor environmental situations are always an indication for psychiatric consultation. If the patient is experiencing major stress at work, within the family, socially, sexually, and so forth, early therapeutic intervention can help to eliminate areas of conflict that may in the future become sources of chronic stress.

CASE 5. One young girl in her menarche had an acute, fulminating onset of colitis. Psychiatric consultation revealed that the mother, more than the daughter, was disturbed; also, that the relationship between the two had deteriorated considerably when the girl had her first menstrual period. At that time the mother began to check on her daughter continuously in all areas of life, even to the extent of accompanying her to the bathroom. The girl resented this invasion of privacy, but was unable to express her anger, which might have effected the necessary change. She subsequently developed severe colitis and required hospitalization. A treatment program was established that centered chiefly on the mother's problems. Within a month the mother was able to accept the psychiatrist's suggestions that she allow the girl more freedom and independence. The colitis subsided shortly thereafter and on an eight-year follow-up, remained in remission.

This short-term psychiatric intervention was felt to be crucial in that it not only relieved the existing emotional stress, but also set a healthier pattern for the future relationship between mother and daughter.

At times it may be necessary to remove a patient from the situational conflict.

CASE 6. An eighteen-year-old male with moderately severe colitis lived in a household where his parents fought incessantly. The boy was constantly the target of his father's anger. On graduation from high school, the psychiatrist strongly recommended that he choose a college well removed from home. This advice was accepted and the young man has remained symptom-free for fifteen years.*

Directive or supportive treatment such as this does not necessarily require the services of a psychiatrist; active participation by the physician sensitive to the needs of his patient is often sufficient to resolve the current crisis. The medical or psychiatric social worker, too, using support, suggestion, and environmental manipulation can be most helpful in favorably modifying an undesirable family, social, or other problem.

It is important to bear in mind that many patients do not want to see a psychiatrist or are untreatable in terms of psychoanalysis or psychoanalytically oriented therapy. Often, the most one should strive for is a good relationship based on the dependency needs of the patient which will enable him to function more effectively. This type of patient, when "forced" to accept insights, may well develop an exacerbation of his colitis.

One cannot always determine early in treatment whether or not the patient will be able to tolerate the rigors of insight therapy. The psychiatrist must be willing to move slowly and guard against too early and too active intervention. This is particularly true when the colitis is in a severe phase. While interpretation of a problem may provide the patient with valuable insight, it may also bring him face to face with a currently insoluble situation which in and of itself can increase anxiety or depression. The anxiety or depression, in turn, is likely to aggravate the somatic symptoms. It is a good technic when a seriously ill patient is first seen to take a detailed history and temporarily limit activity to a supportive type of treatment. Later, when the disease is in remission and a better understanding of the patient's personality has been obtained, there is time to probe more deeply into the psychological difficulties. If one accepts the tenet that emotional factors contribute to the illness, then it is certainly important not to add to emotional stress during exacerbations.

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* Under similar circumstances, another young man with colitis enrolled at a school some distance from his home town. Following graduation, he returned to live with his parents. A severe exacerbation occurred shortly thereafter and within a year he required colectomy.

It is essential never to "close the door" on a patient. When the consultation or the psychotherapy is terminated, the patient should be made to understand that if symptoms recur, he should not hesitate to return for at least a few sessions.

In short, there are many factors that the psychiatrist must consider when evaluating the treatability of a patient with ulcerative colitis. As of now, it appears that certain of these individuals can definitely benefit from psychotherapy, but the specific type of treatment must be selected carefully and be appropriately oriented toward each particular patient.

Much work will have to be done before we more fully comprehend how psychiatric intervention can favorably influence the course of ulcerative colitis. The studies discussed here are a beginning, but more intensive research with larger series of patients are required if the effects of psychological treatment on a physiologic disease are to be understood.

Currently under investigation* are certain pre-existing psychogenic factors that can contribute to prognosis, favorable or unfavorable, in ulcerative colitis. There does appear to be a concordance between the previous emotional state, the patient's handling of the disease, and the eventual outcome. Thirty patients who have an extensive medical and psychiatric history, including session-to-session recordings of their psychotherapy, are being studied. Data so far collected indicate that there are several premorbid psychological components that can be related to the course of the disease. An extension of this study will examine the effectiveness of different psychotherapeutic approaches and also those factors arising from patient-therapist interaction that can influence the course of psychiatric treatment and, as a result, possibly the colitis itself.

Summary

Ulcerative colitis is a disease which probably has genetic and constitutional predeterminants. While gastrointestinal symptoms are usually the most obvious manifestation, other organ systems also are frequently involved: skin, joint, and vascular. Psychological factors appear to have a significant influence in both the onset of the individual exacerbation and in determining the patient's response to and handling of this illness.

The effects of psychotherapy on the course of ulcerative colitis are not yet fully understood. Reports of individual cases tend to be optimistic, and recent sizable series, although less optimistic, have shown that it can favorably modify the course of the disease. Advantageous environmental changes have contributed significantly to somatic improvement in many cases. There are also indications that even when psychotherapy does not improve the physical picture, it can help the individual adapt more readily to the handicaps of chronic illness and provide for a better life adjustment.

The general physician has to be sensitive to the emotional stress and conflicts of the individual, just as the psychiatrist must be thoroughly aware of the medical situation and prognosis.

Effective management of a patient with ulcerative colitis requires conjoint participation of medicine, psychiatry, and surgery; close contact and understanding between the various disciplines are essential if the goals of treatment are to be realized as fully as possible.

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Atomic Energy Commission achievements

The first model of a cardiac pacemaker, to be powered eventually by nuclear energy, underwent testing during 1967. It is designed to relieve interruption of the normal stimulus to the heart. Also under conceptual study is a radioisotope engine to power a pump which would assist or replace functions of a diseased or damaged heart.

Limited distribution began late in 1967 of a purified multiple vaccine which gives immunity to several different types of influenza viruses in a single inoculation. Production is by a zonal centrifuge system developed by the Commission's Oak Ridge National Laboratory and Oak Ridge Gaseous Diffusion Plant. The National Institutes of Health was a joint sponsor of the development.

A truck-mounted irradiator began a cross-country tour last fall demonstrating to interested food firms at their own fields and plants the laboratory-tested technics of food preservation by irradiation. The tour will continue through 1968.

Other developments in the food irradiation program in 1967 were: (1) A demonstration and research grain irradiator to disinfect grain products was opened in Savannah, Georgia; (2) a pilot plant for irradiating tropical fruits for preservation and to overcome insect quarantine barriers was dedicated in Honolulu, Hawaii; and (3) a commercial firm was selected to privately build and operate, with limited government assistance, a pilot plant for the preservation of meat by irradiation.

Correlation Conferences in Radiology and Pathology

State University of New York
Upstate Medical Center
Syracuse, New York

Editors

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Cough and Chest Pain

Case history

Patrick Conte, M.D.*: A sixty-three-year-old male was admitted with a seven-month history of pleuritic pain in the right side of the chest and productive cough. Five months previously bronchoscopy and sputum cytologic examination were performed because of these complaints and gave negative findings. His physical examination and routine laboratory studies on admission were within normal limits.

George Mitchell, M.D.†: Chest films made in January, 1967, showed negative findings. In April the lower portion of the right hilar shadow is more prominent than it was in January (Fig. 1A), but the change is rather subtle. A definite mass is visible in this area in June (Fig. 1B). In September there is an obvious, large mass lying centrally and confined primarily to the right middle lobe (Fig. 2).

E. Robert Heitzman, M.D.**: The lesion was not appreciated on the April radiographs, and it was not until June that an abnormality was detected. The patient

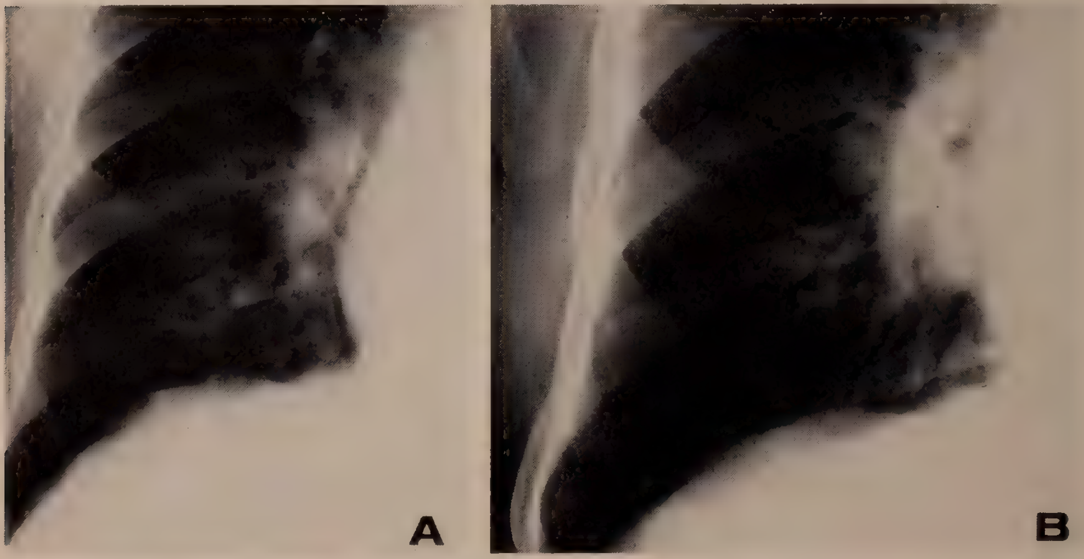

FIGURE 1. Chest films. (A) April. Minimal prominence of inferior portion of right hilum (arrows). (B June. Distinct lobular mass visible in inferior portion of right hilum.

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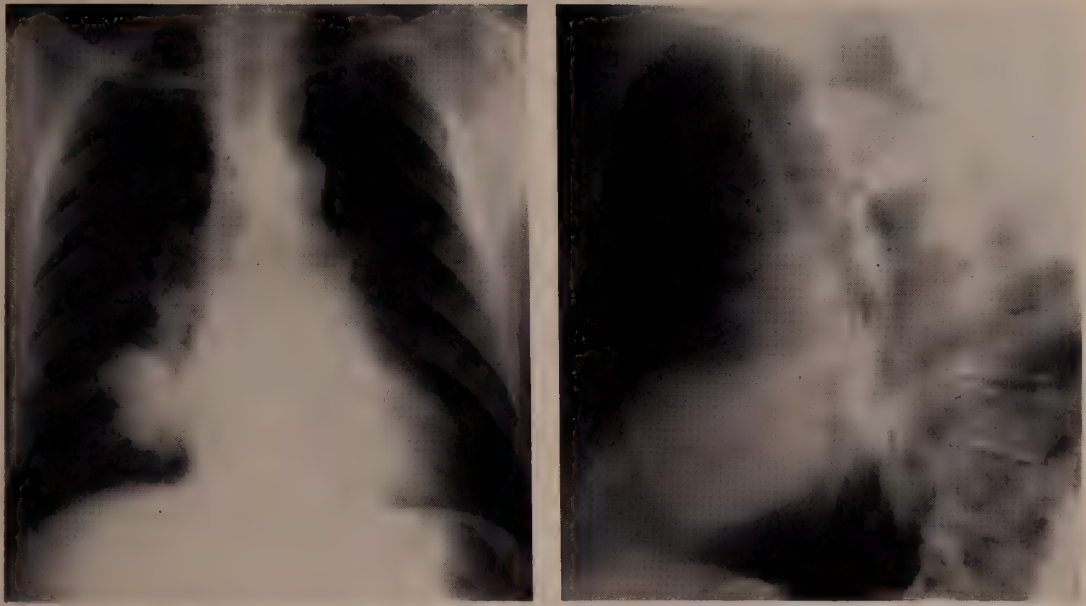

FIGURE 2. September. Large right middle lobe mass considerably increased in size since June.

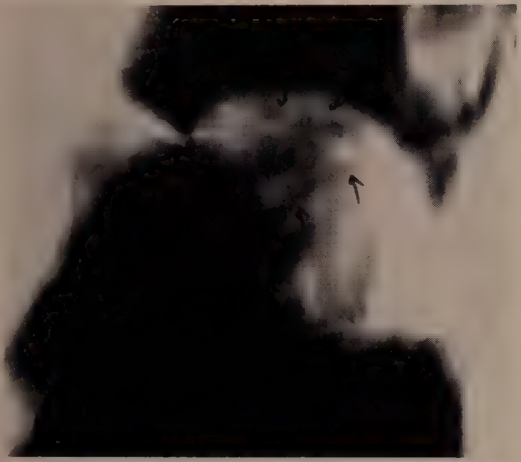

FIGURE 3. September. Anteroposterior laminogram through large mass. Patent middle lobe bronchi are well shown (arrows).

was rather recalcitrant, and it was not possible to get him to return for further study until September.

Dr. Mitchell: We have, then, a rapidly growing right middle lobe mass. I think we have to assume that this mass represents neoplasm. The minor fissure seems slightly elevated and the major fissure displaced somewhat posteriorly and inferiorly. There is no atelectasis of the middle lobe. The laminograms show patent middle lobe bronchi without displacement (Fig. 3). A centrally placed bronchogenic carcinoma of this size would almost certainly displace bronchi or at least partially obstruct them and produce atelectasis. To my way of thinking the absence of bronchial displacement and atelectasis in this case should lead one away from the diagnosis of bronchogenic carcinoma and to consider peripherally developing tumors such as alveolar cell carcinoma or lymphoma as well as benign lesions such as pseudolymphoma.

Alfred S. Berne, M.D.*: Were expiration chest films made?

Dr. Conte: No.

Dr. Berne: If expiration films failed to show obstructive emphysema this would have confirmed further the absence of bronchial compromise.

Dr. Heitzman: Alveolar cell carcinoma, lymphoma, and pseudolymphoma are lesions which we ordinarily do not consider to be rapidly progressive.

Dr. Mitchell: I agree. However, I feel that the roentgen findings would require these diagnoses to be first considerations.

Dr. Mitchell's diagnoses

1. *? Alveolar cell carcinoma*

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* Professor, Department of Radiology, Upstate Medical Center.

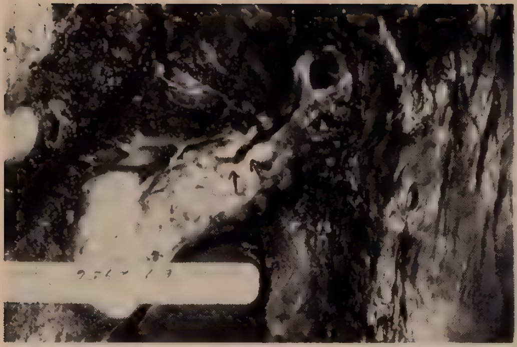

FIGURE 4. Resected specimen showing tumor enveloping right middle lobe bronchus (arrows).

2. *? Pulmonary lymphoma*
3. *? Pulmonary pseudolymphoma*

Bedros Markarian, M.D.*: The resected specimen consisted of the right middle and lower lobes. There was a 6 by 5 by 3-cm. firm mass palpated in the middle lobe. There were a few grossly unremarkable hilar nodes measuring approximately 1 cm. in diameter. Sectioning of the lung following fixation revealed a pale gray tumor surrounding the bronchus leading to the medial segment of the middle lobe (Fig. 4). Our initial gross impression was that this represented a bronchogenic carcinoma arising at this point in spite of the fact that the mucosal surface showed only slight wrinkling.

Microscopic examination reveals many large mucus pools surrounded by grade II spindle-shaped columnar cells replacing the usual alveolar lining cells. The alveolar walls are slightly thickened but are otherwise intact. The tumor surrounds the bronchus rather than arising from it (Fig. 5). This is a typical bronchiolar carcinoma. Two of the nodes were partially involved by metastatic tumor. Some people still refer to this tumor as an alveolar cell carcinoma, but most authorities now agree that this tumor has its origin from bronchiolar epithelium rather than alveolar lining cells. These tumors will usually remain localized for long periods of time before metastasizing. Early diagnosis and resection in these cases can thus result in a cure. The lymph-node involvement in this patient represents an ominous sign.

My final diagnosis is a bronchiolar carcinoma with lymph-node metastasis.

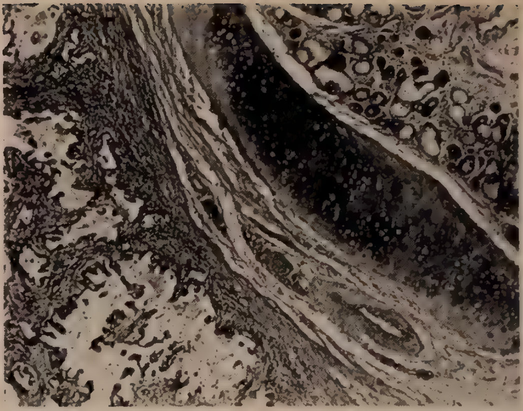

FIGURE 5. Photomicrograph showing bronchiolar carcinoma surrounding bronchus rather than arising from it.

Dr. Heitzman: Alveolar cell carcinoma is perhaps most familiar to radiologists because of its presentation with multiple pulmonary nodules. Localized forms of the tumor are, however, more common.[1] The lesion may appear on radiographs as a solitary nodule, a lobar infiltrate, or as a perihilar mass.

While in general, these localized forms of alveolar cell carcinoma have a relatively favorable prognosis, metastases to regional lymph nodes and to distant sites are not rare.[1,2]

Although Dr. Mitchell was able to suggest the correct diagnosis in the present case, in many instances the radiologist will be unable to distinguish the tumor from bronchogenic carcinoma. In fact, distinction from benign processes may at times be very difficult. Often, however, sputum cytology is very helpful in arriving at a correct diagnosis.

This case is also interesting because of the rapid growth of the tumor despite rather good cellular differentiation under the microscope.

Final diagnosis

Bronchiolar carcinoma, right middle lobe, with lymph node metastases

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Amyloidosis Complicating Granulomatous Colitis*

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IN 1936 MOSCHCOWITZ[1] COMMENTED: "It seems rather strange in view of the frequency of chronic ulcerative colitis that amyloidosis has hitherto not been reported as a sequence." He reported 1 necropsy case; subsequently only 8 others have been published.[2-8] In one study, amyloidosis has been found in 5 of 17 necropsy cases of regional enteritis.[9]

In most instances, the disease first described by Crohn, Ginzburg, and Oppenheimer[10] remains proximal to the ileocecal valve. However, a substantial body of evidence has now accumulated which would indicate that Crohn's disease may involve the colon in addition to the small intestine, and indeed may even be confined to the large intestine.[11-13] Lockhart-Mummery and Morson[11] have commented: "It is unfortunate that many reports in the literature about the incidence of complications in patients with colitis are misleading because those with Crohn's disease of the colon have not been recognized."

A necropsy case of "ulcerative colitis" associated with amyloidosis will be recorded here. As far as has been ascertained, this is the first report of Crohn's disease of the colon (granulomatous colitis) complicated by amyloidosis.

Case report

An eighteen-year-old man suffered from cramping abdominal pain, diarrhea, fever, and weight loss. On sigmoidoscopic examination the mucosa was edematous. Roentgenograms showed rigidity and mucosal ulceration of the right side of the colon; the terminal ileum was narrowed and distorted. A perianal abscess was incised. His condition remained fairly stable except for the development of a periurethroperineal fistula and three severe exacerbations of the colitis.

Nineteen years later dependent edema was noted. His urine showed 4 plus protein and coarse granular casts; a twenty-four-hour specimen contained 12 Gm. of protein. The blood urea nitrogen level was 18 mg. and serum cholesterol 370 mg. per 100 ml.; serum albumin was 0.5 Gm. and serum globulin 5.6 Gm. per 100 ml. A renal biopsy specimen showed infiltration of the glomeruli by a homogeneous eosinophilic material which stained positive with crystal violet.

Subtotal colectomy, ileectomy, and jejunoproctostomy were performed. There was marked thickening and ulceration of the terminal ileum and right half of the colon. Noncaseating granulomas with Langhans' giant cells were found in the ileum and colon (Fig. 1). Deep longitudinal ulcers extended to the muscularis, and multiple fistulous tracts communicated with the adipose tissue. Special stains showed deposits of amyloid in the walls of vessels and in the adipose tissue. The patient became increasingly azotemic, thrombophlebitis developed, and he died ten weeks after surgery.

Necropsy confirmed extensive amyloidosis of the kidneys and revealed additional deposits in the adrenal glands, spleen, and thyroid gland. Septic thrombosis was

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* This material has been reviewed by the Office of the Surgeon General, Department of the Army, and there is no objection to its presentation and/or publication. This review does not imply any indorsement of the opinions advanced or any recommendation of such products as may be named.

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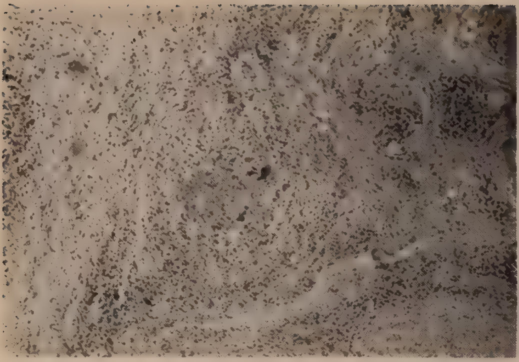

FIGURE 1. Microscopic section of colon showing noncaseating granuloma with Langhans' giant cells (hematoxylin and eosin stain).

present in the periprostatic venous plexus and septic infarction in the lungs.

Comment

Analysis of the case reported here reveals features which are not characteristic of chronic idiopathic ulcerative colitis. The patient had colitis on the right side with ileal involvement, a perirectal abscess, and a perineal fistula. The nephrotic syndrome developed and was shown to be caused by renal amyloidosis. Surgery of the diseased bowel was undertaken in an attempt to reverse this process. The excised intestine showed outstanding fibrosis, deep ulcerations, multiple fistulous tracts, and a granulomatous reaction with giant cells. Extensive amyloidosis was present at necropsy.

A review of the necropsy cases of ulcerative colitis associated with amyloidosis also indicates features which would be unusual in chronic idiopathic ulcerative colitis.[1-8] The patient described in the original report of Moschcowitz[1] had rectal strictures, multiple intestinal fistulas, a granulomatous mass in the rectum, and terminal ileitis. In a case from Boston, it was commented that the degree of perianal inflammation with multiple draining abscesses was unusual for chronic idiopathic ulcerative colitis.[2] In a patient at the Mayo Clinic, perianal abscess and fistula formation preceded the abdominal complaints.[3] Fibrosis and narrowing of the lumen of the colon and jejuno-ileitis with epithelioid giant cells were found at necropsy. In a case reported from Amsterdam, a network of fistulas around the anus and ileitis were noted.[4] In a patient at The Mount Sinai Hospital, New York, a pararectal abscess; perianal fistulas; jejuno-ileitis; perforation of the jejunum; and deep ulceration, fibrosis, and narrowing of the lumen of the colon were found.[5] In a case from Detroit, a fistula in ano was the initial manifestation, and giant cells and a suggestion of epithelioid formation were noted in the excised tissue.[6] Ileitis was present, and giant cells were scattered throughout the colon. In a case from Seattle the patient had stenosis and fibrous adhesions of the ileum.[7] In a report from Liverpool, 1 patient had an ischiorectal abscess and marked contraction of the colon with narrowing of the lumen; a rectovaginal fistula developed in the second patient.[8]

The various features mentioned would indicate that as a group, the patients with ulcerative colitis in whom amyloidosis develops may not be representative of chronic idiopathic ulcerative colitis. A possible explanation for the findings mentioned is that some of these cases may not represent chronic idiopathic ulcerative colitis, but rather another affliction with more significant amyloidogenic potential.

In contradistinction to chronic idiopathic ulcerative colitis, granulomatous colitis (Crohn's disease of the colon) tends to be a proliferative process, with fibrosis out of proportion to inflammation.[11-13] The bowel is characteristically rigid, thickened, and hoselike. Cicatrization, stenosis, and fistulas are commonly seen. Microscopically, outstanding fibrosis, deep longitudinal ulcers, and noncaseating granulomas containing multinucleated Langhans' giant cells are frequently found. Anal lesions are prominent and may be the presenting complaint. The small intestine is frequently involved in association with the colon.

In the absence of specific biochemical, microbiologic, cytochemical, or immunologic methods for distinguishing granulomatous colitis from chronic idiopathic ulcerative colitis, some cases are not amenable to neat classification. However, it is clear that certain patients previously classified as having ulcerative colitis present features of Crohn's disease and form a subgroup which can be differentiated from the larger number of patients who have chronic idiopathic ulcerative colitis.

It is suggested that some cases of amyloidosis associated with ulcerative colitis might reasonably be interpreted as amyloidosis complicating granulomatous colitis. Such information would seem to fit in well with present knowledge. The tendency for the development of amyloidosis in Crohn's disease of the colon would be one more feature to link it more closely with Crohn's disease of the small intestine and to differentiate it from chronic idiopathic ulcerative colitis. This is not only of theoretic interest but may have practical implications as well.

The possibility of preventing the development of amyloidosis might be an additional consideration when the indications for surgery are weighed in patients with granulomatous colitis. In the 6 patients with ulcerative colitis in whom surgery was undertaken after amyloidosis became manifest, only 1 survived more than five months.[3] On the other hand, since the development of amyloidosis has not been recorded in patients in whom the diseased intestine was excised early in the course of their illness, surgery at such a time may prevent the development of amyloidosis. Indeed, the facts that Crohn's disease of the colon is frequently resistant to medical therapy and that surgical intervention is often undertaken early in the course of the illness may explain why amyloidosis is not seen more frequently in such patients.

A detailed analysis of the features of amyloidosis complicating ulcerative colitis did not uncover significant differences from that complicating rheumatoid arthritis, tuberculosis, lepromatous leprosy, or Crohn's disease of the small intestine (regional enteritis). The clinical manifestations of secondary systemic amyloidosis are presented elsewhere and will not be considered further in this communication.[14]

The information presented here may provide a useful clue about common underlying factors in the diseases which are complicated by amyloidosis. In itself, it does not provide answers about the cause or pathogenesis of secondary systemic amyloidosis, and these aspects of amyloidosis will not be considered further in this communication.

Summary

A necropsy case is reported of a thirty-seven-year-old man with long-standing granulomatous colitis (Crohn's disease of the colon) in whom the nephrotic syndrome and uremia due to amyloidosis developed. As far as has been ascertained, this is the first record of amyloidosis complicating granulomatous colitis.

The features of 9 previously recorded cases of ulcerative colitis associated with amyloidosis were analyzed. The frequency of ileitis; the prominence of anal lesions; and the presence of enterocolic fistulas, perforation of the small intestine, noncaseating granulomas, outstanding fibrosis, stricture formation, and deep ulceration of the colon would all be unusual in chronic idiopathic ulcerative colitis. The elements discussed are interpreted as indicating that some of the previous cases may also represent granulomatous colitis rather than chronic idiopathic ulcerative colitis.

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Agranulocytosis Due to Thioridazine Hydrochloride*

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THREE TYPES OF DRUG-INDUCED agranulocytosis are recognized: (1) that induced in any patient by certain antimetabolites and alkylating agents if given in sufficient dosage; (2) an idiosyncratic reaction to minute amounts of the drug with demonstrable leuko-agglutinins of which aminopyrine is the prototype; and (3) that induced by prolonged administration of such drugs as the phenothiazines. Although many case descriptions of chlorpromazine hydrochloride-induced agranulocytosis have been published, only 3 cases of agranulocytosis clearly induced by thioridazine hydrochloride (Mellaril) have been described[1,2] and 1 case which was due to a sulfoxide derivative.[3] This case report includes a fourth case with immunologic data not previously reported.

Case report

A sixty-six-year-old white housewife was first seen at the Strong Memorial Hospital outpatient department on December 22, 1965, with complaints of anorexia and weight loss. A physical examination gave normal results, and a white blood cell count was 4,300 per cubic millimeter with 76 per cent matured neutrophils. She was seen by a private internist on January 4, 1966, and a diagnosis of a depressive reaction was made. A white blood cell count was 4,400. The patient was begun on thioridazine hydrochloride therapy, 25 mg. three times a day. After taking the drug for approximately six weeks, on February 20, 1966, the patient noted chills and severe dysphagia due to a sore throat. Two days later, she consulted her physician who found agranulocytosis and referred her to Strong Memorial Hospital for admission. The patient denied taking any other drug except for occasional aspirin and denied any contact with organic solvents or insecticides.

Physical examination on admission revealed an acutely ill woman with a temperature of 39.3 C., pulse 124 per minute, respirations 22 per minute, and a blood pressure of 160/40 mm. of mercury. Positive physical findings were limited to an injected, swollen, exquisitely tender pharynx with induration of the anterior side of the neck. The chest was clear. The heart had a Grade II of VI systolic flow murmur along the left sternal border, but no diastolic murmurs were heard. Examinations of the abdomen, pelvis, extremities, and neurologic system were unremarkable.

Laboratory data included a hematocrit of 36.5 per cent and a white blood cell count of 450 per cubic millimeter with 96 per cent lymphocytes and 4 per cent monocytes. Platelets and red blood cell morphology were normal on blood smear. Urinalysis was negative. A fasting blood sugar was 110 mg. per 100 ml. Bone marrow examination demonstrated absence of granulocytic precursors to the blast level with relative prominence of lymphocytes and increased numbers of plasma cells. Positive cultures included a blood culture for Diplococcus pneumoniae, type III, on February 22, 1966; and cultures of throat, urine, and stool for Monilia on March 1 to 3, 1966.

The patient was initially treated with penicillin G potassium, 10,000,000 units, intravenously per day; kanamycin sulfate, 1 Gm. intramuscularly initially and 0.5 Gm. intramuscularly daily; and nafcillin sodium, 1 Gm. intramuscularly every eight hours. Her fever cleared rapidly and when the positive blood culture for D. pneumoniae returned, the kanamycin sulfate and nafcillin sodium were discontinued. On

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* This study was supported by a grant from the Arthritis Foundation, New York City.

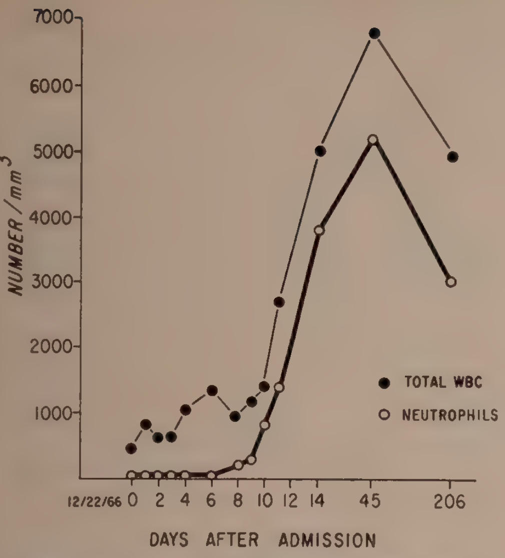

FIGURE 1. Changes in white blood cell and neutrophil counts.

the sixth hospital day, the patient developed a temperature of 38.3 C., and a stool culture was obtained which was positive for Staphylococcus aureus. The penicillin G potassium was discontinued, and the patient was placed on oxacillin sodium, 1 Gm. every four hours by mouth and streptomycin sulfate, 0.5 Gm. intramuscularly daily for the subsequent seven days. The patient became afebrile within forty-eight hours and remained asymptomatic until discharge. The white blood cell and granulocyte count is noted in Figure 1.

The patient was seen one month and six months after discharge from the hospital and has had no recurrence of fever or sore throat.

Comment

This patient presented the classical picture of agranulocytosis following phenothiazine administration. She had not taken other drugs implicated in agranulocytosis, and the sudden onset of fever after several weeks of phenothiazine administration and recovery about two weeks after the drug was discontinued are quite typical. As noted in previous reports, prompt treatment of infection is imperative.[3,4] The fatal case reported by Gallant and Bishop[3] as well as previous fatal cases described,[4] illustrate that the usual cause of death is overwhelming infection.

TABLE I. Serum immunoglobulin and complement levels*

Date, 1966	Gamma (mg. per 100 ml.) G	A	M	Complement (Units)
February 28	940	202	88	111
March 3	1,375	205	110	136
April 8	1,280	247	110	138
September 15	940	173	46	159

* Levels for normal white adult: G, 600 to 1,700 mg.; A, 50 to 250 mg.; M, 50 to 200 mg. per 100 ml.; and complement, 80 to 160 units.

The pathogenesis of phenothiazine-induced agranulocytosis is unknown. Leukocyte agglutinins have been demonstrated in patients who have become leukopenic on aminopyrine,[5] but not in similar patients receiving chlorpromazine hydrochloride.[4] Serum immunoglobulin and complement levels were obtained serially in our patient to see if an increase occurred in any of the immunoglobulin classes at the time of leukopenia. A quantitative Oudin technic, using a method adapted from the work of Becker *et al.*[6] and Rubinstein,[7] with specific antisera was used. The results were within normal limits (Table I). These findings do not rule out an immunologic basis for the thioridazine hydrochloride-induced agranulocytosis since enough antibody to cause leukopenia could be present without being detectable as an increase in the immunoglobulin class above normal values. The possibility of an antigen antibody reaction with complement fixation and lowered serum complement levels cannot be eliminated because the determinations were performed several days after the patient was admitted to the hospital and because lowering of complement titer requires very large amounts of antigen antibody complexes in the circulation. All we can conclude is that the values per se do not suggest immunologic abnormalities.

Summary

The fourth case of agranulocytosis due to thioridazine hydrochloride (Mellaril) is described. Immunologic data presented failed to demonstrate any specific immunologic abnormalities.

ACKNOWLEDGMENT. We are indebted to Charles A.

Rogers, M.D., who referred the patient to us and to John H. Vaughan, M.D., who performed the immunoglobulin determinations.

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Hospital insurance benefits

A recently-completed survey by the Health Insurance Association of America has made possible an evaluation of the levels of hospital insurance benefits for almost 68 million persons covered under insurance company group policies. The segment represents nearly half of all Americans under the age of sixty-five with some form of private hospital insurance.

Nationally, 149 million persons under sixty-five were protected against hospital expenses at the start of 1967. Of this number, insurance companies covered about 93 million, including some 68 million protected under group plans.

The study focused on those persons covered by basic group programs, such as hospital, surgical, and medical, which did not have a major medical-type policy. For these basic plans, the study showed that: (1) Over 99 per cent of persons had their hospital benefits provided for thirty-one days or more; nearly 66 per cent had benefits for seventy days or more; (2) some 56 per cent had hospital benefits of $18 or more per day, including 18 per cent who had full coverage for the cost of semi-private hospital accommodations; (3) almost 90 per cent had ancillary hospital expense benefits of $200 or more to help pay for hospital extras such as laboratory services, x-rays, and drugs. About a third of these had such benefits of $1,000 or more; (4) 70 per cent of those insured under group surgical plans had maximum surgical benefit schedules of $300 or more; (5) 80 per cent of the coverage for nonsurgical medical expense covered physician visits for in-hospital patients only. However, about 66 per cent of the in-force coverage paid for such visits for only thirty-one days or more; and (6) about 66 per cent of persons not covered by compulsory group short-term disability insurance plans had coverage for accidents or illness which did not occur as a result of their occupations. The average amount of weekly benefit payments among the nonoccupational plans was $53.

The survey also noted that comparable levels of coverage were provided to both dependents and employes under the group basic plans examined.

Necrology

Robert Dempster Albee, M.D., of Buffalo, died on January 30 at the age of fifty-two. Dr. Albee graduated in 1944 from the University of Buffalo School of Medicine. Until 1967 he was chief of the Department of Medicine and vice-president of the medical Staff at Deaconess Hospital and at the time of his death was a consultant in medicine there. Dr. Albee was a Diplomate of the American Board of Internal Medicine and a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Eugene Traugott Bernstein, M.D., of New York City, died on October 13, 1967, at the age of seventy-four. Dr. Bernstein received his medical degree from the University of Frankfurt in 1920. He was an associate attending dermatologist (affiliate) at Metropolitan Hospital and Bird S. Coler Memorial Hospital and Home and a senior clinical assistant dermatologist (off service) at The Mount Sinai Hospital. Dr. Bernstein was a Diplomate of the American Board of Dermatology, Inc., and a member of the American Academy of Dermatology, the Society for Investigative Dermatology, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Domenick Caravetta, M.D., of Elmira, died on January 30 at the age of sixty-three. Dr. Caravetta graduated in 1930 from University and Bellevue Hospital Medical College. He was an attending physician in eye, ear, nose, and throat at St. Joseph's Hospital. Dr. Caravetta was a member of the Chemung County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hugh Smith Chidester, M.D., of Saugerties, died on February 23 at the age of seventy-five. Dr. Chidester graduated in 1915 from Albany Medical College. Until his retirement in 1960 he had served as town health officer for twelve years and its school doctor for eighteen years. Dr. Chidester was a member of the Ulster County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

A. Girard Cranch, M.D., of Norwalk, Connecticut, formerly of New York City, died on November 9, 1967, at the age of eighty-seven. Dr. Cranch graduated in 1906 from New York Homeopathic Medical College and Flower Hospital. He was a member of the American Public Health Association, the Industrial Medical Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Ardern Crowther, M.D., of Shortsville, died on January 17 at the age of fifty-nine. Dr. Crowther graduated in 1932 from Columbia University College of Physicians and Surgeons. He was health officer for the village of Shortsville and the Town of Hopewell. During World War II he served as a captain in the Pacific Theatre. Dr. Crowther was a member of the American Academy of General Practice, the Ontario County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George Patterson Eddy, M.D., of Niagara Falls, died on February 27 at the age of seventy-one. Dr. Eddy graduated in 1919 from the University of Buffalo School of Medicine. He was an honorary member of the medical staff and consulting physician in industrial medicine at Niagara Falls Memorial Hospital. Dr. Eddy was a Diplomate of the American Board of Preventive Medicine, Inc. (Occupational Medicine), a Fellow of the American College of Surgeons, a Fellow of the American College of Preventive Medicine, and a member of the Industrial Medical Association, the Niagara Falls Academy of Medicine, the Niagara County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Gillette Eustace, M.D., of Naples, Italy, formerly of Buffalo, died on October 19, 1967, at the age of sixty-three. Dr. Eustace graduated in 1928 from the University of Buffalo School of Medicine. Retired, he had been a clinical associate physician at Buffalo General Hospital. Dr. Eustace was a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ian C. Funk, M.D., of Albany, died in November, 1967, at the age of fifty-two. Dr. Funk graduated in 1942 from Albany Medical College. He was an attending psychiatrist at Albany Medical Center Hospital and an attending dispensary psychiatrist at Albany Medical Center Hospital Outpatient Department and Memorial Hospital. Dr. Funk was a Diplomate of the American Board of Psychiatry and

Neurology (Psychiatry) and a member of the American Psychiatric Association, the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Howard Leonard Gadboys, M.D., of New York City, died on February 28 at the age of forty-four. Dr. Gadboys graduated in 1951 from Boston University School of Medicine. He was an associate attending surgeon in cardiothoracic surgery at The Mount Sinai Hospital and an associate professor of surgery at Mount Sinai School of Medicine. Dr. Gadboys was a Diplomate of the American Board of Surgery, a Diplomate of the American Board of Thoracic Surgery, and a member of the American Association for Thoracic Surgery, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ralph H. Garlick, M.D., of South Ashburnham, Massachusetts, formerly of Brooklyn, died on February 23 at the age of eighty. Dr. Garlick graduated in 1911 from Cornell University Medical College. Retired since 1960 he had been a consulting obstetrician and gynecologist at Kings County Hospital Center. Dr. Garlick was a Fellow of the American College of Surgeons and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

John Cowle Hamilton, M.D., of Little Rock, Arkansas, formerly of Brooklyn, died on November 3, 1967, at the age of eighty-six. Dr. Hamilton graduated in 1903 from Vanderbilt University School of Medicine. He had been a consulting pediatrician at Methodist Hospital of Brooklyn and Coney Island and Caledonian Hospitals. Dr. Hamilton was a Diplomate of the American Board of Pediatrics and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Stanton Montgomery Hardy, M.D., of Pearl River, died on February 28 at the age of sixty-one. Dr. Hardy graduated in 1932 from Johns Hopkins University School of Medicine. At the time of his death he was assistant director in antibiotics at Lederle Laboratories, Pearl River. Dr. Hardy was a member of the American Public Health Association and the American Thoracic Society.

Eric Landsberg, M.D., of Yonkers, died on February 5 at the age of fifty-six. Dr. Landsberg received his medical degree from the University of Zurich in 1938. He was an associate attending surgeon at Yonkers Professional Hospital. Dr. Landsberg was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Jacob Leftoff, M.D., of Hempstead, died on February 9 at the age of fifty-five. Dr. Leftoff graduated in 1939 from the University of Chicago, The School of Medicine. He was an attending general practitioner at Meadowbrook Hospital and a general practitioner on the medical staff at Hempstead General Hospital. Dr. Leftoff was a member of the American Academy of General Practice, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William d'Arcy Magee, M.D., of East Meadow, died on December 13, 1967, at the age of sixty-four. Dr. Magee graduated in 1943 from Georgetown University School of Medicine. He was a member of the American Board of Legal Medicine, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Peter K. Maybarduk, M.D., of Interlaken, Orlando, Florida, formerly of New York City, died on March 5 at the age of eighty-two. Dr. Maybarduk received his medical degree from the University of Berlin in 1911. Retired, he had been an associate attending neurologist at Flower and Fifth Avenue Hospitals, a consulting neurologist at Metropolitan Hospital, and a consulting neuropsychiatrist at Goldwater Memorial Hospital. Dr. Maybarduk was a member of the Association for Research in Nervous and Mental Disease, the New York Neurological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hugh F. Neely, M.D., of New York City, died on February 11 at the age of fifty-eight. Dr. Neely graduated in 1935 from Columbia University College of Physicians and Surgeons. He was an associate attending surgeon at French Hospital and French Hospital Outpatient Department. Dr. Neely was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Clarence Arthur Read, M.D., of Bradenton, Florida, formerly of New Rochelle, died on July 31, 1967, at the age of eighty-three. Dr. Read graduated in 1910 from Cornell University Medical College. He had been a consulting physician at New Rochelle Hospital. Dr. Read was a Fellow of the American College of Chest Physicians and a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Sandra Ala Spiss, M.D., of Albany, died on

February 22 at the age of sixty-eight. Dr. Spiss received her medical degree from the University of Vienna in 1927. She was a member of the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis Bush Swisher, Jr., M.D., of Roslyn Harbor, died on February 13 at the age of thirty-four. Dr. Swisher graduated in 1959 from Jefferson Medical College of Philadelphia. He was an assistant attending anesthetist at Jewish Hospital of Brooklyn. Dr. Swisher was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Anesthesiologists, Inc., the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harlan George Vowinkel, M.D., of Buffalo, died on February 6 at the age of fifty-nine. Dr. Vowinkel graduated in 1933 from the University of Buffalo School of Medicine. He was an assistant attending orthopedist at Edward J. Meyer Memorial Hospital and an associate attending orthopedist at Deaconess and Gowanda State (Helmuth) Hospitals. Dr. Vowinkel was a Fellow of the International College of Surgeons and a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Deaths from accidents

Accidents caused an estimated 112,000 deaths in the United States during 1967, about 1,000 less than in 1966, with the accident death rate dropping to a little below 57 per 100,000 population, according to the Metropolitan Life Insurance Company. Nevertheless, this annual rate was higher than in any year during the previous decade except 1966, when it reached 57.7 per 100,000 population.

The decline in accident fatalities in the year just ended reflected, in large measure, the reduced toll from injuries in and about the home. A little over 28,500 persons sustained fatal injuries in such mishaps, a decrease of nearly 1,000 from the number in 1966.

Motor vehicle accidents during 1967 accounted for approximately the same number of deaths as the record high of 53,000 in 1966. Preliminary information indicates that despite an increase in the volume of travel, the motor vehicle accident death rate per 100 million miles traveled was slightly below the rate of 5.7 recorded for 1966.

Injuries arising out of and in the course of employment caused slightly fewer deaths than in 1966 when the total was 14,500; approximately 3,000 of these deaths were caused by motor vehicle accidents and were also included in the 53,000 fatalities mentioned. Public accidents other than those involving motor vehicles resulted in about 19,500 fatalities, the same as in 1966.

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Abstracts

Siegler, A. M.: Hysterosalpingography; indications and advantages, New York State J. Med. **68:** 1039 (Apr. 15) 1968.

Hysterosalpingography is helpful in studying and diagnosing dysmenorrhea, unruptured tubal pregnancy, adenomyosis, pelvic pain, abnormal uterine bleeding, and tubal patency, and in planning proper treatment. Abnormal states which preclude conception are delineated: hydrosalpinx, salpingitis isthmica nodosa, isthmospasm, kinks and tortuosities of the tubes, and such abnormal conditions as congenital uterine anomalies and intrauterine synechiae which are not obvious clinically. Misplaced intrauterine devices for contraception can be located. Possible therapeutic advantages are destruction of pathogenic microorganisms in the fallopian tubes by iodized oil and restoration of patency to impaired tubes.

Shibutani, K., Hyun, B. S., Mahboubi, R., Lubetsky, H., and Bishop, H. F.: Correlation between hypoxemia and physical and radiologic examinations in atelectasis; association with abdominal surgery, coma, and open-heart surgery, New York State J. Med. **68:** 1046 (Apr. 15) 1968.

Patients following abdominal surgery (27), following open-heart surgery (20), and in coma (31) were studied to compare the value of physical, radiographic, and physiologic examinations. The correlation between hypoxemia and the physical examination was significant in patients following abdominal surgery, poor in patients following open-heart surgery, and fair in patients in coma. Daily physical examination is important in detecting pulmonary atelectasis following abdominal surgery; when physical and radiographic examinations give negative results following abdominal surgery, significant shunting is probably not present. Routine blood gas analysis is essential following open-heart surgery.

Abstracts in Interlingua

Siegler, A. M.: Hysterosalpingographia; indicationes e avantages (*anglese*), New York State J. Med. **68:** 1039 (15 de april) 1968.

Hysterosalpingographia es utile in studiar e diagnosticar dysmenorrhea, non-rupturate pregnantia tubal, adenomyosis, dolor pelvic, anormal sanguination uterin, e patentia tubal e etiam in le planage del appropriate programma therapeutic. Anormalitates que non permitte le conception es delineate, i.e., hydrosalpinge, salpingitis isthmic nodose, isthmospasmo, plicas e tortuositates del tubas, e conditiones deviatori del typo de congenite idiosyncrasias uterin e de synechias intrauterin que non es obviemente de signification clinic. Displaciate dispositivos intrauterin (a function anticonceptional) pote esser identificate e localisate. Le methodo possede potential avantages therapeutic, i.e., le possibilitate que per su uso microorganismos pathogene es destruite in le tuba fallopian per oleo a iodo e que un tuba defective es restaurate a un stato de patentia.

Shibutani, K., Hyun, B. S., Mahboubi, R., Lubetsky, H., e Bishop, H. F.: Correlation inter hypoxemia e le examines physic e radiologic in atelectase; association con chirurgia abdominal, coma, e cardiochirurgia aperte (*anglese*), New York State J. Med. **68:** 1046 (15 de april) 1968.

Esseva studiate 27 patientes post chirurgia abdominal, 20 post chirurgia cardiac a corde aperte, e 31 in stato de coma, con le objectivo de comparar le valor de examines physic, radiographic, e physiologic. Le correlation inter hypoxemia e le examine physic esseva significative in le patientes con chirurgia abdominal; illo esseva disproviste de signification in patientes con chirurgia a corde aperte; e illo esseva satis clar in le patientes in coma. Le diurne examine physic es importante in le detection de atelectase pulmonar post chirurgia abdominal. Quando le examines physic e radiographic monstra resultatos negative post chirurgia abdominal, il es probabile que un significative shunting non es presente. Le routinari analyse del gas del sanguine es essential post chirurgia a corde aperte

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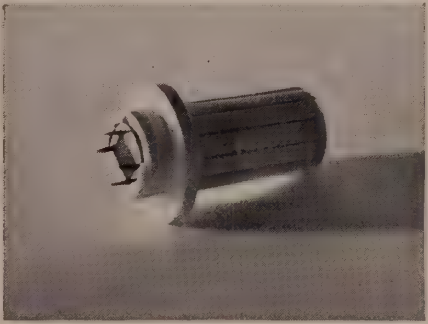

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1. Bradley, J. E., *et al.*: J. Pediat. *38*:41 (Jan.) 1951.
2. Bradley, J. E.: Mod. Med. *20*:71 (Oct. 15) 1952.
3. Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. *65*:311 (Feb.) 1953.

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Precautions: As with other thyroid preparations, an overdose may cause diarrhea or cramps, nervousness, tremors, tachycardia, vomiting and continued weight loss. Medication, in such cases, should be stopped for 2—6 days, then resumed at a lower dose level. In patients with diabetes mellitus, careful observations should be made for changes in insulin or other antidiabetic drug dosage requirements. In cases of adrenal insufficiency, the dysfunction must be corrected prior to, and during SYNTHROID (sodium levothyroxine) administration. It should be administered with caution to patients with heart disease.

Contraindications: Thyrotoxicosis, acute myocardial infarction.

Side Effects: Side effects, when they do occur, are secondary to increased rates of body metabolism: sweating, palpitations, leg cramps, and weight loss. Diarrhea, vomiting, and nervousness have also been observed. Myxedematous patients with heart disease have died from abrupt increases in dosage of thyroid drugs. Reduction in dosage followed by a more gradual upward adjustment will usually result in a more accurate indication of the patient's dosage requirements without the dosage side effects.

Dosage and Administration: Administer tablets as a single daily dose, preferably after breakfast. In hypothyroidism without myxedema, the usual initial adult dose is 0.1 mg. daily, and may be increased by 0.1 mg. every 30 days until proper metabolic balance is attained. Final maintenance dosage will usually range from 0.2—0.4 mg. daily. In adult myxedema, starting dose should be 0.025 mg. daily. The dose may be increased to 0.05 mg. after two weeks and to 0.1 mg. at the end of a second two weeks. The daily dose may be further increased at two month intervals by 0.1 mg. until the optimum maintenance dose is reached (0.1—1.0 mg. daily). The initial dose for children with cretinism or severe hypothyroidism is the same as for adult myxedema, but all intervals of change should be made every two weeks.

SYNTHROID (sodium levothyroxine) Injection may be administered intravenously utilizing 200—400 mcg. of a solution containing 100 mcg. per ml. If significant improvement is not shown the following day, a repeat injection of 100—200 mcg. may be given.

Supplied: Tablets: 0.025 mg., 0.05 mg., 0.1 mg., 0.15 mg., 0.2 mg., 0.3 mg., scored and color-coded, in bottles of 100 and 500. Injection: 500 mcg., lyophilized active ingredient and 10 mg. of Mannitol, N.F. in 10 ml. single-dose vial, with 5 ml. vial of Sodium Chloride Injection, U.S.P. as a diluent.

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The Acne "Epidemic"

Acne is constantly present in epidemic proportions. At any given time 60% to 90% of teenagers are afflicted.[1]

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References: **1.** Sulzberger, M. B., and Witten, V. H.: *M. Clin. North America* 43:887, May, 1959. **2.** Hodges, F. T.: *GP* 14:86, Nov., 1956. **3.** Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. **4.** McLean, I. E. D.; Graham, K. T., and East, M. O.: *Practitioner* 189:82, July, 1962.

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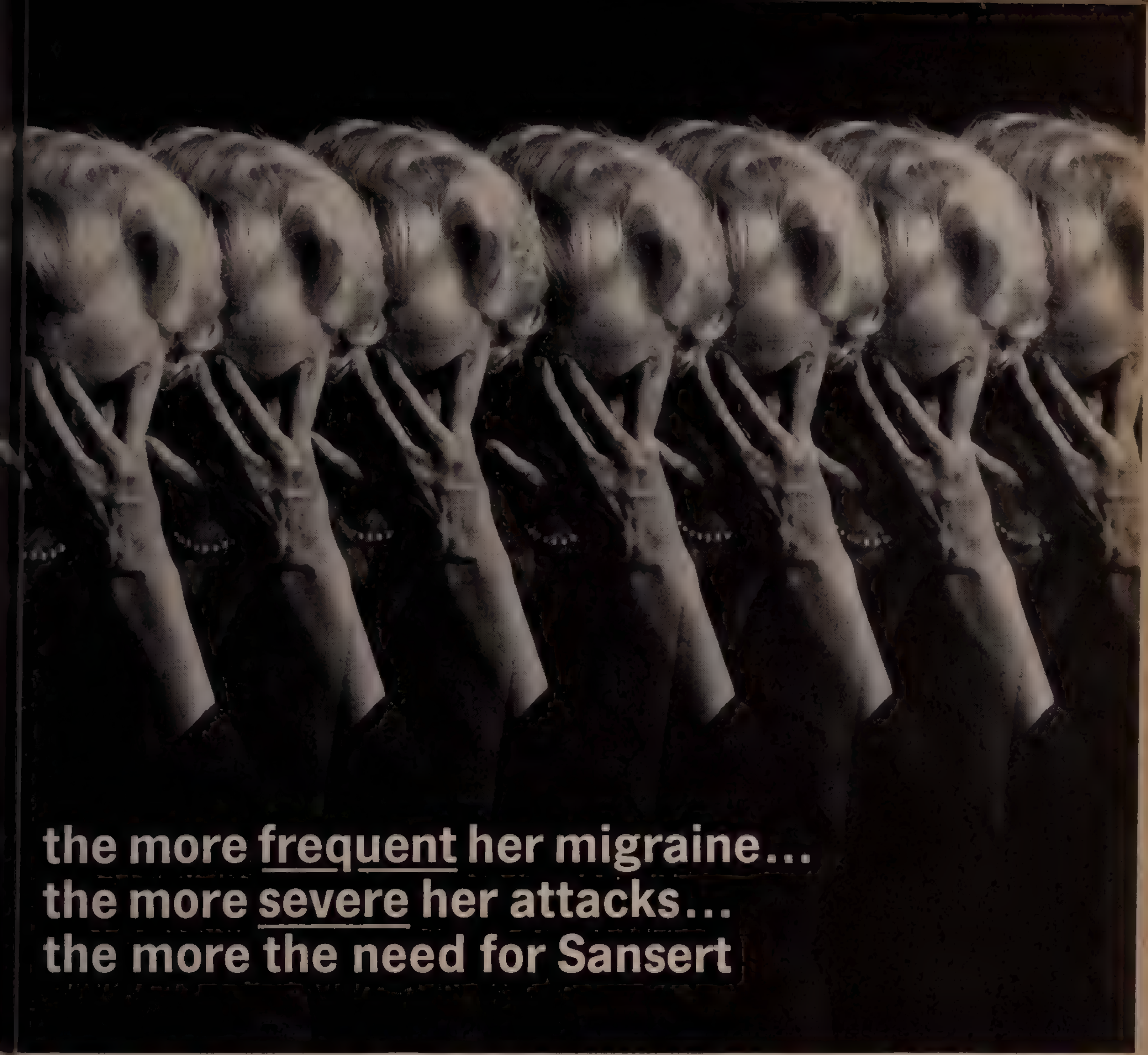
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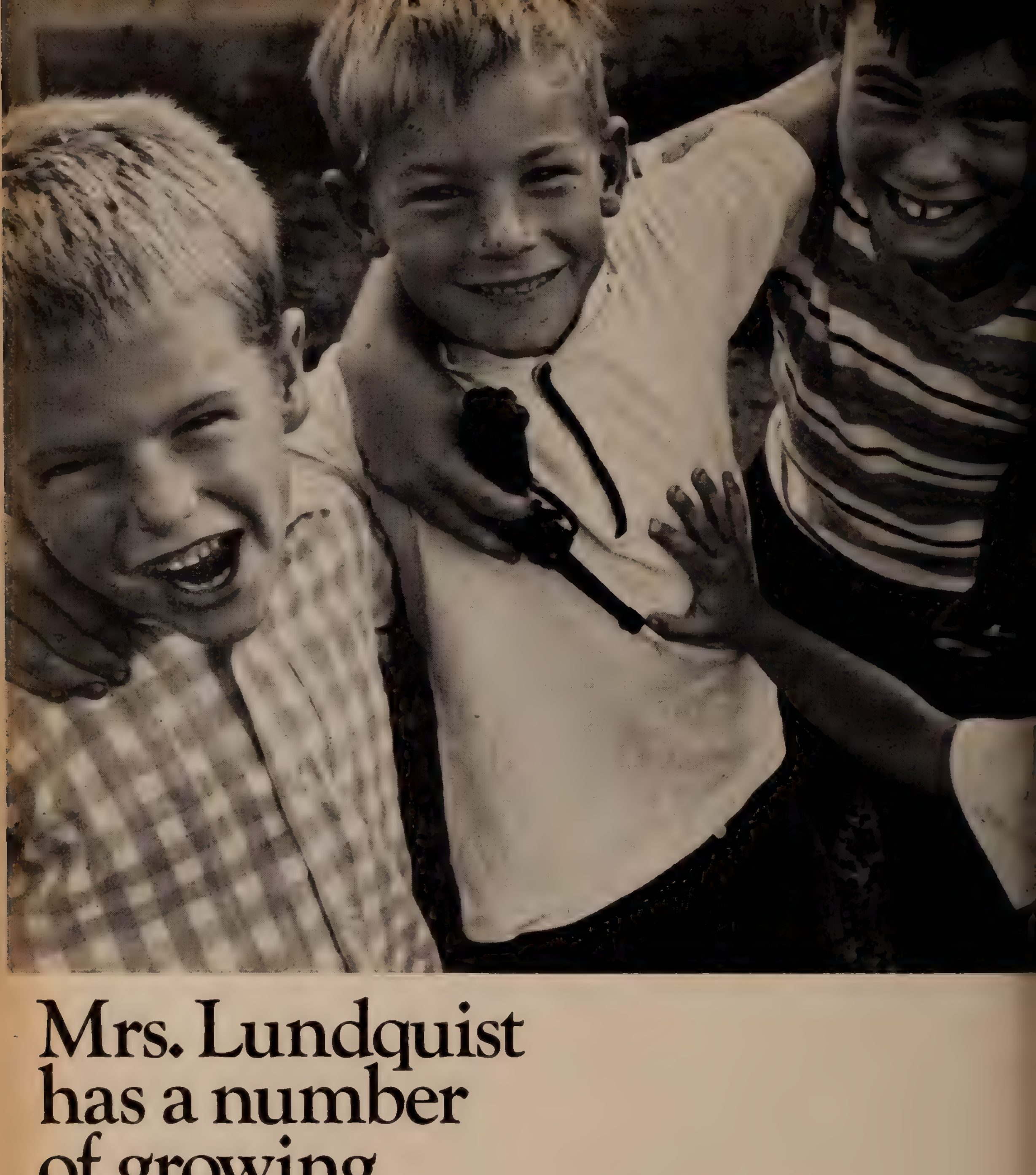

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Indications: Indicated as adjunctive therapy to control emotional and somatic factors in gastrointestinal disorders.

Contraindications: Patients with glaucoma; prostatic hypertrophy anc benign bladder neck obstruction; known hypersensitivity to chlordiazepoxide HCl and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcoho and other CNS depressants. As with all CNS-acting drugs, caution patient against hazardous occupations requiring complete mental alertness (e.g. operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution ir administering Librium (chlordiazepoxide hydrochloride) to known addiction-prone individuals or those who might increase dosage; withdrawa symptoms (including convulsions), following discontinuation of the dru and similar to those seen with barbiturates, have been reported. Use o any drug in pregnancy, lactation, or in women of childbearing age require that its potential benefits be weighed against its possible hazards. As witl all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusior (not more than two capsules per day initially; increase gradually as needec and tolerated). Though generally not recommended, if combination therap with other psychotropics seems indicated, carefully consider individua pharmacologic effects, particularly in use of potentiating drugs such a MAO inhibitors and phenothiazines. Observe usual precautions in presenc of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatri patients. Employ usual precautions in treatment of anxiety states witl evidence of impending depression; suicidal tendencies may be presen and protective measures necessary. Variable effects on blood coagulatio have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with eithe compound alone have been reported with Librax. When chlordiazepoxid hydrochloride is used alone, drowsiness, ataxia and confusion may occu especially in the elderly and debilitated. These are reversible in mos instances by proper dosage adjustment, but are also occasionally observe at the lower dosage ranges. In a few instances syncope has been reportec Also encountered are isolated instances of skin eruptions, edema, minc menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fas activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reporte occasionally with chlordiazepoxide hydrochloride, making periodic bloo counts and liver-function tests advisable during protracted therap Adverse effects reported with Librax are typical of anticholinergic agent *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

Dosage: Individualize for maximum beneficial effects. Usual maintenanc dose is 1 or 2 capsules, 3 or 4 times a day, before meals and at bedtim Geriatric patients—see Precautions.

How Supplied: Librax® Capsules, each containing 5 mg chlordiazepoxic hydrochloride (Librium®) and 2.5 mg clidinium bromide (Quarzan®)· bottles of 50 and 500.

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Books Reviewed

Medical Department, United States Army. Neuropsychiatry in World War II. Volume I. Zone of Interior. Editor in Chief, Colonel Robert S. Anderson, MC, USA. Editors for Neuropsychiatry, Colonel Albert J. Glass, MC, USA (Ret.), and Lieutenant Colonel Robert J. Bernucci, MC, USA (Ret.). Quarto of 898 pages, illustrated. Washington, D.C., Office of the Surgeon General, Department of the Army, 1966. Cloth, $7.50.

The volumes comprising the official history of the Medical Department of the United States Army in World War II are published under the direction of the Surgeon General, U.S. Army. These volumes are divided into two major series: administrative and professional. This book is included in the latter group.

The 35 selected major authors were involved in World War II neuropsychiatry. Several hundred other World War II psychiatrists and neurologists contributed anecdotes, personal experiences, reprints, and photographs. The collection of such reference material fully describes the development of the Neuropsychiatry Department in the Surgeon General's office, as well as the education and training of military psychiatrists.

There are many chapters covering the hospitalization and disposition of psychiatric casualties. The organization and functions of station, regional, and general hospitals are discussed in detail. In addition, there are interesting chapters on forensic military psychiatry and psychiatry in the Army correctional system.

The last three chapters cover the postwar period. Emphasis is placed on the problems of the adjustment of military personnel on return to civilian life; the magnitude of psychiatric disorders in modern warfare; and the need for better psychiatric screening.

This book is a valuable reference source for the resident in psychiatry and should be required reading for the civilian psychiatrist entering into the military service. MORTON M. GOLDEN, M.D.

Club-Foot. By Alfred T. Fripp, M.B., and Norman E. Shaw, Ch.M. Quarto of 122 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd. (Baltimore, The Williams & Wilkins Company), 1967. Cloth, $8.25.

This book is a complete review of the history, pathology, radiology, and treatment of club foot. The text is very well done. There are many excellent illustrations of all points covered by the text.

The radiology section is especially good with diagrams of technic and interpretation.

All phases of treatment are covered. The technic of stretching and strapping is well shown. This book is highly recommended. OTHO C. HUDSON, M.D.

Atherosclerotic Vascular Disease. Edited by Albert N. Brest, M.D., and John H. Moyer, M.D. Octavo of 534 pages, illustrated. New York, Appleton-Century-Crofts, Division of Meredith Publishing Company, 1967. Cloth, $17.50.

This text is a compilation of 51 monographs on the subject of atherosclerosis in vascular disease presented by 86 authorities from every part of the country. It provides a comprehensive analysis of present-day knowledge of the genesis, pathophysiology, and clinical complications of atherosclerosis.

The subject matter is divided into seven main categories with the following headings: 1. The Atherosclerotic Plaque; 2. Factors Contributing to Atherogenesis; 3. Hyperlipidemia; 4. Coronary Heart Disease; 5. Renovascular Hypertension; 6. Extracranial Cerebrovascular Insufficiency; and 7. Peripheral Vascular Insufficiency.

Each topic is well presented and is followed by authoritative references. It is an excellent source of information for the clinician and investigator in the field of vascular diseases. DAVID H. KLASSON, M.D.

Newer Methods of Nutritional Biochemistry. Volume III. Edited by Anthony A. Albanese. Octavo of 527 pages, illustrated. New York, Academic Press, 1967. Cloth, $18.50.

This volume is a worthy successor to its fine predecessors. It effectively expands and supplements the materials covered in the earlier members of this series. Nine authoritative contributions review present understanding as well as recently-introduced procedures in selected areas of major interest: urinary excretion of amino acids; nutritional aspects of protein reserves; in vitro protein evaluation; availability of plant proteins; lipoprotein transport; chemical assay of adrenocorticosteroids; studies of zinc metabolism; folates in human nutrition; and functional evaluation of nutritional status: thiamine.

Although considerable space is devoted to methodology, the book's subtitle seems more descriptive of its over-all contents. The clinician, perhaps even more than the laboratory scientist, will profit from large sections emphasizing interpretations and implications of the new-

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est technical developments. While any residual illusions concerning a simple, reliable assessment of nutriture seem certain to be dispelled, a measure of reassurance is also provided through the promise of more precise tools with which to evaluate and, consequently, to promote nutritional well being. Robert W. Hillman, M.D.

The Broad Scope of Psychoanalysis. Selected Papers of Leopold Bellak. Edited by Donald P. Spence. Quarto of 392 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $14.75.

Leopold Bellak, M.D., is a psychoanalyst. He is a graduate of the New York Psychoanalytic Institute and is a member of the American Psychoanalytic Association. He is an advocate of the basic theoretical formulations of Sigmund Freud but believes in the continuation of scientific research to elaborate a methodology of psychoanalytical treatment. Dr. Bellak is a prolific writer and this book contains a selection of some of his papers between the years 1945–1966.

Bellak attempts to bridge the gap between experimental psychology, clinical psychoanalysis, and psychiatry. The broad scope of his papers comprises all of human behavior. There is an interesting chapter on the psychology of detective stories that presents psychoanalytical theories concerning the creative writer and his work.

The book is a provocative stimulating challenge to rigid orthodox doctrines. It will be of value to the eclectic psychiatrist who seeks a concise review of Freudian psychoanalytical concepts. For the general practitioner, section III offers a good grasp of some of the emotional problems inherent in the practice of medicine. Morton M. Golden, M.D.

The Lung. Edited by Averill A. Liebow, M.D., and David E. Smith, M.D. Quarto of 400 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $14.75. (International Academy of Pathology Monograph)

This eighth monograph, sponsored by the International Academy of Pathology, consists of the presentations of 25 authorities at the annual meeting of the organization in 1966. The editors are the chairman of the conference and the editor of the entire series. The book is divided into 15 chapters dealing with various aspects of pulmonary physiology and pathology and with symposiums on geographic pathology and methods for the study of pulmonary disease. The articles on emphysema, chronic interstitial pneumonia, the pathology of the pulmonary circulation, genetics, and carcinogenesis are especially valuable to the pathologist.

Unlike many books in which different authors participate, repetition, varying views of similar material, and variations in writing style are notably absent here. Each chapter, except for "Respiratory Problems in the Newborn," is an exploration in depth. The illustrative material includes many photomicrographs, some obtained by the electron microscope, and various tables and classifications. The editors have achieved their goal of presenting sophisticated material in a highly readable form with the result that the large amount of information is presented in a palatable form. The chapters on emphysema, chronic interstitial pneumonia, and pleural mesothelioma are especially valuable to the pathologist because of the detailed manner in which they are treated.

Dr. Liebow is to be commended highly not only for his work as principal editor but also for the final two chapters "New Concepts and Entities in Pulmonary Disease" and "Epilogue." Both tend to emphasize the contributions to medicine still possible by the alert, enthusiastic, and dedicated anatomic pathologist. These chapters represent whipped cream on the cake.

This book is highly recommended to all physicians with more than a cursory interest in pulmonary diseases. It is an excellent by-product of a well-organized, meaningful international gathering of authorities in this field. Abraham Mackles, M.D.

Histologic Patterns in Tumor Pathology. By Mark E. Williamson, M.D., Jan E. Leestma, M.D., William C. Black, III, M.D., and Donald West King, M.D. Quarto of 212 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $16.

This book is an atlas illustrating in black and white photomicrographs, generally of large size, the microscopic pathology of about 90 lesions. Despite the title several non-neoplastic lesions such as lichen sclerosus et atrophicus and Whipple's disease are included. Each entity receives one page of text and a facing page of one or more photomicrographs.

The unifying concept behind the selection of included elements is one of "pattern recognition," and the included topics are selected because their patterns are, in the words of the authors, suitable for analysis.

The authors, two from the University of Colorado and one each from Washington University and Columbia University, have aimed the atlas at residents in pathology and, as such, there is some merit to the choice of subjects, particularly those that are recent enough not to be included in standard texts of pathology. For example, atypical fibroxanthoma of skin and bizarre leiomyoblastoma. Also, the text is terse and factual, the photomicrographs of good quality, and the references include both recent and historical papers.

The good features do not, however, overcome the fact that relatively few entities are depicted, that the selection of the included entities by "pattern recognition" is nebulous, and the book is expensive. Even under the authors' terms of selection for inclusion it is difficult to see how biopsy material from liver and kidney could be

continued on page 1098

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Tell him to stay on Maalox.
And for convenience,
suggest the No. 2 Tablets."

Maalox No. 2 Tablets are double strength for *twice* the antacid action and *twice* the assurance of good results. Each Maalox No. 2 Tablet is approximately equivalent to *two* teaspoonfuls of Maalox Suspension.

3 dosage forms for convenience, flexibility and variety: Maalox Suspension (12 fl. oz.). Maalox No. 1 Tablets (0.4 Gm.): sugar-free and low in sodium. Maalox No. 2 Tablets (0.8 Gm.): double strength for double antacid action.

Maalox®

MAGNESIUM-ALUMINUM HYDROXIDE

WILLIAM H. RORER, INC. FORT WASHINGTON, PA.

continued from page 1096

excluded and thyroid and salivary gland tumors minimized. The latter are represented only by oncocytoma, adenoid cystic carcinoma, thyroglossal duct cyst, and Warthin's tumor. The parathyroid and adrenal glands have no representation. The book cannot be recommended. ABRAHAM MACKLES, M.D.

The Management of Trauma. By Members of the Staff of the Johns Hopkins University School of Medicine and the Johns Hopkins Hospital. Edited by Walter F. Ballinger, II, M.D., Robert B. Rutherford, M.D., and George D. Zuidema, M.D. Quarto of 815 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $25.

This volume is written to encompass a study of the wide range of insults to the body considered by the term trauma. This includes blows by objects and people and the injuries inflicted by electrical, chemical, thermal, and environmental forces.

The first five chapters are general in nature and cover in a very comprehensive manner the subjects of initial evaluation of the patient, the pathophysiology of trauma and shock, treatment of shock, cardiopulmonary resuscitation, anesthesia in trauma, and renal failure in trauma. The remaining chapters are written to cover systems or specific organs of the body. The final chapter is an extremely well written section on the mass casualty management.

This text, covering the subject of trauma, is very well composed and teaches the principles of management of trauma. However, generally trauma means fractures. The section on management of fractures of the extremities is relatively short and does not discuss in detail the various fractures of the bones of the extremities.

On the whole, this text is extremely well written and I recommend it highly. ALAN A. KANE, M.D.

Febrile Convulsions. By J. Gordon Millichap, M.D. Octavo of 222 pages, illustrated. New York, The Macmillan Company, 1968. Cloth, $7.95.

The author of this book is professor of pediatrics and neurology at Northwestern University Medical School.

There are seven chapters dealing primarily with definition and statistics, clinical evaluation and manifestation, electroencephalography, etiology, prognosis and sequelae, treatment and experimental febrile convulsions.

In each of the chapters there is presented evidence of the author's clinical and research experience. Also, included are reviews of the world literature and summaries of the data presented in the discussions. There is also a good bibliography and index.

The book is concise and well written. It is highly recommended to any physician dealing with children. STANLEY S. LAMM, M.D.

Treatment of burn with dilute silver nitrate

Experience with 35 patients, studied by W. R. Price, M.D., and M. Wood, M.D., writing of this in a recent issue of the *American Journal of Surgery*, indicates that initial surgical debridement and application of 0.5 per cent silver nitrate dressings in burn wound sepsis are an effective method of eradicating invasive infection and preventing its recurrence. Odor was eliminated, pain and evaporative heat loss were minimized, additional bacterial conversion of a partial-thickness to a full-thickness burn wound was prevented, and the expected morbidity and mortality rates were lessened. The survival rate was 97.2 per cent. Existing burn wound sepsis was eliminated in all cases, and septicemia was not noted in any patient.

The patients, ranging in age from three months to eighty-nine years, were infected burn cases selected from a total of 160 thermal burns treated over a twenty-five-month period. There were 12 females and 23 males. The total surface area of the infected wound varied from 10 to 50 per cent, for an average of 22 per cent. The injury preceded admission by periods of three days to seven weeks.

All barriers to direct contact with the silver nitrate must be surgically removed and all water-insoluble products on the burn surface eliminated, as well as all solutions which can combine chemically with the silver ion and all devitalized tissue overlying the burn. After debridement the wounds were thoroughly washed with tepid distilled water and an antibacterial sudsing emulsion (pHisoHex). The residual emulsion was removed with a tepid water rinse and then with 0.5 per cent silver nitrate solution. All burned areas except the face were then covered with 40 layers of coarse mesh gauze without cotton, lint, or paper fill. This was saturated with 0.5 per cent silver nitrate solution and covered with two layers of dry sheet or thermal blanket. The silver nitrate solution was reapplied every two hours. All patients were given daily whirlpool baths in modified Locke's solution. The patients were given a high protein-carbohydrate diet supplemented by high-protein liquids and adult dietary supplements. Antibiotics, although not used for wound infection, were given as indicated to 12 patients for associated infections. There was a total of 87 surgical procedures.

JUDGE ANTIBIOTIC OINTMENTS HERE

Results on skin are final proof of any topical antibiotic's effectiveness

No in vitro test can duplicate a clinical situation on living skin. 'Neosporin' (polymyxin B —bacitracin—neomycin) Ointment has consistently proven its effectiveness in thousands of cases of bacterial skin infection. The spectra of the three antibiotics overlap in such a way as to provide bactericidal action against most pathogenic bacteria likely to be found topically. Diffusion of the antibiotics from the special petrolatum base is rapid since they are insoluble in the petrolatum, but readily soluble in tissue fluids. The Ointment is bland and nonirritating.

Caution: As with other antibiotic preparations, prolonged use may result in overgrowth of nonsusceptible organisms and/or fungi. Appropriate measures should be taken if this occurs. Articles in the current medical literature indicate an increase in the prevalence of persons allergic to neomycin. The possibility of such a reaction should be borne in mind.

Contraindications: This product is contraindicated in those individuals who have shown hypersensitivity to any of its components.

Supplied: Tubes of 1 oz., ½ oz. with applicator tip, and ⅛ oz. with ophthalmic tip.

Complete literature available on request from Professional Services Dept. PML.

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POLYMYXIN B-BACITRACIN-NEOMYCIN

OINTMENT

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New

Tegretol®
carbamazepine

Therapeutic breakthrough in non-narcotic control of the pain of trigeminal neuralgia

Warning
Fatal cases of aplastic anemia have been reported following treatment with Tegretol. Agranulocytosis, thrombocytopenia and transitory leukopenia have also been observed. Complete blood and platelet counts should be done prior to and at regular intervals during treatment with the drug (see recommendations under "Important Note and Precautions") to help in the early detection of serious bone marrow injury. Abnormalities in initial blood tests should rule out use of the drug. Also, patients should be made aware of such early toxic signs of a potential hematologic problem as fever, sore throat, mouth ulcers, easy bruising and petechial or purpuric hemorrhage. Should such signs appear, the patient should be advised to discontinue the drug and to report to the physician immediately.

Indication Tegretol is indicated in the treatment of the pain associated with true trigeminal neuralgia. It is not a simple analgesic and should never be administered for relief of trivial facial aches or pains.

Contraindication Do not use in those with a known sensitivity to any tricyclic compound or in those being treated with M.A.O.I. agents. As long a period as possible should elapse before using Tegretol in patients who have been treated with M.A.O.I.'s, with a minimum of 7 days. In such cases, initial dosage should be low and the patient's reaction to gradual increments closely observed.

Important Note and Precautions Familiarity with the clinical symptoms which lead to an accurate diagnosis of true trigeminal neuralgia and with the complete prescribing information, careful patient selection, a thorough examination before treatment and close patient supervision throughout the treatment period are essential to the safe and effective use of this drug.

Where feasible, Tegretol should not be used in conjunction with any potent drug which may increase the possibility of toxic reactions.

In pregnancy, the drug should not be prescribed during the first trimester and thereafter only to patients in whom the clinical situation warrants the potential risk. It should not be administered to nursing mothers.

Patients with increased intraocular pressure should be closely observed during treatment with this drug because of its anticholinergic effect. Because of the drug's relationship to other tricyclic compounds, the possibility of activation of latent psychosis and, in the elderly, of confusion or agitation, should be considered.

Dizziness and drowsiness may occur and patients should be cautioned about the hazards of operating machinery or automobiles and of engaging in other hazardous tasks.

Use cautiously in patients with a history of coronary artery disease, organic heart disease, congestive failure or liver disease.

Before initiating therapy, the following laboratory procedures should be performed:

1. Complete blood and platelet counts which, if abnormal, should rule out the use of the drug.
2. Baseline evaluations of liver function.

During treatment with Tegretol, the following laboratory procedures should be performed:

1. Complete blood and platelet counts should be done at intervals of one week during the first month of drug treatment, every two weeks during the second and third months, and at monthly intervals thereafter for as long as the patient is taking the drug. A trend toward a decreasing white blood cell count should suggest a dosage reduction and more frequent laboratory and clinical evaluations. Should this trend continue, the drug should be discontinued.
2. Liver function tests must be performed at regular intervals during treatment with this drug since liver damage may occur during therapy. The drug should be discontinued immediately in cases of aggravated liver dysfunction or active liver disease.
3. Periodic eye examinations, including slit-lamp, funduscopy and tonometry, are recommended for patients being treated with this drug since many phenothiazines and related drugs have been shown to cause eye changes.
4. Complete urinalysis and BUN should be done on patients treated with Tegretol because of observed renal dysfunction.

Adverse Reactions Dizziness, drowsiness, unsteadiness on the feet, nausea, vomiting, aplastic anemia, transitory leukopenia, agranulocytosis, eosinophilia, leukocytosis, thrombocytopenia, purpura, abnormalities in liver function tests, cholestatic and hepatocellular jaundice, urinary frequency, acute urinary retention, oliguria with elevated blood pressure, albuminuria, glycosuria, elevated BUN, microscopic deposits in the urine, impotence, disturbances of coordination, confusion, headache, fatigue, blurred vision, transient diplopia and oculomotor disturbances, speech disturbances, abnormal involuntary movements, peripheral neuritis and paresthesias, depression with agitation, talkativeness, nystagmus, tinnitus, paralysis and other symptoms of cerebral arterial insufficiency, pruritic and erythematous rashes, urticaria, Stevens-Johnson syndrome, photosensitivity reactions, alterations in skin pigmentation, exfoliative dermatitis, alopecia, diaphoresis, recurrence of thrombophlebitis, erythema multiforme and nodosum, aggravation of disseminated lupus erythematosus, gastric distress, abdominal pain, diarrhea, constipation, anorexia, dryness of the mouth and pharynx, glossitis, stomatitis, fever, chills, adenopathy, lymphadenopathy, aching joints and muscles, leg cramps, conjunctivitis, left ventricular failure, aggravation of hypertension, hypotension, syncope and collapse, edema, aggravation of coronary artery disease and congestive heart failure. (Whether these cardiovascular effects are drug-related is not known. However, some of these complications have resulted in fatalities.) The necessity for discontinuing the drug should be dictated by the gravity and severity of the adverse reactions.

Dosage and Administration The drug should always be taken with meals, if possible.

Initial: One-half tablet (100 mg.) b.i.d. on the first day. Thereafter, the dose should be increased in one-half tablet (100 mg.) increments every 12 hours until freedom from pain is achieved. To relieve pain, between 200 mg. and 1200 mg. per 24 hours may be necessary.

Maintenance: Initial control of pain can be maintained in most patients with a dose of 400 mg. to 800 mg. daily. Maintenance doses may range between 200 mg. and 1200 mg. daily.

At least once every 3 months during treatment period attempts should be made to discontinue the drug or to reduce the dose to the minimum effective level.

Availability Round, white, single-scored tablets of 200 mg. in bottles of 100 and 1000. (B)46-820-A

For complete details, please see Prescribing Information.

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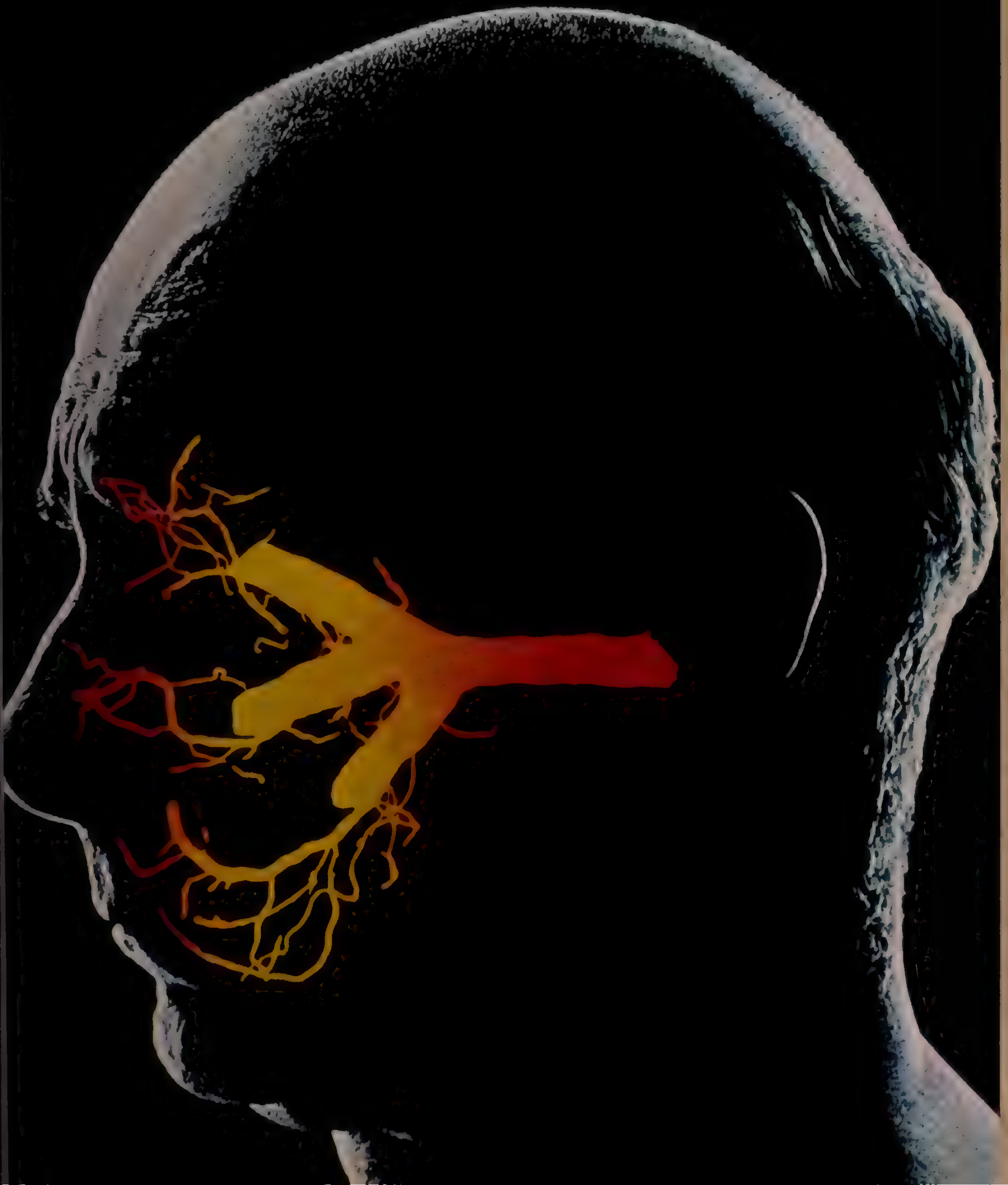
uncommon relief of uncommon pain



Medical Meetings

Lecture on amino acid metabolism

The division of dermatology of the Department of Medicine of the State University of New York, Downstate Medical Center, is sponsoring a lecture on "Inborn Errors of Amino Acid Metabolism—Dermatologic Manifestations" by Samuel Weinberg, M.D., on May 3, at 9:30 A.M., in "F" building classroom, second floor, Kings County Hospital Center, 451 Clarkson Avenue, Brooklyn, New York.

Manhattan Eye, and Ear and Throat Hospital to observe centennial

The Manhattan Eye, Ear and Throat Hospital is sponsoring a Centennial Symposium on Ophthalmology, Otolaryngology, and Plastic Surgery to be held June 3 through 7 at the Hotel Pierre, New York City.

The first day of the symposium will be devoted to the hospital's achievements during its first century of service. The following days will feature meetings for each surgical specialty and a ceremony honoring physician-graduates of the hospital who have completed fifty years of service. Cochairmen of the symposium are William F. Robbett, M.D., director of otolaryngology, and Arnold I. Turtz, M.D., attending surgeon, Department of Ophthalmology.

Air quality criteria topic of symposium

A symposium on Air Quality Criteria is to be held June 4 and 5 at the Hotel Commodore, New York City. The two-day meeting is being jointly sponsored by the Air Pollution Control Association, the American Industrial Hygiene Association, the American Petroleum Institute, and the Industrial Medical Association and its affiliate, the Occupational Health Institute.

The purpose of the meeting is to provide an opportunity for a discussion of current knowledge on the effects of air pollution and to define air quality criteria that may be used as a basis for establishing effective and reasonable standards.

For further information contact: H. H. Golz, M.D., secretary, symposium policy committee, American Petroleum Institute, 1271 Avenue of the Americas, New York, New York 10020.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Symposium on gnotobiology to be held

A symposium on "Gnotobiology: Experimental and Clinical Aspects," cosponsored by the Roswell Park Memorial Institute and the Department of Biochemical Pharmacology, School of Pharmacy, State University of New York at Buffalo, and the Association for Gnotobiotics, Inc., is to be held at Roswell Park Memorial Institute, Buffalo, on June 10 and 11.

The symposium has been divided into the following sessions: Leukemia in Germ-Free Rodents; Disease Resistance of Germ-Free Animals; Experimental Biology; Physiology; Nutrition; Immunology; Technology; Carcinogenesis; and Patient Care in Sterile Environments.

The deadline for registration and hotel reservations is May 15.

For further information and registration write to: E. A. Mirand, M.D., professor and assistant director, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, New York 14203.

Postgraduate course offered in gynecologic pathology

A postgraduate course in Applied Gynecologic Pathology sponsored jointly by The State University of New York, Downstate Medical Center and The Long Island Jewish Hospital, is to begin August 1 and continue for fifteen consecutive weeks, at the Long Island Jewish Hospital, New Hyde Park.

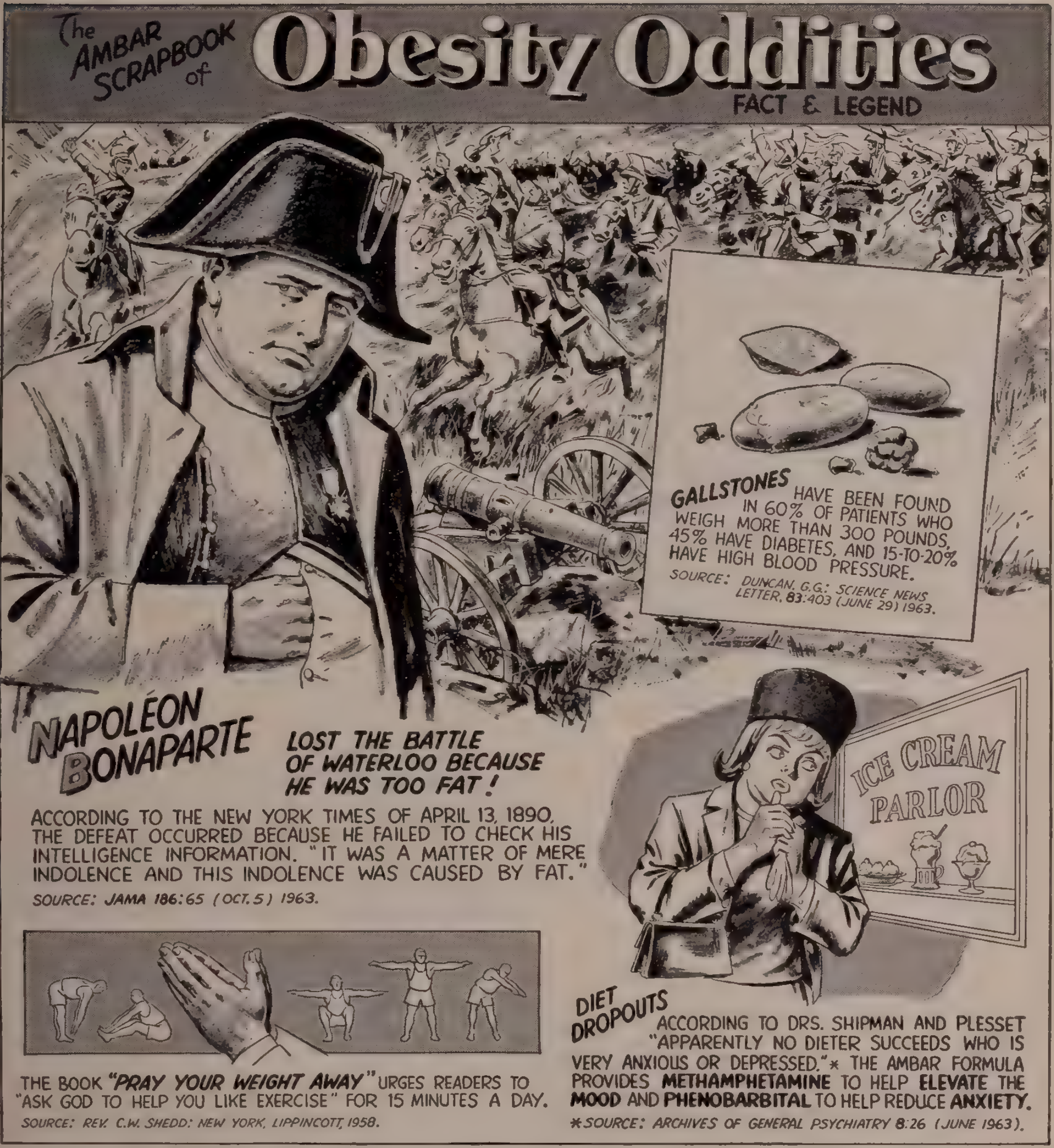
The course will stress correlation between clinical aspects and pathology. The subject matter will be covered by lantern slide presentation, scopicon microscopic projection, and demonstration of gross specimens. Students are requested to provide their own microscopes. Instructors of the course will be: Henry I. Colman, M.D., Alexander H. Rosenthal, M.D., James I. Berkman, M.D., Donald J. Casper, M.D., and Norbert Platt, M.D.

Registration is limited to 20, and the tuition fee is $100. For information and registration write to: Mrs. Evelyn Bennett, secretary, committee on medical education, The Long Island Jewish Hospital, 270-05 76th Avenue, New Hyde Park, New York.

Transplantation society to meet

The second International Congress of the Transplantation Society is to be held September 7 through 11 at the Americana Hotel, New York City. The scientific program will feature

continued on page 1104



The AMBAR SCRAPBOOK of **Obesity Oddities**

FACT & LEGEND

NAPOLEON BONAPARTE *LOST THE BATTLE OF WATERLOO BECAUSE HE WAS TOO FAT!*

ACCORDING TO THE NEW YORK TIMES OF APRIL 13, 1890, THE DEFEAT OCCURRED BECAUSE HE FAILED TO CHECK HIS INTELLIGENCE INFORMATION. "IT WAS A MATTER OF MERE INDOLENCE AND THIS INDOLENCE WAS CAUSED BY FAT."

SOURCE: JAMA 186:65 (OCT. 5) 1963.

GALLSTONES HAVE BEEN FOUND IN 60% OF PATIENTS WHO WEIGH MORE THAN 300 POUNDS, 45% HAVE DIABETES, AND 15-TO-20% HAVE HIGH BLOOD PRESSURE.

SOURCE: DUNCAN, G.G.: SCIENCE NEWS LETTER, 83:403 (JUNE 29) 1963.

THE BOOK *"PRAY YOUR WEIGHT AWAY"* URGES READERS TO "ASK GOD TO HELP YOU LIKE EXERCISE" FOR 15 MINUTES A DAY.

SOURCE: REV. C.W. SHEDD: NEW YORK, LIPPINCOTT, 1958.

DIET DROPOUTS ACCORDING TO DRS. SHIPMAN AND PLESSET "APPARENTLY NO DIETER SUCCEEDS WHO IS VERY ANXIOUS OR DEPRESSED."* THE AMBAR FORMULA PROVIDES **METHAMPHETAMINE** TO HELP **ELEVATE** THE **MOOD** AND **PHENOBARBITAL** TO HELP REDUCE **ANXIETY.**

**SOURCE: ARCHIVES OF GENERAL PSYCHIATRY 8:26 (JUNE 1963).*

CONTROL FOOD AND MOOD ALL DAY LONG WITH A SINGLE MORNING DOSE

AMBAR #2 EXTENTABS®

methamphetamine HCl 15 mg.,
phenobarbital 64.8 mg. (1 gr.)
(Warning: may be habit forming).

One Ambar Extentab before breakfast can help control most patients' appetite for up to 12 hours. Methamphetamine, the appetite suppressant, gently elevates mood and helps overcome dieting frustrations. Phenobarbital, the sedative in Ambar, controls irritability and anxiety... helps maintain a state of mental calm and equanimity. Both work together to ease the tensions that erode the willpower during periods of dieting.

Also available: Ambar #1 Extentabs®—methamphetamine hydrochloride 10 mg., phenobarbital 64.8 mg. (1 gr.) (Warning: may be habit forming).

BRIEF SUMMARY/**Indications:** Ambar suppresses appetite and helps offset emotional reactions to dieting. **Contraindications:** Hypersensitivity to barbiturates or sympathomimetics; patients with advanced renal or hepatic disease. **Precautions:** Administer with caution in the presence of cardiovascular disease or hypertension. **Side Effects:** Nervousness or excitement occasionally noted, but usually infrequent at recommended dosages. Slight drowsiness has been reported rarely. See package insert for further details.

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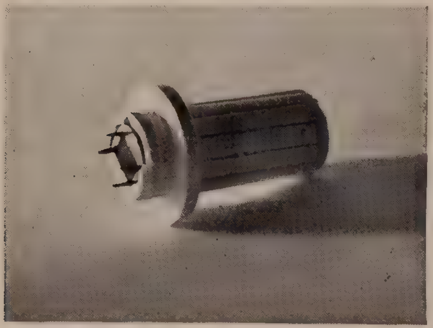
To fight TB-find it first!

Make tuberculin testing routine with every physical examination.



TUBERCULIN,TINE TEST
(Rosenthal)

Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

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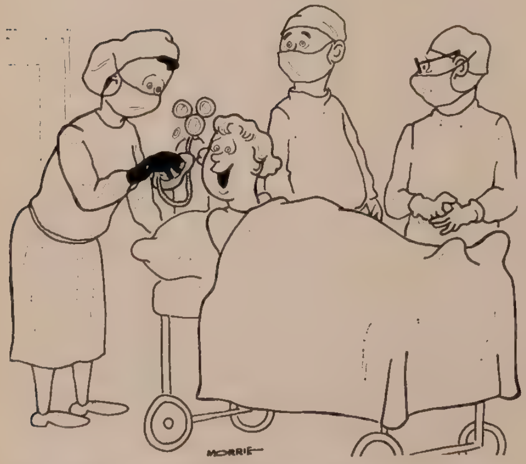

"Take it away! I don't want to miss a thing."

continued from page 1102

sessions on bone marrow transplantation, cancer and pregnancy in their relationship to transplantation, and transplantation of organs, including kidney, heart, liver, and lung. Body rejection of alien tissue will be discussed at length.

For further information contact: Herbert Kadison, New York University Medical Center, 560 First Avenue, New York, New York 10016.

Forensic medicine topic of symposium

The sixth annual Symposium on Forensic Medicine for physician coroners, medical examiners, and forensic pathologists throughout the State of New York and medical examiners and investigators in the City of New York is to be held October 19 and 20 at the office of the Chief Medical Examiner of the City of New York, 520 First Avenue, New York City.

The symposium is jointly sponsored by the Office of the Chief Medical Examiner of the City of New York, the Department of Forensic Medicine of New York University, The Medical Society of the State of New York, and The New York State Department of Health.

Thermoluminescent lithium fluoride dosimeters

Thermoluminescent lithium fluoride dosimeters of a new type, superior to other dosimeters for special purposes, have been developed in the Public Health Service's National Center for Radiological Health.

The dosimeters may be used to measure background radiation, x-rays from electronic products, gamma-beta radiation, and exposure of patients undergoing x-ray examinations. One of the advantages of the dosimeters is that they can be employed to record diagnostic x-ray exposure without interference with diagnostic procedures.

Methods for reading and calibrating the large single lithium fluoride crystal dosimeters were developed by members of the staff of the Radiological Health Center's Electronic Products Radiation Laboratory. The crystals have been purchased from a chemical manufacturer.

The dosimeters were initially employed for quality control in the Public Health Service diagnostic x-ray exposure study for measurements in the range of 5 to 5,000 milliroentgens, but since have been improved so that they can make low-level recordings with an accuracy of ±0.25 milliroentgens.

During the first seven months of 1967, 7,500 readings were made with 675 crystals. X-ray calibration of individual crystals was found to be reproducible within ±5 per cent.

who goes for checkups?

A vital question. For if early diagnosis and treatment can cure cancer, obviously regular health checkups are essential. In a survey conducted for the Society, we discovered that only 26% of those questioned had such regular checkups. But 90% said, *if their physicians told them to do so*, they would have annual checkups.

This confirmed what we have long known—your key role, doctor, in *activating* your patients in good health practices. We alert the public with facts about cancer. You follow through by urging regular checkups. A life-saving combination.

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DISTRICT COURT
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PRESSURE
Sixth Straight Setback
THE NEW YORK
New York Stock Exchange Trading
Drop
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VIOLATIC
NO PARKING ZO.
RESERVED SPACE
BLOCKING DRIVEW
EMERGENCY DRIVEW
WITHIN 10 FT. OF FI
PARKING WITHOUT
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PARKING IN LOADI
WARN

When life's pressures build up blood pressure

in the hypertensive patient

Life's pressures and frustrations can often set the stage for a rise in blood pressure in the hypertensive patient. Emotional fluctuations of blood pressure may be especially intensified in the hard-driving individual who continuously pushes himself. Along with your advice to help the patient adjust to living with hypertension, you can also prescribe help in the form of Hydropres.

Hydropres, a combination of two proven antihypertensive agents, has a mild tranquilizing effect that lets the patient relax as it reduces his blood pressure. It alleviates symptoms associated with hypertension, such as headache and tachycardia, that frequently reflect the general tenseness of the patient.

It's worth noting that potassium loss with Hydropres at usual therapeutic doses is usually minimal, and a diet rich in potassium normally avoids serious depletion.

Another point to remember: When other antihypertensive drugs are used adjunctively they must be given at one-half their usual dosage simply because Hydropres potentiates the action of such agents. Hydropres is contraindicated in anuria and in patients known to be sensitive to hydrochlorothiazide or reserpine.

So, when life's pressures build up blood pressure, consider Hydropres to help your hypertensive patient feel more relaxed while under pressure.

HYDROPRES®

ANTIHYPERTENSIVE

HYDROPRES-25:
25 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

HYDROPRES-50:
50 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

helps your patient relax as it lowers his blood pressure

For additional prescribing information, please see following page.

helps your patient relax as it lowers his blood pressure

INDICATIONS: Mild to severe hypertension.

CONTRAINDICATIONS: Anuria; increasing azotemia and oliguria during treatment of severe progressive renal disease. Known sensitivity to hydrochlorothiazide or reserpine. Nursing mothers. Electroshock therapy; discontinue drug at least 7 days before initiating electroshock therapy.

WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls.

Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. The possibility of sensitivity reactions should be considered in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of child-bearing age, potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.

PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, paresthesias, purpura, rash, urticaria, photosensitivity or other hypersensitivity reactions may occur. Cutaneous vasculitis precipitated by thiazide diuretics has been reported in elderly patients on repeated and continuing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice. Whenever adverse reactions are moderate or severe, the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, and pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS (including ocular) sensitization have been noted. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure. Since reserpine may increase gastric secretion and motility it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other gastrointestinal disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Anxiety, depression, or psychosis may develop. Pre-existing depression may be aggravated.

Before prescribing or administering, read product circular with package or available on request.

HYDROPRES®

ANTIHYPERTENSIVE

HYDROPRES-25:
25 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

HYDROPRES-50:
50 mg. hydrochlorothiazide
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where today's theory is tomorrow's therapy

Abstracts

Torda, C.: Contribution to serotonin theory of dreaming (LSD infusion), New York State J. Med. **68:** 1135 (May 1) 1968.

The consistency and magnitude of the decrease of the latency of REM (rapid eye movement) and dream incidence by LSD (lysergic acid diethylamide) infusion warrant the assumption of a relationship between intracellular LSD increase (LSD has been shown to induce a serotonin-like reaction from human brain), and REM or dream incidence. A psychophysiologic mechanism capable of inducing dreams and hallucinations is described. It is concluded that paradoxical sleep is the physiologic manifestation of the interplay of a norepinephrine-dependent process fostering arousal and a serotonin-dependent process promoting sleep.

Abstracts in Interlingua

Torda, C.: Contribution al theoria a serotonina del sonio (infusion de LSD) (*anglese*), New York State J. Med. **68:** 1135 (1 de maio) 1968.

Le constantia (e le magnitude) del declino in le latentia de rapide movimentos ocular e le constantia (e importantia) del incidentia de sonios post infusiones de LSD (diethylamida de acido lysergic) justifica le postulato de un relation inter augmentos intracellular de LSD e le incidentia de rapide movimentos ocular e/o de sonios. (Il ha essite demonstrate que LSD induce reactiones serotoninoide in le cerebro human.) Es describite un mechanismo psychophysiologic capace a inducer sonios e hallucanationes. Es formulate le conclusion que somnio paradoxe es le manifestation physiologic del interaction mutual de un processo (norepinephrino-dependente) que promove vigilitate e un processo (serotonino-dependente) que promove somnio.

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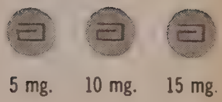

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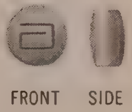

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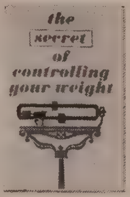

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Brief Summary

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DESBUTAL 15 Gradumet
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Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

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Book Notes

Renal Transplantation. By Roy Yorke Calne, M.S. Second edition. Octavo of 220 pages, illustrated. London, Edward Arnold Publishers Ltd. (Baltimore, The Williams and Wilkins Company), 1967. $11.75.

Substantial progress in clinical and experimental renal transplantation has been made during the four years since the first edition of this monograph appeared. As a consequence, it has been necessary to rewrite most of the original work. Much of the progress in this field can be attributed, as the author notes, to better patient management, improved clinical judgment in the use of azathioprine and corticosteroids, and the more frequent secondary use of transplants if the first fails. In this new edition much of the experimental detail has been omitted and new experimental work is discussed. Also, there are completely new sections on renal transplantation in man.

A Primer of Pathology. By F. A. Ward, L.R.C.P.I., M.C.Path. Second edition. Octavo of 116 pages. New York, Appleton-Century-Crofts, 1967. Fabrikoid, $4.50.

The author of this compact little volume sympathizes with the beginner in pathology who is "immediately confronted with a limitless field of inquiry." Therefore, he has fashioned this work as a guide which will be helpful in directing the attention of the student to the more important aspects of the subject.

It usually is easier to grasp a subject if something of its history is known. Consequently the historical approach has been used to clarify certain material which would be difficult to explain or otherwise even understand. In addition, the text progresses from the particular to the general.

After reading the book once, the student should have a bird's-eye view of the subject and after three or four readings, a good working knowledge. There is no index. Instead, there are questions at the end of the text with which the reader can test his knowledge.

Kinesiology and Applied Anatomy. By Philip J. Rasch, Ph.D., and Roger K. Burke, Ph.D. Third edition. Octavo of 488 pages, illustrated. Philadelphia, Lea & Febiger, 1967. Cloth, $8.50.

This text presents an integrated analysis of the science of human movement. It is intended to serve several broad areas of interest. For coaches and trainers of athletes and for teachers of dance and physical education it presents

continued on page 1114

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continued from page 1113

essential subject matter for professional practice. For medical and paramedical personnel engaged in physical medicine, rehabilitation, and therapeutic exercise, it supplements highly specialized texts in these fields. The authors have recognized the needs of beginning students by careful definition of terms and by including summaries of pertinent aspects of elementary anatomy, physiology, and mechanics. However, no attempt has been made to oversimplify the subject matter by omitting difficult material or basic factual data. Many chapter headings and topics of this edition are similar to those of previous editions, yet almost every page has been revised, incorporating hundreds of new facts, insights, and concepts. Also, many illustrations have been replaced.

Care of the Patient in Surgery, Including Techniques. By Edythe Louise Alexander, B.S., M.A., R.N., Wanda Burley, B.S., M.A., R.N., Dorothy Ellison, B.A., M.A., R.N., and Rosalind Valleri, B.S., M.A., R.N. Fourth edition. Quarto of 898 pages, illustrated. St. Louis, The C. V. Mosby Company, 1967. Cloth, $16.85.

This edition covers all aspects of operating room nursing service including administration and organization of operating services, design of physical facilities, environmental safety controls, and aseptic and general surgical technics followed to ensure all patients quality care.

It is designed primarily for professional operating room nurses in the position of administrator, supervisor, or instructor and for those staff members who are experts in one specialty and would like to have more contact with other clinical specialties. It also should be a helpful reference for those interested in medical and surgical nursing and for those enrolled in courses which emphasize nursing leadership and professional responsibility for patient care.

Outline of Orthopaedics. By John Crawford Adams, M.D. Sixth edition. Octavo of 467 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1967. Cloth, $9.75.

This book is intended primarily for students. However, it also may be of use to practitioners whose work brings them into occasional contact with orthopedic problems and to physiotherapists and orthopedic nurses. Rarities that are unimportant to the undergraduate student have been omitted, and descriptions of operative technic have been cut down to the barest essentials.

In this edition, much repetitive material has been deleted and the text has been thoroughly revised. Also, the extensive bibliography, introduced for the first time in the last edition, has been re-edited and enlarged. Another important feature are the illustrations and plates, of which there are over 300.

Modern Trends in Pathology—2. Edited by T. Crawford, M.D. Octavo of 323 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $16.75.

In planning the second volume in this series, the editor has paid tribute to the editor of the first volume, the late Professor Douglas Collins, by continuing to select contributors whose work illustrate the release of pathologists from the "shackles that previously bound them to the rigid disciplines of morbid anatomy."

The chapters in this volume serve to illustrate the wide range of technics which now constitute the tools available to the pathologist when he plans his research. These include the experimental and immunologic technics employed in the study of inflammation, transplantation pathology and thymic function, and many others.

Conclusions, discussions, or summaries are presented at the close of most chapters, as well as numerous references to pertinent literature.

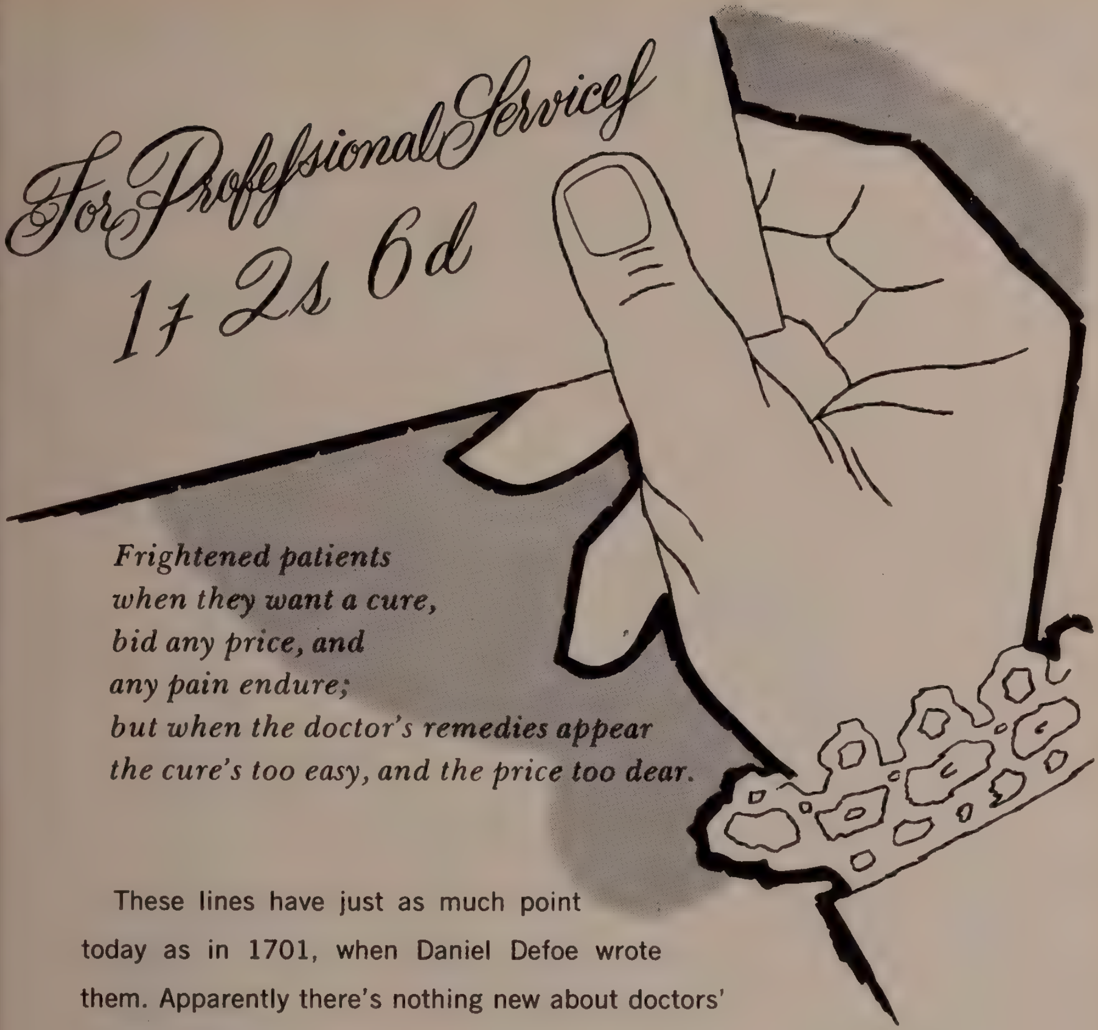
A Textbook of Histology. By William Bloom, M.D., and Don W. Fawcett, M.D. Ninth edition. Quarto of 858 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $18.90.

This edition follows the previous one after five years of rapid progress in the exploration of the structure and function of the tissues and organs. As a consequence, many extensive revisions have been made in the text. Also, many unsatisfactory old figures have been eliminated and almost 400 have been added bringing the total number to 820. Wherever possible in the labeling of the figures, abbreviations have been eliminated and the identifying terms have been spelled out on the figure. In selecting the illustrative material, the authors have tried to maintain a reasonable balance between light and electron microscopy. There are nearly 1,600 references at the ends of chapters. These should be helpful to teachers and graduate students who wish to pursue particular subjects in greater depth.

Vascular Diseases of the Lung. Compiled and edited by Harold A. Lyons, M.D. Octavo of 195 pages, illustrated. Springfield, Charles C Thomas, 1967. Cloth, $12.75.

The object of this book is to provide the practicing physician with information on vascular diseases of the lung considering pathogenesis, pathology and pathophysiology, angiographic findings, clinical findings, and treatment.

The increasing realization of the significance of the pulmonary circulation has provided an impetus for numerous studies which have enlarged the understanding of its anatomy, physiology, and pathology. However, much of this information is scattered throughout many different journals and books and in a number of sources not readily available to the practicing physician. The high lights of this knowledge have been assembled in this work with indications for its practical application and use.



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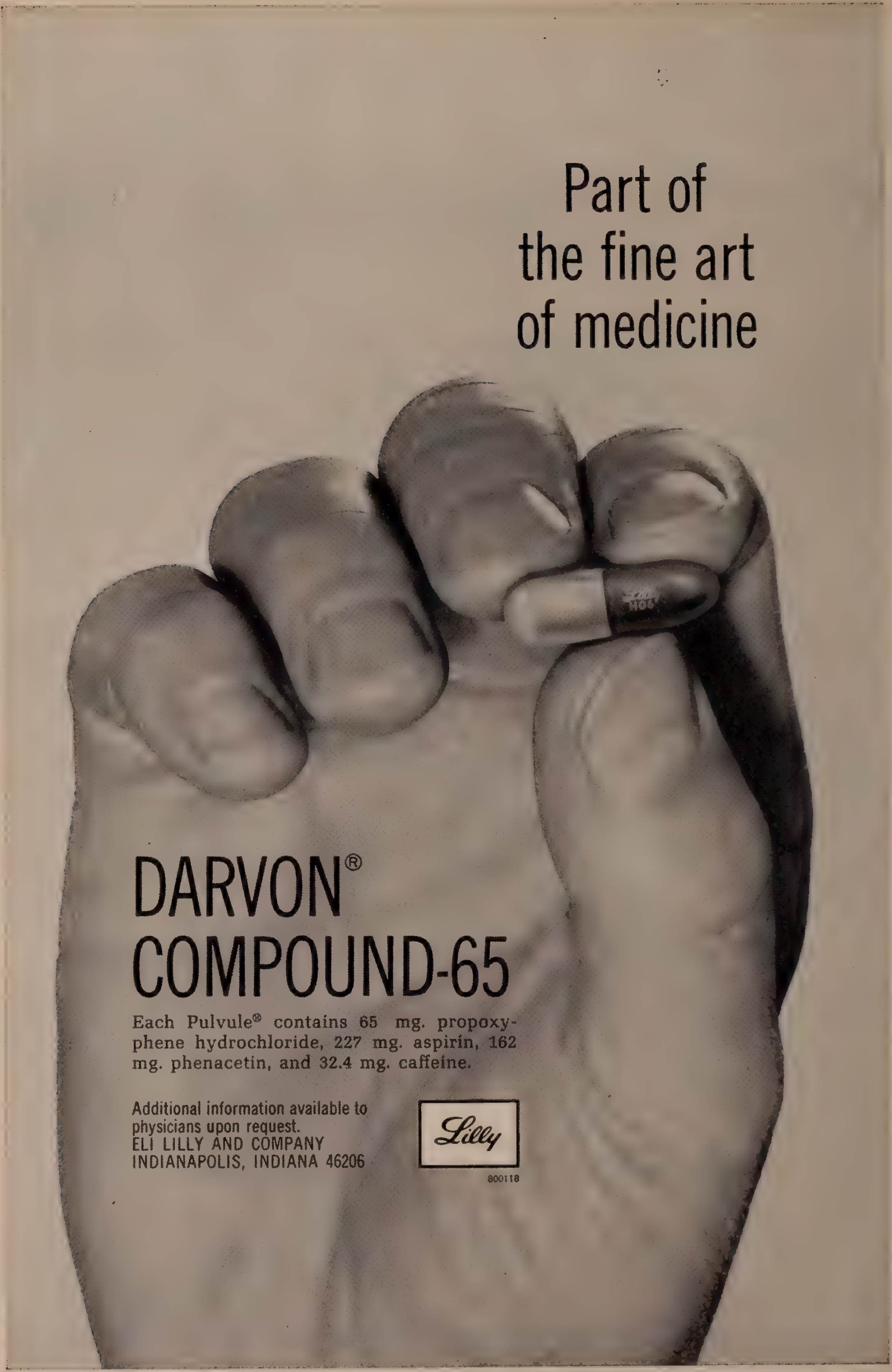

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May 1, 1968 Volume 68 Number 9

"Dedicated to the continuing education of the physician"

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Journal awards for 1967

Continuing its recognition of outstanding writing in and accomplishment for the NEW YORK STATE JOURNAL OF MEDICINE, the JOURNAL made three awards at the opening session of the 1968 House of Delegates of the Medical Society of the State of New York, on February 11, 1968.

Frederick A. Wurzbach, Jr., M.D., president, presented the seventh annual Laurance D. Redway medal and award for excellence in medical writing in the JOURNAL during 1967 to Stanley I. Fishman, M.D., of Brooklyn, for his article entitled "Pulmonary Emphysema—A Clinical Problem," which appeared in the October 1, 1967, issue (Fig. 1).

New York State Medicine

Joseph Merante

FIGURE 1. Stanley I. Fishman, M.D. (left), receiving the 1967 Laurance D. Redway medal and award from Frederick A. Wurzbach, Jr., M.D., president, Medical Society of the State of New York.

The citation for this award stated:

> This well-reasoned article, only ten pages in length, put the clinician squarely in the center of the emphysema problem. The protean nature of the etiology of this condition and its physiologic and pathologic results led logically into a consideration in depth of the clinical picture. The article concluded with a close look at all the various therapies proposed to date and put them in proper perspective. All the information provided was soundly based scientifically. In addition there was not a word wasted and there was not a word that could be removed without loss.
>
> This is high competence in medical writing, and the JOURNAL is privileged to recognize it.

Dr. Wurzbach continued the fourth annual presentation of award certificates for distinguished service to the JOURNAL by recognizing Miss Alvina Rich Lewis, managing editor for the JOURNAL, and George Himler, M.D., chairman of the Publication Committee (Fig. 2).

The citations were as follows:

> ALVINA RICH LEWIS: This award for Distinguished Service to the NEW YORK STATE JOURNAL OF MEDICINE is made for the first time to one who does not hold a degree in medicine.
>
> Miss Lewis has rightly won for herself an honored position in the family of medicine. For twenty years she has served the JOURNAL, first as technical editor, then as assistant to the editor, and currently as managing editor. Miss Lewis has had complete responsibility for day-to-day working out of the immense number of details of editorial production required to meet semimonthly publication deadlines. She has done this calmly and efficiently and has brought to this work a solid homegrown integrity, a gift for organization, and unparalleled grasp of detail.
>
> She is a friend to all, as many can attest. Her talents, while primarily at the service of the JOURNAL, have been shared by her fellow craftsmen in the American Medical Writers' Association, where she has held high office and received many honors.
>
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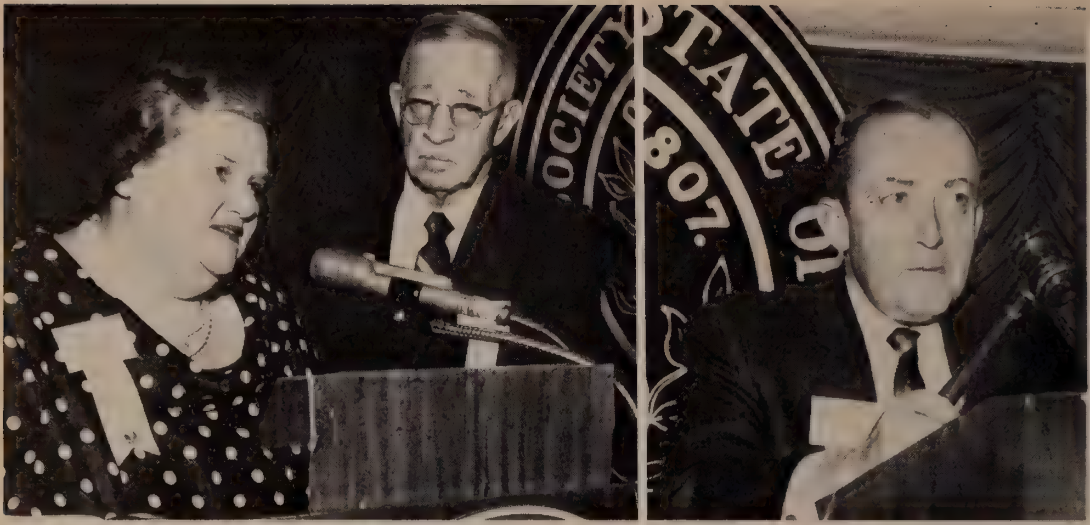

Joseph Merante

FIGURE 2. Recipients of the 1967 awards for Distinguished Service to the JOURNAL which were presented by President Wurzbach; (*left to right*) Miss Alvina Rich Lewis, Dr. Wurzbach, and George Himler, M.D.

New York is fortunate that it will continue to have the benefit of Miss Lewis' service after her retirement from the JOURNAL later this year. She will be retained as research assistant in the Division of Research and Planning.

The JOURNAL is grateful to Miss Lewis for these years of untiring and unselfish service. If the JOURNAL were to make but one award for many years of distinguished service it would go to none other.

GEORGE HIMLER, M.D.: Recent action of the Council has changed the manner of liaison between the Council and the NEW YORK STATE JOURNAL OF MEDICINE. This function, formerly performed by the Publication Committee, will now be taken over by an individual councillor.

It is fitting that the last chairman of the Publication Committee be honored by this award for Distinguished Service to the JOURNAL.

Dr. Himler became chairman of the Publication Committee in 1963. This was a time of economic difficulty for the JOURNAL and for medical journalism generally. The chairman served also on the Ad Hoc Committee to Study the JOURNAL from 1963 to the present, since the ad hoc committee has not yet at this time been dismissed.

By active participation as a member of that committee and simultaneous leadership of the Publication Committee, Dr. Himler steered a calm and reasoned course through difficult times.

Due in part to Dr. Himler's efforts, the JOURNAL was enabled to survive a lean period in its existence and to maintain its steady advance toward excellence.

As in past years, these awardees represent the high quality of competence and dedication of those who advise and direct the editorial affairs of the JOURNAL.

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SYMPOSIUM

Shall There Be a General and/or Family Practice Department in Our Medical Schools?

Moderator
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Proposed Program in Family Practice for New Medical College

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THE DEVELOPMENT OF a new medical school offers an opportunity to make a fresh approach to the educational program. The planning in the program should look at the past in perspective, examine the present with our rapid state of social evolution, and project into the future as the practice of medicine then may be conceived.

Family practice

Before an educational program can be devised, the objective for which it is planned should be defined. What is family practice? Is it a body of knowledge which can be clearly defined in the minds of both the public and the profession? The medical problems now cared for by physicians in family practice require knowledge of most of the clinical disciplines as practiced by specialists.

Is family practice a pattern of delivery of medical care? Does the public want an approach to its problems in which a single physician of its choice looks not just at the individual's disease but at the unit of society, the family, which lives in a specific community? Most physicians feel this approach is best.

Is family practice an attitude of mind in the physician? From the professional point of view, a responsibility is implied for making medical decisions involving all members of the family. This attitude on the part of the physician should be developed, regardless of how he ultimately may limit his practice.

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*By invitation.

Long-range trends

Several trends are apparent in this country which have been developing over a period of twenty-five to thirty years.

A change in character of the population has occurred. The explosion in numbers of people has been most marked in the young and elderly. The population is more mobile than formerly, so that families change their residence within the same city or move to another community. Partly as a result of mobility and partly from social change, the role of the family is changing. A single household contains only one generation and rarely parents and grandparents.

Mobile families do not put down roots in the community or make as long-term contacts with physicians as formerly. Greater dependence is placed on institutions to assume responsibility formerly accepted by families for the education of children and for meeting the financial needs of illness.

The character of illness has changed from the self-limited, acute, infectious diseases to the chronic illnesses. The life history of the present killer diseases is no longer measured in terms of days but has life-long elements. The increasing importance of genetic factors is becoming apparent in heart disease, stroke, and cancer. The increasing importance of behavioral disturbances in disability and loss of time at work is reflected in symptoms resulting from the stresses of living. These symptoms may be exhibited purely as psychosomatic problems or as functional overlay to organic disease. In addition, accidents which have a large behavioral component are a major cause of death in all age groups.

Changes have occurred in the patterns of medical care. In the past, people were born and died in their homes. Now, birth and death occur in an institution, the hospital. Fewer physicians are practicing alone, and more are practicing in partnerships or groups. In the past, the patient or his family assumed the financial responsibility for illness. Now, third parties, whether insurance companies, prepayment plans, or government, are assuming greater roles. The health-related professions are increasingly doing parts of the job formerly performed by the physician himself.

In spite of these trends, however, most medical care is still given to ambulant patients by individual physicians who are practicing alone.

Role of new school

A generous allotment of funds from The M. S. Hershey Foundation permitted the establishment of a new four-year medical school. The trust instruments require that the funds be expended in Derry Township, which contains the relatively small community of Hershey. A court decree in August, 1963, permitted an affiliation agreement with The Pennsylvania State University for the establishment of a college of medicine, a teaching hospital, and related research programs. The decree provides that the University make all academic decisions. The dean was appointed in November, 1964. At that time, the academic program was outlined in general, including the specific role of the proposed department of family and community medicine.

Educational philosophy

A university, particularly a state university, has a primary responsibility for education. The college of medicine has as its primary responsibility the education of physicians for practice as it may be done twenty years hence. The emphasis in the educational program is on the medical student, the house officer, and the continuing education of the practicing physician, in that order. It is recognized that the process is a never-ending one of self-education for the physician. Graduate degree programs in the basic medical sciences are a part of the initial program.

Universities render service. In medicine, service takes the form of patient care. Planning must assure that the educational program is not swamped by demands for service. This point commits the medical school to limitation of patient service. Limitation in the number of patients seen implies selection according to illness with the requirement that all be used in the teaching program.

Universities are responsible for the development of new knowledge. Research has a value for its own sake, but it is also useful as a teaching tool. The rate of accumulation of factual knowledge is extremely rapid. The interpretation of research findings and the application to individual patient problems is a continuing responsibility of the practicing physician. He must review not only reports on basic and clinical research but studies in the delivery of patient care as well.

The curriculum must be increasingly concerned with attitudes on the part of students. It is no longer possible to teach medicine from a purely factual approach since the volume of facts is overwhelming and constantly changing. Emphasis must be placed on concepts and patterns of learning. When the physician in practice sees a patient with a diagnostic or therapeutic problem, his intellectual process is one of analysis, collection of information, and evaluation. This process involves a technic of problem solving. The basic fact of biologic variability between individuals means that the practice of medicine will continue to be an art which rests on a scientific base. The faculty is posed with the dilemma of how to prepare the student so that he is at the same time an objective, dispassionate, and analytical scientist and also a warm, compassionate human being interested in his patient. The patient is not an isolated person but a member of a family living in a specific community. The frame of reference for study must be broadened.

Most students come to medical school expecting ultimately to practice. Their prime motivation is an interest in people and a desire to help them. People have their own sense of values and make their own individual decisions as to why they lead their lives as they do. The subtle, intangible factors which influence acceptance of the recommendations of the physician involve the person as a human being. The study of human values is the study of the humanities, and these factors must be considered in the curriculum.

Educational innovations

The educational process should have threads which run throughout the traditional four years of the curriculum. At Hershey the emphasis on learning at the individual level rather than teaching has led to the development of a study cubicle which will be provided for each student. Its placement in the physical plant will balance the bibliographic and laboratory approaches to learning.

HUMANITIES. The study of human values, particularly from the cultural point of view, has led to the organization of what we believe to be the first department of humanities in a medical school. Major faculty positions will cover the fields of comparative religion, philosophy and ethics, and history of science. Students will be taught attitudes of various peoples, past and present, on life, death, and the body before and after death. These particular points can be discussed in anatomy as the student is introduced to the cadaver. The attitude toward animals, as in the sacred cows of India, the use of animals for research, and reverence for life can be explored in physiology and pharmacology. The ethics of experimentation on the human being and the attitudes toward transfusion, transplantation of organs, and fertility control can be discussed from these points of view during the clinical years.

BEHAVIORAL SCIENCE. A department of behavioral science has been organized as a basic medical science. Behavior, especially the range of variability, is basic to all clinical disciplines. Only when normal behavioral reactions are understood, can psychosomatic problems and mental illness be properly evaluated.

An animal farm is under construction to serve as a facility to house genetically controlled breeding colonies for use in teaching of group and individual behavior in a variety of species of animals and for research in aging and chronic illness.

FAMILY AND COMMUNITY MEDICINE. A unique department of family and community medicine has been organized to serve as a frame of reference for teaching throughout the four years of the student's curriculum. The members of the department will serve as role models for students. This department should serve as the focal point for application of the social, behavioral, and cultural factors which may be taught through the other educational innovations mentioned.

The members of the department appointed are three physicians now practicing in Hershey who have records on the patients under their care extending over a period of ten years or more. This requirement is necessary to assure the student's recognition of the need for continuity of care. The University, in this fashion, is assuming responsibility for a segment of the community in which the medical school is being established. The University will make available all resources in the medical center for application to patient care problems in this portion of the population.

The faculty members will be full time and will be eligible for tenure in the University. In view of the full-time appointment, they have accepted the principle of restriction in time available for practice and in income. To facilitate teaching, they will move their offices to the medical sciences building into especially designed suites which resemble in character their present offices. After consultation with the members of the department, it was decided the program proposed could not effectively be established if the patients were seen in the usual outpatient clinic atmosphere rather than a private office. A comparison between patient and student reaction to the two settings can be made.

It is anticipated that the teaching will be largely informal, involving single or small groups of students, not exceeding four. By the fourth year, it should be possible for the student to elect a preceptorship with an individual physician in which he would shadow him throughout the day. Since students in the clinical years are expected to live in garden-type apartments on the site, a telephone connection to permit off-hours conversations with patients should be feasible.

Emphasis will be placed on growth, development, and variability in individual patients throughout the complete life span. Interaction within the family to external stresses and to illness can be pointed out. Continuity in care over a period of years will be emphasized. The student should learn how to use consultants in specialized fields when they are necessary.

The use of the laboratory and the need for sophisticated diagnostic procedures will be kept in perspective. An interesting study will be the actual use of the laboratory in comparison to former years if all those facilities in the medical center are available at the physician's elbow and the patient knows this fact. The value of periodic screening from a laboratory point of view in a practice which represents a cross section of society in a small community is another interesting study which could be done.

The application of genetic principles to premarital counseling and family planning for children, as well as the application of behavioral principles to solution of marital problems, is another area for study. The question of the amount of normal obstetrics required for teaching of family medicine is not settled but will await the appointment of the professor of obstetrics and gynecology. Actually, little obstetrics is now done by the members of the department, and most of it involves uncomplicated pregnancies.

Members of the department will have full admitting privileges to the teaching hospital. Patients will be admitted on the regular wards, and no separate service will be set up. The patients and families now seen by these faculty members are exactly the type which the student sees himself caring for in his own practice in the future. They are stable, solid citizens in a suburban setting. There are no slums in Hershey, and the indigent population is minimal.

To prepare for teaching, the members of the department are being required to spend the equivalent of one year in postdoctoral training between the organization of the department in 1965 and the opening of the teaching hospital in the summer of 1969. The men are taking periods of two to four months each year, at their own expense, in a major medical center in fields related to family practice. They may not elect fields which relate to specialty practice but are serving in university departments where problems related to adolescent medicine, marital problems, and general medical problems in internal medicine and pediatrics are seen.

This technic of placing a practicing physician five to ten years after graduation in a setting where he has responsibility for patients with maximum motivation for learning has implications for continuing postgraduate education. This setting in a teaching hospital is the one in which the maximum learning of clinical problem solving and development of judgment occurred for the physician in the past.

The program in the department is designed to make the medical student see the faculty member as a full participant in the educational and patient care process with all privileges at the same level as the traditional specialist. By this technic, students should be attracted into family practice as a career and could set this goal during the undergraduate years. The attitude of looking at the family as the frame of reference for the impact of disease biologically, culturally, and socially will serve as the proper frame of reference, even for those students who elect subsequently to become trained as specialists.

The individuals selected to establish this department have each demonstrated superior qualifications as a practicing physician. In addition, they have other qualities as persons which medical students should recognize as important requirements for the best family physicians. Members have served as lay leaders in their churches, as president of the school board, and as physician to the local professional hockey team. One of the physicians has had experience in workmen's compensation for injuries seen in light industry. None of the physicians will have a connection with the largest industry in the community.

The members now serve on the admissions committee to interview prospective students. The spokesman for the department participates in curriculum discussions. The details of the general curriculum have not yet been settled. No formal courses in family practice currently are planned. During the first and second years, the students will see patients and families in the office and home with the physician. Health maintenance, prevention, and evaluation will be stressed at this time rather than disease. Discussions between faculty and several students on problems seen in the families being followed will bring out the range of problems and solutions the physician faces. It is anticipated that informal teaching during the third and fourth years will focus on specific illnesses and will serve as the focal point in which the teaching in the humanities and behavior will come to bear on individual patient problems.

It is recognized that the department may need a scientific floor in the future on which clinical research could be based. The research might be expected to concern long-term observations so that access to scientific help in epidemiology and genetics may be required. Teaching in these fields, as in many others usually taught in traditional departments of preventive medicine, could be done in this department as the program evolves. Indeed, specially trained faculty members in these disciplines could be added to the department.

It would be wise if a base line could now be established on the practices of these physicians in their present settings before the move to the medical center occurs. Such a base line would be necessary before the effect of the establishment of the department on delivery of medical care in the community could be assessed. The department offers an opportunity for the development of new paramedical personnel who might work out of a private physician's office with him in the home or elsewhere in the community. One type of person discussed has been called a family health advisor, who might be essentially a graduate nurse with additional training in health education. She could instruct patients and families in the meaning of illness and in the adoption of preventive and rehabilitative measures for the family as a whole in the setting of the home. This technic would help assure that the physician's recommendations are understood and are being followed.

Every effort will be made to avoid the institutionalization of patient care on the philosophic basis that the practice of medicine is essentially a confidential, interpersonal relationship between a physician and his patient. This relationship, however, will have the backing of a complete medical institution and will be physically based in one, even though the philosophic orientation is different. The use of institutional laboratory facilities will provide better quality control on data used in making medical decisions.

In addition to the offices, the medical center will have available an ambulant unit for patients who need only minimal or self care. In the future, extended-care facility in the form of a nursing home will be built separately on the site or contiguous to the ambulant facility. Members of the department would have access to this facility, if needed, to supplement the studies being done or care being rendered in the patient's home in the community.

Summary

A unique department of family and community medicine is being organized as an integral department on the same level as the traditional clinical departments of the new four-year College of Medicine of The Milton S. Hershey Medical Center of The Pennsylvania State University. The location in a small community permits the University to assume full responsibility for care of a segment of the population in the community and to make available the full resources of a major medical center for use in programs of patient care of the private practices of the members of the department. The members will be full-time faculty members with academic tenure in the University and hospital admitting privileges.

This experiment is expected to improve the teaching of medical students in the recognition of the impact of illness biologically, culturally, and socially in the setting of the family living in the community. It is hoped that more students will commit themselves to careers as family physicians as a result of this program. Of equal concern is the development of the attitude of the family physician in all students, regardless of the type of practice they ultimately may enter.

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Role of Family Practitioner in Medical Education

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THE STEADY DECREASE in the number of medical students selecting general practice as a career has concerned many of us who believe family physicians are important for good comprehensive medical care. Although a multitude of reasons for this decline have been cited, the absence of general practitioners from most medical faculties is, I believe, a very important etiologic factor. I also wish to point out that the trend to specialty practice has increased so that approximately 80 per cent of recent graduates enter specialties or research. I further believe that the concept of comprehensive medical care or general practice is omitted in differentiating undergraduate physicians. It is my belief that undifferentiating physicians are not being graduated in that the "whole man" concept has not been taught. In medical schools there should be a deliberate attempt to create interest in general practice or at least not to give the student the impression that general practice is relatively low in the scale of medical practice. It is essential that the image of general practice be changed both for the public and for the medical student. This will take place spontaneously when general practice is upgraded and the status of the general practitioner is raised, when a medical student is convinced that a general practitioner can function adequately, that there are opportunities to keep up to date, and that the training for general practice is as structured and as serious as the training for other specialties—then he will plan to enter this most interesting of all specialties.

Need for general practitioners

Just published by the Millis Commission is a 114-page report which took three years of study, and the authors have come to one germane conclusion, "that new and en-

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lightened emphasis be placed on the urgent need to train more primary physicians who will be Board-certified physicians in comprehensive care." The Commission elects to call the family physician the primary physician. Another emphasis was placed on the basic importance of comprehensive continuing health service and the need for more physicians who are competent in this area.

The American Academy of General Practice has in the past endorsed and supported legislation for a certifying board in family practice. The report further urges that there should be a specialty board, certification examinations, and diplomate status for physicians in comprehensive care. The old image of the general practitioner of revered memory has passed on just as the old-fashioned hoop skirt. The family physician has changed and so has his economy, the time he lives in, and also his patients. The report on comprehensive care involves teaching a "new body of knowledge."

This trend toward specialization is further emphasized by the increasing number of straight internships. In a recent survey in New England, requests for physicians in communities in Massachusetts indicated a need for general practitioners in 90 per cent of the instances; 75 per cent of the physician responders, however, were specialists. I believe this inequity can be relieved by implementation in teaching of general practice in undergraduate education. The sum total of knowledge and skill which a general practitioner or family physician can more effectively teach is in primary patient care and total patient management. We must assume that all future physicians will be well-educated scientists.

There is a common fund of knowledge and skill desirable for all graduates of medical schools. The educational program in a modern medical school exposes the student to specialty viewpoints, and I think that it is now time that the student also be exposed to the concept of family practice. Because general care is a necessary and important part of community health, this phase of medical education beamed toward the patient and his medical care should be encouraged. In addition to all the scientific knowledge required of all medical students, the student should also be advised in health counseling, health management, disease prevention, mental health, and rehabilitation. A family physician who through experience has acquired the attitudes and skills required for good patient management in relation to the family can best assist the student to develop these attitudes and skills through demonstration and student participation. The skills the family practitioners can more effectively teach are judgment in the evaluation of the patient and health maintenance. He should be able to take good histories, interview and examine the patient; come to a conclusion in identifying a disease, if any, and other factors in relation to the family, job, and background; and select proper laboratory procedures and proper consultation. In summary, the general practitioner can maintain the health of a patient which shall include four areas, namely: (1) primary prevention, (2) early detection, (3) treatment, and (4) rehabilitation.

Community involvement

The attitudes which a family physician can more effectively teach are interest in the patient as a person and as a member of his family and community. To carry out this program effectively, the school should accept more general practice teachers for clinics, home care programs, community health services, and other areas. To further implement this, the student exposure should begin in the sophomore year, preferably after the completion of physical diagnosis. The teaching of general practice is commonly under the aegis of the department of preventive medicine or community health. For example, at the University of Kansas, sophomores are assigned two days a week to a home care program under the professor of preventive medicine and under the general supervision of a general practitioner. Also, at the University of Kansas, students are sent into rural areas for two months on an obligatory basis, sometime during their sophomore and junior years. At Western Reserve University a family is assigned to a student in the freshman year under the guidance of a general practitioner. At the new school at Hershey, there will be a department of general practice, and at the University of Kentucky a home family care program is part of the curriculum under the department of general practice.

Preceptorship program

A second major method of teaching general practice to undergraduate students is the institution of a preceptorship program. The preceptorship program is one of the many ways in which the school of medicine and the undergraduates and the physicians in that community can work together for the ultimate benefit of the community. These preceptorships or fellowships should be instituted at the end of the sophomore or preferably the junior year, because at this stage there is a strong desire of many students to get the feeling of private practice. However, it must be emphasized that the responsibility that both the medical profession and the university hospital has accompanies this privilege so that capable men are engaged who have shown proper attitudes and skills as family physicians, and this type of teaching should be further expanded not only through preceptorships but also through clinics and home care programs. These preceptorships are described as teaching situations in which the students accompany the physician to the office taking histories, doing physical examinations, discussing cases, and so on, as well as in the hospital and in the field. I further believe that this kind of experience should not be an elective but rather a required part of medical training.

While the ideas of family care planning are not new, there are some things about them which make them unique. The family care unit is in the division of general practice which is a division of the department of preventive medicine. This is operated at the University of Vermont under the direction of John Lantnow, M.D.

The family care unit functions both as a teaching and a service unit. The teaching program involves primarily the medical student.

One of the prime functions of the family unit is to serve as a demonstration of general practice. In keeping with this objective, the physicians who work and teach in the care unit are general practitioners. The allocation of amount of service each general practitioner gives to the family unit must be determined in each instance locally.

Patients accepted are medically indigent or, at the present time, medicaid patients or even medicare. References to the family care unit are made by the physicians in the area, social agencies, and so on. The family unit is staffed, in addition to physicians who teach in the unit on a voluntary basis, also with ancillary personnel. This is team approach, and as such demands close cooperation with all personnel and also frequent conference and communications.

The operation of the family care unit may be carried out as is the practice of a general practitioner or that of a physician in the field, as far as possible. The operation can be by appointments, except in emergencies. If this is to be primarily a teaching unit, the patient is seen by the medical student who elicits a history and gives a physical examination, diagnosis, and treatment. The student then can confer either with the resident or attending physician who also sees the patient. The diagnosis and treatment are then discussed and carried out. Also other members of the staff, such as health nurse, dietitian, and so on, may be involved if a need exists. Under this operation, in addition, many of the patients are seen in their homes.

Another avenue in undergraduate medical education is a good, up-to-date geriatric program which could very well be handled by general practitioners.

Summary

The following points should be emphasized:

1. There is a need for increasing the teaching of concepts and training in general practice in undergraduate education.

2. Implementation can be effected through the following mechanisms: (1) family care or home care programs in the outpatient or home situations; (2) preceptorships including rural preceptorships; (3) participation in special programs in the departments of internal medicine and

pediatrics; (4) participation in geriatric programs; and (5) new concepts for family physicians with a new body of knowledge which must be introduced at the medical school level. It is time that those family physicians capable of dedicated teaching, as well as educators who profess to know the value of family physicians in family practice, get together at a medical faculty level.

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Hidden danger of pooled plasma

Writing in a recent issue of the *American Journal of Surgery*, M. Wood, M.D., W. R. Price, M.D., and D. Childers, M.T., have studied a case of a severely burned child, group A positive, who suffered a fatal hemolytic reaction after transfusions of pooled plasma in large volume. The authors feel that (1) Anti-A and anti-B antibodies are present in pooled plasma. The repeated administration of pooled plasma, even of low-titer antibody concentration, to persons in blood groups other than O, can permit an accumulation of antibodies that may give rise to potential immunologic reactions; (2) in such groups (other than O), such reactions can be avoided by not giving pooled plasma; (3) a substitute for pooled plasma would be either type-specific plasma or gamma globulin-poor plasma; (4) for all burned persons, washed red cells are recommended whenever administration of red cell mass is indicated, because in such patients there is a tendency toward leukocytic antibody production; and (5) if a person in these groups has had pooled plasma previously and requires cell mass, he must then be given group O washed red blood cells to avoid possible hemolytic reaction.

The patient was a nine-year-old white girl admitted two hours after a 97 per cent flame burn, mostly full-thickness, from an ignited flannel nightgown. She was blood type A positive. On the second day, 500 ml. of type A positive blood and 2,250 ml. pooled plasma were given intravenously. On the third day, 300 ml. pooled plasma and 300 ml. type A positive blood were given. A transfusion reaction occurred, with a temperature of 40 C., cerebral edema, pulmonary congestion, and anuria. On the fourth day, 250 ml. type A positive blood was given. Gross hemoglobinuria persisted. Venous blood samples contained anti-A antibodies. The patient improved during the next two days on intravenous Ringer's lactate solution and 5 per cent glucose with saline. Blood was not given during this time, and the hemoglobinuria cleared. On the seventh day, a transfusion reaction occurred while a unit of type O positive blood was being given. It was halted by administration of Ringer's lactate solution and mannitol. Type O cells were given with no apparent reaction. On the tenth day, the patient underwent a surgical debridement procedure, and about two hours postoperatively a severe hemolytic reaction started, terminating fatally about six hours later.

One problem was the mechanism of anaphylactoid reaction to the transfusion. Such reactions are apparently caused by the presence of host leukocyte antibodies reacting with the leukocytes of the donor. These antibodies were demonstrated. The second consideration presents a more complex problem involving several obscure mechanisms: (1) the titers of anti-A and anti-B antibodies in the plasma pools, (2) the volume of plasma administered, and (3) antibody accretion or accumulation in the tissues of the recipient.

Blood Pressure Comparisons in Tropical Africans and Peruvians

III. White Mountain Apaches of Arizona Compared with Shepibos of Peru

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ALTHOUGH CURRENT CONCEPTS concerning the cause of essential hypertension continue to be discussed,[1] the role of heredity is forcefully defended by Hamilton *et al.*,[2] Oldham *et al.*,[3] and Platt.[4,5] Wherever the epidemiology in different ethnic groups is studied, the multiplicity of contributing factors and necessity of further studies are emphasized.[6-8] Environmental factors also are now being presented as partly responsible for the rise in blood pressure with age.[9]

Comparing blood pressures of different ethnic groups under similar environmental conditions has been described in Panama as a "high incidence of hypertension in the Negro population and a moderate to low incidence among the whites and Panamanians."[10] Although psychological and social factors may account for some of the difference, it is at least equally probable that genetic factors are of primary importance.[10]

Following the recommendation of the World Health Organization's Expert Committee on Cardiovascular Disease and Hypertension "that studies be done throughout the world to determine possible differences in many populations,"[11] I made a preliminary report in 1964,[12] comparing the blood pressures in tropical Africans and Peruvians. "The equatorial African Negro shows a tendency toward elevation of blood pressure in middle age. The Indian of the Amazon jungle has an amazingly low blood pressure, and only after his inheritance is combined with Caucasian ancestry does his blood pressure approach United States averages in the urbanized males."

To add to these observations on equatorial Africans, I accumulated further data in a second visit to Lambaréné and concluded that "blood pressure averages, even on re-examination, are consistently higher in Gabon than in the United States."[13]

It had already been observed that "it appears that mean blood pressure of mongoloids is lower."[10] This is further enforced by Lowenstein[14] reporting on two tribes of Indians living in the tropical Amazon basin of Northern Brazil. Their "pressures are shown to be low throughout adult life; they have a tendency to rise with age in the Mundurucus, whereas no such tendency was found in the Carajas." The latter "are more primitive and live more or less like their ancestors." The former "have accepted some of the culture of Catholic Brazil." "It is postulated that the rise of blood pressure with age, observed in the great majority of groups, is a consequence of . . . the process of acculturation."

This observation has been duplicated by Cruz-Coke, Etcheverry, and Nagel[15] studying "the rise of diastolic blood pressure with age (which) increases significantly in the inhabitants of Easter Islanders when they migrate to the South American continent."

The Indians of the southwestern United States have been observed in some detail. Even before 1955, when the U.S. Public Health Service assumed responsibility for their care, Cohen[16] studied over 1,000 cases and reported an incidence of hypertension (diastolic readings over 90 mm. of mercury) in only 1.2 per cent. He concluded "attention is directed to the rarity of hypertensive vascular disease in the Indian of the American Southwest."

Fulmer and Roberts[17] reported on a study of about 500 Navajos and concluded,

TABLE I. Data on blood pressure on Apache Indians living on Whiteriver Reservation, Arizona

Age (Years)	Males					Females				
	Number of Cases	Range		Average		Number of Cases	Range		Average	
		Systolic	Diastolic	Systolic	Diastolic		Systolic	Diastolic	Systolic	Diastolic
All ages	36	92 to 184	60 to 104	125	76	70	88 to 190	40 to 120	118	75
11 to 19	9*	98 to 120	62 to 78	108	72	13	88 to 136	40 to 88	109	70
20 to 39	15	92 to 160	60 to 104	128	74	38	96 to 144	52 to 98	111	73
40 to 59	10†	110 to 172	66 to 100	130	82	12	100 to 164	70 to 120	131	85
60 and over	2	144 to 184	76 to 96	164	86	7	110 to 190	60 to 92	148	77

* Cherokee-Choctaw.
† Navajo.

"analysis of so-called 'risk' variables in a comparison with the Framingham population reveals that blood pressure levels are significantly lower throughout the entire studied age range in both male and female subjects."

The Apache Indians are considered related to the Navajos, since both tribes are the only southwestern tribes of Athapascan ancestry.[18] Clifford *et al.*[19] make the interesting observation after studying the White Mountain Apaches that "coronary artery disease is extremely rare in these people . . . (although) a surprisingly high prevalence of high blood pressure was found, particularly in young men."

With previous experience in equatorial Africa and Peru, I was happy to be able to accept the invitation of the U.S. Public Health Service to work at the Indian Hospital at Whiteriver, Arizona. This clinical note is a report of blood pressure as studied in a homogeneous sampling of Apache Indians belonging to the White Mountain tribe and compared to the Shepibo Indians in the Amazon jungle.

Environmental comparisons

Whereas the Shepibos live in a perpetually hot steaming jungle, the Apache reservation is in a mountainous region characterized by the seasonal changes of the temperate zone. The Hospital Amazonico Albert Schweitzer is at sea level; the Indian Hospital at Whiteriver is at an invigorating altitude of over 5,000 feet. Both hospitals have over 30 beds and often up to 50 patients. Presently, T. Binder, M.D., has three other medical colleagues, although he has often in the past been the sole physician. Whiteriver has four U.S. Public Health Service physicians and two dentists. Until Dr. Binder established his hospital in 1960, there was no medical care for the Shepibo Indians. The Whiteriver hospital has been in existence for thirty years longer than the Shepibo hospital. The flimsy leaf huts of the Shepibos are matched by the grass "wickiups" and wooden shacks of the Apaches.

Similarities in both groups are the uncertain water supply and sewage disposal. Since the male Apache is no longer the mobile warrior, his hunting for meat for his family has largely ceased. In both tribes, therefore, poor nutrition, especially protein deficiency, is evident. Alcohol is more available and intake higher in North America. Respiratory and gastrointestinal diseases exact the correspondingly heavy toll in both tribes.

Their chief dissimilarity is the awareness of the Apache of the world around him and his acceptance of school and religious education. Although able to learn, few Shepibos are literate. They remain further removed from the mainstream of modern life.

Materials and methods

Blood pressures were taken on routine examinations both in the hospital and the clinic. In addition, parents of children examined were tested, as well as Indian Hospital employes and visitors who became interested in the study. With the exceptions of a seventeen-year-old Cherokee-Choctaw son of an employe and a Navajo with a fractured patella, all were full-blooded Apache Indians. The sampling of young women was greatly increased by the mothers of the large pediatric clinic population. There are many more aged Apaches than Shepibos, a few reaching ages into the ninth decade.

Results

Table I summarizes the average systolic and diastolic blood pressure by sex and age

Table II. Comparison of blood pressure readings of Apache and Shepibo Indians with American standards

	Build and Blood Pressure Study		Shepibos (Pucallpa, Peru)			Apaches (Whiteriver, Arizona)		
			Number of Cases	Average		Number of Cases	Average	
Age (Years)	Systolic	Diastolic		Systolic	Diastolic		Systolic	Diastolic
Males								
Under 19	117	71	1	104	70	9	108	72
20 to 39	121	75	9	98	54	15	128	74
40 and over	128	78	4	96	61	12	135	83
Females								
Under 19	114	70	3	88	46	13	109	70
20 to 39	118	74	12	96	56	38	111	73
40 and over	128	79	5	119	59	19	137	82
TOTALS			34			106		

in 106 Apache subjects, 36 males and 70 females.

These results are compared in Table II to the over-all United States findings[20] and the Shepibo data assembled previously.[12] It will be noted that the low readings in Apaches recorded in Table I correspond to the Shepibo averages. But the Apache averages fall much nearer to those for the United States in general. This may be a reflection of more obvious obesity among the Apaches and the almost frequent occurrence of toxemia of pregnancy and later cardiovascular disease. Diabetes was unknown among the Shepibos but represented by occasional cases among the Apaches currently in the hospital.

Comment

The Shepibos of the Amazon jungle and White Mountain Apaches of Arizona come from different Indian racial stocks. Although they both live relatively simply in undeveloped communities, their climatic differences are striking. Obesity and heart disease attack some Apaches at relatively early ages, but a few others survive into venerable old age.

Conclusion

The sampling reported is much too small to draw definite conclusions. It may be noted, however, that the low readings in the Apaches are similar to the Shepibo averages. The Apache averages are nearer to the American averages in general.

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Contribution to Serotonin Theory of Dreaming (LSD Infusion)*

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THE CONSISTENCY AND MAGNITUDE *of the decrease of the latency of REM (rapid eye movement) and dream incidence by LSD (lysergic acid diethylamide) infusion warrant the assumption of a relationship between intracellular LSD increase (LSD has been shown to induce a serotonin-like reaction from human brain), and REM or dream incidence. A psychophysiologic mechanism capable of inducing dreams and hallucinations is described. It is concluded that paradoxical sleep is the physiologic manifestation of the interplay of a norepinephrine-dependent process fostering arousal and a serotonin-dependent process promoting sleep.*

SOME OF THE PSYCHOPHYSIOLOGIC factors responsible for sleep, paradoxical REM (rapid eye movement) sleep, and dreaming have been identified.[1-8] Animal experiments offer conclusive evidence that the prerequisite for falling asleep is a release of intracerebral serotonin.[2-4] Observations based mainly on the effects of intracerebral injections on the behavior and the electroencephalogram of animals led to the conclusion that paradoxical sleep is the physiologic manifestation of the interplay of two, at times opposing processes, namely, a norepinephrine-dependent process fostering arousal and a serotonin-dependent process promoting sleep.[4,6] Since dreaming and REM may also occur independently,[1] the conclusive experimental evidence based on animal studies regarding the processes underlying REM induction cannot be directly applied to dreams. Furthermore, direct dream studies can be conducted only in man. So far we know only that there is a coincidence between increased dream time per night and increased brain serotonin by precursor consumption,[1,9-12] and decreased dream time and decreased brain serotonin content[1,9-12] mainly induced by reserpine.[13] Because of the several intermediary processes, assumption of an interrelationship between brain serotonin and dreaming is highly inferential.

The experiments described here represent an attempt to ascertain whether or not the latency of dream incidence shortens during a mild but acute increase of brain serotonin, since such decrease of latency would offer a far more direct evidence of an interrelationship between intracerebral serotonin release and incidence of dreaming. Since serotonin does not readily pass the blood-brain barrier,[14] one may either attempt increasing brain serotonin through consumption of a precursor substance or imitate such increase by introducing a competitive inhibitor. Because the time required for yielding brain serotonin after intake of a precursor is variable, intravenous infusion of a competitive inhibitor, LSD (lysergic acid diethylamide), seemed to be the procedure of choice. LSD readily passes the blood-brain barrier,[14] and in low concentrations LSD has been shown to induce a serotonin-like reaction from human brain.[14-24] LSD also usually increases the dream time if consumed before one falls asleep.[25,26]

Methods

Electroencephalograms and dream records were obtained from 2 subjects during eleven consecutive nights. Since the rec-

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TABLE I. Effect of LSD infusion on latency of paradoxical sleep and dreaming

Night		Infusion		REM Sleep (Onset in Minutes)		Dreaming (Awakened After Onset of)	
Serial Number	Total Number	Substance	Time After Onset of Third REM, Start (Minutes)	Infusion Length	Time Since Third REM	Fourth REM (Two Minutes)	Third REM (Forty Minutes)
2, 3, 5, 7, 9, 10	6	Saline	30	60	90	Yes	No
4	1	LSD	30	19	49	Yes	. . .
6	1	LSD	40	15	55	Yes	. . .
8	1	LSD	50	10	60	Yes	. . .
2, 3, 5, 7, 9, 10	6	Saline	30	60	90	Yes	No
4	1	LSD	50	11	61	Yes	. . .
6	1	LSD	40	15	55	Yes	. . .
8	1	LSD	30	17	47	Yes	. . .

ords obtained during the first night are known to differ from those obtained during consecutive nights,[27] they were discarded. Before retiring, an intravenous infusion needle was inserted into the cubital vein and was left in place at least to the end of the fourth REM period. During the control nights (2, 3, 5, 7, 9, and 10) the subjects received an infusion of saline for ten minutes, starting thirty minutes after the onset of the third REM period. During the fourth, sixth, and eighth nights, LSD was infused in concentrations of about 5 gammas per minute. Infusion was started in one of the subjects thirty, forty, and fifty minutes after the onset of the third REM period during the fourth, sixth, and eighth nights respectively. This order was reversed in the second subject.

During the fourth REM period, the subjects were awakened every night by a taped instruction: "Tell me what is on your mind right now," repeated, if necessary, in thirty-second intervals until verbal reports were forthcoming. Similarly, thirty minutes after the fifth REM period, the subjects were also wakened to learn about the content of the reports during a non-REM period. The reports were taped, and the tapes were evaluated by two unbiased judges for presence of dream fragments. For several technical reasons, larger sampling of the population was not possible.

Results

The results are summarized in Table I. During the control nights, the latency of the fourth REM period and dreaming averaged ninety minutes. Dreams have not been reported from the non-REM periods by the 2 subjects. LSD infusion reduced the latency of the next REM period and dreaming to ten to nineteen minutes instead of the expected forty to sixty minutes.

Comment

The consistency and magnitude of the decrease of the latency of REM and dream incidence by LSD infusion warrant the assumption of a relationship between intracellular LSD (serotonin) increase and REM or dream incidence.

One may conceptualize the mechanism of action of LSD and serotonin in inducing dreams taking into account our knowledge based on human and animal experimentation. Content analysis of dreams of subjects with bilateral hippocampal lesions[28] and with Korsakoff's disease[29] and observations on the coincidence of dreams and specific frequency ranges of theta activity[30] led to the conclusion that dreaming is, at least partly, an awareness of the visual concomitants of processes related to memory storage and retrieval.[31] Seemingly, this continuously ongoing process is kept from conscious awareness through inhibitory processes, also represented by the theta activity. Measures decreasing this inhibitory activity result in dreaming.[30,31] Both serotonin and LSD, if locally introduced into the hippocampus, decrease the amplitude of theta activity by synaptic inhibition of the generation of the theta activity.[22,32]

The mechanism of action of serotonin and LSD in decreasing theta activity is effected in the following way: A prerequisite for theta activity is afferent reticular activity reaching the hippocampus via septohippocampal fibers across the intact medial nucleus of the septum.[22] Theta waves result from an oscillating dipole across the pyramidal cell bodies and the distal region of their apical dendrites.[22,23,33] Since the synapses of the pyramidal cells and their axon collaterals are supplied by the basket cells, theta activity is prevalently inhibitory, mixed, at times, with weaker excitatory stimuli from the excitatory synapses of the apical dendrites.[33] The hippocampal synapses are cholinergic.[22,34] Under physiologic conditions, acetylcholine and serotonin are stored in the hippocampus, usually inside the same presynaptic terminals in adjacent structures.[35,36] Release of serotonin into the presynaptic intracellular space or entrance of the infused LSD into these spaces initiates a massive calcium ion transport from the synaptic cleft into the presynaptic terminal, causing a reversal of the calcium ion gradient across the synaptic surface of the presynaptic membrane.[6,8,14] Since acetylcholine release into the synaptic cleft against a changed calcium ion gradient is impeded, decreased synaptic transmission occurs, resulting in a decrease of the amount of theta activity generated. Presynaptic restorage of serotonin is followed by normal redistribution of the calcium ion, and, therefore, free acetylcholine release into the synaptic cleft and normal synaptic transmission, resulting in increased generation of theta activity. The latter amount of theta activity contains the necessary inhibition sufficient to keep the processes represented by dreaming out of awareness, and we stop dreaming for awhile. It is, therefore, proposed that dreams are perceived as a result of this serotonin-dependent chain reaction and vanish after restorage of serotonin. This assumption is supported by the results of wide-scale research revealing that during the process of falling asleep, not only is intracerebral serotonin released,[2-4] but also, all the 200 human subjects reported experiencing some form of hypnagogic hallucinations.[37]

Dreams and hallucinations share several qualities. Since hallucinations occur only during unusual cerebral conditions, these conditions may be responsible for the differences of the other qualities. Should these intracerebral processes affect the wave shape of the read-out signal,[38] the memories retrieved from old memory stores will differ accordingly. Since LSD modifies various cerebral processes, the hallucinations may reflect a combined effect of these changes, some as yet unidentified. According to the mechanism described, LSD will temporarily decrease some inhibitory mechanisms responsible for keeping many cerebral processes from conscious awareness. This would result in dreaming during sleep and in hallucinations during wakefulness. The assumed connection between dreams, hallucinations, and memory storage and retrieval processes is further substantiated by LSD hallucinations being heavily loaded with old memories.[39] The LSD-induced changes in the activity of sensory neurons may easily result in fluctuating changes of the memory retrieval signals, leading to the constantly changing quality of LSD mentation.[40] The decrease in LSD mentation of components dependent on neocortical activity results from direct inhibition of neocortical synaptic activity.[41] The scintillating geometric quality, specific for LSD hallucinations, results from the local effect of LSD on the retina,[42] perhaps also on other structures of the visual system.

Summary

LSD infusion during sleep decreased the latency of both the incidence of REM and of dreams in man.

A psychophysiologic mechanism capable of inducing dreams and hallucinations has been described. Dreams are viewed resulting, in part, from awareness of the visual concomitants of processes related to memory storage and retrieval. Perception of these continuously ongoing processes is kept from awareness by special inhibitory mechanisms, for instance, theta activity. Temporary and periodic decrease of these inhibitory processes during sleep may result in dreams. A serotonin-dependent biochemical chain reaction has been identified capable of modifying synaptic transmission in cholinergic hippocampal structures resulting in changes in the generated theta activity, and, therefore, leading to dreams. Restorage of serotonin results in termination of dreams.

Some of the processes contributing to LSD hallucinations have also been identified. Perception of processes related to memory storage and retrieval due to decreased theta activity during wakefulness may result in hallucinations. Direct effect of LSD on sensory stimuli affecting retrieval may contribute to the quality and content of the retrieved processes. Direct inhibition of neocortical synaptic activity may be responsible for some changes in the quality of mental attitudes characteristic of LSD. The scintillating geometric components, unique for LSD hallucinations, appear to result from direct effect on LSD on the retina and perhaps also on other structures of the visual system. These effects of LSD during sleep will induce dreams and during wakefulness may induce hallucinations.

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Dermatologic Approach to Atopic Dermatitis

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ATOPIC DERMATITIS has been a major concern of the allergist and the dermatologist from the earliest days of the twentieth century. Since Besnier in 1892[1] recognized that hay fever, asthma, and certain itchy eruptions had a tendency to appear with greater frequency in some families, and Von Pirquet in 1906[2] used the term "allergy" in connection with this and certain other phenomena, our two disciplines have struggled with the problem of the physiopathologic mechanisms operating in atopic dermatitis and of how best to manage the care of patients with this disease.

During the first four decades of this century, both specialties were occupied with the study of the role of specific allergens as the cause of atopic dermatitis. Both specialties attempted, with suitable tests and elimination procedures, to identify the responsible substance or substances and then to minimize the patient's exposure to these substances and to reduce his reactivity to these by hyposensitization procedures. Both specialties recognized the value of topical therapy in the management of atopic dermatitis, but the dermatologist's approach, as one might expect from his background, tended to be more fanciful and varied, while the allergist's approach tended to be more standard and supportive to his immunologic procedures.

In the last twenty-five years, the dermatologist, bemused concerning the interpretation of the positive skin test reactions to common protein allergens in atopic dermatitis patients, began to look elsewhere in the physiology of the skin for the basic mechanisms at work in this disease. Discouraged by the low therapeutic yield he felt was being achieved by hyposensitization and elimination procedures, and stimulated, especially in the last fifteen years, by new potent therapeutic agents for topical and systemic use, the dermatologist evolved a pragmatic approach to the management of atopic dermatitis that does not rest on allergic technics.

Some pathophysiologic reactions in atopic dermatitis

The physiologic reactions of the skin of the patient with atopic dermatitis show some striking differences from those of the nonatopic patient. Williams[3] showed that intramuscularly administered histamine caused erythema and increased skin temperature at some of the sites of predilection for atopic dermatitis, such as the face, the neck, and the cubital and popliteal fossae. Eyster, Roth, and Kierland[4] showed that the skin in the cubital and popliteal fossae of atopic dermatitis patients warmed faster and cooled slower than normal. However, changes in the skin temperature of the fingers and toes of atopic dermatitis patients were just the opposite. In these acral areas, there was diminished warming and enhanced cooling. The initial skin temperature in these areas tends to be lower in atopic dermatitis patients, and they tend toward a hyperreactive response in the cold pressor test. All this indicates vasomotor instability in the atopic dermatitis patient and a tendency to increased acral vasoconstrictor tone.

Other paradoxical reactions are known to occur in the skin of the atopic dermatitis patient. The flare portion of the "triple response" to intradermally administered histamine is frequently absent. White dermographism, a white line instead of the

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usual red line produced by stroking the skin, is frequently seen in the atopic dermatitis patient. A delayed blanch response to the intradermal injection of acetylcholine[5] and blanching after the topical application of histamine liberators also indicate increased vasoconstrictor tone.

Recently, a number of observations have suggested that the atopic skin metabolizes norepinephrine abnormally. The cutaneous vessels in atopic skin have been shown to be hypersensitive to the vasoconstrictor effect of epinephrine, and this hormone remains longer in the skin of the atopic dermatitis patient after iontophoresis into the skin.[6] Solomon, Wentzel, and Tulsky[7] found that significantly greater amounts (2 to 50 times) of norepinephrine remained in the skin of atopic dermatitis patients twenty-four hours after intravenous injection of this compound. After intracutaneous injection, three to five times more norepinephrine remained in the atopic skin twenty-four hours later. These authors also showed that plasma norepinephrine is diminished in patients with active atopic dermatitis as compared with the quiescent atopic or nonatopic person. They suggest that there is abnormal binding of norepinephrine in the skin of the atopic dermatitis patient at the expense of circulatory norepinephrine levels and that this may be the common path by which various trigger factors produce or flare atopic dermatitis.

Management of atopic dermatitis

Corticosteroid therapy dominates the management of atopic dermatitis today. Those patients with mild or moderate involvement can usually be nicely controlled with topical steroid therapy. One per cent hydrocortisone, 0.1 per cent triamcinolone acetonide, 0.1 per cent dexamethasone, 0.1 per cent betamethasone valerate, 0.05 per cent fluorandrenalone, and 0.025 per cent fluocinolone are all effective. Lower concentrations may be used for maintenance therapy after initial improvement has been achieved. Iodochlorhydroxyquin or tar may be added to the topical corticosteroid. Oil or tar baths and oral antihistaminics or ataractics may be used to round out the therapeutic plan for the management of the mildly or moderately active atopic dermatitis patient. The avoidance of emotional stress, rapid changes in temperature, activities which produce sweating,[8] contact with wool, and exposure to dust, are adjuvant measures which are usually unnecessary and anticlimatic. They warrant judicious use if the primary therapeutic package described falls short of its goal, the control of the dermatitis with minimal interference with the patient's usual activities.

Severe atopic dermatitis often will not respond satisfactorily to these therapeutic measures, and systemic corticosteroids are then indicated. After systemic corticosteroids have controlled the dermatitis, moderately severe atopic dermatitis patients can often be kept in a reasonable state of remission by the diligent use of topical corticosteroids. However, severe or intractable atopic dermatitis patients may require (demand!?) prolonged corticosteroid therapy.

The initial dose should be high enough to suppress the dermatitis quickly. The dose can then be gradually reduced to the minimum maintenance requirement, or, one can hope, be discontinued entirely and the patient controlled on the less heroic topical regimen.

It has been suggested that when long-term systemic corticosteroid therapy is indicated, adrenal suppression and undesirable reactions and side-effects can be minimized by the intermittent administration of the corticosteroid requirement.[9] A forty-eight-hour interval between doses is most desirable, but even a twenty-four-hour interval is felt to be preferable to the usual four, three, or two times a day dosage, provided, of course, that the clinical picture can be controlled by this lengthy interval schedule. If it cannot, more continuous dosage must be supplied. It can be given by mouth or by intramuscular depot therapy. This latter method reserves complete control of the drug to the therapist and frequently achieves satisfactory control of the dermatitis at a lower total dose than would be required if round-the-clock oral therapy were given.

Whenever systemic steroids are used, by whatever schedule, supplementary topical therapy and the more conservative adjuvant therapies must also be used to their maximum potential to minimize the systemic steroid requirement and hasten its ultimate withdrawal.

Summary

In the last twenty-five years, the dermatologist has studied the vascular and hormonal physiology of the skin for clues to the basic mechanisms of atopic dermatitis, and he has utilized the new potent corticosteroids as the cornerstone in the management of patients with this disease.

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Chloroquine retinopathy

Visual changes in 2 patients, both on chloroquine therapy for about five years, are described by B. Dodge, M.D., in a recent issue of *Bulletin of the Mason Clinic.* Although corneal changes occur in about a third of the patients on prolonged chloroquine therapy, these changes are reversible and are not regarded as having great clinical significance. Retinal changes, are, however, another matter. When patients, all with different underlying diseases but with chloroquine as a common factor, show a similar retinopathy, the implication of the drug as the etiologic agent is almost certain.

The patients were (1) a woman, fifty-three years old, who had been on chloroquine therapy for five years for arthritis. The dose was about 750 to 1,000 mg. daily, for a total dose when first seen of about 1,500 Gm.; and (2) a woman of forty-three who had been on a daily dose of 500 to 750 mg. for about five years for the treatment of rheumatoid arthritis. In this patient, the total intake on presentation was about 590 Gm.

Earliest retinal changes, increased granularity, or patchy depigmentation were seen in the macula. Macular depigmentation is more prominent in advanced stages, giving the characteristic "bull's-eye" appearance. Late findings are attenuation of the arteries and arterioles with sheathing and segmental constriction, with optic atrophy and diffuse peripheral depigmentation. The retinopathy is bilateral and nearly symmetrical. An early feature is a pericentral scotoma with preservation of almost complete normal visual acuity despite a residual central field as small as 1 degree. With progression of the retinopathy, the peripheral field becomes constricted, and the pericentral scotoma spreads farther centrally and peripherally, giving both central scotomas and peripheral breakthroughs. Electroretinograms show a greater loss of cones than rods. These changes may occur before visual or retinal changes are noted. Changes in light threshold may occur in advanced retinopathy. The early color changes are thought to be due to central and peripheral scotomas rather than an actual color vision defect. This latter does occur later, going through a stage of trianopsia. This is more characteristic of retinal pathology than the red-green defects due to lesions of the conducting pathways. The exact nature and location of the retinal abnormal condition is not fully understood.

A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Physiologic Aspects of Depression

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WITHIN THE PAST ten years, numerous articles have been published describing the phenomenon of depression on a physiologic or biochemical basis. The author has compared and evaluated the various data in this field and presents a comprehensive review of the literature on depression.

Physiologic changes

BRAIN AND RELATED STRUCTURE. The study of the role performed by the brain in the production of emotional disturbances is not new. However, in recent years many investigators have tried to find the center or centers in the brain to which they might ascribe the cause of emotional disorders. Among these centers, the limbic system and hypothalamus nucleus have received most attention. Interest in the limbic system goes back to Kluever and Bucy, whose work shows the importance of the rhinencephalic structures in emotional behavior.[1] In a bilateral lesion of the limbic system, one can observe a lasting depression of drives and affect.[2] In a case of extensive glioblastosis with malignant degeneration in the shape of glioblastoma, limited to the structures of the limbic system, the patient showed stereotyped affective outbursts.[3] Fenton and Udwin[4] in the presentation of a case of temporal lobe epilepsy and depression, has shown that there is a profound change in the electrical activity in depth recording from the temporal lobe during acute episodes of agitation and hallucination in psychotic patients. They and other authors believe that the limbic system plays a cardinal role in the control of the affect of patients, so that disturbances of the function of this area could produce affects, disorders, and, mainly, depression.[4-6]

Some authors believe that some forms of depression may be associated with deficiency of reticular activity; therefore, polarization of the brain stem might be expected to help depressed patients.[6] Redfearn, Lippold, and Costain[7] experimenting on 29 patients with various forms of depression treated them by means of brain stem polarization. Their technic was to place the electrodes on the eyebrows and legs, with currents varying from 20 to 250 amperes. Treatment was given for several hours a day, for periods of up to six months, and as frequently as 5 times per week. Of the 24 patients who received complete treatment, 13 demonstrated clinical improvement, and 11 showed only slight improvement or none at all.[6] The hypothetical view is that the function of the limbic system does not consist only of the control of rage and aggressive behavior, since changes of affects and mood can be observed in a unilateral lesion or stimulation of the limbic system, particularly near the cortex.[2,6] Nevertheless, the methodology of this study has been questioned, and attempts to replicate it have not been successful.

Amygdaloid nuclei and hypothalamus have great influence on the control of behavior and affect. Stimulation of the amygdaloid nuclei and part of the hypothalamus in conscious human subjects produces sensations of anger and fear. In Japan, when bilateral amygdaloid lesions have been removed in an agitated, aggressive mental patient, the patient has become placid and manageable.[5,8] The hypothetical view is that the amygdaloid nucleus probably regulates the emotional responses produced by hypothalamic excitation.[1,8] Stimulation of the amygdaloid complex results in three sets of signs: autonomic, oral activities, and fight or fright reactions with rage and aggressive behavior. But the most complex function of the limbic system relates to social behavior and its implication with nutritive oral and sexual drives.[1] The hypothesis is that depressive illness has a physiopathologic origin. Possible sites are the diencephalic, the rhinencephalic, and the reticular brain systems; it is the secondary involvement of the cerebral cortex that results in psychopathology.[9]

NEUROPHYSIOLOGIC ASPECTS. Whatmore and Ellis[10-12] have studied the neurophysiologic aspects of depression. They recorded electromyographic responses from the forehead, jaw, tongue, forearm, and leg in 6 depressed patients who were retarded to the point of being mute. In all regions investigated, they found a significantly higher resting activity in depressed patients than in a normal control group. Thirteen depressed patients who did not exhibit the extreme motor retardation also exhibited significantly elevated motor activity but not as marked as was found in the retarded group.[12] Shagass[13] and Shaw[14] have measured the sedation threshold by the amount of intravenous sodium amytal required to produce speech and electroencephalographic changes. He found that psychotic depression showed a low threshold and neurotic depression a higher threshold.[14] Whatmore[10] believes that the depressed patients are hyperponetic. Hyperponesis is a neurophysiologic state consisting of hyperactivity in neuron, composing that portion of the nervous system which extends from the motor and premotor cortex to the peripheral musculature. In 5 depressed patients, Whatmore found that during the period of depression the electromyographic responses are markedly elevated. During the treatment there is a temporary drop; during the period of well-being following treatment, and prior to relapse, the readings are markedly elevated. These elevations are statistically very significant. Four of the 5 patients relapsed into a depressed state within a period of months.[11] In recent studies, Whatmore suggested that patients subject to episodes of severe depression exhibit persistent hyperponesis between their periods of depression, when they are in excellent clinical condition. He further suggested that fatigue of neurons in the neocortex or limbic system, or in the hypothalamus or reticular activity system, or in the cerebellum or spinal autonomic connections, or in all of them, resulting from a prolonged hyperponesis, may be one factor in the production of depression.[10]

Reflexes. The changes in conditional reflexes among depressive patients have been described by Alexander and Lipsett,[15] Faddeyeva,[16] Astrup,[17] and others. Ban[18] in his experiment on 28 patients (7 normal and 21 depressive in various categories, such as neurotic, endogenous, and schizophrenic) found that in neurotic depression, there is only a quantitative deviation from the normal, while in endogenous and schizophrenic depressions there is also a qualitative one. The two basic processes, excitation and inhibition, remain qualitatively unchanged in their interaction in neurotic depression. They only function on a lower level in neurotic than in normal subjects. In both endogenous and schizophrenic depression, there is an increasing dominance of the inhibitory (protective) process which is responsible for the ultraparadoxical response in the majority of cases to the presentation of the external disinhibitory stimulus. Thus, the amplitude of the response decreases instead of increasing.[19] Ban believes that there is a decreased functioning of the thalamic and brain stem reticular nuclei in neurotic depression. This decrease in function is thought to be responsible for the decreased amplitude of the orienting response and for the relatively decreased disinhibition which is the result of external inhibition (startle response). Therefore, it would appear to be related to brain stem reticular functioning. In the schizophrenic depressions, the decreased ability to differentiate between various conditional stimuli indicates the involvement of neocortical functions as well.[18,19]

Electroencephalography. Berger[20] and other early workers reported no abnormal results in electroencephalograms of the depressive patients. Lemere,[21] however, found that such patients showed a tendency to have an unusually high amplitude and dominant alpha rhythm. Davis in 1942,[22] reported a dominant alpha rhythm in manic depressive patients. Recent work has shown that there is an increase in the frequency, amplitude, and amount of fast activity in depressive patients.[23] It has also been shown that the mean alpha frequency tends to be high in manic and relatively low in depressive cases.[23,24] Wilson and Wilson[24a] have tested the electroencephalographic arousal responses in signal photic stimuli in 16 patients with psychotic depressive illness. The mean arousal response duration was significantly increased when compared with a control group of normal subjects. Paulson and Gottlieb,[25] in a group of 8 out of 11 patients, showed more frequent arousal responses on recovery, whereas latency was unchanged. The hypothesis is that the occurrence and duration of the arousal response are related respectively to the threshold of alertness and to the temporal span of the orienting process.[25] Some authors believe that there is a significant correlation between electroencephalographic activities and plasma electrolyte level in depression, that is the electroencephalographic changes are due to electrolyte changes.[26]

Autonomic system. The autonomic system and its reaction in various forms of depression have a different orientation.[27] Gold and Altman[28] believe that with recovery from a depressive state there is a tendency to increased sympathetic reactivity and, at the same time, to increased parasympathetic excitability. Kaplan[29] measured autonomic visual regulation in depressed patients. He examined the effect on the intensity of the visual image to short versus long spectral wave lengths; an effect produced by introducing two kinds of accessory to enhance the spectral stimulation. A total of 18 normal adults and 18 depressed psychotic patients were the subjects. The two-accessory color sensitizers were autonomic arousal, manipulated by drugs and color. The contrast was manipulated by pairing complementary colors; image intensity was measured by the after-image spectral photometer. In normal subjects, the sympathomimetic ephedrine sulfate resulted in an intensification of the color image to short wave lengths and an inhibition of color image to long wave lengths. The parasympathomimetic neostigmine bromide had a reciprocal spectral differentiation. The depressed subjects were less susceptible to autonomic spectral differentiation.[29] Vascular changes and changes in cerebral spinal fluid have drawn the attention of some investigators. It has been claimed that a benign circulatory insufficiency of the basilar artery constitutes a responsibility for depression, particularly in elderly patients.[30,31] Pogády and Hudáková[32] in a statistical evaluation of cerebrospinal fluid of 2,098 patients, of whom 928 were mentally ill and 1,170 had inflammatory disease of the brain, found that chloride levels were lower in a different form of neurotic depression and epilepsy than in cases of psychopathy and other forms of psychoses.

Biochemical changes

Electrolytes and water metabolism. Among the first investigators who studied the electrolytes and water metabolism in affective disorders are Klein and Nunn (1945), Strom, Olsen, Weil, and Malherb (1958), and Crammer (1959) who estimated electrolyte and water losses during manic depression illness.[14,33] Gibbons in 1960,[34] measured total exchangeable sodium in 24 depressive patients. He suggested that sodium retention is concomitant with depression but found no significant change in exchangeable potassium.[34] Vallet and Guille,[35] investigating 41 cases, found that there is a cellular dehydration or a cellular dehydration combined with extracellular hyperhydration in patients with depression. They suggest that there is no correlation between the nature of the psychic disturbances and the type of dehydration.[35] Coppen, Shaw, and Mangoni in 1962,[36] re-examined Gibbons' investigations; they measured the total exchangeable sodium before and during the period of treatment in 14 patients suffering from depression by means of isotope sodium-22. Contrary to previous studies, no change in sodium balance was detected in 12 patients, who recovered during the period of investigation. On the other hand, Gibbons in 1963[37] stated that in some cases of rapid alternation of mania and depression, a variation in water and sodium metabolism accompanies the fluctuation in mood. He further stated that changes in water and electrolyte metabolism, which cannot be explained as the result of alteration in diet or activity, are more likely to be the effect rather than the cause of mood change.[37] Coppen and Shaw's[14,38,39] later studies indicate that residual sodium, which includes intracellular and some bone sodium, significantly increases during depression. They examined each patient twice by means of an isotope technic, during severe depression and after recovery, and found that total exchangeable sodium and extracellular sodium did not change significantly. Total body water, extracellular fluid, and extracellular chloride were all greater after recovery. Estimates of total body potassium and residual and extracellular potassium did not vary nor did plasma concentration of sodium, potassium, chloride, plasma, water, and hematocrit. The abnormal preparation of exchangeable sodium to total body potassium, even after clinical recovery, suggests that depressed patients may differ constitutionally from normal subjects in this respect.[38] Brown, Hullin, and Roberts[40] in a study of 28 depressed patients, successfully treated with either electric convulsive therapy or imipramine hydrochloride, indicated that in 22 cases there was an increase of extracellular fluid volume and in 6 cases a decrease in extracellular fluid. The result showed that there was a shift of fluid from intracellular to extracellular space after treatment. Recent works of Shaw and Coppen[14,39] indicate that in depressed subjects, both before and after recovery from their illness, there is an apparent lack of intracellular potassium. The portion of total body water is abnormal, as these patients show a relative decrease in extracellular water and an increase in intracellular water. This shift of water from extracellular to intracellular would tend to decrease intracellular potassium concentration further and to magnify the abnormality in body potassium found in these patients.[39] In summary, in depression there is (1) a considerable increase in residual sodium which returns to normal with recovery; (2) a decrease in total body potassium and in the concentration of potassium in the cells; and (3) neither the deficit in potassium nor the abnormal partition of total body water between intracellular and extracellular is altered by the process of recovery.[14,39] The question is, are these changes in sodium a consequence or a cause of depression? Studies with lithium provide some clue. The lithium ions resemble sodium in some tissue, and in some systems they are more like potassium.[41,42] Lithium also has a profound influence on sodium metabolism and has a therapeutic action on affective disorder. The hypothesis is that lithium acts as the cellular level probably by altering the exchange of sodium at the cell membrane.[43]

Coppen in 1960[44] measured the abnormality of the blood-cerebrospinal fluid barrier of depressive patients. He found that in depression, the uptake velocity of sodium-24 into the cerebrospinal fluid considerably increased, and after clinical recovery the rate became normal. Studies made by Fotherby *et al.* in 1963,[45] showed there was no significant difference between the rate of transfer of sodium-24 from blood to cerebrospinal fluid in 2 groups of patients with depressive illness and schizophrenia. The sodium-24 transfer rate of a small group of the depressive patients, who showed severe depression without paranoid symptoms, was lower than that of the whole group of depressed patients. Exercise appeared to increase the transfer rate, and this increase may have been caused by more rapid mixing of ventricular fluid with cerebrospinal fluid.[45]

The clinical improvement in depressed patients treated with electric convulsive therapy or imipramine hydrochloride has been associated with significant decreases in the urinary excretion of calcium.[46] This metabolic change seen in psychotic depression is not a neurotic one and occurs more often in males than in females. According to Flach,[46] there should be a different psychobiologic mechanism in the structure of the neurotic patient, as distinct from the endogenous mood change, and there is a definite relationship between calcium metabolism and certain depressive illnesses. Cade,[47] in his investigation, found that there is a significant elevation of the plasma magnesium level, 35 to 40 per cent higher in severely affected depressed patients than in controls. A study was made of a forty-seven-year-old male patient who had a partial nephrectomy for a fourteen-year-old renal stone. He had suffered from depression with suicidal thoughts for a period of four months prior to his admission to the hospital. He improved partially with the antidepressant amitriptyline. Initially, decreased values of serum calcium and magnesium with increased excretion of calcium were found. Whereas the calcium values returned to normal with further progressive improvement of the depression with electric convulsive therapy, the serum magnesium values behaved differently.[48]

CARBOHYDRATE METABOLISM AND ENERGY. Early studies indicate that there is a highly significant decrease in the glucose tolerance test among the patients with depression as compared with control groups. The test demonstrates a lower tolerance in the involutional melancholic group than in the manic depressive group.[6,49] Observation of the intravenous glucose tolerance test curves in 15 patients affected by depression, has shown that in 14 cases the glucose utilization index was diminished when the patients had improved or were cured as a result of treatment.[50] Other studies by van Praag and Leijnse[51] of 35 of a group of 59 patients suffering from depression of varying origin showed that the glucose tolerance test result was disturbed by prolonging the period of hyperglycemia. After treatment with monoamine oxidase inhibitors, tests showed normal results. Early studies also indicate that there is a significant reduction in high energetic phosphate in muscle tissue in depressive patients.[52]

In recent studies, Coppen, Shaw, and Malleson[53] by measuring the expiratory rate of 14-carbon dioxide following the injection of 5-hydroxytryptophan labeled with carbon-14 in the carboxyl group, found that in depression there is a decrease in the rate of expiration of 14-carbon dioxide from 5-hydroxytryptophan-carbon-14. This may be caused by a reduction in the rate of decarboxylation of the injected 5-hydroxytryptophan. The authors, however, state that there are other variables apart from the decarboxylation of the 5-hydroxytryptophan which can alter the expiration of 14-carbon dioxide.

LIPID METABOLISM. The relationship between mood alternation and the changes of lipids in the body has been proved by many investigators. Wertlake *et al.*[54] studied the serum cholesterol in a group of medical students during examination week when the students were under stress as compared with periods free from stress. He found a significant increase in the level of cholesterol. The average increase was 11 per cent. Grundy and Griffin[55] determined the serum lipoprotein and total serum cholesterol values in a group of 35 sophomores and 13 freshmen medical students. During final examination week, tests showed the cholesterol levels increased from 23 to 27 per cent. This covered the control periods of relative relaxation for the 2 groups respectively. Studies and follow-up for three years of 22 manic depressive patients in a neutral state of mood, compared with a control group of 22, have shown higher values of serum lipids for the patients than for the controls. Also, male patients generally show a higher value than female.[42] Gottschalk *et al.*[56] in one study of a group of 24 men and in a second study of a group of 20 men, disclosed that anxiety scores had a significant positive correlation with plasma-free fatty acid. In both groups, more anxious men tended to have higher free fatty acid levels and sharper rises in free fatty acid than nonanxious men in free association. Studies by Whittier *et al.*[57] and by others indicate that there is a hypercholesterolemia among depression subjects. Hypercholesterolemia or "negative cholesterol sign" does not distinguish a group of patients with endogenous depression from patients with other forms of depression.[57,58]

AMINO ACID AND PROTEIN METABOLISM. Among the amino acids, tryptophan has received maximum attention by the investigators. Coppen and Shaw[53] have shown that there are some changes in the metabolic pathway with tryptophan-serotonin-5-hydroxyindoleacetic acid in some areas of the central nervous system in affective psychoses. The administration of large doses of tryptophan potentiate the antidepressive effect of a monoamine oxidase inhibitor. Thus, they postulate that the changes in amine metabolism could be of etiologic importance in the syndrome of severe depression.[59] In recent studies, Coppen *et al.*[60] investigated the excretion of tryptamine and indole-3-acetic in 13 severely depressed patients before and after recovery from their illnesses. Urinary tryptamine excretion was found to be abnormally low during the illness and rose by an average of 70 per cent to approximately normal values after recovery. Urinary indole-3-acetic acid showed no significant change. The findings were not related to urinary pH and volume nor to diet. They concluded that these findings are a further demonstration of abnormal tryptophan metabolism in this illness.[60] Nevertheless, some studies which have been done by Burgermeister, *et al.*[61] proved no significant differences between patients and normal controls in the urinary output of 5-hydroxyindoleacetic acid before and after administration of an oral 5-hydroxytryptophan. In recent studies by Cazzulo, Mangoni, and Mascherpa[62] in the metabolism of tryptophan to 5-hydroxyindoleacetic acid and xanthurenic acid, in 12 depressed patients, it was found that there is a higher conversion of tryptophan into xanthurenic acid in manic patients and in depressed patients when they receive antidepressant drugs.[53]

Some investigators have tried to show some relationship between blood ammonia and mood alteration. Eichler[63] infused ammonium acetate into normal volunteers; he found some characteristic behavior pattern resembling prehepatic coma and some defect in motor performance as well as depressive mood. Nevertheless, this study cannot be considered significant in giving any positive relationship between nitrogen changes and depression. Some studies have been done to prove or disprove the hypothesis that heterozygosity for phenylketonuria is predisposed to endogenous depression. Studies by Pratt *et al.*,[64] showed no significant difference in the excretion of phenolic compounds between groups of depressive heterozygotes and controls following ingestion of phenylalanine.

ENZYME, SEROTININ, AND ACID CHANGES. Rose, Davies, and Lehmann[65] found that in all of their 116 depressed patients selected for electric convulsive therapy there is a significantly higher serum-pseudocholinesterase (acylcholine-acylhydrolase) than in a control group. By means of acylcholine-acylhydrolase, activity exists between 2.2 and 5.56 units in normal people, but in a depressed state, it increases to from 2.6 to 7.1. Several authors have reviewed various aspects of monoamine metabolism and its relation to depression and excitation. The hypothesis is that epinephrine and norepinephrine are metabolized to biologically inactive products by oxidation and methylation, the former reaction being catalyzed by monoamine oxidase. In depressive illness, there is some disturbance in this pathway.[66–71] Depletion of brain serotonin, norepinephrine, and dopamine has been known to be the cause of depression[72,73]; some drugs such as reserpine cause depression by this phenomenon.[74]

In Lemieux, Davignon, and Genest's studies[75] 30 patients out of 195 under Rauwolfia therapy for hypertension developed depressive states after a few months of treatment. Cessation of the drug or decrease of its dosage resulted in recovery or improvement, but a few of these patients required electric convulsive therapy. Some authors believe that reserpine not only induces depressive symptoms but can also provoke endogenous depression.[76] Some investigators believe that there is a relationship between acetylcholine and depression. In early studies they tried to treat patients with injection of acetylcholine; they claim that the result is 6 per cent positive.[77,78] Anderson and Dawson's studies[79] in a series of 98 depressive patients found that half of them showed a rise of acetylmethyl carbinol levels. A higher or more variable fasting blood (acetylmethyl carbinol) level tended to be found in those patients with clinical signs of verbal retardation, and marked depressive preoccupation was similar to that observed in manic-depressive patients. It is suggested that the biochemical disturbance can be regarded as a sign of impaired metabolic homeostasis, which is partly due to psychological stress and which produces the clinical signs by influencing the function of the central nervous system.[79]

The blood level of bound acetaldehyde in normal subjects and in patients with different types or degrees of depression were studied by some investigators; they found that patients with a greater degree of depression had higher levels of bound acetaldehyde in their blood. In depressive patients with increased psychomotor activity, acetaldehyde levels were lower than those of normal subjects. It is thought that acetaldehyde metabolism is perhaps controlled by a higher center in the thalamus or hypothalamus which influences the changes of mood.[80]

Fabisch and Fellner[81] found there is a deficiency in the excretion of hippuric acid in schizophrenic and depressive patients in contrast with psychoneurotic patients with severe anxiety. The clinical improvement was accompanied by normalization of hippuric acid values. It seems that a low rate of hippuric acid excretion is associated with states of withdrawal and psychomotor retardation.

Blood changes. The relationship between blood groups and certain physical illnesses are fairly well established by many authors.[82] Irvine and Miyashita,[83] in studies of 668 patients admitted to mental hospitals, found that group O was significantly more associable with involutional melancholia and manic depression than with neurotic depression. These statistics indicate that involutional melancholia 61.8 per cent, manic-depression 45.6 per cent, and reactive depression 34.4 per cent are associated with group O. They also found that blood type Kell is twice as high in diagnoses of depression as in nondepression.

Changes in blood volume circulation in depression have been studied by Degkwitz[84] who, in 161 investigations on 91 patients, found that there is a considerable diminution of active blood volume in manic phases, agitated depression, and schizophrenia. With the subsiding of these states, volume returns to normal. Disturbances of blood coagulation occur in depression as well as in other forms of psychosis. Studies by different authors indicate generally an increase of coagulation time.[85,86] Korenyi *et al.*[87] in their studies of 91 patients with depression and 30 control patients found that patients with involutional psychotic reaction show an increase of eosinophils on remission. Patients in other diagnostic categories did not exhibit this response. Lewin[88] claims that depression may be a factor in the production of pernicious anemia by reducing the intrinsic factor below the critical level which is required for normal erythropoiesis.

Salivary glands. Strongia and Hinsie in 1938 showed a lower than average rate of salivary secretion for depressed patients and a higher than average rate for schizophrenia. Later studies supported this idea.[89-93] Wechsler and Barnum[94] determined the salivation rate on 109 severely depressed patients; they found that patients with reactive depression (exogenous), have a significantly higher rate of salivation than patients with nonreactive (endogenous) depression. Salivation rates do not vary with severity of depression in any of the diagnostic groups. It has been suggested that even in severe exogenous depression there is less physiologic expression of depressive affect than in endogenous depression.[94] On the other hand, Gottlieb and Paulson[95] in their longitudinal analysis revealed that there is no change in the salivary excretion rate of patients regardless of sex, diagnosis, or treatment. In a cross-section analysis, they suggested that factors other than depression are responsible for the salivary excretion rate differences between depressed patients and other groups. Loew[91] measured the secretion of saliva by increases in weight of cotton pellets held in the mouth for two minutes and found that total quantity of saliva was significantly less in patients with manic-depressive psychoses and with psychogenic depression than in patients with involutional depressions. In each group anxious agitated patients showed a greater decrease in saliva than the inhibited-depressed patients of the same nosologic group. The author believes that there are two factors; one is a stress factor in agitated patients and the other is autonomous disturbance in manic-depressive psychosis.

Epinephrine metabolism. From the physiologic point of view, stimulation of the dorsomedial nuclei and posterior hypothalamic areas produces or increases epinephrine and norepinephrine from the adrenal medula. These physiologic changes are associated with rage and fear. Norepinephrine is synthesized from amino acid tyrosine with two intermediate steps (dopa and dopamine). The breakdown of epinephrine is accomplished in two ways; one involves oxidation by monoamine oxidase and the other involves initial O-methylation by catechol-O-methyl transference. In the cell, monoamine oxidase converts it into 3-methoxy-4-hydroxy-mandelic acid through the intermediate metabolite 3,4, dihydroxy mandelic acid.[96-100] The early studies revealed that there is a relative decrease of norepinephrine in body fluid and brain of depressive patients.[65,101,102] In 1959, Pare and Sandler[103] and in 1963, Klerman *et al.*[70] discovered the influence of dopa by giving DL-dopa (a precursor of norepinephrine) to chronically depressed patients, with a fair result. Page and Hoffer[104] treated 148 depressed patients with epinephrine methyl ether, total daily dose being from 5 to 50 mg. with an average of 10 mg. Clinical evaluation showed that after four weeks or less, 67 per cent experienced a definite stimulation of the central nervous system with lightening of their depression. The effect of antidepressant drugs on the urinary excretion of 3-methoxy-4-hydroxymandelic acid, a metabolite of norepinephrine, proposes a mechanism of action based on the known effect of antidepressant drugs on norepinephrine metabolism.[105] Schildkraut and Burrell[106] found that there is a decrease in 3-methoxy-4-hydroxymandelic acid excretion in depressed patients who were treated with imipramine hydrochloride and phenelzine sulfate, but no changes were noted in the group treated by placebo. They hypothesized that some depressed patients may deaminate norepinephrine to excess and release a small amount of the amine available in an active form. Subsequent studies showed that the effective pharmacologic treatment for depression with monoamine oxidase inhibitors and the imipramine hydrochloride type drugs effectively increases functional free norepinephrine in the brain; and the antihypertensive agent, reserpine, effectively decreases the availability of free norepinephrine.[107]

Rosenblatt *et al.*[108] in their recent studies of 20 depressed patients found differences in the metabolism in those patients classified as manic-depressive in that they tended to have a definite increase in the urine, in proportion to those metabolites which retain the amine group, as compared with the metabolism which had undergone oxidative deamination, N/O ratio (N/O is the ratio of the concentrations of metabolites retaining nitrogen, norepinephrine, normetanephrine, and conjugates to those which have been oxidized, vanillamandelic acid, 3-methoxy 4-hydroxyphenylglycol, dihydroxyphenylglycol, dihydroxymandelic acid, and conjugates). The main amine metabolite was normetanephrine, while the main oxidized metabolite was vanillamandelic acid. Patients diagnosed as reactive depressive also tended to have an elevated N/O ratio but to a lesser degree than the manic-depressive patient; those patients with involutional psychosis or schizophrenia with depression did not differ from the normal in the amine metabolism. Electric shock therapy appears to be especially effective in those patients with an abnormal amine pattern, and it is also effective in correcting the metabolism disturbances[109,110]

STEROID CHANGES. The relationship between the adrenal cortical function and depression is still a controversial matter.[111] Plasma 17-hydroxy corticosteroid levels have been shown to rise after a variety of experiences. Some examples are surgical operation, electric shock therapy, stress, or hypnotically suggested anxiety.[112] A brief review in literature indicates that there is generally an increase in corticoid production and excretion during depression and a reduction during mania.[108,113,114] Zelinskii,[115] in his study of a patient with manic-depressive psychosis, noted that the 17-ketosteroids in the urine showed an increase during the period of depression. He postulates that hyperfunction of the adrenal cortex may be correlated with a state of latent excitation in the thalamo-hypothalamic region. The relationship between adrenocortical and psychological response to stress has been shown by many authors.[116-121] A significant elevation in plasma 17-hydroxy corticosteroid level was observed in one group during a war movie, and marked decreases in plasma 17-hydroxy corticosteroid levels were observed during Disney nature films.[122] The hypothesis is that non-noxious stimuli may serve to narrow the subject's attention away from other possibly stressful stimuli of either internal or external origin. The clear difference between plasma 17-hydroxy corticosteroid response to films which arouse and films which are bland suggests that the adrenal cortex responds to events of emotional significance within the range of mildly stressful, ordinary experience and that the central nervous system regulation of adrenocortical function involves lowering as well as raising of 17-hydroxy corticosteroid concentration.[120,121]

Gibbons and McHugh[123] in early studies of 18 cases, found that at weekly intervals the level of cortisol is elevated in proportion to the severity of the illness, and a decline occurred in 13 cases after treatment. Gibbons,[124] in his later studies of 15 hospital male and female patients with reactive and endogenous depression, found that mean secretion rate before treatment was 25.5 per cent 2.39 mg. per twenty-four hours (method of Cope and Black). After treatment with electric shock therapy and drug or spontaneous recovery, mean secretion rate was 14.1 per cent 0.89 mg. per twenty-four hours which is a highly significant decrease. The mean rate before treatment for severely depressed patients was 33 mg. per twenty-four hours and for moderately depressed patients, 20 mg. per twenty-four hours.

After recovery, there was no difference in secretion rate between these groups. Urinary total 17-ketosteroids and total free conjugated 17-hydroxy corticoids were studied by some authors.[102,125] They found that there is a decrease in 17-ketosteroids in male patients with depression and a decrease of total 17-hydroxy corticosteroids in female patients with depression. Free 17-hydroxy corticosteroids in females were increased, and conjugated 17-hydroxy corticosteroids were decreased in both sexes, resulting in a lower cortex function ratio; it was concluded that the diencephalopituitary adrenocortical function is impaired in depression.[105]

Kurland,[126] in analyses of the urinary steroids of neurotic and manic-depressive male patients, found significant elevation of the 17-ketogenic steroids but not the 17-ketosteroids or 17-hydroxy corticosteroids. He also found a correlation between the patients' clinical states and the amounts of 17-ketogenic steroids they excreted. Friedman, Mason, and Hamburg[127] performed an interesting study of 43 subjects which included one or both parents of 26 children with neoplastic disease. Each parent showed that the 17-hydroxycorticosteroid level tended to remain within a relatively constricted range, even when the parent was exposed to superimposed acute stress. In subsequent studies by Wolff *et al.*[128] in 31 parents of children suffering from fatal illness, urinary (17-hydroxycorticosteroid) levels were measured concurrently throughout the extended crisis. These parents had characteristic mean 17-hydroxycorticosteroid excretion rates along the continuum from high to low excretion, that is the more effectively a parent defends himself against the threat of loss, the lower will be his mean 17-hydroxycorticosteroid excretion rate. Bunney and his associates[116-118] concluded that there is an increased steroid excretion on the depressed day, which is concomitant with a decrease in psychological defense strength, absence of denial, and emotional awareness of illness.

Conversely, lowered steroid excretion on manic days or recovery hopes is concomitant to extensive denial of one's illness. Bunney and Fawcett[129] in a recent study of 3 patients who committed suicide, showed high mean urinary 17-hydroxycorticosteroid levels but relatively low suicidal behavior. Jakobson *et al.*[130] found that there is a significant correlation between the decrease of the depression and the anxiety rating following treatment of the depression to pretreatment level of urinary-11-oxygenated corticosteroids. The result is that there is an alteration of the adrenocortical function in depression which results from an increased production of those steroids which are normally associated with various forms of emotional stress.

FUNCTION OF OTHER ENDOCRINE GLANDS. Some authors believe that depression is less frequent when endocrinal hypofunction is present and more frequent when endocrinal hyperfunction is present.[131] Nevertheless, when the determination of gonadotropin was carried out by some authors, they found that there is a deficiency of pituitary gonadotropin in depressive patients.[132,133] Thyroid activity has been measured by different authors; the general finding indicates that there is a hyperthyroidism in depression.[134-136] The relationship between hyperparathyroidism and depression has been mentioned by some investigators. Reinfrank[82] in his study of a case with primary hyperparathyroidism showed that the metabolic products of the parathyroid adenoma rather than the serum calcium level were responsible for the depression.

GENETICS. Some of the current literature indicates the importance of genetic factors in producing the depressive mood. Kallmann's[137-139] studies indicate that there is a difference of from 26.3 to 95.7 per cent between the concordance rate of two-egg and one-egg twins in manic-depressive patients. Corresponding family risk figures vary from 16.7 per cent for half siblings to 22.7 per cent for full siblings and 23.4 per cent for the parents of cyclic index cases. In involutional depression, he found the twin concordance rates differ from 6 per cent for 2 eggs to 60.9 per cent for one-egg pairs. Burch[140] in his statistical analysis of all the cases of manic-depressive psychosis, diagnosed in New York State between 1949 to 1953, suggests that this illness is a definite organic disease. Predisposition toward it is restricted to a carrier subpopulation in which females are at more risk than males and which is characterized by a particular genotype. The phenotypic expression of the mental disorder seems to depend on the accumulation in the carrier of random events probably concerned with some form of somatic gene mutation. One mutation probably affects an X-linked gene while the other affects one or more autosomal gene. Munro[141] in his studies of 153 hospital patients with depression revealed that twins were found to occur in a proportion of 1 per 13.9 individuals as compared with 1 per 54.3 individuals in the control series. The twins with depression showed: (1) They appear to have developed an affective disorder at a somewhat earlier age than the other depressive patients, (2) a proportion have a positive family history of severe mental illness, (3) a high number report a disturbed relationship with the father during childhood, but none report a disturbed relationship with the mother, and (4) none had suffered from deprivation due to parental death during childhood, whereas 23.2 per cent of the remaining depressive and 20.2 per cent of the control groups were so deprived by the time of their sixteenth birthday.

Winokur and Pitts,[142] in their studies of the family histories of patients admitted to a psychiatric hospital and using the family histories of patients admitted to a general hospital with nonpsychiatric disease as controls, found that the prevalence of affective disorder among the parents of nonpsychiatric patients is approximately 2 per cent. This can be considered as a basal expectancy rate of affective disorder among the general population. This figure increased among parents of patients with an affective disorder which included, predominantly, alcoholism and personality disorder. The highest rates for affective disorder in parents were found when the patient suffered from the same disorder himself. Where two generations were affected, the third generation showed a high rate of affective disorder as well, but in all generations this was more manifest in the female sex.

It was suggested that affective disorders are genetically transmitted through both male and female, and the differential rate of illness in the two sexes is due to incomplete penetration of the gene, penetration being more complete in the female.[142] Pare, Rees, and Sainsbury[143] have suggested that there are two genetically specific types of depression; endogenous are more likely to benefit from the imipramine hydrochloride group of drugs and reactive types from amino-oxidase inhibitors. This is caused by two genetically different types of depression.

Summary

Investigators are trying to describe and formulate the "depressive mood" in the framework of physiology and biology. Deficiency and fatigue of neurons in the neocortex or limbic system or cerebellum and spinal autonomic connections, or all of them, may be one factor in the production of depression. In electroencephalography generally, there is a reduction in alpha rhythm in depression. Other neurophysiologic findings indicate characteristic changes in conditional reflexes and a tendency to decreased sympathetic reactivity. Some authors have found lower chloride levels in the spinal fluid in various forms of depression.

Studies on electrolyte changes indicate that there is an increase in residual sodium and a decrease in total body potassium. The blood calcium as well as magnesium elevates during the depressive mood.

Studies on carbohydrate and lipids metabolism indicate that there is a disturbance in glucose tolerance tests, and there is a higher value of serum lipids and cholesterols during depression.

Among the amino acids, tryptophan plays an important role in the cause of depression. The general idea is that there are some changes in the metabolic pathway tryptophan-serotonin and 5-hydroxyindolacetic acid. Among the enzymes, there is a rise in pseudocholinesterase, and there are some disturbances in the pathway and activity of monoaminoxidase. Blood changes have been discussed by some authors; it was believed that people with blood type O are more susceptible to involutional melancholia and those with blood type Kell to depressive reaction. The increase of eosinophil has been shown by other authors. The reduction of vanillamandelic acid excretion in a depressed patient, after treatment by antidepressant drugs, indicated that some depressed patients may deaminate norepinephrine to excess and release a small amount of the amine available in an active form.

The relationship between the adrenal cortical function and depression indicates that there is generally an increase in cortical production and excretion during depression.

A review of the literature on genetics implies that there might be a genetic factor in the production of a depressive mood.

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Lenox Hill Hospital
New York City
March 31, 1967

Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by DAVID BARR, M.D.
and LAWRENCE P. SHEA, M.D.

Fever, Pleuritic Chest Pain, and Serial, Rapidly Changing, Chest X-Ray Films

Case history

STEPHEN CARTER, M.D.: A fifty-three-year-old white female writer was admitted to Lenox Hill Hospital for the second time complaining of pleuritic pain in the left side of the chest for two weeks preceding admission.

The patient had apparently been well until this occurred. There was no immediate history of chills, night sweats, cough, hemoptysis, arm or shoulder pain, or weight loss; there was an associated low-grade fever. The pain was exacerbated by deep inspiration and was much less severe when she would lie on her left side. Approximately three weeks prior to the onset of the present illness she was seen by her internist for a yearly, routine, physical examination which resulted in completely normal findings. A chest x-ray film taken at that time showed negative results. She was given influenza vaccine at the same time as part of an immunization program.

In 1963 the patient was hospitalized at Lenox Hill Hospital for the first time because of chest pain; diagnostic studies were compatible with a diagnosis of subendocardial infarction. The pertinent enzymes at that time were reported to be normal. The patient was given anticoagulant therapy and was so maintained until her second hospital admission. The prothrombin time taken just prior to admission was 23 seconds with a control of 12 seconds which was within her usual range. Because of her persistent symptoms, a repeat chest x-ray film was taken which revealed some changes, and the patient was admitted to the hospital. In the interval her daily dose of anticoagulant medication was gradually reduced.

The past history revealed that the patient had had a total abdominal hysterectomy for uterine myomata in 1958. She had scarlet fever as a child but denied any personal or family history of diabetes mellitus, rheumatic fever, hypertension, asthma, tuberculosis, or any other known pulmonary disease. She was allergic to chocolate, meprobamate, and penicillin. She formerly had smoked approximately one pack of cigarets per day for about ten years but had recently discontinued this habit. She was a social drinker. Her medications included 5 mg. of sodium warfarin (Coumadin) per day, nitroglycerin tablets as needed, conjugated estrogens (Premarin) tablets three out of every four weeks, propoxyphene hydrochloride (Darvon) periodically, and sulfur nose drops. She denied any recent or past foreign travel or unusual animal exposure.

The physical examination disclosed a well-developed, well-nourished middle-aged white female, alert and oriented, in no acute distress, appearing her stated age. The blood pressure was 140/90. The pulse rate was 72 per minute and regular, the respirations 20 per minute, and temperature 100.2 F. Examination of the head and neck showed normal findings. The breasts contained no masses or tenderness. Chest examination revealed diminished breath sounds at the posterior base of the left lung with dullness to percussion in that area; no rales or friction rubs were heard. The heart had a regular rhythm with no murmurs or friction rubs heard. The abdomen was soft without any masses or organomegaly; a healed suprapubic scar was seen. Pelvic and rectal examinations were unrevealing. There was no rash or petechiae present, and examination of the extremities revealed no clubbing, cyanosis, or edema. Homans' signs were absent bilaterally. The neurologic examination revealed normal findings, and there was no lymphadenopathy present.

The hemoglobin was 12.7 Gm. with a hematocrit of 38 per cent. The white blood cell count was 8,000 with 70 neutrophils of which 5 were nonsegmented, 20 lymphocytes, 8 monocytes, 1 eosinophil, and 1 basophil. The erythrocyte sedimentation rate was 71 mm. per hour. Urinalysis showed normal findings. The serology gave negative results. The blood urea nitrogen was 15 mg. per 100 ml., the prothrombin time was 15 seconds with a control of 12 seconds, the serum glutamic oxaloacetic transaminase was 15 units, and lactic acid dehydrogenase was 330 units. The heterophil antibody titer was negative, and the febrile agglutinins revealed a negative typhoid O titer with a paratyphoid A titer of 1:80 and B of 1:80. The Brucella, proteus OX-19 and OX-K titers were negative. The electrocardiogram showed diffuse nonspecific T-wave changes with a low T in lead I, diphasic T in lead II, and inverted T-wave in lead III and aVf. In addition the T-waves were inverted in the precordial leads from V_2 through V_6. A first strength purified protein derivative tuberculin skin test gave negative results. Radiographic study including tomograms showed a well-demarcated, homogeneous density in the anterior mediastinum to the right of the midline which appeared to be separate from the aorta. There was a suggestive but indefinite extension of this mass to the left of the midline. There was obliteration of the left costophrenic sulcus by a small amount of pleural fluid.

A thoracentesis of the lower left side of the chest and pleural biopsy were performed. The aspirate contained 20 cu. cm. of bloody fluid which did not clot. A Papanicolaou smear on the fluid was class I. The pleural biopsy had no pleural lining in the tissue obtained, and the fluid culture grew out nonhemolytic Staphylococcus albus coagulase negative, which was sensitive to all antibiotics but streptomycin. The post-thoracentesis chest x-ray film showed a very slight but definite increase in the right anterior superior mediastinal mass extending to the left side. A superior vena cava angiogram was performed and revealed no evidence of any obstruction or abnormal dilatation of the filled structures. The dye circulated normally through the lungs. The ascending aorta was faintly opacified, regular in contour, and situated behind the anterior mediastinal mass without any evidence of aneurysmal dilatation.

Throughout the patient's hospital course she complained of slight pleuritic pain and remained febrile. On the seventh hospital day a thoracotomy was performed.

Discussion

David Barr, M.D.*: In summary the patient was a middle-aged woman who, in a setting of good health, developed mild, nonspecific symptoms and was found to have an anterior mediastinal mass that was not present on a chest x-ray film taken three weeks before. The past history was of interest in that she had been on anticoagulant therapy and under good control. The physical findings were unremarkable except for signs of a small pleural effusion on the left side. The laboratory data were within normal limits except for an elevated sedimentation rate. The electrocardiogram revealed changes classified as nonspecific. Roentgenograms of the chest revealed an anterior mediastinal mass above the heart discernible to the right and left of the midline. Tomograms revealed the mass to be homogeneous, without calcifications, and with a suggestion of lobula-

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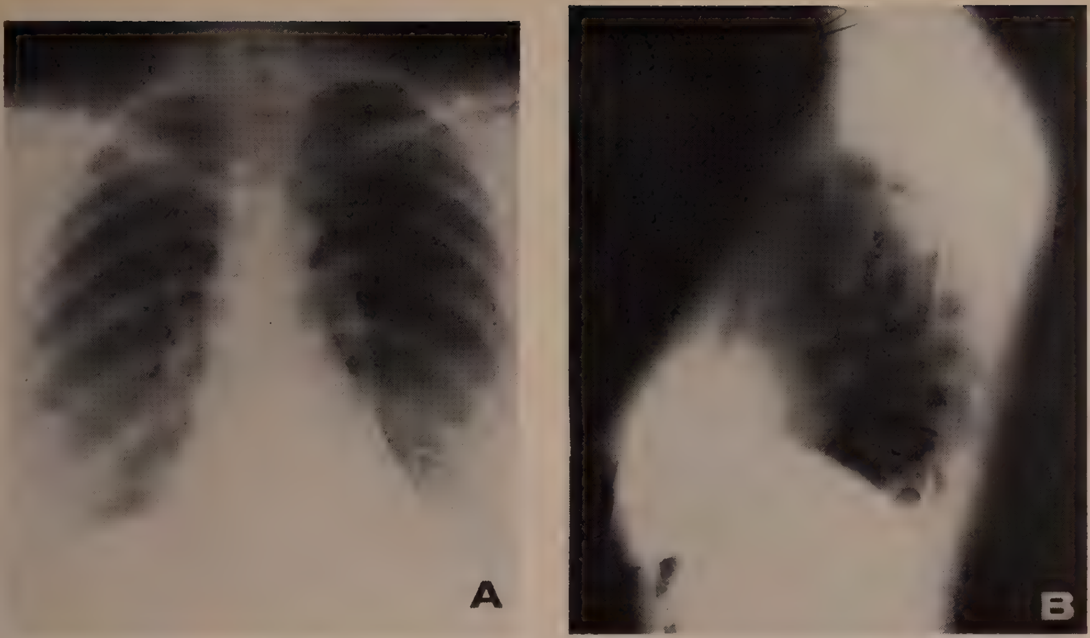

FIGURE 1. Chest x-ray films taken three weeks prior to admission showing normal findings. (A) Postero-anterior view and (B) lateral view.

tion. Venous angiocardiograms showed some pressure on the superior vena cava but no obstruction; the aorta was separate from the mass. The pleural fluid was bloody with class I cytology. While the patient was under observation in the hospital prior to surgery, the mass continued to enlarge.

In the differential diagnosis we must consider all conditions producing a mediastinal mass lesion in a short period of time that causes few symptoms and yet enlarges rapidly. Mediastinal masses more often than not are asymptomatic. Symptoms caused by benign lesions generally occur later and progress more slowly than do symptoms produced by malignant lesions. The former tend to cause displacement and pressure and the latter to invade. The more rapid the growth, the more likely are the chances that the lesion is malignant. However, in a benign condition, rapid increase in the size of a mass may occur because of infection, accumulation of fluid, or internal hemorrhage. In this case the lack of symptoms referable directly to the mediastinum was in favor of a benign process. The rapid change in size might indicate malignant disease, but accumulation of fluid or blood in a benign cystic lesion could also have occurred.

Many tumors occur in the mediastinum, in fact too many to discuss each in detail. Primary and secondary tumors, congenital or neoplastic cysts, granulomas, and vascular lesions may be found. About one half of all mediastinal lesions are located in the anterior compartment with the remainder distributed about equally in the middle and posterior compartments. Knowledge of the sites of predilection of the various entities help in their diagnosis. A complete list of mediastinal tumors can be found in the *Atlas of Tumor Pathology* published by the Armed Forces Institute of Pathology.[1] No attempt will be made to cover this list. There have been many clinical series published, and the one of Lyons, Calvy, and Sammons[2] is representative. In this discussion we need be concerned with tumors of the anterior compartment, and in their series the most common ones were: thymoma, teratoma, goiter, lymphoma, metastatic carcinoma, parathyroid adenoma, aneurysm, and assorted cysts.

In this patient aneurysm is ruled out by the results from the angiocardiogram, and since the x-ray films are very revealing, it

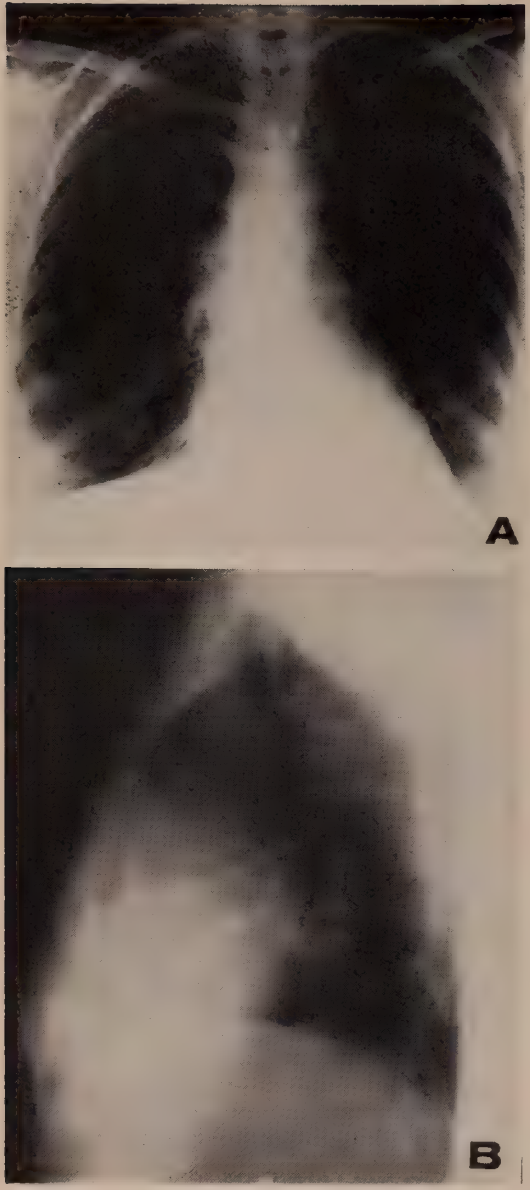

FIGURE 2. (A) Admission chest x-ray film demonstrating smooth, slightly lobulated mediastinal mass. (B) Lateral view showing mass to be located anteriorly.

would be helpful if the radiologist would review them now.

Fred Pezzulli, M.D.: In this particular case, we are fortunate in having radiographs taken shortly prior to the patient's admission to the hospital and onset of clinical symptomatology. Three weeks prior to admission routine chest x-ray films were taken which showed normal findings (Fig. 1). In retrospect this interpretation is well substantiated.

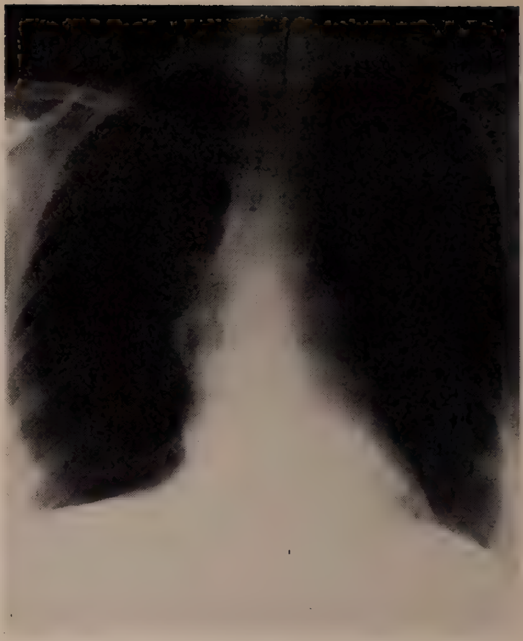

FIGURE 3. Chest x-ray film taken post thoracentesis on sixth hospital day showing increased size of mass.

Fortunately a lateral view was taken, and the retrosternal space is noted to be clear. This observation is important in view of subsequent radiographic developments. A chest film showing negative posterior-anterior findings and not showing the retrosternal space would be of limited value since a small mass could easily have been overlooked. A chest x-ray film taken on admission demonstrates a well-defined right mediastinal mass with smooth contours and a suggestion of slight lobulation along its superior border (Fig. 2A). There are no calcifications in the mass.

A lateral view places the mass in the anterior mediastinal compartment, overriding the ascending aorta but apparently separate from it and the sternum (Fig. 2B). In addition there is evidence of a small amount of fluid in the left costophrenic sulcus. Following a left thoracentesis on the sixth hospital day, the mass is noted to be larger and extending slightly to the left of the midline (Fig. 3). It maintains its smooth, slightly lobulated contour. A venous angiocardiogram was done which demonstrates the independence of the mass from any of the opacified vascular structures (Fig. 4).

In conclusion the radiographic investi-

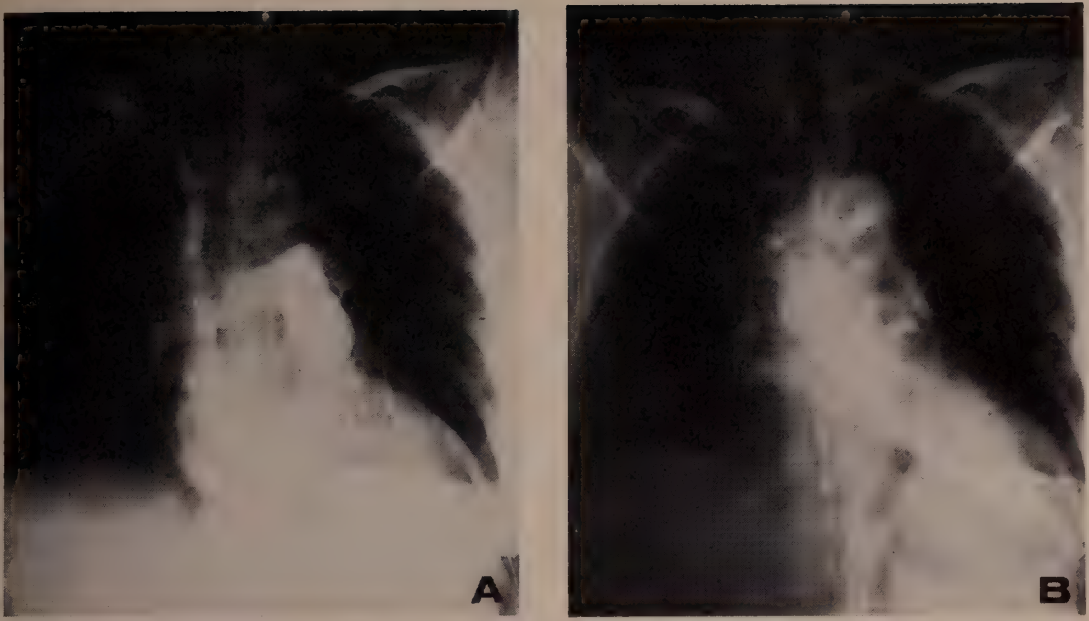

FIGURE 4. (A) Venous angiocardiogram (one second) showing superior vena cava, right ventricle, pulmonary arteries, left ventricle, and aorta. (B) Venous angiocardiogram (three seconds) showing mass is independent of opacified vascular structures.

gation demonstrates the presence of a rapidly developing, rapidly enlarging, anterior mediastinal mass, apparently nonvascular in origin.

Dr. Barr: Metastatic carcinoma from the lung, breast, or other more remote sites may also be dismissed from consideration. There was no cough or hemoptysis, and the lung fields were clear. Although there was a bloody left pleural effusion, it had a class I cytology, and it was unlikely that a lung cancer that had progressed to the stage of producing pleural effusion and mediastinal metastasis would remain occult. The breasts contained no masses, but if there were a minute primary malignant tumor there with mediastinal metastasis and pleural effusion, one would also expect to have found other metastatic deposits. As far as other remote primary carcinomata are concerned, there were no symptoms or physical findings to suggest a neoplasm in any other system.

Retrosternal goiter is an unlikely possibility that deserves mention. Small goiters are usually asymptomatic, while the larger lesions when they cause trouble usually produce tracheal displacement and narrowing. There are no symptoms presented of tracheal compression. Furthermore, in the presence of a mediastinal goiter, there is often a portion of thyroid tissue palpable in the neck, which was not the case here. Radiographically mediastinal thyroid tumors are usually spherical, are found higher in the mediastinum, and in closer apposition to the trachea; a picture quite different from the one presented in this case. Additionally, goiters are unlikely to enlarge rapidly unless internal hemorrhage has occurred. In this event one might have expected to find a more symmetrical appearing lesion.

Teratoid tumors, dermoids and teratomas are frequently found in the anterior mediastinum. The benign variety of these tumors grow slowly over a long period of time. About one third undergo malignant change with invasion of adjacent structures. They may present symptoms of a simple cyst or a lobulated mass, and unless there is characteristic calcification resembling a tooth or bone, to make a diagnosis preoperatively may be difficult. The benign tumors are asymptomatic unless they become infected or rupture into the tracheobronchial tree. The malignant lesions invade adjacent structures, such as the superior vena cava, causing significant symptoms and findings. I would doubt that a teratoid tumor would enlarge as rapidly as was the case here, unless it hemorrhaged into a dermoid cyst. In this event as in the case of goiter, I would expect to find a more symmetrical appearing lesion.

Bronchogenic cysts occur in the anterior mediastinum but are usually located more posteriorly. Characteristically they are in proximity to the tracheobronchial tree and asymptomatic unless infection of bronchial communication occurs. In this patient the lesion seems to be located too far anteriorly, and there was no cough or leukocytosis. Pericardial cysts are also usually asymptomatic and most commonly are located near the diaphragm. However, neither lesion seems likely here.

Tumors of thymic origin are among the commoner tumors found in the anterior mediastinum. They too are usually asymptomatic, especially when benign, unless there is associated myasthenia gravis. Symptoms of pain, dyspnea, or superior caval obstruction, are of ominous import and suggest malignant disease. These tumors are variable in shape sometimes resembling the form of the gland and may be lobulated. They may be solid or cystic. In the Lyons, Calvy, and Sammons series[2] almost half were cystic, and in the Mayo clinic series[3] about 15 per cent were. They are usually located over the base of the heart. Calcification occurs in about 10 per cent of cases. In this patient the x-ray appearance of the mediastinal mass is consistent with thymoma, and the lack of local symptoms would suggest that if this were the diagnosis it was benign. The question of rapid enlargement of the tumor could be explained by hemorrhage into the tumor as might occur if it were cystic. This has been observed by Lyons, Calvy, and Sammons[2] and is alluded to in the description of the pathology by Bernatz, Harrison, and Clagett.[3] If hemorrhage had indeed occurred, it could explain the low-grade fever and small bloody pleural effusion. Parenthetically there are benign thymic cysts which are believed to develop from remnants of the thymic or thymopharyngeal ducts. These might not become clinically apparent until they became distended with fluid or blood. This would produce a picture similar to that seen in this patient, and such has been reported,[4] but how one would make the diagnosis without thoracotomy, I do not know. In any event it is a very rare lesion.

The last large group of anterior mediastinal tumors to be considered are the lymphomas; these occur in the middle mediastinum as well. Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma, and Brill-Symmers disease may all present symptoms in the anterior mediastinum, and if there are no accessible peripheral lymph nodes involved, the diagnosis becomes more difficult. There may be an associated low-grade fever and pleural effusion. The appearance on x-ray film may resemble the picture seen in this patient. It is also possible that the mass of lymphomatous tumor might undergo rapid enlargement. The presence of a high sedimentation rate and a peripheral blood smear showing normal results would not be inconsistent. All in all, malignant lymphoma is a distinct possibility.

There are many other tumors, including lipomas, liposarcomas, rhabdomyosarcomas, and choriocarcinomas, to mention but a few, that are very uncommon and which will not be discussed this morning. With the information given in this case, it is probably not possible to make a precise histologic diagnosis and that, of course, is why we have to have thoracic surgeons. In summary I think that the choice lies between hemorrhage into a thymoma that has undergone cystic degeneration and a rapidly growing malignant lymphoma. I understand that the patient was not very ill, and I would think that she would be sicker if she had the latter disease than if she had the former. I vote, therefore, for a thymoma with hemorrhage into an area of cystic degeneration.

John V. Waller, M.D.: Why is the left pulmonary artery not seen on the angiogram?

Dr. Pezzulli: On the serial studies we do see the left pulmonary artery, but the films shown were taken too early to demonstrate this.

Eugene Clark, M.D.: What about the possibility of a primary hemorrhage into the mediastinum secondary to anticoagulation without presenting symptoms of a tumor?

Dr. Barr: Certainly that possibility exists, but the prothrombin time was well controlled in the twenty-second range, and no other manifestation of hemorrhage was present such as hematuria, petechiae, or ecchymoses. It would be difficult to envision mediastinal hemorrhage as the single manifestation of bleeding due to anticoagulants.

Michael S. Bruno, M.D.: Have you ever seen a case of spontaneous primary mediastinal hemorrhage, Dr. Clark?

Dr. Clark: No, but as we are well aware, it can occur in other body areas, such as the subdural and subperiosteal spaces, without any antecedent trauma.

Dr. Bruno: I recently saw a patient who had a massive, spontaneous, hemorrhage into the subcutaneous and deep tissues of his upper arm occurring immediately after he had inserted a light bulb into a ceiling fixture. He, too, was on anticoagulant therapy because of a previous myocardial infarction, with excellent prothrombin levels being maintained. I might add that he had a serious flexion deformity of the adjacent elbow which gave us great concern and lasted six weeks.

Alfred J. Kaltman, M.D.: Could the 1963 episode of chest pain have represented pericarditis and not subendocardial damage?

Dr. Bruno: That is a possibility, although unlikely.

Dr. Barr: The benign mediastinal tumors are completely asymptomatic. In the Lyons, Calvy, and Sammons[2] series of thymomas, 70 per cent were asymptomatic, and whether or not the 1963 episode of chest pain may have been pericardial is hard to say.

Dr. Bruno: This patient had been under the care of Dr. Kreps for many years. I wonder if he would comment on the course so far.

Sidney I. Kreps, M.D.: We considered pericarditis in the differential diagnosis in 1963 because of the absence of enzyme changes and the T-wave inversions in leads V_3 and V_6. It was difficult to evaluate the patient's symptoms because of a strong psychoneurotic overlay, but further serial T-wave changes and persistent suggestive chest pains made us decide, after several consultations, to start long-term coagulant therapy. The patient tolerated this without incident for four years. An exercise electrocardiogram in August, 1964, showed S-T depression, lending further support to the diagnosis of coronary artery disease.

George J. Frankel, M.D.: Was a second strength purified protein derivative skin test done?

Dr. Bruno: No.

Dr. Frankel: Certainly Boeck's sarcoid can mimic many chest diseases. The lesions can grow rapidly, prominent exacerbations are not uncommon, and with mediastinal involvement a variety of roentgen shadows are seen. I feel the patient may well have had sarcoidosis.

Dr. Bruno: To make sarcoid the primary diagnosis, using the information presented, is stretching things a bit. Dr. Barr mentioned the granulomatous diseases in his discussion and apparently dismissed this possibility early in his presentation.

Robert P. Gearhart, M.D.: A bloody pleural effusion is uncommon with sarcoidosis. Has this been your experience, Dr. Bruno?

Dr. Bruno: I agree. If this is sarcoidosis, it would be the first case I have ever seen presenting symptoms in this way.

Joseph Kessler, M.D.: Would mediastinoscopy have helped you in making the diagnosis preoperatively?

Dr. Barr: I have had no experience with mediastinoscopy. A scalene node biopsy sometimes may be more helpful or actual sternal splitting "mediastinoscopy."

Dr. Bruno: Dr. Missier was the surgeon of record, and I would like to ask him what his preoperative diagnosis was and what he found at surgery.

Peter A. Missier, M.D.: I saw my first patient with this condition in 1963 and confirmed the diagnosis surgically. When I was presented with a similar picture a second time, I unhesitatingly made the same diagnosis. The radiologists were hesitant to agree with me, and for that I do not blame them. To my knowledge there are no reports of this condition in the American literature; however, experience is our greatest teacher, and I was fortunate in having seen a prior case. My preoperative diagnosis was hemorrhagic thymus.

Dr. Bruno: How is that different from hemorrhage into a thymic cyst?

Dr. Missier: The differentiation is impossible. I made my diagnosis through association with the case I operated on four years before.

Dr. Bruno: What was found at the time of surgery?

Dr. Missier: There was hemorrhage in the mediastinum with blood in the left hemithorax and hemorrhage into a thymic cyst. When actually exposed the tumor was greater than that seen on the x-ray films.

Austin P. Boleman, Jr., M.D.: Had the patient who was seen in 1963 been on anticoagulant therapy?

Dr. Missier: No. Have you seen any previous cases or read about them in your review of the literature, Dr. Barr?

Dr. Barr: I would rather answer that after the pathologist shows us the operative findings and microscopic sections.

Clinical diagnosis

Anterior mediastinal mass, hemorrhagic thymus

Dr. Barr's diagnoses

1. *Hemorrhage into a thymic tumor with cystic degeneration*
2. *? Rapidly growing lymphoma*

Lawrence P. Shea, M.D.*: The surgical specimen was a cystic structure measuring 6.5 by 4.5 cm. in transverse diameters and varying from 0.3 to 1 cm. in thickness. The external surface was lobulated and dark red (Fig. 5A). The inner surface was irregular and partly coated with blood clot (Fig. 5B). The cut surfaces of the moderately firm wall consisted of yellowish and grayish-white tissue with dark red, apparently hemorrhagic foci.

Microscopic sections of the fibrous wall of the cyst revealed a thin layer of stratified squamous epithelium on the inner surface and areolar tissue with atrophic thymic remnants on the outer surface (Fig. 6A). The squamous cells were uniform and showed no atypical changes (Fig. 6B). The wall of the cyst was irregularly thickened by the presence of scar tissue and granulation tissue. In the fibrous tissue there were areas showing fresh hemorrhage and chronic inflammatory changes. Among the inflammatory cells were macrophages containing hemosiderin, plasma cells, lymphocytes, and rare multinucleated giant

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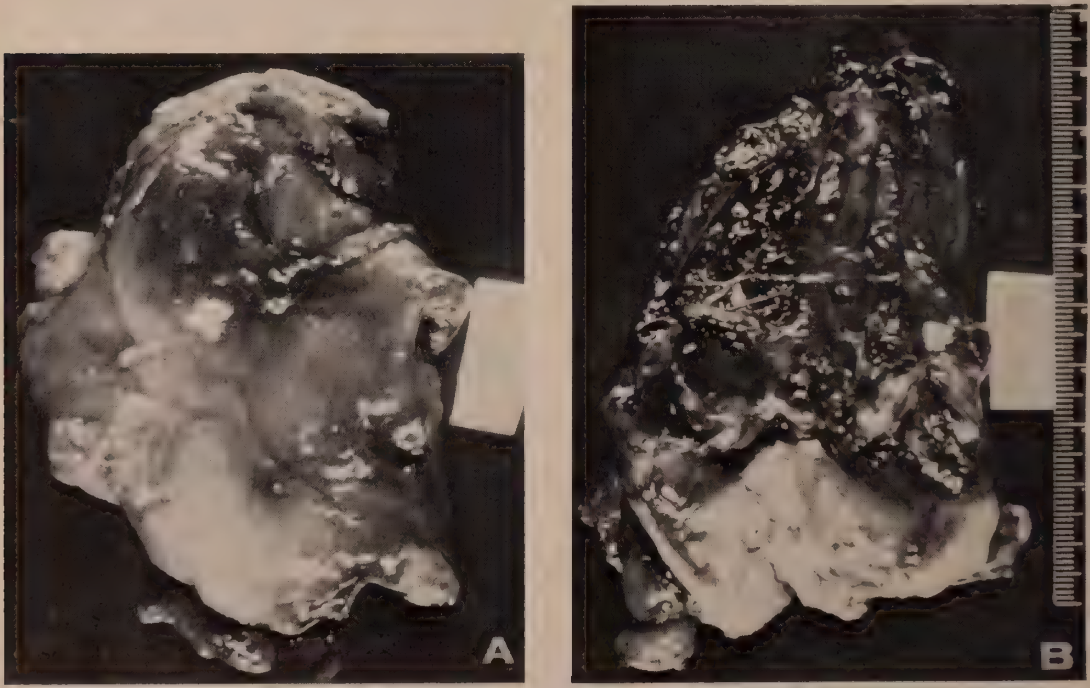

FIGURE 5. (A) External aspect of cystic anterior mediastinal mass. (B) Internal surface of thymic cyst.

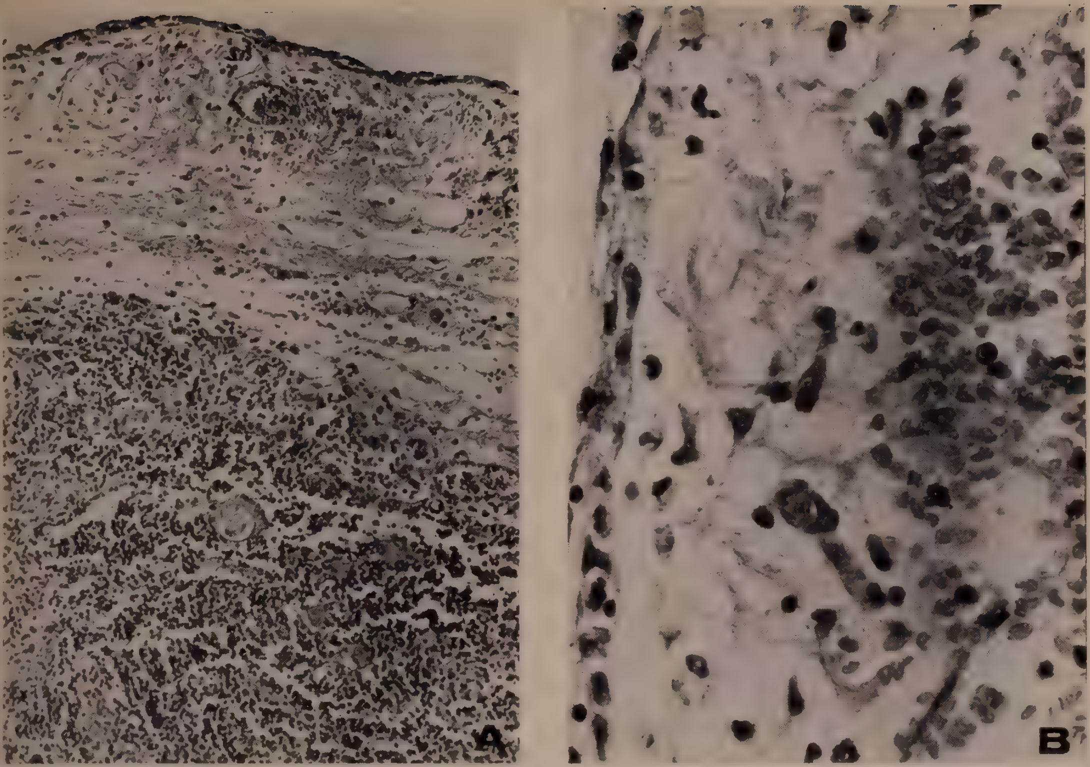

FIGURE 6. (A) Low-power microscopic view of cyst wall showing squamous epithelial lining and remnant of thymic tissue. (B) High-power view showing squamous epithelial cyst lining.

cells of the foreign body type. The microscopic sections revealed no evidence of thymoma.

In discussion of the pathogenesis of thymic cysts of this type, two modes of origin are usually considered. In view of the embryologic development of the thymus from the third pharyngeal pouch, the more attractive theory is that of origin from misplaced branchial cleft epithelium. An alternative explanation, for which positive evidence is lacking, is that the cysts represent the one-sided development of a teratoma.

DR. BARR: In reference to Dr. Missier's last question, Krech[4] in 1954 reported cases of thymic cysts presenting symptoms in a variety of ways, such as chest pain and neck pain and may be filled with blood and clot. Dr. Schlumberger may be right in postulating that predisposing teratomas lead to thymic cyst or thymoma formation.

DR. BRUNO: I saw this patient in consultation with Dr. Kreps before the angiography and work-up were completed. The patient did not look sick. A complete adequate history was difficult to obtain from her because she changed her story every other day. With the background of the previous myocardial infarction, the question was what could the anterior mediastinal mass represent. A local dissection of the ascending aortic arch was considered, but the patient looked well. An angiocardiogram was then done to differentiate this from any lesion of the aorta. I think that Dr. Barr's differential diagnosis and discussion were very conclusive, and statistically by location thymoma was most likely.

DANIEL NEYMAN, M.D.: How did you account for the bloody pleural effusion, Dr. Bruno?

DR. BRUNO: The mediastinum had free blood outside of the cyst, and a dissection by gravity into the left pleural space from the mediastinum could explain this.

GERHARD L. SCHERK, M.D.: Would you say that the anticoagulants caused the hemorrhage?

Dr. Bruno: I would be suspicious but could not say for sure.

Dr. Kreps: This unusual case without prior precedence in the readily available literature was considered worthy of further study and report and so gave me the opportunity to review the literature on the thymus. Some tremendous strides have been made only in the past six years. There had been widespread misconception that the thymus was a large gland apparent only in childhood, and that it disappeared in adulthood. This was based on findings at autopsy or surgical proceedings. It is now known that disease or severe stress can cause the thymus to atrophy within twenty-four hours, so that the true size of the thymus in normal adults can only be seen in cases of sudden or accidental death.

Out of the myriad facts uncovered in recent work on the thymus, there are four outstanding and provocative ideas pertaining to the function of the thymus.

1. It plays a vital role in immunologic reactions. Some think it may be the "master gland."
2. In experimental animals it plays a role in leukemogenesis.
3. It may be important in host resistance to cancer.
4. It curiously shows pathologic lesions in association with diseases such as myasthenia gravis, autoimmune hemolytic anemia, systemic lupus erythematosus, and agammaglobulinemia.

In this patient, the sudden development of hemorrhage into a thymic cyst raises the question of etiology. Anticoagulants are always first suspect; but the satisfactory range of prothrombin time and the fact that Dr. Missier's other case was not on anticoagulant therapy may argue for other causes. This patient had been given estrogens for the past year, had been given an injection of influenza vaccine (she had also had a "reaction" to influenza vaccine the previous year), and had undergone the stress of a Master's exercise electrocardiogram three weeks prior to her admission. I wonder if these events could have played any role in enlarging her thymic gland or precipitating hemorrhage there; that is, could the influenza vaccine have been the antigenic stimulus?

The thymic gland usually disappears with age, but any stress or illness can cause hypertrophy in children, and the same mechanism could have acted here.

Dr. Barr: Yet it is well known that thymic tumors may be present without x-ray evidence of them, and in patients with myasthenia gravis these can often be found when sought.

Dr. Bruno: The final diagnosis then, is thymic cyst with hemorrhage into it and a concomitant hemorrhagic left pleural effusion.

Final anatomic diagnosis

Thymic cyst with old and recent hemorrhage

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Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

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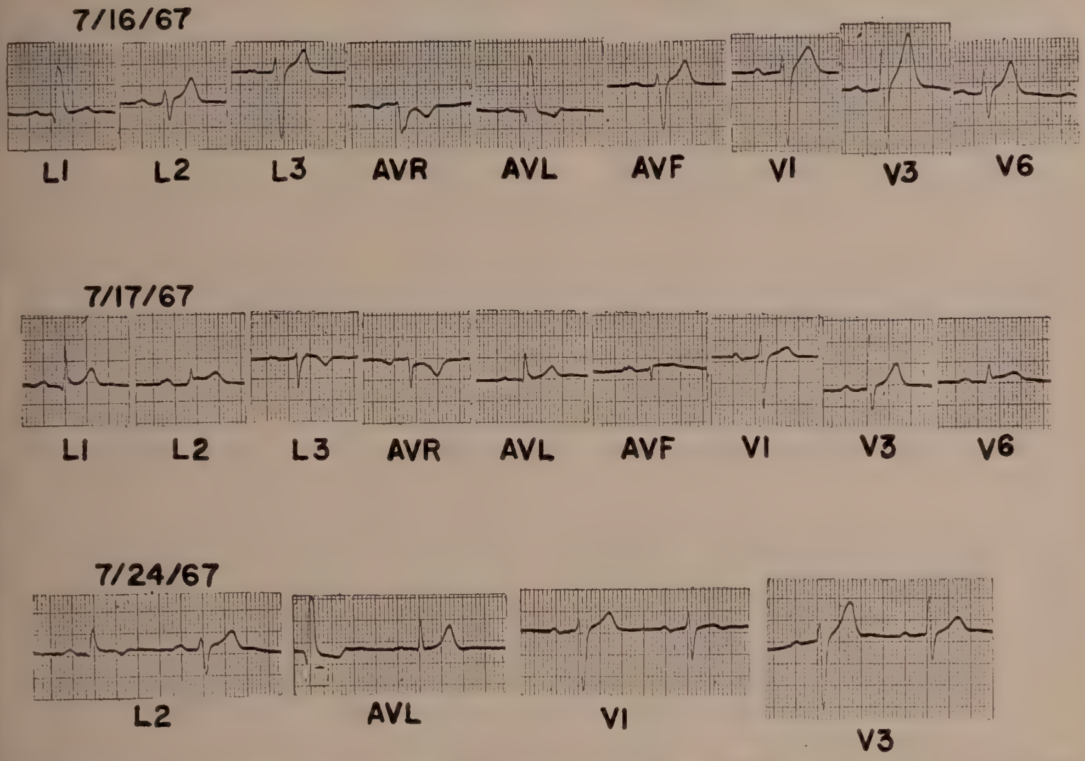
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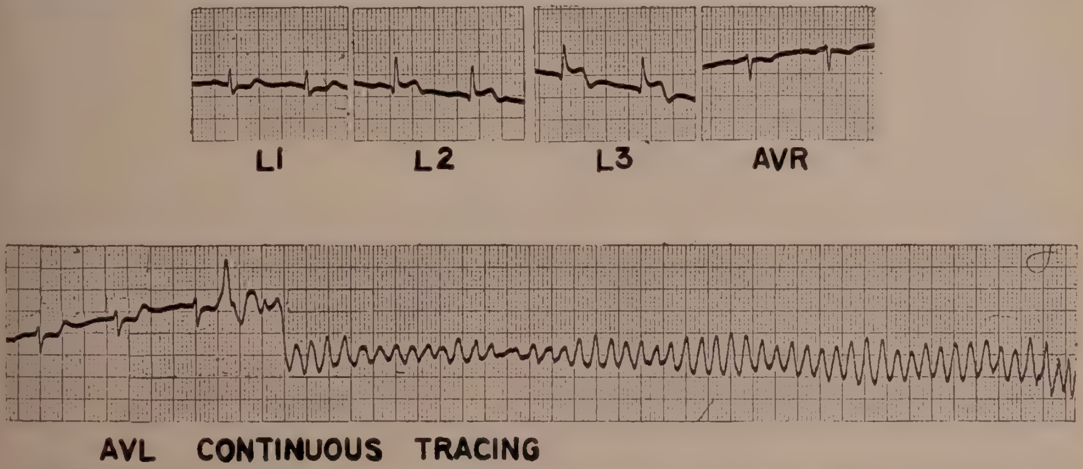
QUESTION 19. Serial electrocardiograms of seventy-year-old man with recent myocardial infarction. What is interpretation?


LI
L2
L3
AVR
AVL CONTINUOUS TRACING

QUESTION 20. Electrocardiogram taken on admission to hospital. Patient was forty-year-old man with severe chest pain. What is interpretation?

ELUCIDATION

QUESTION 19. The tracing dated July 16, 1967, shows a P-R interval of 0.24 second, the QRS measures 0.12 second. There is left axis deviation with a mean QRS electrical axis of approximately minus 45 degrees. The R wave measures 13 mm. in lead aVl, and the T wave is inverted. There is a prominent Q wave in leads I and aVl. The interpretation is first-degree heart block with an abnormal degree of left axis deviation compatible with myocardial damage. The tall R wave in aVl followed by an inverted T wave suggests left ventricular hypertrophy.

On July 17 the electrocardiogram shows a P-R interval of 0.24 second, and the QRS is 0.09 second. The mean electrical axis is minus 15 degrees. The R wave in aVl measures 6 mm., and the T is positive. The S-T segment is slightly elevated in leads II, aVf, and V_6. A small Q wave is present in leads I and aVl. This tracing again shows first-degree heart block. The width of the QRS is within normal limits, and the electrical axis is normal. The elevated S-T segments are suspicious but not diagnostic of recent posterior wall infarction.

The tracing of July 24 shows alternating QRS configuration. Some QRS complexes resemble the QRS complexes of July 16 and others those of July 17. The T wave in lead II is now inverted during normal conduction.

This series of records demonstrates that extreme left axis deviation with QRS prolongation may result from a conduction defect which is transient or intermittent. Note that the tall R wave in aVl on July 16 is also a transient phenomenon. R waves of this height are considered diagnostic of left ventricular hypertrophy, especially when associated with an inverted T wave. The large R wave and inverted T wave in aVl in this instance is probably a result of conduction disturbance and not left ventricular hypertrophy. The serial changes in the S-T segment and T wave in lead II during normal conduction are manifestations of the recent posterior wall infarction. These S-T and T changes in lead II do not appear during abnormal conduction.

QUESTION 20. In lead I and aVl the rhythm is regular sinus rhythm. The S-T segments are depressed. Leads II and III demonstrate an elevated S-T segment with late inversion of the T wave. In aVl, after the third beat, there is a ventricular premature contraction occurring early on the T wave. This premature beat is followed by ventricular fibrillation. Ventricular premature beats falling early on the T wave, the so-called vulnerable period, may precipitate serious ventricular arrhythmias, such as ventricular tachycardia or ventricular fibrillation. When ventricular premature contractions occur on the upstroke of the T wave, prompt anti-arrhythmic therapy is indicated.

Decrease in x-ray radiation hazard

The danger of overexposure to radiation from medical and dental x-ray examinations in New York City has decreased over 70 per cent in the past nine years, it was recently reported by the Health Department's Office of Radiation Control.

The chances of overexposure due to poor x-ray technics and faulty equipment have been cut by an intensified inspection and evaluation program of medical and dental units begun late in 1958. Of the 11,400 medical x-ray machines and fluoroscopes in use in the city, 8,322 or 73 per cent now meet Health Department regulations.

A major fault in x-ray equipment remedied in the past decade is the lack of filters which screen out x-rays of such low energy that they cannot pass through the patient's body to reach the photographic plate. The danger here is of overexposure to the skin. Also, many x-ray units failed to meet Health Code regulations in 1958 because they did not limit the size of the x-ray beam to the part of the patient's body under study. Correction of this problem alone has tripled the number of x-ray machines which now meet Health Department standards. Beam size of the x-ray at present is considered satisfactory in 90 per cent in the 1958 investigations.

Case Report

Traumatic Diaphragmatic Hernia Simulating Transient Pleural Effusion

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TRAUMATIC DIAPHRAGMATIC HERNIAS may complicate crushing or penetrating injuries of the chest. They commonly are noted acutely at the time of injury but occasionally may not become symptomatic until years later. This latter situation often creates an interesting and perplexing diagnostic problem.[1] In this communication, we present a case report of traumatic diaphragmatic hernia simulating a transient pleural effusion which did not become symptomatic until several years after a penetrating stab wound of the chest.

Case report

A twenty-nine-year-old Negro janitor was first seen in the St. Luke's Hospital emergency room on June 16, 1966, complaining of abdominal pain of four hours duration. He had been in good health until four months earlier when he noted the onset of transient episodes of left upper abdominal cramping pain. On the day of his visit, while sweeping the floor, he suddenly developed abdominal and left anterior chest pain associated with nausea, vomiting, sweating, and dizziness. He denied constipation, diarrhea, or weight loss. On physical examination he was afebrile and his lungs were clear. There was some direct tenderness in the left upper quadrant of the abdomen, and the bowel sounds were hypoactive. The hemoglobin was 15.5 Gm. per 100 ml., and white blood cell count was 8,000 with a normal differential. Chest x-ray film showed linear and patchy densities in the lower aspect of the left lung field and suggested an air-fluid level behind the left side of the heart. A plain film of the abdomen revealed only a distended loop of bowel in the right upper quadrant. The patient was felt to have pneumonia with left pleural effusion. Because of lack of beds, he was referred to another hospital.

On July 5, 1966, the patient returned to the clinic stating that he had been to three other hospitals but each time he was sent home. In the interim the pain had subsided, and he had returned to work. Chest x-ray film on this day showed atelectatic changes in the left base and blunting of the left costophrenic angle. These findings were considered compatible with resolving pneumonia and pleurisy. An upper gastrointestinal series gave negative findings.

On July 22, while mopping the floor, he had a recurrence of sudden left upper abdominal and anterior chest pain, nausea, and vomiting. Now, for the first time, he gave a history of having been stabbed two years prior to this admission which had required hospitalization at another institution. Management had been conservative with rest and thoracentesis. On physical examination, he was found to be well-developed and muscular. His vital signs were: blood pressure 130/80, pulse 76, respirations 20, and temperature 100 F. There was a well-healed scar, 8 cm. in length, on the right side of his

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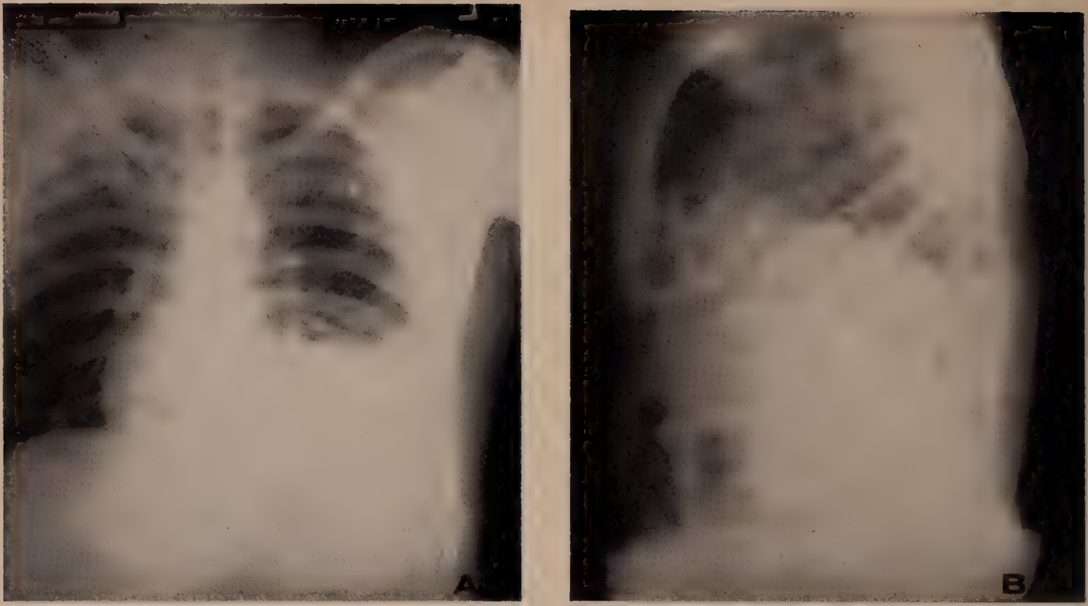

FIGURE 1. X-ray films taken on admission suggesting left pleural effusion. (A) Posteroanterior view (B) Lateral view. Note multiple cystic spaces.

neck and a 2-cm scar on the left hemithorax at the anterior axillary line in the seventh intercostal space. Examination of the lungs revealed decreased breath sounds at the left base posteriorly and no rales. The abdomen was mildly tender in the left upper quadrant. The remainder of the examination was unremarkable.

Pertinent laboratory studies revealed a hemoglobin of 14.7 Gm. per 100 ml. and a white blood cell count of 8,000 with 70 per cent neutrophils. Serum sodium was 135 mEq., potassium 4 mEq., carbon dioxide content 20.8 mEq., and chlorides 96 mEq. per liter. The fasting blood sugar was 92 mg. per 100 ml., blood urea nitrogen 13 mg. per 100 ml., and serum amylase 61 Somogyi units. Sputum smear was negative for acid-fast bacilli. The intermediate strength purified protein derivative was positive. Chest x-ray film was interpreted as showing a pleural effusion and multiple cystic spaces in the left lower lung field (Fig. 1). A left lateral decubitus x-ray film showed opacification of the left upper lung field while a right lateral decubitus film revealed clearing of the left costophrenic angle and again demonstrated cystic spaces suggestive of abscesses. A thoracentesis was attempted, but no fluid could be obtained. A repeat chest x-ray film on the day following admission revealed a remarkable clearing of the density in the left lower lung field (Fig. 2). Fluoroscopy failed to reveal evidence of left diaphragmatic paralysis.

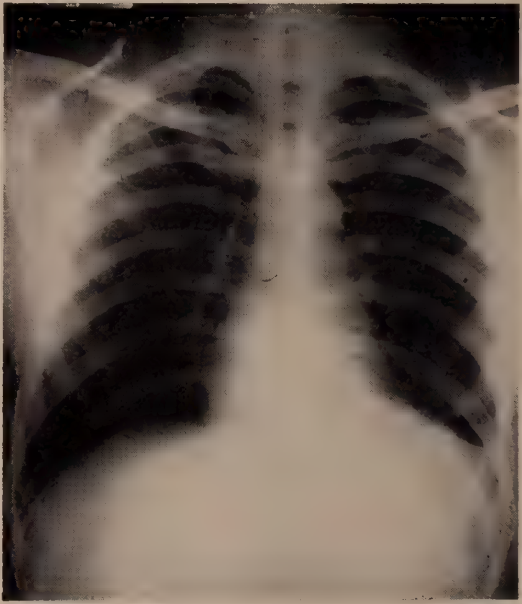

FIGURE 2. Posteroanterior chest x-ray film day following admission. Major portion of density in left lung field cleared.

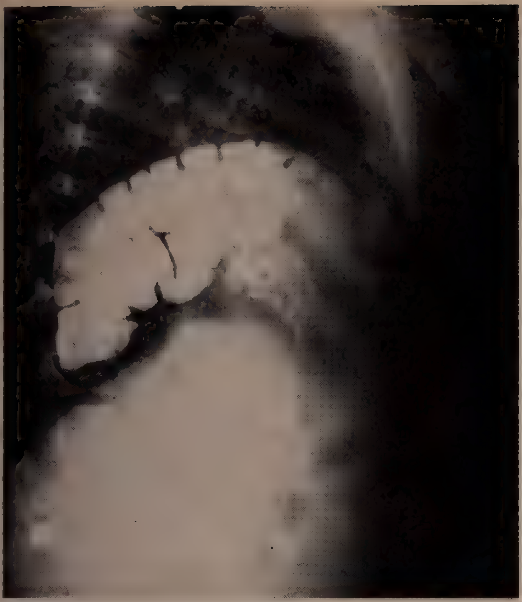

FIGURE 3. Barium enema taken in Trendelenburg position revealing diaphragmatic herniation of colon.

A barium enema with the patient in the Trendelenburg position demonstrated herniation of the transverse and descending colons through an anterolateral defect in the left hemidiaphragm (Fig. 3).

The patient subsequently underwent a transthoracic repair of his diaphragmatic hernia. At operation, no fluid was found in the thorax, but a 4-cm. defect in the anterior left side of the diaphragm was present through which the large bowel, uncovered by peritoneum, was protruding. Dense adhesions were present, but the intestine was viable. The hernia was reduced and the diaphragm repaired. The patient made an uneventful recovery.

Comment

With the exception of hiatus hernia, the most common hernia through the diaphragm is the traumatic type. It was first described by Ambroise Paré in 1579.[2] It can be caused by direct or indirect trauma, incision of the diaphragm at surgery, or can occur following inflammatory necrosis of the diaphragm due to subdiaphragmatic abscess.[3,4]

Direct trauma is usually caused by missile injury or stab wound while indirect trauma refers to any type of injury capable of producing a sudden bursting force in the chest or abdomen such as falls, crushing injuries, or steering wheel accidents. Once a rent has been made in the diaphragm, negative thoracic pressure encourages ascent of intra-abdominal contents plugging the defect and preventing healing.[5] In 95 per cent of the cases, the hernia occurs through the left hemidiaphragm, the liver apparently providing protection for the right side except in massive injuries.[6] The hernia which has no peritoneal sac may contain large intestine, stomach, or small intestine, in decreasing order of frequency.[5]

The hernia may appear acutely at the time of injury or produce intermittent symptoms sometimes beginning years after the trauma and finally ending in strangulation. Hernias that become apparent immediately are most often caused by massive indirect trauma. These patients are acutely ill, frequently in shock, and must be given surgical attention quickly if they are to survive.

At the other extreme, the patient may be symptom free or troubled with intermittent abdominal and/or chest pain. This type of picture is most often produced by direct trauma which occurred in the recent past but also may have occurred so long ago that the patient has forgotten the injury and scars are well healed. Probert[7] reports a case which led to obstruction thirty-three years after a gunshot wound in World War I.

The pain is described as sharp or cramping, may radiate to the left shoulder, and is often brought on by strenuous activity, food intake, or changes in position associated with increased intra-abdominal pressure. Vomiting or constipation may be associated. If a lung is being compressed by the hernia, shortness of breath or pain related to breathing is present. Peptic disease, cholelithiasis, pancreatitis, hiatus hernia, pleurisy, or coronary disease are simulated. Intestinal obstruction occurs frequently, and strangulation accounts for the most of the mortality figures in many reports. Incarceration of the bowel leads to an outpouring of fluid, and the resulting pleural effusion may be large, bloody, and foul. Hematemesis reflects strangulation of the stomach in the hernia.[6] Peristaltic sounds may be heard in the chest, and the abdomen can be distended or scaphoid.[5,6] Chest x-ray film may reveal an elevated hemidiaphragm and areas of plate-like atelectasis, a pleural effusion, intestinal gas pattern, or a large cystic gas space because of an entrapped gut above the diaphragm. Frequently the mediastinum has shifted away from the side of the hernia. Differential diagnosis includes lower lobe pneumonia, pleural effusion, atelectasis, lung cyst, lung abscesses, eventration of the diaphragm, subdiaphragmatic abscess, or phrenic nerve paralysis.[2,6]

Conclusive diagnosis, demonstrating constriction of involved gut as it passes through the diaphragm, may not be established unless both an upper gastrointestinal series and barium enema are done since herniated large bowel will not show on the upper intestinal study or herniated stomach on barium enema.[6] Since most patients will eventually have obstruction, surgical repair is indicated as soon as the diagnosis is established.

In retrospect, our patient is a classical example of traumatic hernia being noted two years after direct diaphragmatic injury. He gave a history of intermittent abdominal and chest pain precipitated by physical exertion, and x-ray films were compatible with a left midlung field infiltrate and small pleural effusion. Despite a normal white blood cell count and absence of fever, he was considered to have pneumonia and sent to another hospital. It is of interest that this very characteristic history and clinical picture had not impressed other admitting physicians since the patient claimed to have been discharged from three different emergency rooms besides our own. Explanation lies in a relative unfamiliarity with this clinical entity, best exemplified by the fact that the main clues, a history of prior stab wound and scars on the chest, although noted, were not immediately related to the present illness.

The diagnosis was not suspected until the admission chest film results, compatible with multiple lung abscesses and effusion in an individual without clinical symptoms of infection, dramatically cleared on the following day. It then became apparent that the following findings all added up to the diagnosis of traumatic diaphragmatic hernia: history of trauma, intermittent abdominal and chest pains precipitated by effort, x-ray evidence of left-sided pleural effusion, air-fluid levels and plate-like atelectasis, and evidence of spontaneous reduction of the hernia. The diagnosis was confirmed with a barium enema following efforts to increase intra-abdominal pressure.

Differential diagnosis

There are other diaphragmatic hernias which must be considered in the differential diagnosis and discussion of traumatic diaphragmatic hernia.[8] The Bochdalek hernia is caused by a congenital defect characterized by imperfect fusion of the posterior pleuroperitoneal segment with the septum transversum.[9] It most often occurs through the left posterior portion of the diaphragm and when it persists into adulthood is, for the most part, asymptomatic.[3] The Morgagni hernia, or subcostal sternal diaphragmatic hernia, is the rarest type of diaphragmatic hernia. It appears in the cleft between the costal and sternal attachments of the diaphragm through which the superior epigastric vessels pass.[10] Eventration of the diaphragm is not a hernia but rather a ballooning of the diaphragm into the left hemithorax caused, probably, by a congenital weakness of this structure.[11] Gastrointestinal contrast studies will rule out eventration while the anterior location of the Morgagni hernia is almost diagnostic. Traumatic diaphragmatic hernia occurs more commonly than any of these, and the history of injury should serve to be a major diagnostic point.

Summary

A case of traumatic diaphragmatic hernia becoming symptomatic two years following a knife wound is reported and discussed. Chest x-ray film results simulating a pleural effusion which cleared rapidly led to definitive barium studies and diagnosis.

Acknowledgment. The authors would like to thank A. L. Loomis Bell, Jr., M.D., and Peter R. Holt, M.D., for their helpful suggestions in the preparation of this manuscript.

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Emphysematous gastritis

Emphysematous gastritis, only 12 cases of which have been reported, is a type of phlegmonous gastritis characterized by gas in the wall of the stomach. This is caused by gas-forming bacteria in an infection usually preceded by a mucosal disruption due to the ingestion of corrosives, to gastroenteritis, gastroduodenal surgery, or gastric infarction. It carries a high mortality rate. Although it is rare, emphysematous gastritis has a distinctive radiographic appearance. On plain films the diagnostic features are bubbles, streaks, or amorphous collections of gas in the stomach wall, not altered by changes in the patient's position, with rugal swelling and thickening of the gastric wall. Regarding this problem, H. I. Meyers, M.D., and J. J. Parker, M.D., writing in a recent issue of *Radiology*, state that the extraluminal location of the gas is confirmed by upper gastrointestinal study with a water-soluble medium.

The patients studied in this series were (1) a Caucasian male, fifty-eight, who had swallowed 4 ounces of household ammonia; (2) a Mexican girl, fourteen, who had swallowed 3 ounces of muriatic acid; and (3) a woman, fifty-nine, who had ingested 0.5 ounce of lye and 3 ounces of silver polish.

The clinical manifestations are those of an acute fulminating disease. It may simulate a perforated abdominal viscus. Hematemesis is common, with severe abdominal pain, tachycardia, fever, shock, leukocytosis, and anemia. Organisms cultured from the stomach had included Escherichia coli, Streptococcus viridans, Proteus vulgaris, B. aerobacter, Bacillus welchii, and Staphylococcus aureus.

In the acute phase, the stomach shows areas of mucosal erosion, submucosal edema, and cellular infiltration, gas collections, and a local fibrinous peritonitis. The initial treatment is supportive, including parenteral fluids and antibiotics. While nasogastric intubation is used in some cases, this entails the risk of perforation. Surgery is best delayed until gastric strictures develop.

Two of the 3 patients died postoperatively. One patient, Case 3, survived for over four months. In this patient, autopsy findings were bronchopneumonia and gastric and esophageal strictures. In the cases so far reported, the mortality rate is about 60 per cent.

Spontaneous Rupture of Spleen in Infectious Mononucleosis

Value of Roentgenography*

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NUMEROUS CASE REPORTS have appeared in the medical literature relevant to that infrequent complication of infectious mononucleosis, spontaneous rupture of the spleen. Because a delay in diagnosis will result in significant morbidity and death to the patient, the clinical features of spontaneous rupture of the spleen have been repeatedly emphasized. However, rarely have radiographic procedures been utilized to assist in the diagnosis of this entity.[1,2] It is the purpose of this case report to demonstrate the value of roentgenographic examination in establishing the diagnosis of splenic rupture in infectious mononucleosis.

Case report

An eighteen-year-old Caucasian male seaman was admitted to the U.S. Naval Hospital, St. Albans, New York, with a seventy-two-hour history of fever, malaise, myalgia, dull frontal headache, sore throat, and nonproductive cough. Past history, family history, and review of systems were noncontributory.

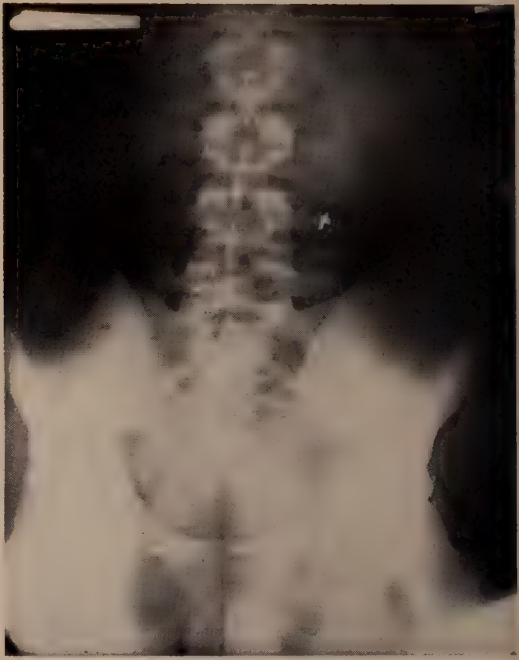

FIGURE 1. Upright film of abdomen immediately after onset of abdominal pain (arrow marks lower border of splenic shadow).

Physical examination revealed a well-developed, well-nourished young Caucasian male with a regular peripheral pulse of 100, an oral temperature of 101 F., shotty anterior and posterior cervical lymphadenopathy, injection of the posterior pharynx, and a smooth nontender spleen 5 cm. beneath the left costal margin. No dermal eruptions, palatal petechia, or hepatomegaly were noted. The remainder of the physical examination was unremarkable.

Symptomatic therapy was instituted. Laboratory studies including hemoglobin, hematocrit, platelet count, urinalysis, blood urea nitrogen, two-hour postprandial blood sugar, uric acid, and serology; and liver function studies gave normal results except for a total white blood count of 6,800 with 80 per cent polymorphonuclear leukocytes and a heterophil of 1:56 with a guinea pig adsorption to 1:7. A chest x-ray film was interpreted as being within normal limits.

The patient, with a presumptive diagnosis of infectious mononucleosis, pursued a febrile but otherwise uncomplicated course

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* Opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

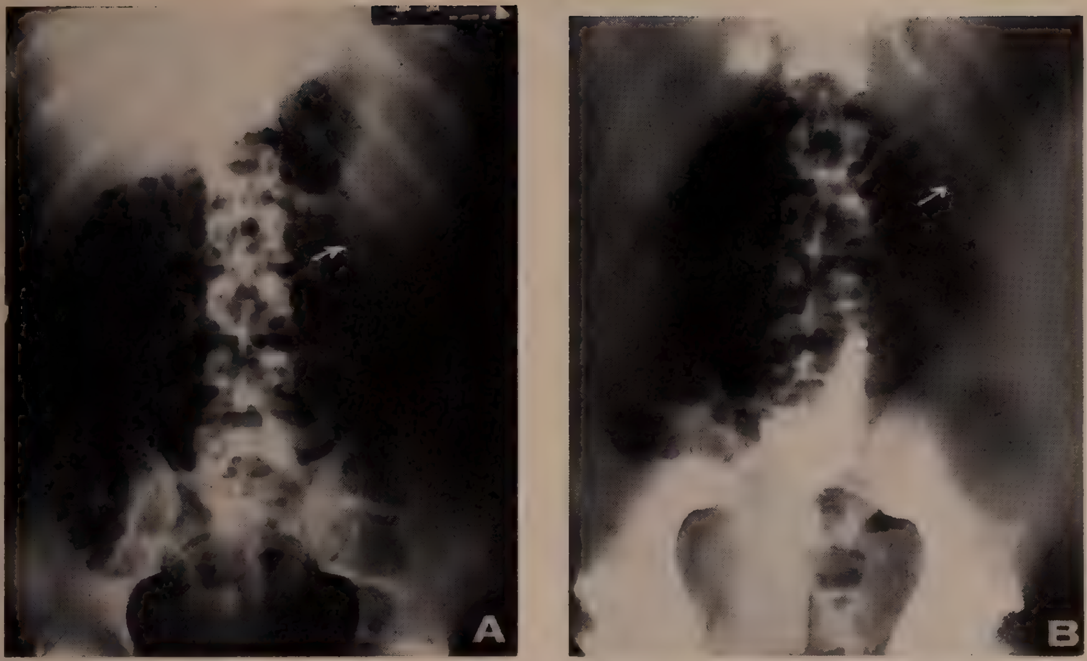

FIGURE 2. Films of abdomen twelve hours after splenic rupture. (A) Prone. (B) Upright. (Arrows denote lower border of obliterated splenic outline.)

until the fifth day of hospitalization. At that time, he experienced the acute onset of dull, nonradiating, left upper quadrant pain after the ingestion of several ounces of juice. This was followed by a single episode of nausea and emesis. Relief was obtained with the passage of flatus. Physical examination revealed bilateral lower quadrant tenderness. Bowel sounds were normoactive. Left shoulder pain was not elicited when the foot of the bed was raised. The spleen was not palpable. The hematocrit was recorded as 40, and x-ray films of the patient's abdomen and chest revealed no abnormality except for a well-outlined enlarged spleen on the upright view of the abdomen (Fig. 1). Parenteral fluids were instituted, and the patient was observed over the ensuing twelve-hour period. Left upper quadrant pain persisted with bilateral lower abdominal tenderness. There was a gradual development of rebound tenderness in the left lower abdominal quadrant. Twelve hours after the onset of abdominal pain, the patient's hematocrit was recorded as 31. Repeat radiographic studies revealed the presence of gastric distention and small-bowel ileus with a loss of the splenic outline (Fig. 2).

The patient immediately underwent an exploratory laparotomy which revealed a greatly enlarged spleen in association with both a subcapsular hematoma and rupture of the splenic capsule. Approximately 1 L. of both clotted and unclotted blood was present in the peritoneal cavity. A splenectomy was performed.

Postoperatively the patient pursued an uncomplicated course. The maximum heterophil was attained on the seventeenth day of hospitalization when a titer of 1:224 was recorded with a guinea pig adsorbed titer of 1:112.

Pathologic examination of the excised spleen revealed a specimen weighing 500 Gm. and measuring 15 by 14 by 5 cm. in its greatest dimensions. Gross examination revealed it to be soft, diffluent, and pink to grey-brown in color. On the hilar surface at one margin was an irregular rupture which measured 4 by 1 cm. Microscopically the capsule and the spleen pulp were diffusely infiltrated with large mononuclear cells. The malpighian corpuscles were small, without germinal centers, and appeared to be reduced in number. Pathologic diagnosis was infectious mononucleosis with rupture of the spleen.

Comment

The patient described in this case presents many of the characteristic features of spontaneous rupture of the spleen in infectious mononucleosis. There is an acute onset of left upper quadrant pain in association with symptoms and signs of peritoneal irritation. Significant abdominal pain is rarely seen in uncomplicated infectious mononucleosis unless splenic rupture has occurred.[3] Elevation of the foot of the patient's bed will frequently elicit pain or a localized area of hyperesthesia at the left shoulder because of subdiaphragmatic irritation (Kehr's sign).

Radiographic signs of splenic rupture are attributable either to encroachment on or displacement of adjacent structures as well as to the presence of blood within the peritoneal cavity. They include gaseous distention of the stomach, a serrated margin of the greater curvature of the stomach, downward displacement of the gastric cardia, displacement of the stomach to the right, an extrinsic pressure defect in the fundus of the stomach, downward displacement of the splenic flexure, elevation and decreased excursion of the left dome of the diaphragm, displacement of the left kidney medially and downward, and evidence of free fluid in the peritoneal cavity.[4,5] There will be enlargement of the splenic shadow with obliteration of the perisplenic margins. Visualization of the normal splenic outline in general excludes the presence of rupture. However, a lack of a splenic shadow on x-ray film may be a normal finding and does not exclude the possibility of rupture.[6]

Summary

Spontaneous rupture of the spleen represents an infrequent complication of infectious mononucleosis. Delay in diagnosis results in significant morbidity and death to the patient. A case has been presented in which roentgenographic examination aided in establishing the diagnosis of this entity.

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Sudden death in nephrotic syndrome

Discussed in a recent issue of *Clinical Pediatrics* are the cases of 3 children suffering from the nephrotic syndrome whose sudden deaths were possibly due to salt depletion, which were reviewed by W. W. Hagge, M.D., E. C. Burke, M.D., and G. B. Stickler, M.D. The cause, of course, cannot be definitely proved, but it is believed that there is sufficient suggestive evidence on which to base certain recommendations: (1) Nephrotic syndrome patients with signs of abdominal pain, vomiting, diarrhea, and peripheral vascular collapse may be suffering from salt depletion, hypovolemia, or both. Prompt infusion of isotonic sodium chloride solution as well as use of plasma-volume expanders are advisable after obtaining serum sodium determinations and blood for cultures; (2) even though similar symptoms are caused by pancreatitis, immediate salt infusion is indicated as soon as blood specimens are obtained for amylase determinations; and (3) severe restriction of salt intake is not necessary, and a diet low in sodium should be abandoned during steroid maintenance therapy in the nephrotic syndrome. Salt retention is usually not a difficult problem in these cases even after steroid administration.

The patients were 2 boys and 1 girl. All 3 died unexpectedly, their deaths heralded by onset of vomiting, followed by vascular collapse and death within a relatively short period of time. Before his fatal episode, 1 patient had had a similar spell of vomiting which was known to be associated with significant hypochloremia and shock. Although the patient recovered the first time after infusion of sodium chloride solution, he still had severe hyponatremia after the salt solution was given. All 3 deaths occurred in the summer, when salt loss through the skin may have been induced by environmental heat, contributing to the reduced salt levels. Parents of 2 of the children had kept them on severely restricted salt intake which had been started in the early phase of hospitalization. This had been done despite advice to resume normal salt content of the diet when the children returned home. No evidence of bacterial infection was found, but since microbiologic examinations were not done, gram-negative septicemia and shock cannot be excluded as a possible cause of death.

Giants of Paumanok

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A MAN'S HOME is more than just his castle; it is invariably a link in that long chain of things, events, and people we call history. The island of which my own half acre is but a tiny link, first emerged from the sea a million years ago, bore its first human footfall about five thousand years ago when a vanguard of Indians from eastern Canada poked their way through its wooded highlands, became an island outpost of the Delaware Indian nation about two thousand years ago, saw its first white man about three hundred fifty years ago, and assumed its modern posture as a part of the American republic ninety-one years ago. In all these two million years of time, its chain of things, events, and people has not been altogether discontinuous but has held together rather remarkably. Then again, if history sometimes appears to be a length of broken chain, it is usually an illusion that we ourselves fabricate because we are blind to so many of its links.

Background

For example, the 13 Delaware tribes who were the island's sole proprietors until some three hundred fifty years ago and who called it Paumanok left the land steeped in a rich compost of archeologic digs, place names, and legends. Not the least intriguing of the legends proposed that a race of giants had once lived on Paumanok long before the Delawares' Frontenac ancestors had migrated here from Canada and that these giants had been great medicine men. As proof, the legend said, one of the giants had left his footprint embedded in a rock on a spit of land near one of the villages of a small island tribe known as the Matinecocks whose own medicine men had somehow absorbed the power of the giant print and had themselves continued to make big medicine at this ancient place. When the first white settlers came to Paumanok and renamed it Long Island,* they were sufficiently awed by the petrified footprint to have continued the legend in the chain, giants, strong medicine, and so on.

Unhappily for the romance glowing in this bit of folklore, modern paleontologists have destroyed the race of giants by proving that the print belonged instead to a dinosaur and then added a dram of bitter vetch to the already soured brew by insisting that the footprint, or pawprint, was not even of Long Island origin but rather from Connecticut, whence its rock carrier had been dragged by the leading edge of a vagrant Pleistocene glacier across an alluvial valley that was to become Long Island Sound.[2,3] But legends are very often the strongest link in a chain of history, forged from a subtle diaphanous material that does not sunder easily and when sundered, frequently reconstitutes itself to keep the chain intact. And so with this one, for such is the nature of Paumanok that no lively tradition really dies here but manages to recreate itself in another guise. In this instance the recreation may very well have taken the form of several generations of historical giants who practiced the white man's brand of medicine on the eastern half of Long Island between 1695 and 1857. Patriarchs might perhaps be more in keeping with their own tradition and a better descriptive synonym, since they had names with which to conjure the begats of *Genesis:* Zophar Platt, Isaac Ledyard, Benjamin Prime, Nathaniel Gardiner, Ebenezer Sage, Abel Huntington, and Joel Griffing, so that their generations, when calculated according to exact Biblical specifications, come to 2.37. It is doubtful whether or not these men would have considered themselves giants in their own time or whether or not their patients would have used such a heroic yardstick to measure their proportions. But then, has anyone ever considered Long Island capable of breeding giants of any kind except, perhaps, for an occasional Walt Whitman?

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* The first white men preferred the more chaste Long Island, a translation from the Iroquois Ga-Wa-Nase-Geh, to the Delawares' Paumanok, which meant The Beautiful-Island-Whose-Sides-Are-Drawn-In-Like-Breasts. Apparently one of their descendants, an amateur archeologist named Walt Whitman, felt no such compunction and extolled its lyric beauty so freely that he felt moved to exclaim, "And if Long Island were ever to secede from New York State, how mellifluous the 'State of Paumanok' would sound to these ears!"[1] As for the spit of land on which the giant footprint lay, the white men renamed it Eaton's Neck, because it juts out into Long Island Sound, and the Matinecock village, Northport.

To most Americans Long Island is a peculiar, almost comic, coagulum of Madison Avenue "bedroom" commuters, suburbanites, potato farmers, duck husbandmen, and charter-boat fishermen, adherent to a large thrombosed artery euphemistically named the Long Island Expressway. For any historical perspective, all one need do is subtract the Expressway and the "bedroom" suburbanites, substitute for the latter such absentee manor lords as Cornelius Vanderbilt and Theodore Roosevelt, and we have the Victorian-Edwardian version of the canard. Yet to the less facetious who are willing and able to remove their tongues from their cheeks for a time, Long Island appears in quite a different perspective as one of the more fascinating experiments in American sociocultural dynamics. It is a 119-mile long test tube, in effect, in which divers human reagents have mixed with each other to produce a remarkable subculture of Americana and to which the medical profession contributed its full measure of reactivity, the giants of Paumanok perhaps more than a full measure.

The most fascinating aspect of the Long Island experiment is that the island has always had two distinct personalities. At its western end it has always been dominated by Manhattan, separated as it is from that touchstone by less than a mile of tidewater creek known as the East River; its eastern half, separated from Connecticut by 20 miles of Long Island Sound, has always borne the stamp of New England. The first white settlers on the western end were the Dutch from Manhattan, a hard-nosed autocratic syndicate of Dutch West India Company entrepreneurs to whom the land was a business acquisition to shore up the fur trade that trafficked through the magnificent harbor of the then Nieuw Amsterdam. When the real estate passed into English hands in 1664 and became New York, the objective passed along with it unchanged. New York City rapidly became an international port of call and a center of colonial finance and culture; the settlements on western Long Island kept the pace under its influence, growing into villages, then towns, then cities, and auxiliaries to, and eventually parts of, the colossus on the mouth of the Hudson.

The eastern half of the island, on the other hand, was settled by farmers, millers, and fishermen from Connecticut, Rhode Island, and Massachusetts who preferred the rural life and whose progeny had until very recently succeeded in keeping this modus vivendi intact. There was, as a result, a fundamental difference in primary objective from the west islanders: The east islanders* sought not only the peace of rural living but also freedom from the puritanical bigotry of colonial New England. This breed of early islanders was therefore composed of dissidents—Quakers, Baptists, Congregationalists, Huguenots, and not a few Catholics—as for example Robert Williams, who found life in Providence too restricting, even under the jurisdiction of famous cousin Roger. They were, in fact, the authors of one of the most stirring but sadly neglected documents in American history, antedating Thomas Jefferson and the Declaration of Independence by one hundred nineteen years. When the Dutch governor Peter Stuyvesant attempted to outlaw the religious dissidents of the town of Flushing in 1657, the angered citizens answered him with what is now known as the Flushing Remonstrance, the heart of which is worth the repeating:

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* For those who insist on accurate geographical definition, and for those who are more than usually curious, the definition of eastern Long Island follows that agreed on by the English and the Dutch at the Treaty of Hartford in 1650.[4] According to the treaty, a line of demarcation was drawn from Long Island Sound just to the west of Oyster Bay, south to the Atlantic Ocean; the land west of the line was then under Dutch jurisdiction and the land east of the line under the English. It was not long before the English began honoring the treaty more in the breaking than the making, and before much longer a number of pitched battles between the two antagonists led to the surrender of all of Long Island to the west of the line by the Dutch. By this definition, eastern Long Island is obviously more than half of the island, but it does include most of the country where the giants of Paumanok enjoyed their life, liberty, and pursuit of happiness.

> Wee are bounde by the Law to doe good unto all men, especially to those of the household of Faith. . .The Law of Love, Peace and Liberty in the States extending to Jews, Turks and Egyptians, as they are considered the Sonnes of Adam. . .our desire is not to afford one of his little ones, in whatsoever Form, Name or Title hee appears in, whether Presbyterian, Independent, Baptist or Quaker, but shall be glad to see God in any of them. . . . Therefore if any of these said persons come in love unto us, we cannot in conscience lay violent hands upon them, but give them free egresse and regresse unto our Town and houses, as God shall persuade our consciences. And in this we are true subjects both of Church and State, for we are bounde by the law of God and man to doe good unto all men and evil to noe man.[2]

Consequently, although these early easterners saw witches as often as their brethren in Salem and Gloucester, there were neither trials nor autos-da-fé, and the witches simply vanished from Suffolk County. There is no record of an Indian war on the island (the only wars fought by the island tribes were with their Mohawk and Narraganset confreres from the mainland) or of a broken treaty or contract between white and Indian. True, the Indians eventually disappeared from Long Island, but they did so as a result of natural and quite undeliberate attrition from smallpox and measles, a sad but involuntary pair of gifts from the whites. And although the islanders kept slaves, the practice was so antipathetic that most of them had freed their slaves by 1700, long before the thought had occurred to many other Americans.

Perhaps the best example of the practice of island live and let live philosophy was that of Elias Hicks, a Quaker farmer of Jericho. Brother Hicks took the usual dim view of potable alcohol and the taverns that prospered along the Jericho Turnpike, a major artery to New York City after the Revolutionary War, but he refused to harass the tavern keepers à la Carry Nation. Instead he opened his house to any and all travelers free of charge; for, he said, if he could not offer them beds, he could at least provide them with Mistress Hicks's suppers and breakfasts and a floor to sleep on for the night as long as they touched no liquor. Mistress Hicks proved to be such an exemplary cook that before long Brother Hicks found his house swarming with strangers every night, sprawled on his living room floor in their clothes and boots and filling his immediate lebensraum with snoring and the malodor of bromhidrosis. He continued this practice until his death, at which point his family turned it into a capital gain by opening a liquorless inn which still survives, albeit not liquorless, as one of Long Island's finest restaurants.

It was under this imprimatur, then, that the eastern half of Long Island developed into a relatively isolated rural community of independent self-sufficient egalitarians whose most important instrument for survival was public service and who, if threatened, preferred to use the technics of law and/or civil disobedience rather than of the military or quasi-military. Thus, if the troops supplied to the Continental Army by Long Islanders during the Revolution were not very effective, the spy network they furnished General Washington while the island was occupied by the British was the most valuable he had. Benedict Arnold's plot to capture West Point is supposed to have been uncovered by Miss Sally Townsend of Oyster Bay, for whom Major John André had conceived a romantic attachment. And this, too, was the milieu that propagated the giants of Paumanok; although they lived their own version of splendid isolation away from the centers of colonial and Federal medical progress in New York and New England, they developed their own strong traditions of medical practice built largely on the Elias Hicks concept of public service.

Medicine in Long Island

This seems to have been the dominant concept from the very beginning. On the western part of Long Island, for instance, the first practicing physician was Paulus van der Beck, M.D., a Dutch university-trained surgeon on the staff of the West India Company who put in at the town of Bruijkleen in 1644 with a group of 130 men from the company's post in Curaçao; after several years of practice, however, Dr. van der Beck turned to farming because his returns from practice were not ample enough to warm the cockles of his pocket.[4] The first physician known to have practiced on eastern Long Island was Nathan Wade, an émigré from Connecticut who arrived in Southampton sometime before 1698.[5] By contrast, Dr. Wade was not a medical school graduate but had been trained by a preceptor in Connecticut and, again unlike Dr. van der Beck, not only remained in practice until his death, but also for many years served Southampton as its "publick" physician, despite the fact that both endeavors must have been, if anything, far less lucrative than what the burghers of Bruijkleen could have afforded. Unfortunately, Dr. Wade ran afoul of the town fathers in 1701 because of some question about his management of a sick woman prisoner; quoth the town council: ". . . he administered Physick, and let her Blood, and we found she was never the better, so we bade him forbear to meddle with her anymore."[6]

Insofar as medical education was concerned, the preceptor was to remain its chief instrument on eastern Long Island until 1857, when the Long Island College Hospital opened its doors, in Brooklyn, of course. On the western end of the island, however, the trend toward medical school education started early: in Europe at first, then at the University of Pennsylvania when its medical department was organized in 1750, and finally becoming the norm in 1765 when the more accessible Kings College inaugurated its medical school in neighboring Manhattan. Although the stubborn isolationism of the rural east islanders forced them to forego the advantages of collegiate medical training until an island school was available to them, the preceptorship became a hallowed institution of true Hippocratic proportions. To be a preceptor with as many students as possible was one of the high acts of public service for an island practitioner, and many a Biblical name, such as Zophar Platt and Ebenezer Sage, was elevated to patriarchal status because of this devotion to public duty. Of course, not all Long Island physicians were content with the primitive conditions of preceptor training, and the east Islanders inevitably lost a number of talented physicians and surgeons to metropolitan practice across the East River: Valentine Seaman, M.D., of North Hempstead, who was instrumental in introducing smallpox vaccination into the United States, and Valentine Mott, M.D., of Glen Cove, who became one of the great American surgeons of the early nineteenth century (ligation procedures of the innominate and common iliac arteries were among his contributions) and held several chairs of surgery in New York medical schools.

However primitive the medical science taught by the preceptors, they must have instilled their charges with a tenacious sense of responsibility toward medical practice because of one unusual form of practice that developed in response to their patients' needs. There is no better way to describe it than as a circuit rider practice, much like the circuit law courts of the Midwest and the Far West. The eastern island consisted of scattered villages with individual families dotting the land between them. On the north shore, serrated by hilly and heavily wooded inlets and on the two eastern forks which trail off into the Atlantic Ocean and abound with offshore islands, these individual families were often completely isolated, especially in the winter. It was not unusual, therefore, for a physician in a village to be called by one of these families and to spend the next week or two on horseback in response to calls from other families who had quickly learned that he was on the circuit. Since these unscheduled circuits could obviously raise hob with an office practice and hard to get supplies, several physicians began to schedule their circuits on a prearranged basis, but for some reason this organized approach never took hold as standard operating procedure for the majority.

Whether scheduled or unscheduled, however, it was a bone-weary saddle-sore man who would return from a circuit only to find, even with a preceptee covering his village practice, a huge backlog of office calls and house calls accumulated in his absence. It was also a bone-weary horse who returned with the man; few families on the circuit were likely to own any hard currency and usually too proud to beg credit, and they paid the physician's fee in barter and in the transaction often provided him with a substantial volume of freight on board. In exchange for a bill of

£ 9.00, as an historical example, poor Henry White, and horse, of colonial Southampton, once had to transport a consignment of seaweed, apples, flax, wood, pears, timothy seed, beans, clams, fish, eels, pigs, watermelons, and geese around his circuit until he reached home.[7]

The high requisites of public service went considerably beyond those of practice itself, and one of the standards the early generations of Paumanok physicians felt most honor-bound to maintain was the integrity of their profession against the incursions of lay cultists. There were, of course, more mundane aspects to this ongoing battle, but in a region where no medical school existed to function as a semiofficial licensing body, the battle was more difficult and onerous than usual, especially when lay cultism had congealed into an accepted social custom. It began with the very first settlers when, in the absence of physicians, clergymen took to fulfilling the physical as well as the spiritual needs of their flocks. In fact the first colleges established in New England—Harvard, Yale, Dartmouth, and Brown—recognized the need and included a smattering of medicine in the curriculums of their divinity schools. But when this practice failed to take up the slack, the colonial courts resorted to qualifying among others tanners, farmers, and blacksmiths, because, since they dealt with animals in one way or another, they were presumably familiar with the ways of the human animal and his diseases. So it was that one James Wood, a farmer of Huntington, was granted permission by a court of assizes in 1677 to practice medicine and surgery on the grounds that he had already "executed divers considerable Cures in Chirurgery."[4]

By far the most difficult to combat were the Indian herb doctors, attenuated versions of the tribal medicine men, who, when they discovered that the white man was more amenable to their traditional magic medicine when herbs were added to the procedure, began to travel from village to village hawking their cures. That the early settlers were greatly impressed by the combined prowess of Indian and herb is attested to by a Daniel Denton when he wrote in 1690: "...did we know the vertue of all those Plants and Herbs growing there (which Time may more discover) many are of opinion, and the Natives do affirm, that there is no disease common to the Country, but may be cured without Materials from other Nations."[8] Indeed, a Shinnecock Indian "yarb" doctor named Levi Phillips ("Doctor Levi"), his bag stuffed with raw Indian galenicals, was still plying his trade in 1905 between Stony Brook and Sag Harbor and being received with open if furtive arms. And Dr. Levi seemed to have had more than just galenicals in his bag; he was known to have "untricked" more than one pair of new shoes by some secret shamanist ritual to spare their owners the vicissitudes of untrained cowhide.

As would be expected, east Island housewives were avid disciples of the "yarb" doctor, and the more sagacious of them planted herb gardens of their own to assure an ample supply of the basic pharmacopoeia in the event the Indian herbalist failed to materialize on his appointed rounds. These included such staples as catnip for "nerves," Indian posy for spring tonics, boneset for fevers, and skunk cabbage for rheumatism. There were often sharp clinical pharmacologic debates between housewife and medical doctor over the relative merits of the various "yarb" teas and the doctor's own paregoric, castor oil, spirits of niter, and rhubarb, which he was forced to buy from an apothecary in New York because there was no qualified apothecary east of Hell Gate until many years after the Revolution.

Many physicians, recognizing some merit in these home brews, took to growing their own herb gardens and instructing their wives in the arts of decoction and infusion.

Because of all these disturbing inroads on medical practice, the physicians brought pressure on the provincial legislature to restrict the unprofessional practice of medicine, and an act was passed in 1760 prescribing all sorts of retribution for those who practiced any form of medicine without having passed the proper scrutiny by the local judiciary. The act, however, failed to delegate police powers and went largely unheeded until 1806 when a group of east island physicians decided to exert their citizens' rights in implementing the law by organizing the Suffolk County Medical Society (a minor historical irony, since the more sophisticated physicians of Brooklyn did not form their Kings County Medical Society until 1822). The Society performed its police duties so well and with such high purpose, often with the aid of such determined persuaders as pitchfork and hoe, that the (now) State legislature was content to point up the Suffolk County arrangement as a model for all other counties in the State. It was not until many years later that it took any definitive legislative action, and then only when the medical schools in the State convinced the politicos that the Albany government needed to take a proper hand.

Military duties

From all indications it seems that these east island physicians held their citizens' rights in highest regard, and it is in this purview that the giants of Paumanok disclosed their true stature. To recount this may be something of a humdrum exercise in conventional historiography, to be sure; nevertheless it does add the last few important feet to their stature. The recital might perhaps begin with their service as citizen soldiers in the French and Indian War, but there is nothing to recount at this juncture except to say that a good number of them left their practices and their perennial troubles with Indian herbalists and farmer chirurgeons for more acute emergencies with the Colonial forces. Among them was Gilbert Potter, a regimental surgeon with the famed Royal Americans, who apparently showed himself to be so adept at military medicine that at the outbreak of the Revolutionary War he was mustered in as a colonel with Gen. Nathaniel Woodhull's division of Long Island militia.[7] Here again he performed more proficiently as a military surgeon in the Battle of Long Island than did General Woodhull, a professional soldier, as a military tactician. Woodhull's orders were to cover Washington's retreat from Brooklyn by distracting the British at Jamaica, but swift-moving events contrived to confuse the General, and he allowed himself to be outflanked, surrounded, and captured by the seventeenth British Dragoons. Col. Potter escaped the encirclement with a small detachment of militia and lived to harass the British during their occupation of the island for the duration of the war as part of Washington's spy network, while General Woodhull died several months later aboard a British prison ship in New York harbor.

This spy network, composed almost entirely of Long Island civilians, contained some of the most unsung heroes of the Revolution and included a good many east island physicians.[9] Their primary objective was to supply Washington with intelligence about British happenings in New York City, but their most effective work culminated in a continual harassment of the chain of forts the British had built along the North Shore and the eastern forks. The harassers were island whaleboatmen and militiamen stationed in Connecticut who, provided with the proper intelligence at the most opportune times, raided these forts and often discommoded them quite seriously.

There is some word-of-mouth suspicion among today's amateur historians in the Huntington-Smithtown area, with a rough population density of 5 to the square mile, that the destruction of Fort St. George, near Mastic, and Fort Salonga, near Smithtown, were due in large part to the work of Dr. Potter.

Even more noteworthy was the feat of Nathaniel Gardiner of Southampton, at the time a surgeon with a New York regiment on active duty with the Continental Army on the mainland. Dr. Gardiner managed somehow to return home on leave in mufti during the spring of 1777 only to find his house the headquarters of Maj. John André, of later Benedict Arnold infamy. Despite André's expert professional surveillance, Gardiner succeeded in getting information to the rebel raiders in Connecticut on the disposition of the British garrison at Sag Harbor, and in good time a detachment of militia under Lt. Col. Jonathan Meigs unleashed a midnight attack on the fort.

The raiders left 12 British ships and frigates burning in the harbor in that engagement and made off with considerable ordinance and a good number of redcoat prisoners.[7] Dr. Gardiner terminated his leave after this excellent piece of undercover work and was eminently successful in slipping away unharmed to rejoin his regiment.

Physicians in politics

Unlike the Revolution, during which the occupying British proved to be a most destructive force, the War of 1812 failed to stir either the islanders or their physicians to great deeds of derring-do. But what did develop between the wars was a remarkable inclination of the part of east island physicians for politics and a high order of nonmedical civil service to their neighbors and patients. They had always participated actively in the local affairs of their villages, but when the colonies became the United States of America, their ambitions suddenly expanded to include the State, the nation, and, in some instances, the world. Samuel L. Mitchell, M.D., of Hempstead, for example, sat in the New York State senate from 1797 to 1813 and was highly instrumental in pushing the enabling bill for the Erie Canal through the upper House, a feat of political dexterity that opened the Midwest to people and commerce, made New York City a port of international importance, and accelerated the United States toward what John Quincy Adams was to trumpet as its manifest destiny in world affairs. He also executed a geologic survey of the Hudson River, helped Robert Fulton bring the *Clermont* to reality, presided over the first American pharmacopoeial convention, and taught chemistry and natural history at Columbia College.

Two east island physicians were elected to Congress at critical points in the nation's history. Ebenezer Sage, served in the House of Representatives between 1809 and 1817, a period that encompassed James Madison's two administrations and the pangs of international crisis that preceded, fought, and followed the War of 1812. His student, Abel Huntington, served in the House between 1833 and 1837, Andrew Jackson's second term, during which the Presidency as well as the entire Federal government were immeasurably strengthened and the lines irrevocably drawn for the Civil War. Another of Dr. Sage's preceptees, Benjamin F. Thompson[10] of Setauket, became so enamored of politics after having served several terms in the State assembly that he abdicated from medical practice to study law and thereafter served as an unofficial peripatetic advisor to any elected official who would listen. Among those who did listen were Presidents Jackson and Van Buren, but although they seemed to have lent their ears to whatever pearls Dr. Thompson had to offer about the Bank of the United States and the panic of 1837, respectively, whether or not they hearkened to what they heard has not yet been disclosed by history.[10] Dr. Thompson's greatest fame, however, was reserved for his three-volume history of Long Island which saw its first edition in 1839 and its last, the third, in 1962, and has since become the classic source for all island historians. If then his home in Setauket, now honored as an official historical "place" by the State of New York, memorializes anything, it is his talent as a historiographer and a man of public affairs.

Conclusion

To close the generations of giants with Dr. Thompson's death in 1840 would break the chain of history with another artifact, but to continue on from here would only belabor a point with a potpourri of details that would add many words and little light. In actuality, history itself appeared to sever the chain not too many years later when the opening of the Long Island College Hospital in 1857 ended the tradition of preceptorship that had been one of the hallmarks of the giants. But several other events also contributed to the break at that time. One of them was the demise of the whaling trade, an industry that had not only freshened island coffers but had given life on the island an adventurous challenge for many of its young men. When, as an unfortunate coincidence, the California gold rush of 1848 instigated the national Drang nach Westen, the challenge from across the continent did not fail to drain the island of these thwarted young bloods. Finally, whatever young blood turned a deaf ear to the call of the West was drained out by the Civil War. It was almost inevitable under such circumstances that the generations of giants should have been brought to an end by a hemorrhagic anemia of the only substrate capable of continuing them.

In point of fact, the entire island became no more than a backwash of American culture at this interlude in history and remained so until the opening of the twentieth century when the Spanish-American War with Teddy Roosevelt in its wake propelled the United States into international power politics. New York City could not help but respond in its usual energetic way to this propulsion by magnifying its influence as the focal point of international trade and finance, whereupon Long Island also began to feel the shock wave. Homesteaders began pouring across the East River in a quest for green acres that would give them respite from the contrecoups of the big city, thus opening the era of the bedroom commuter but also adding vital new reagents to the old sociocultural test tube. The years since World War II have seen these reactions build to higher and higher levels of what the social scientists like to call intellectual ferment. There is much to be said for the aptness of the term except that it fails to include other ferments which may not be so edifying. Certainly, the early sessions of the United Nations at Lake Success contributed ingredients to the ferment the likes of which had not been seen since the halcyon days of the whaling trade, and some of them are still domiciled in the Soviet mission to the United Nations near Glen Cove. As additives, the electronic and aerospace industries have some of their most important research facilities on the island, and the explosion in higher education has deposited thousands of students and faculty along its length and breadth.

Lest this sound like the exhortations of a self-appointed chamber of commerce, however, it should be stated that there have been no signs throughout these years that a new generation of Paumanok giants has become operational, or, at least, none that an amateur medical historian can honestly detect. Yet there are a few signs that one may very well be in the making. The mushrooming of universities and colleges throughout the island may provide the substrate from which the new medical center at the State University at Stony Brook, with the aid of such existing institutions as the Brookhaven National Laboratory, may conceivably breed this new generation. It may be radically different in outlook and style from the old giants of Paumanok, but its stature should certainly be as towering.

As for the chain of history, the medical center at Stony Brook is but another example of its remarkable capacity to reconstitute its diaphanous self. For Stony Brook is not far from that place on Eaton's Neck where the original giants of Paumanok of Indian legend were supposed to have made their prehistoric big medicine. Q.E.D.?

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BILLSBORD

Chaff From the Bedside Table of an Insomniac. X

Of the year 'sixty-seven now's the time to take stock:
The New York State lottery was the year's greatest flop,
The outstanding thief was the Cardinals' Lou Brock,
While President Johnson became the proudest Grandpop.
But tell me—
Can that kid ever thrive minus Benjamin Spock!

The press is full of the exciting news of successful heart transplants; now if they would find a way to transplant guts . . . .

Is it true, I wonder, that those restaurants featuring "topless" waitresses no longer serve breast of Guinea hen under glass.

Once upon a time, in those parlous days before the University discovered that Research was the magic word to unlock the Federal treasury free of any restrictive conditions and without corporation responsibility, the major problem faced by the research man was financing. Lack of interest and limitation of available funds made competition inevitable, and this served as a sort of "weeding out" process which discouraged the timid, routed the dilettante, and destroyed initiative; and so it was that many a worthwhile project died of economic malnutrition.

Then, suddenly, the Federal government decided to assume responsibility for subsidizing acceptable research investigations, and so, seeding the financial heavens with government largesse, they produced a seemingly never-ending torrent of dollars. Just as suddenly, university administrators discovered they had a vital interest in and a responsibility for the implantation and cultivation of research programs in their laboratories and on their campuses. Like Cinderella, the research worker, once forgotten and starved, frequently an outcast in the intellectual world where he sought acceptance and aid, now became the pampered darling of the cap and gown jungle.

As a result of this turnabout, the problem today in research is no longer financial but the finding of new projects to investigate. Therefore, it seems to me, it devolves on those of us interested in the well-being and reputations of our academic enclaves to contribute any idea we might have that would provide a fertile field for study and evaluation by a qualified research team.

Accordingly, as my contribution, I offer, freely and without reservation, the following suggestion as an interesting avenue of exploration on man's behavior.

A study of the psychological motivation behind the seemingly spontaneous but actually compulsive behavior pattern characterized by disorganized arm gyrations whenever a television camera is pointed toward a human group.

While it is true that in any given group, the arm reactors to the camera vary as to number and enthusiasm, it is also true that there is not a single group devoid of such a type of response. Even when such a mature, cultured, and sophisticated group as the cheering section of Harvard University was exposed to the probing camera eye, one could detect a few furtive but definitive arm wavings.

The problem requiring elucidation is—Why? Perhaps it is a carry-over from infancy when an exhibitionistic parent trained a defenseless child to wave "bye-bye"; perhaps it is an atavistic throwback to an aboriginal desire to placate an unknown and possibly hostile force by the age-old symbol of peaceful surrender. Perhaps this and perhaps that; all I know is that all those people waving can't be relatives of the cameraman.

* * *

One can easily understand how an intelligent or religious person might become convinced of the futility and innate evil of war and can only admire the individual who, as a result of such conclusions, declares himself a conscientious objector and refuses to participate in any armed conflict; but it is difficult to understand how an individual can be selective, choosing to serve in the war he approves, yet claiming the status of a conscientious objector when the conflict does not meet with his approval. It is as though someone convinced of the inviolacy of the marriage contract declared flatly that divorce is never justified regardless of circumstances except, of course, in his own marital situation.

The first represents adherence to fundamental belief and principle whatever the consequences, the second a hypocritical assumption of an attitude to solve a personal and temporary dilemma.

* * *

Once there was a time, remember—

When a heavyweight prize fight usually ended in a knockout.
When a beard was a symbol of maturity.
When clergymen were concerned about men's souls.

When a major league outfielder was expected to (and did) hit .300 or better.

When you could usually find a nurse at a patient's bedside.

When the symbol of adulthood was the acquisition of a pair of long pants.

When you could take a stroll in the park any evening.

When a turtle-neck sweater was something a boxer wore when doing his early morning road work.

Announcement of the casualty figures for the deer herd in New York State for the year 1967 was received with mixed reactions. The conservation department citing the figure of 78,481 deer killed stated it demonstrated the effectiveness "of New York's deer management program particularly the party permit system." The publication of the figure evoked a response from a group of university professors and students, all members of The Association for the Development of a Program for Peaceful Coexistence with the Denizens of Our Forests. In a signed newspaper advertisement they questioned the reliability of the published figure, stating it was a gross exaggeration which stretched the credibility gap to an even greater extent. They particularly deplored the party permit system which they stated resulted in mass slaughter of defenseless, antlerless deer contrary to all accepted practices of the sport of hunting and caused almost universal condemnation by other governments throughout the world. The statement ended with a plea asking the conservation department to abandon its management program and leave the future of the deer herd to itself and its natural environment.

The accuracy of the figure was also questioned by a prominent member of the legislature, a member of the majority party long known for his public disagreement with the conservation program. He indicated that in a recent press conference the commissioner had admitted the figure was based in part on reports of both hunters and hunting guides which made the total figure suspect and a little bit ridiculous, in view of the many published incidents of deer attacking automobiles on our public highways.

WRC

Population growth

Paced by the western states, the population of the United States is expected to continue to grow in the years ahead, but at a slower rate of increase than in the recent past. The Metropolitan Life Insurance Company estimates that our resident population will rise by 15 per cent between 1965 and 1975, whereas in the two decades after the end of World War II, the relative growth was 23.7 and 17.4 per cent, respectively. Despite the lessened rate of growth, our population between 1965 and 1975 will increase by 29,000,000, reaching 222,800,000.

In the future, as in the past, population growth will not be distributed uniformly throughout the country. Indications are that the number of persons in the Pacific states will increase by a fourth between 1965 and 1975, or at $^2/_3$ times the rate for the nation as a whole. California alone is expected to add 5,400,000 inhabitants during this period. With an anticipated population of 23,800,000 in 1975, California, our most populous state, will outrank New York by 3,300,000.

The mountain states will also grow rapidly, increasing by more than a fifth. The gain is expected to be especially pronounced in Nevada and Arizona. Utah and New Mexico will also increase by one fifth. Outside the West, only four states, Delaware, Maryland, Alaska, and Florida, are expected to experience gains of such magnitude. Florida's population will most likely increase by almost a third, from about 5,800,000 in 1965 to 7,590,000 in 1975. On the other hand, during the period under review, only in West Virginia is the population expected to decline.

Of special interest is the outlook for the population eighteen to forty-four years of age, the period in life when productivity and family responsibilities rise to a maximum. This group will grow at a rapid rate in every area of the country, the increase varying from 16.2 in the Middle Atlantic area to 31.7 in the Pacific sector. For the country as a whole, the number in this age category may expand by 14,240,000, which is half the anticipated growth for persons of all ages.

The outlook is different for the population at ages forty-five to sixty-four. Decreases of as much as 1.7 per cent may occur in North Dakota, South Dakota, Iowa, Nebraska, West Virginia, and Washington, D.C. In the country as a whole, this group will increase by only 11 per cent, to about 43,440,000 in 1975. The number of persons at ages sixty-five and over is expected to grow substantially in the future, increasing by a sixth to about 21,160,000 in 1975, when these elders will represent some 9.5 per cent of the resident population.

Necrology

Georges Bean, M.D., of Garden City, died on March 7 at the age of fifty-nine. Dr. Bean received his medical degree from the University of Geneva in 1933. He was an assistant director of anesthesiology at South Nassau Communities Hospital, an associate attending anesthesiologist at Bronx Municipal Hospital Center, and an assistant clinical professor of anesthesiology at Albert Einstein College of Medicine. Dr. Bean was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Anesthesiologists, Inc., the Nassau Academy of Medicine, the New York Academy of Medicine, the New York State Society of Anesthesiologists, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Sidney William Bisgrove, M.D., of Woodgate, retired, died on January 24 at the age of seventy-seven. Dr. Bisgrove graduated in 1917 from Albany Medical College. He was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the American Psychiatric Association, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Nandor Bokor, M.D., of Far Rockaway, died on February 18 at the age of fifty-six. Dr. Bokor received his medical degree from the University of Vienna in 1938. He was an associate attending physician at St. Joseph's (Far Rockaway) Hospital. Dr. Bokor was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Sanger Brown, 2nd, M.D., of Cold Spring, died on March 19 at the age of eighty-three. Dr. Sanger graduated in 1907 from Columbia University College of Physicians and Surgeons.

Philip Graeme Cabaud, M.D., of Smithtown, died on March 21 at the age of fifty-six. Dr. Cabaud graduated in 1938 from New York University School of Medicine. He was a consulting pathologist at the John T. Mather Memorial Hospital. Dr. Cabaud was a Diplomate of the American Board of Pathology (Pathologic Anatomy and Clinical Pathology), a Fellow of the American College of Pathologists, a Fellow of the American College of Physicians, and a member of the American Society of Clinical Pathologists, the International Academy of Pathology, the New York State Society of Pathologists, the New York Pathological Society, the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph Arvine Coleman, M.D., of New York City, died on March 19 at the age of fifty-nine. Dr. Coleman graduated in 1935 from the University of Arkansas School of Medicine. He was a Diplomate of the American Board of Otolaryngology, a Fellow of the American College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology.

Solomon Cooper, M.D., of Huntington, died on February 22 at the age of seventy-four. Dr. Cooper graduated in 1925 from Boston University School of Medicine. Retired in 1953, he was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Robert Roy Eckert, M.D., of Cooks Falls, died on February 29 at the age of seventy. Dr. Eckert graduated in 1924 from the University of Michigan Medical School. Retired, he was a Fellow of the American College of Surgeons.

Victor Frederickson, M.D., of New York City, died on March 12 at the age of eighty-nine. Dr. Fredrickson graduated in 1902 from University and Bellevue Hospital Medical College. Retired since 1964, he was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

James Herbert Humphries, M.D., of New York City, died on March 12 at the age of sixty-seven. Dr. Humphries graduated in 1927 from Western Ontario Faculty of Medicine, University of London. He was a member of the Association of Life Insurance Medical Directors of America, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Sherman Roosevelt Jacobs, M.D., of Oneonta, died on February 24 at the age of sixty-two. Dr. Jacobs graduated in 1933 from the University of Rochester School of Medicine and Dentistry. He was an attending surgeon at the Aurelia Osborn Fox Memorial Hospital. Dr.

Jacobs was a member of the Otsego County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ellis Kellert, M.D., of Schenectady, died on March 1 at the age of eighty-one. Dr. Kellert graduated in 1909 from Albany Medical College. He had been a consulting pathologist at Ellis Hospital, an attending pathologist and consulting pathologist at Bellevue Maternity Hospital, and an honorary pathologist at Eastern New York Orthopedic Hospital-School. Dr. Kellert was a Diplomate of the American Board of Pathology (Clinical Pathology and Pathologic Anatomy), a Fellow of the American College of Pathologists, and a member of the American Association for Cancer Research, the American Association of Pathologists and Bacteriologists, the American Public Health Association, the New York State Society of Pathologists, the Schenectady County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert Frederick Koop, M.D., of Peekskill, died on March 17 at the age of sixty-three. Dr. Koop graduated in 1930 from Columbia University College of Physicians and Surgeons. He was an attending surgeon and director of surgery at Peekskill Hospital. Dr. Koop was a Fellow of the American College of Surgeons and a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Lillian Sarason Lusskin, M.D., of New York City, died on March 9 at the age of seventy-four. Dr. Lusskin graduated in 1918 from Tufts University School of Medicine. She was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Loren Berton Manchester, M.D., of Batavia, died on February 5 at the age of eighty. Dr. Manchester graduated in 1913 from the University of Buffalo School of Medicine. He was an attending physician in general practice at Genesee Memorial and St. Jerome Hospitals. Dr. Manchester was a member of the Genesee County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert Arthur O'Connor, M.D., died on March 13 at the age of fifty-two. Dr. O'Connor graduated in 1943 from New York Medical College. He was an attending physician at St. Clare's Hospital, an associate attending physician at Flower and Fifth Avenue Hospitals, an attending cardiologist at St. Barnabas Hospital for Chronic Diseases, and associate dean of New York Medical College. Dr. O'Connor was a Fellow of the American College of Angiology, a Fellow of the American College of Chest Physicians, and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William J. Orr, M.D., of Buffalo, retired, died on February 14 at the age of seventy. Dr. Orr graduated in 1920 from the University of Buffalo School of Medicine. He had been an attending pediatrician at Children's Hospital, a consulting pediatrician at Mercy Hospital, and a former clinical professor of pediatrics at the University of Buffalo School of Medicine. Dr. Orr was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis Elkan Schaefer, M.D., of New York City, died on March 9 at the age of forty-six. Dr. Schaefer graduated in 1945 from Columbia University College of Physicians and Surgeons. He was an assistant attending physician in metabolic diseases at The Mount Sinai Hospital. Dr. Schaefer was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, a Fellow of the American College of Cardiology, and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Philip Winfield Smith, M.D., of Syracuse, died on February 6 at the age of sixty-seven. Dr. Smith graduated in 1926 from the Syracuse University College of Medicine. He was a member of the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Medical Schools

Cornell University Medical College

New division inaugurated. The inauguration of a new Division of Medical Systems and Computer Science in the Department of Medicine was announced recently. Ralph L. Engle, Jr., M.D., associate professor of medicine, is the director. The Division represents an academic wing of systems and computer activities for the College and its related institutions and will be concerned with the teaching of the principles of medical systems and computers together with certain aspects of operations research as they apply to medicine. Instruction in these areas will be available to doctors, nurses, students, and paramedical personnel.

It is hoped that the new Division will complement related activities in other departments and divisions of the medical community and serve as an integrating center for systems and computer activities in all fields of medicine. Dr. Engle, also director of the Cornell Medical Community Computer Projects since its initiation in the spring of 1967, has been working in close cooperation with IBM. The Project is designed primarily as the service wing for medical systems and computer applications.

Gold medal recipient. John M. McLean, M.D., professor of clinical surgery (ophthalmology) received the Pan American Gold Medal on March 24. Awarded once every four years by the National Society for the Prevention of Blindness, Dr. McLean was cited for "the most outstanding services by an individual in the Western Hemisphere to the promotion of eye health and the prevention of blindness."

Downstate Medical Center

New appointments and promotions. Recent appointments announced were: Ronald F. Rieder, M.D., Denis A. Bloomfield, M.D., B.S., and Raymond Damadian, M.D., assistant professors of medicine; Nabeeh Mourad, Ph.D., clinical assistant professor of pathology; Eddy C. K. Tong, M.D., clinical assistant professor of radiology; Leon M. Protass, M.D., clinical assistant professor of neurology; and Dr. Harold R. Vandenburgh, associate professor of medical computer science (College of Health Related Professions). Promoted were: Henri Begleiter, Ph.D., assistant professor of psychiatry; and Leon N. Goldenberg, M.D., Hyman Merenstein, M.D., and Milton Ressel, M.D., to clinical associate professors of pediatrics.

Faculty notes. Stanley M. Aronson, M.D., professor of pathology and assistant dean of the College, has been elected to the editorial board of the *Journal of Neuropathology and Experimental Neurology*. Duncan W. Clark, M.D., professor and chairman of environmental medicine and community health, has been appointed to the executive committee of the Committee on Social Policy and Health Care of the New York Academy of Medicine. Patrick J. Fitzgerald, M.D., professor and chairman, Department of Pathology, has been awarded one of four State University of New York Distinguished Research Fellowships. Dr. Fitzgerald's project is "Repression and Derepression in Pancreas Organ Culture," and will be carried out during a year's sabbatical spent working in the laboratory of Professor Pierre Desnuelle of the Institut de Chemie Biologique, Faculté des Sciences, Marseille, France. Harold A. Lyons, M.D., professor of medicine, has been elected a member of the Medical Research Society of England. Charles M. Plotz, M.D., professor of medicine and director of continuing education, has been appointed to the Public Education Committee of the Arthritis Foundation.

Grants. A total of $333,579 was received during January, 1968, for 14 research grants which provided for the renewal of eight studies already in progress, four supplements, and two new projects.

Lectures. The annual Sigma Xi lecture was presented by Solomon A. Berson, M.D., professor and chairman, Department of Medicine, Mount Sinai School of Medicine (City University of New York) on February 19. Dr. Berson discussed "Hormonal Antigens and Radio-Immunoassay of Peptide Hormones in Plasma." On April 29, William H. Boyce, M.D., professor and chief, Section of Urology, Bowman Gray School of Medicine, Wake Forest College, delivered the annual Jean Redman Oliver Lecture. Dr. Boyce spoke on "Nephrocalcinosis in the Primate."

Visiting associate professor. Robert Collin, M.D., Lecturer in Physiology, University of Western Australia, has been appointed visiting associate professor of physiology for a one-year period. Dr. Collin will work on a research project with Drs. Kiyomi Koizuomi and Albert I. Kaufman to study the fine nerve fibers of the kidney which is expected to give additional insight into the function of the nervous system.

New York University School of Medicine

Professor named. Alfred L. Florman, M.D., was named professor of pediatrics (full time), to become effective July 1. Since 1963 he has held a teaching appointment at the School as well as served as director of pediatrics at the North Shore Hospital since its founding in 1952. In his new appointment, Dr. Florman will be responsible for the house staff and postgraduate training programs of the School's Department of Pediatrics.

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A patient of advancing years may appear to "have everything," but may well be in need—*medically*. You know the symptoms. She's tired most of the time. Though there's nothing wrong with her organically, she suffers from general malaise. Lassitude has become her way of life...vague aches and pains her major concern.

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Medical News

Positions open in N.Y.C. police, fire, and sanitation departments

Part-time positions are open for Police Department surgeons and medical officers in the Departments of Fire and Sanitation of the City of New York. The salary range is from $11,436 to $14,136 with liberal pension, vacation, sick leave, and health insurance benefits.

Minimum requirements for applicants are a New York State license to practice medicine, completion of an approved internship and residency in medicine or surgery, plus five years of appropriate experience in the practice of medicine or surgery. Two years of this experience must have been on the inpatient visiting service of an approved hospital. The position is open to men only. For Police Department surgeons, applicants must live in either New York City, Nassau, Rockland, Suffolk, or Westchester counties.

Applications may be obtained by writing or calling: director of recruitment, New York City Department of Personnel, 220 Church Street, New York, New York 10013. The telephone number is 212-566-8700.

Health Department expedites applications for working papers

It is easier for teen-agers attending school to get working papers for summer jobs this year. A new ruling, jointly approved by the New York City Department of Health, the New York City Board of Education, the New York State Department of Labor, and the anti-poverty agencies, now enables youngsters between the ages of fourteen and eighteen to take their physical examinations any time during the school term instead of waiting until they have a definite job.

These medical examinations are given by doctors in the Health Department's school health services, and in those schools without health service, these examinations will be given in the working-paper clinics. Those youngsters who pass the physical examination and have jobs receive their working papers immediately. For those who do not have jobs, the procedure is completed only after the student gets a job or has registered with an anti-poverty agency.

Glorney-Raisbeck fellowship offered

The Glorney-Raisbeck Fellowship in the Medical Sciences for the academic year beginning July 1, 1969, will be awarded by the Committee on Medical Education of The New York Academy of Medicine for one year of research and/or study, in the United States or abroad, in any field of medicine or its allied sciences.

The Fellowship, which carries a stipend of $7,500, is open only to citizens of the United States who hold their M.D. degrees and preferably to those who have just completed or are in the last year of their residencies at the time of application and who are located in the New York Metropolitan area. Applicants must have demonstrated potential for productivity in research and teaching.

An applicant should be prepared to give assurance that he will have an institutional appointment which will enable him to carry out the objectives of his program of research and/or study. Such institutions will be encouraged to supplement the Fellowship stipend. The Fellowship is not available for supplementation of residency salaries.

The deadline for receipt of applications is November 1, and applicants will be required to appear before the Awards Committee for a personal interview in December. Announcement of the award will be made in late December.

For information and application forms contact: Office of Medical Education, The New York Academy of Medicine, 2 East 103rd Street, New York, New York 10029.

Air pollution and respiratory disease topic of study

A study of the relationship between air pollution and respiratory disease in school-age children is being conducted by the Department of Preventive Medicine of the State University of New York at Buffalo. This study is being financed by a $147,908 grant by the New York State Health Department.

The first school to be selected for this project is School 54 in Buffalo. Participation in this study will be on a voluntary basis. Other schools will be added in the fall so that data for a representative portion of the childhood population can be accumulated.

Personalities

Elected. Milton Helpern, M.D., Chief Medical Examiner of New York City, as president, and Leslie Lukash, M.D., Medical Examiner of Nassau County, as secretary-treasurer, of the National Association of Medical Examiners.

Awarded. To Irvin J. Cohen, M.D., executive vice-president of Maimonides Medical Center, the Brooklyn Hall of Fame Award in the science category for 1967-1968.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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Reserve now for the Scientific Awards Dinner in honor of the Scientific Award Winners—Wednesday, June 19, 1968. Since space is limited, we suggest you make your reservations before June 3, 1968. Tickets are $10.00 each, payable in advance.

The complete scientific program, plus forms for advance registration and hotel accommodations, will be featured in JAMA, May 6, 1968.

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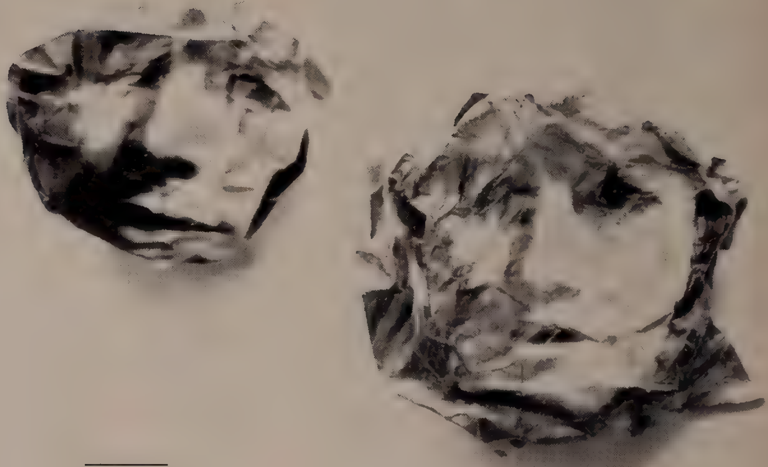

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CONTRAINDICATIONS: Glaucoma, urethral or ureteral spasm, recent myocardial infarction, severe coronary heart disease, epilepsy. Should not be given within two weeks of treatment with a monoamine oxidase inhibitor.

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ADVERSE EFFECTS: The following side effects have been encountered: dry mouth, constipation, dizziness, palpitation, delayed urination, agitation and stimulation ("jumpiness," "nervousness," "anxiety," "insomnia"), bad taste, sensory illusion, tinnitus, sweating, drowsiness, headache, hypotension (orthostatic), flushing, nausea, cramps, weakness, blurred vision and mydriasis, rash, tremor, allergy (general), altered liver function, ataxia and extrapyramidal signs, agranulocytosis.

Additional side effects more recently reported include: seizures, eosinophilia, confusional states with hallucinations, purpura, photosensitivity, galactorrhea, gynecomastia, and impotence. Side effects which could occur (analogy to related drugs) include weight gain, heartburn, anorexia, and hand and arm paresthesias.

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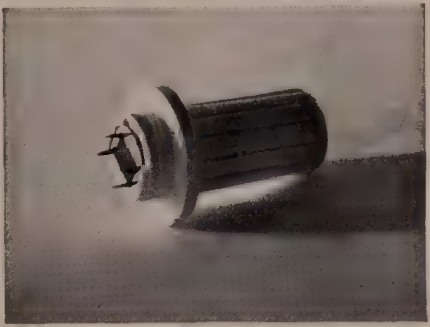

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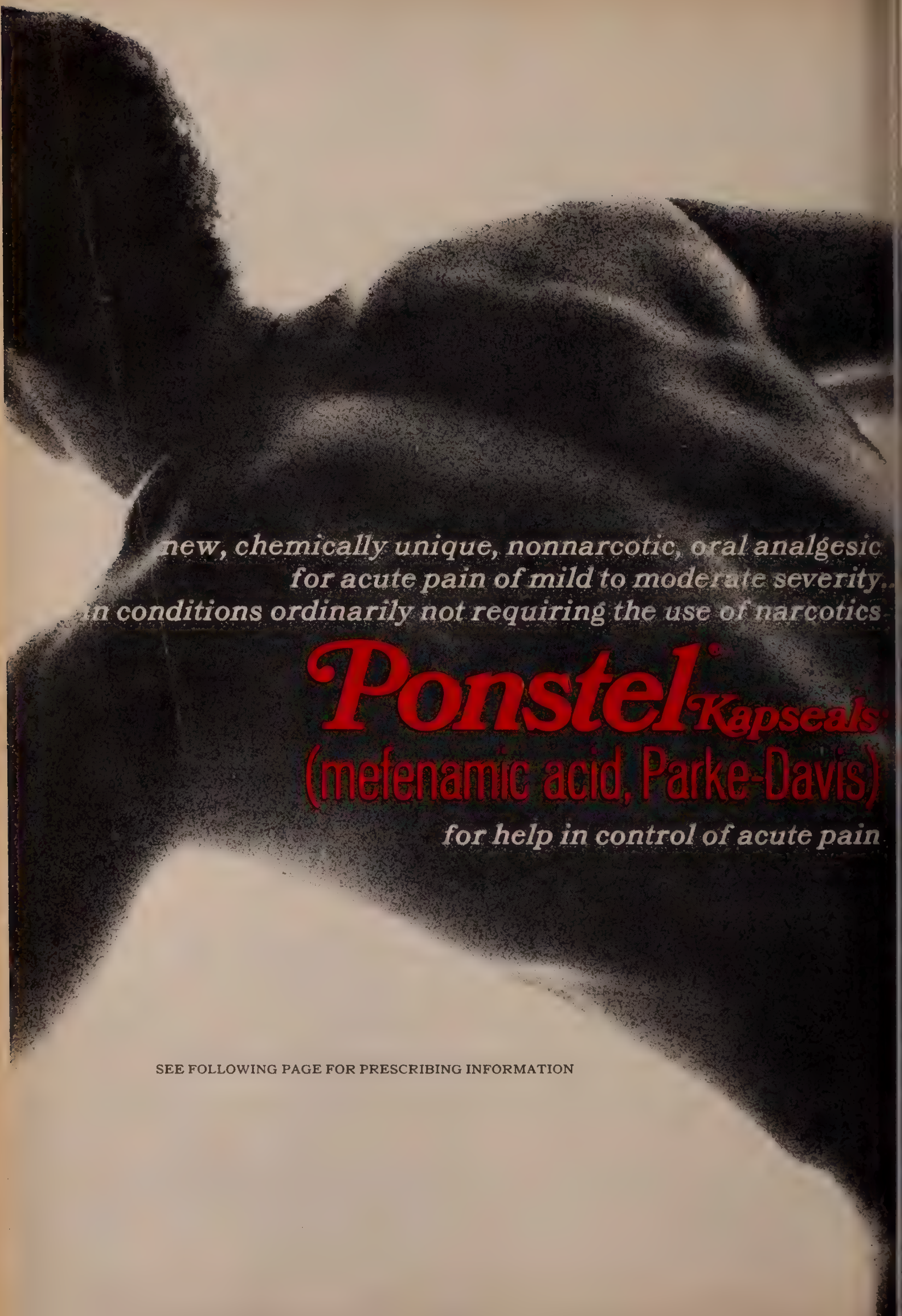

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When somatic symptoms persist despite negative objective findings, you may suspect a psychogenic cause. As a useful measure, consider adjunctive Valium (diazepam). It helps relieve the psychic tension that often finds its outlet in somatic symptoms. In some patients it's the heart. In others, the troublesome symptoms may be gastrointestinal, genitourinary, respiratory, dermatologic or musculoskeletal.

cardiac symptoms...often the somatic voice of psychic tension

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in: skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders; athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

Contraindications: Known hypersensitivity to drug; children under 6 months of age; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in treatment of psychotic patients, and should not be employed in lieu of appropriate treatment. As with most CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may also be associated with temporary increase in frequency and/or severity of seizures. Advise patients against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance. Keep addiction-prone individuals (such as drug addicts or alcoholics) under careful surveillance because of their predisposition to habituation and dependence. Use of any drug in pregnancy, lactation or in women of childbearing age requires that potential benefit be weighed against possible hazard.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium, such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants. Employ usual precautions in the severely depressed or in those with latent depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed or tolerated).

Adverse Reactions: Side effects most commonly reported: drowsiness, fatigue and ataxia. Infrequently encountered: confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo and blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, use of the drug should be discontinued. Because of isolated reports of neutropenia and jaundice, periodic blood counts and liver function tests are advisable during long-term therapy. Minor changes in EEG patterns (low-voltage fast activity) observed during and after therapy and are of no known significance.

Dosage: Individualize for maximum beneficial effect. *Adults:* Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See **Precautions.**) *Children:* 1 to 2 ½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

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Indications: Tofrānil is recommended for the treatment of depressive states of diverse psychopathology.

Contraindications: The concomitant use of Tofrānil and monoamine oxidase inhibiting (M.A.O.I.) compounds is contraindicated. Hyperpyretic crises or severe convulsive seizures may occur. Potentiation of adverse effects can be serious or even fatal. An interval of at least 7 days after M.A.O.I. therapy has been discontinued should be allowed before Tofrānil may be substituted. Initial Tofrānil dosage should be low, increases should be gradual, and the patient's progress should be carefully observed.

Warning: Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician, the potential benefits outweigh the possible risks, Tofrānil should not be used during the first trimester of pregnancy.

Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.

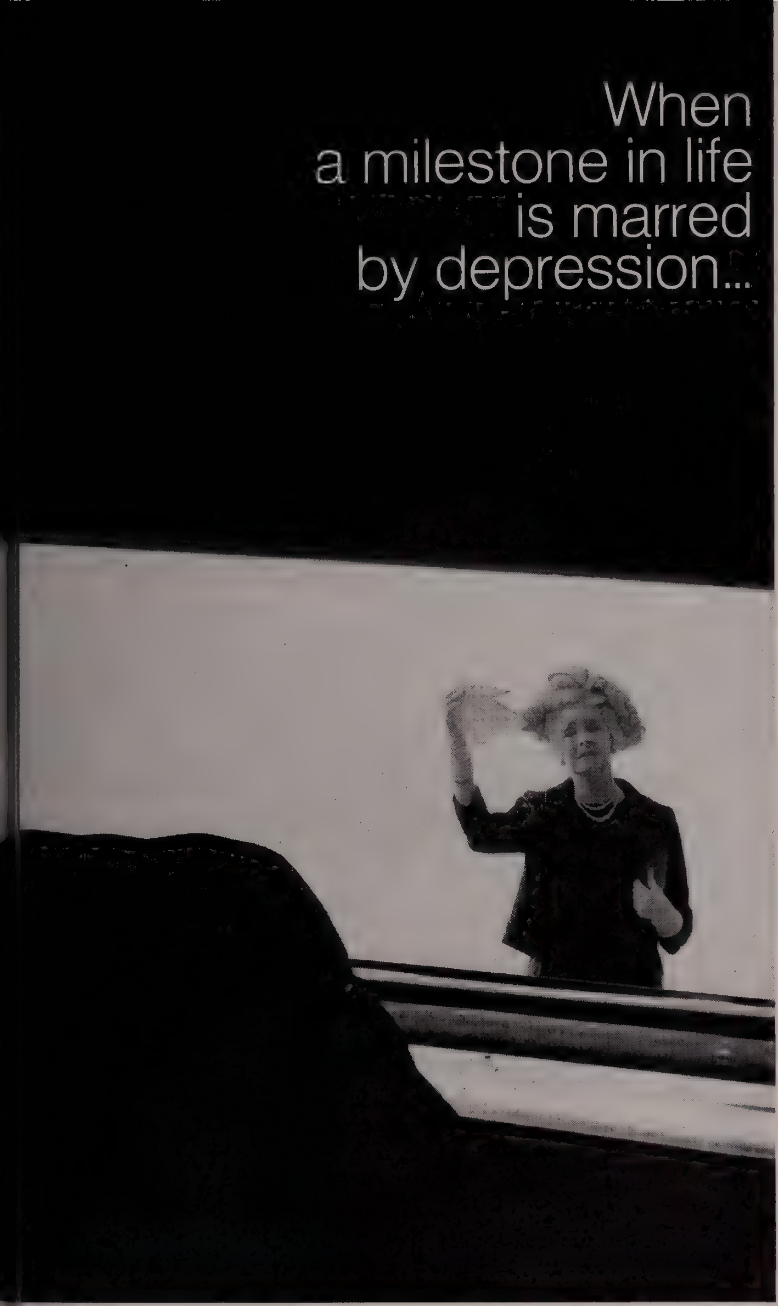
Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment with Tofrānil. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy.

Because of its anticholinergic effect, caution should be observed in prescribing Tofrānil for patients with increased intraocular pressure.

In rare instances, transient cardiac arrhythmias have occurred in hyperthyroid patients and in patients receiving thyroid medication when Tofrānil was added to the regimen. Imipramine may block the pharmacologic activity of guanethidine and other related adrenergic neuron-blocking agents.

The drug is not recommended at the present time in patients under 12 years of age.

Adverse Reactions: Dryness of the mouth, tachycardia, constipation, disturbances of accommodation, sweating, dizziness, weight gain, urinary frequency or retention, nausea and vomiting, peripheral neuritis, mild parkinson-like syndrome, tremors, rare cases of falling in elderly patients, confusional states (with such symptoms as hallucinations and disorientation), activation of psychosis in schizophrenics and agitation (includ-



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Tofrānil often relieves symptoms of depression.

As maintenance therapy during the active phase of depression, it may help prevent relapse.

The use of Tofrānil in patients receiving M.A.O.I.'s is contraindicated.

In patients with cardiovascular disease, hyperthyroidism or increased intraocular pressure; or in those receiving anticholinergics (including antiparkinsonism agents), thyroid medication, or antihypertensive adrenergic neuron-blocking agents; and in those in their first trimester of pregnancy, the special precautions listed in the prescribing information should be carefully observed.

Toxic reactions severe enough to require discontinuation of Tofrānil are uncommon. However, for complete details, please refer to the full prescribing information.

ing hypomanic and manic episodes) which may require dosage reduction and/or addition of a tranquilizer or temporary discontinuation of the drug, epileptiform seizures, orthostatic hypotension and substantial blood pressure fall in hypertensive patients, purpura, transient jaundice, bone marrow depression including agranulocytosis, sensitization and skin rash including photosensitization, eosinophilia, and mild withdrawal symptoms on sudden discontinuation after prolonged treatment with high doses. Occasional hormonal effects (impotence, decreased libido, and estrogenic effects) may be observed. Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those using anticholinergic agents (including antiparkinsonism drugs).
Outpatient Adult Dosage: Initially, 75 mg. daily, increased, if necessary, to 150 or 200 mg. Maintenance dosage may be lower, 50 to 150 mg. daily, if possible.
Geriatric and Adolescent Dosage: Initially, 30 or 40 mg. daily, which may be increased according to response and tolerance. It is usually unnecessary to exceed 100 mg. daily.
A lag in therapeutic response, lasting from a few days to a few weeks, should be expected. When dosage recommendations are already being followed, increasing the dosage does not normally shorten this latency period and may increase the incidence of adverse reactions.
Availability: Tofrānil: Round tablets of 25 and 50 mg.; triangular tablets of 10 mg. for geriatric and adolescent use; and ampuls, each containing 25 mg. in 2 cc. for I.M. administration.
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Warning: If renal impairment exists, even usual doses may lead to liver toxicity. Under such conditions, lower than usual doses are indicated and, if therapy is prolonged, serum level determinations may be advisable. Hypersensitive individuals may develop a photodynamic reaction to natural or artificial sunlight during use. Individuals with a history of photosensitivity reactions should avoid direct exposure while under treatment, which should be discontinued at first evidence of skin discomfort.

Precautions: Some individuals may experience drowsiness, anorexia, and slight gastric distress. If excessive drowsiness occurs, it may be necessary to increase the interval between doses. Persons on full dosage should not operate any vehicle. Use may result in overgrowth of nonsusceptible organisms. If infections appear during therapy, appropriate measures should be taken. Infections caused by beta-hemolytic streptococci should be treated for at least 10 full days to help prevent rheumatic fever or acute glomerulonephritis. Use of tetracycline during tooth development may cause discoloration of teeth.

Adverse Reactions: Gastrointestinal—anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. Skin—maculopapular and erythematous rashes (a case of exfoliative dermatitis has been reported); photosensitivity; onycholysis and discoloration of nails (rare). Kidney—rise in BUN, apparently dose related. Hypersensitivity reactions—urticaria, angioneurotic edema, anaphylaxis. In young infants, bulging fontanels following full therapeutic dosage has been reported. This has disappeared rapidly when drug was discontinued. Teeth—dental staining (yellow-brown) in children of mothers given tetracycline during the latter half of pregnancy and in children given the drug during the neonatal period, infancy, and early childhood. Enamel hypoplasia has been seen in a few children. Blood—anemia, thrombocytopenic purpura, neutropenia, eosinophilia. Liver—cholestasis (rare), usually at high dosage. If adverse reaction or idiosyncrasy occurs, discontinue medication and institute appropriate therapy.

Lederle

327-8

ANNUAL CONVENTION

Medical Society of the State of New York

FEBRUARY 9 through 13, 1969

The Americana, New York City

Scientific Program

Any State Society member who wishes to present a paper before a scientific section or a general session is requested to write to Bernard J. Pisani, M.D., Chairman of Scientific Program Committee at the address given below.

A short abstract of the proposed presentation should accompany the letter.

Scientific Exhibits

Requests for scientific exhibit space should be addressed to Albert H. Douglas, M.D., Chairman, Scientific Exhibits Subcommittee of Convention Committee, at the address given below.

Scientific Motion Pictures

Requests to present a motion picture in the motion picture theatre at the convention should be addressed to Kenneth B. Olson, M.D., Chairman, Motion Picture Subcommittee, at the address given below.

Address all communications to the chairman
Medical Society of the State of New York
750 Third Avenue
New York, New York 10017

Is it depression?

He says "It's my stomach..." ...but his other symptoms:

functional somatic complaints, anxiety, insomnia, anorexia, feelings of guilt

strongly suggest
an underlying depression.

---

when the diagnosis is depression

ELAVIL® HCl
AMITRIPTYLINE HCl

Indications: Mental depression and mild anxiety accompanying depression.

Contraindications: Glaucoma and predisposition to urinary retention. Not recommended in pregnancy.

Precautions and Side Effects: Drowsiness may occur within the first few days of therapy. Patients should be warned against driving a car or operating machinery or appliances requiring alert attention. When depression is accompanied by anxiety or agitation too severe to be controlled by ELAVIL HCl alone, a phenothiazine tranquilizer may be given concomitantly. Suicide is always a possibility in mental depression and may remain until significant remission occurs. Supervise patients closely in case they may require hospitalization or concomitant electroshock therapy. Untoward reactions have been reported after the combined use of antidepressant agents having varying modes of activity. Accordingly, consider possibility of potentiation in combined use of antidepressants. Monoamine oxidase inhibitor drugs may potentiate other drugs and such potentiation may even cause death; permit at least two weeks to elapse between administration of two agents; in such patients, initiate therapy with ELAVIL HCl cautiously with gradual increase in dosage required to obtain a satisfactory response. Caution patients about errors of judgment due to change in mood, and that the response to alcohol may be potentiated. May provoke mania or hypomania in manic-depressive patients.

Side effects include drowsiness; dizziness; nausea; excitement; hypotension; fine tremor; jitteriness; weakness; headache; heartburn; anorexia; increased perspiration; incoordination; allergic-type reactions manifested by skin rash, swelling of face and tongue, itching; numbness and tingling of limbs, including peripheral neuropathy; activation of schizophrenia which may require phenothiazine tranquilizer therapy; epileptiform seizures in chronic schizophrenics; temporary confusion, disturbed concentration or, rarely, transient visual hallucinations on high doses; evidence of anticholinergic activity, such as tachycardia, dryness of the mouth, blurring of vision, urinary retention, constipation; paralytic ileus; jaundice; agranulocytosis.

Careful observation of all patients is recommended. The antidepressant activity may be evident within 3 or 4 days or may take as long as 30 days to develop adequately, and lack of response sometimes occurs. Response to medication will vary according to severity as well as type of depression present. Elderly patients and adolescents can often be managed on lower dosage levels.

Supplied: Tablets ELAVIL HCl, containing 10 mg., 25 mg., and 50 mg. amitriptyline HCl, bottles of 100 and 1000; Injection ELAVIL HCl, in 10-cc. vials, containing per cc.: 10 mg. amitriptyline HCl, 44 mg. dextrose, 1.5 mg. methylparaben, and 0.2 mg. propylparaben.

Before prescribing or administering, read product circular with package or available on request.

MSD **MERCK SHARP & DOHME**
Division of Merck & Co., INC. West Point, Pa. 19486
where today's theory is tomorrow's therapy

Month in Washington

The American Medical Association stated that the regional medical programs had shown good progress in the early stages but urged Congress to order an early evaluation by a nongovernment agency. The AMA position was outlined by Bland W. Cannon, M.D., of Memphis, Tennessee, a member of the Association Council on Medical Education, in testimony before the House Subcommittee on Public Health and Welfare. The subcommittee was considering Administration legislation to extend the regional medical program law for five years.

Subcommittee members reacted favorably to an AMA recommendation that the extension be for only three years. Some of the congressmen also indicated opposition to a recommendation by Michael DeBakey, M.D., of Houston, Texas, that appropriations be increased sharply for the regional medical programs.

"We view with favor the early progress of regional medical programs, its ability to build on existing patterns of medical care, sometimes adding new features or changing old ones as local demands and resources make possible and the local flexibility which allows the program to make a real contribution to the health care of our nation," Dr. Cannon said. "At the same time, we recognize that the concept of the regional medical program is still in its very early stage of existence and that it is difficult to fully appraise the program. We do not know, for example, how much this program adds to the stress on an already overtaxed supply of available medical manpower.

"There is some concern that the proliferation of Federal health programs substantially contributes to the rise in health care costs. For this reason, we are pleased that H.R. 15758 provides for an evaluation of the program. We would suggest, however, that the evaluation begin July 1, 1968, rather than July 1, 1969, since 'evaluation' should be an integral part of the planning. We also suggest that the subcommittee consider further amending Section 102 to provide that the evaluation shall be made by a nongovernment agency. . . .

"We recommend that the subcommittee delete the open-end authorization for funds for the four fiscal years ending after June 30, 1969. In view of the fact that we are still dealing with a relatively untried program, we believe it would be wise to limit the authorization to such sums as this subcommittee may determine to be reasonable, rather than to provide for 'such sums as may be necessary for the next four fiscal years.' "

Prepared by the Washington, D.C., Office of the American Medical Association.

Henry Brill, M.D., of Brentwood, New York, chairman of the AMA's Committee on Alcoholism and Drug Dependence, said that the AMA supported that part of the legislation which authorizes Federal grants for construction of facilities for a new program for alcoholic and narcotic addict rehabilitation. "However," he said, "we have long felt that funds for staffing and operation are properly the responsibility of the community, once the major burden of construction has been met with Federal assistance."

* * *

The American Medical Association and the Association of American Medical Colleges announced a joint policy designed to increase the number of medical students. The statement "emphasized the urgent and critical need for more physicians if national expectations for health services are to be realized" and listed immediate and long-range steps that should be taken.

Immediate steps are the following:

1. Increase the enrollment of existing medical schools.
2. Foster curricular innovations and other changes in the education programs which could shorten the time required for a medical education and minimize the costs.
3. Meet the need for innovation in education programs and to encourage diversity in the character and objectives of medical schools. The development of schools of quality where a primary mission is the preparation of able physicians for clinical practice as economically and rapidly as possible is to be encouraged.

"A longer-range approach to the need for physicians is the development of new medical schools," the statement said. "This approach will not solve our immediate, urgent need for more physicians, but it is essential for meeting the national needs of 1980 and beyond.

"To implement the measure enumerated above will require adequate financial support from government and various private sources for: (1) construction of facilities to expand enrollment of existing schools and to create new schools, (2) support of the operation costs of medical schools, and (3) stimulation and incentive for education innovation and improvement."

* * *

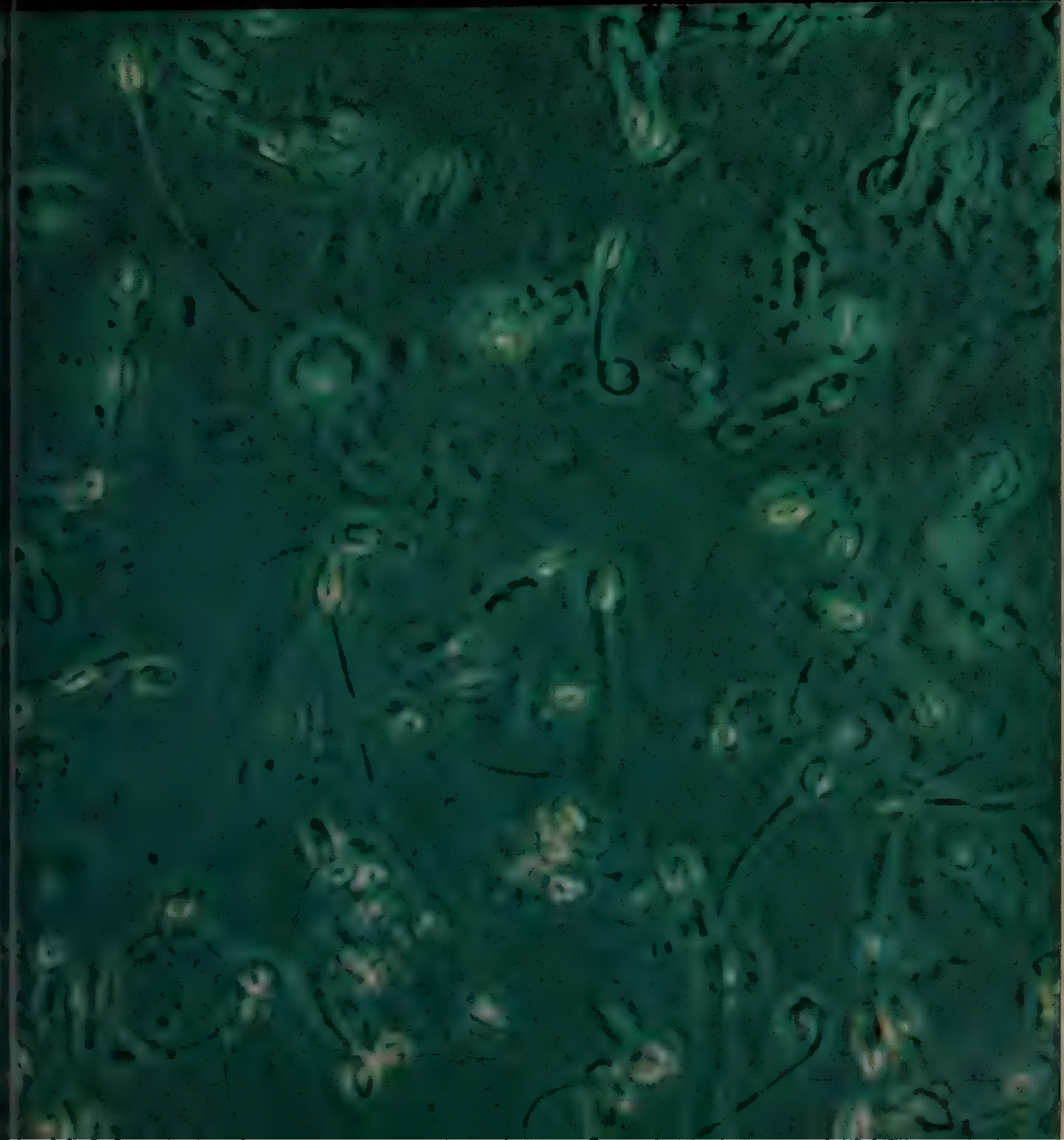
Wilbur J. Cohen, a key proponent of Medicare, was named by President Johnson to succeed John W. Gardner as secretary of HEW (U.S. Department of Health, Education, and Welfare). Cohen, now fifty-four-years old, began working for the Federal government in the early thirties and helped draft the Social Se-

continued on page 1212

When the talk turns to oral contraceptives, it makes medical sense to remember low-dose Norinyl®-1.

(norethindrone 1mg. c̄ mestranol 0.05mg.)

Turn page for contraindications, precautions and side effects.



Reduction of oral contraceptive dosage to the lowest effective levels is a well-accepted principle of conservative medical practice. In keeping with this view, Norinyl is now also available as Norinyl-1, containing exactly one half the previous dosage of norethindrone and mestranol. Clinical experience has established that effective fertility control can be achieved with the same degree of reliability and safety with new Norinyl-1 when taken as directed.

What about switching patients from higher dosage forms?

In transferring patients to low-dose Norinyl-1 from higher-dosage oral contraceptives, some breakthrough bleeding may occur in the early cycles. In the majority of cases the bleeding episode is mild and self-limited. The long-term advantages of the lower dosage form should be weighed against the inconvenience of possible breakthrough bleeding in the individual patient.

Contraindications: 1. Patients with thrombophlebitis or with a history of thrombophlebitis or pulmonary embolism. 2. Liver dysfunction or disease. 3. Patients with known or suspected carcinoma of the breast or genital organs. 4. Undiagnosed vaginal bleeding.

Warnings: 1. Discontinue medication pending examination if there is sudden partial or complete loss of vision or if there is a sudden onset of proptosis, diplopia or migraine. If examination reveals papilledema or retinal vascular lesions, medication should be withdrawn. 2. Since the safety of NORINYL-1 (norethindrone 1 mg. with mestranol 0.05 mg.) in pregnancy has not been demonstrated, it is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. 3. Detectable amounts of the active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this dose to the infant has not been determined.

Precautions: 1. The pretreatment physical examination should include special reference to breast and pelvic organs, as well as a Papanicolaou smear. 2. Endocrine and possibly liver function tests may be affected by treatment with NORINYL-1. Therefore, if such tests are abnormal in a patient taking NORINYL-1 it is recommended that they be repeated after the drug has been withdrawn for two months. 3. Under the influence of estrogen-progestogen preparations, preexisting uterine fibromyomata may increase in size. 4. Because these agents may cause some degree of fluid retention, conditions that may be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation. 5. NORINYL-1 should be used with caution in patients with a history of cerebrovascular accident. 6. In relation to breakthrough bleeding, and as in all cases of irregular bleeding *per vaginam*, nonfunctional causes should be borne in mind. In cases of undiagnosed vaginal bleeding, adequate diagnostic measures are indicated. 7. Patients with a history of psychic depression should be carefully observed and the drug discontinued if the depression recurs to a serious degree. 8. Any possible influence of prolonged NORINYL-1 therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. 9. A decrease in glucose tolerance has been observed in a small percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be carefully observed while receiving NORINYL-1 therapy. 10. Because of the occasional occurrence of thrombophlebitis and pulmonary embolism in patients taking oral contraceptives, the physician should be alert to the earliest manifestations of the disease. 11. Because of the effects of estrogens on epiphyseal closure, NORINYL-1 should be used judiciously in young patients in whom bone growth is not complete. 12. The age of the patient constitutes no absolute limiting factor, although treatment with NORINYL-1 may mask the onset of the climacteric. 13. The pathologist should be advised of NORINYL-1 therapy when relevant specimens are submitted.

Side effects observed in patients receiving oral contraceptives: The following adverse reactions have been observed in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement and secretion), change in weight (increase or decrease), changes in cervical erosion and cervical secretions, suppression of lactation when given immediately postpartum, cholestatic jaundice, migraine, rash (allergic), rise in blood pressure in susceptible individuals, mental depression.

Although the following side effects have been reported in users of oral contraceptives, no cause and effect relationship has been established: anovulation post-treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption, itching.

The following occurrences have been observed in users of oral contraceptives (a cause and effect relationship has been neither established nor disproved): thrombophlebitis, pulmonary embolism, neuro-ocular lesions.

The following laboratory results may be altered by the use of oral contraceptives: increased sulfobromophthalein and other hepatic function tests, coagulation tests (increase in prothrombin, Factors VII, VIII, IX and X), thyroid function (increase in PBI and butanol extractable protein-bound iodine and decrease in T^3 values), metyrapone test, pregnanediol determination.

norethindrone — an original steroid from

SYNTEX

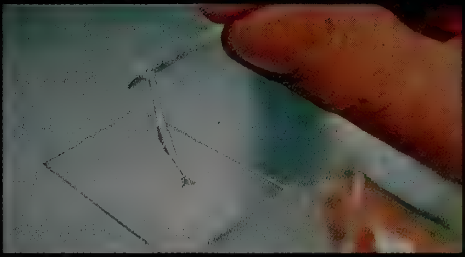
LABORATORIES INC., PALO ALTO, CALIF.

Here's why Norinyl-1 makes medical sense.

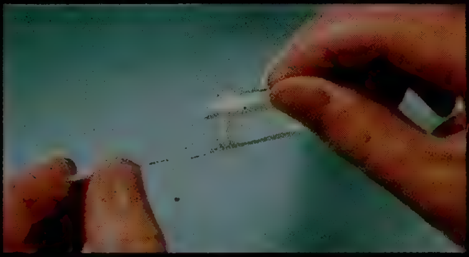
The effectiveness of Norinyl-1 as a low-dose oral contraceptive may be explained by its possible multiple action. In addition to its primary action of suppression of ovulation, Norinyl-1 may offer additional protective mechanisms... (1) creation of a cervical mucus that may be hostile to sperm penetration, and (2) development of an endometrium that may be out of phase with nidation. These effects are illustrated below.

Untreated Patient

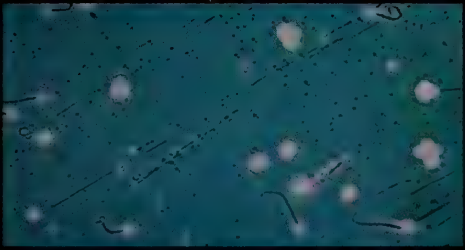
Norinyl-1 Patient



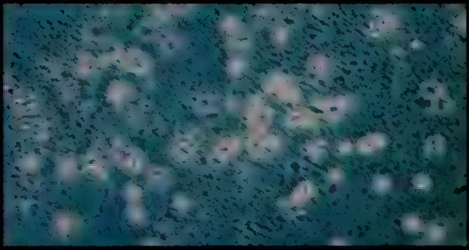
Cervical mucus at midcycle is usually thin and watery, with Spinnbarkeit (stretchability) of 15 to 20 cm.



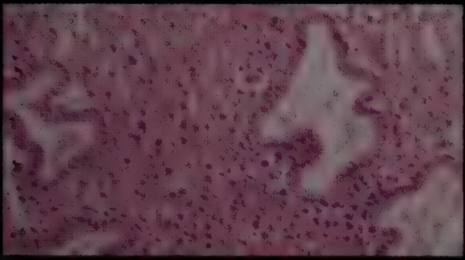
Cervical mucus at midcycle is scanty, viscous—with Spinnbarkeit of 1 cm. or less.



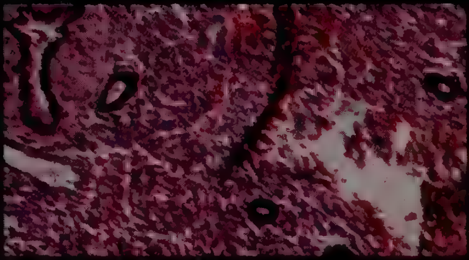
Spermatozoa appear healthy, active, freemoving.



Immobile spermatozoa as they appear in cervical mucus taken from patient treated with Norinyl-1.



Endometrium of untreated patient is receptive to the fertilized ovum during secretory phase.



Norethindrone in Norinyl-1 accelerates secretory phase, suppresses glandular and vascular development.

Norinyl®-1
(norethindrone 1mg. c̄ mestranol 0.05mg.) tablets

- new low dose of time-proved ingredients
- established norethindrone/mestranol ratio
- lower patient cost

continued from page 1208

curity program. Recognized by Congress as an expert on Social Security, he was the leading architect of Medicare and played a prominent role in getting Congressional approval of the program. He has been undersecretary of HEW since June, 1965. For the previous four years, he had been assistant secretary of HEW.

At a news conference following his appointment to the top HEW post, Cohen foresaw health care accounting for as much as 50 per cent of total welfare costs. He urged that voluntary private health insurance be improved. But he said that he did not believe private programs could be improved sufficiently to eliminate the need for government help in dealing with the health care needs of low-income groups and the disabled.

"Medicare and Medicaid have had some impact on higher medical costs," Cohen said. "But I think doctors' costs are going to taper off. Hospital costs are going to continue to rise, but there is a problem of antiquated and inefficient methods. This can be changed."

Soon after Gardner's resignation became effective, Cohen announced major steps in the reorganization of HEW's health activities. Unification and direction of HEW's major health agencies was assigned to Philip R. Lee, M.D., assistant secretary for health and scientific affairs. William H. Stewart, M.D., Surgeon General of the U.S. Public Health Service, was named principal deputy to Dr. Lee.

Dr. Lee was given direct authority over the U.S. Public Health Service and the Food and Drug Administration. Dr. Stewart and Food and Drug Commissioner James L. Goddard, M.D., will report directly to the assistant secretary, while continuing to carry out their present administrative functions. Dr. Lee's responsibility also was expanded to include over-all health policy direction and coordination of other health programs, including Medicare, Medicaid, and the health activities of the Children's Bureau.

In his 1968 message to Congress, President Johnson had directed the secretary of HEW to submit "a modern plan of organization to achieve the most efficient and economical operation of the health programs of the Federal government."

"In the past four years," Cohen said, "31 major new laws have been enacted that increase the Department's authority, responsibility, and appropriations in the field of health.

"The total Federal investment in health has grown from approximately $3 billion in 1960 to nearly $14 billion in 1968, and $16 billion proposed for 1969. Because of new programs, such as Medicare and Medicaid, the HEW health investment alone has more than tripled in the past three years, from $2.6 billion in 1966 to $9.6 billion this fiscal year, and $10.9 billion proposed for 1969."

In a reassignment of agency responsibilities, the National Institutes of Health was expanded to include the present National Institute of Health, the Bureau of Health Manpower, and the National Library of Medicine. The Health Services and Mental Health Administration was set up with responsibility for all other functions previously assigned to the U.S. Public Health Service. These two new agencies, along with the present Food and Drug Administration, now make up an expanded and more comprehensive U.S. Public Health Service.

James A. Shannon, M.D., director of the National Institutes of Health, was named director of the newly constituted National Institutes of Health. Robert Q. Marston, M.D., director of the Division of Regional Medical Programs, was named acting administrator of the Health Services and Mental Health Administration. Dr. Goddard continues as Commissioner of Food and Drugs Administration. The heads of these three agencies will report directly to Dr. Lee under the new organization setup.

Drugs and drug abuse

It should be emphasized that there are two drug manufacturing industries in this country: one that is quality-conscious and research-oriented with high standards and national distribution of its products, and one with limited capabilities that simply copies, or attempts to copy, the most popular dosage forms of widely prescribed drugs and sells them, usually in limited markets.

If the former is unduly penalized, its research efforts must necessarily shrink. The result could be what nobody wants—the drying up of the sources of new, effective agents on which the future of drug therapy depends.

SAN FRANCISCO AMA '68

The excitement of San Francisco's famous sites is waiting for you. Chinatown, the Golden Gate Bridge, Fisherman's Wharf, Telegraph Hill, will add to five memorable and stimulating convention days. Plan to attend now and look forward to an excellent convention in a city of unlimited charm.

Continue your postgraduate education with a varied program of • four General Scientific Meetings on Auto Accidents, Health Care Planning, Infectious Diseases, Treatment of Advanced Malignant Disease • 23 Section Programs • Color Television • Medical Motion Pictures • and over 600 scientific and industrial exhibits. All are designed to bring you up-to-date on what is making medical news today. You will attend lectures by the nation's outstanding medical authorities and discuss with them the significant advances in medicine.

In addition the AMA TV network will present more than 40 hours of convention news.

Reserve now for the Scientific Awards Dinner in honor of the Scientific Award Winners—Wednesday, June 19, 1968. Since space is limited, we suggest you make your reservations before June 3, 1968. Tickets are $10.00 each, payable in advance.

The complete scientific program, plus forms for advance registration and hotel accommodations, will be featured in JAMA, May 6, 1968.

SAN FRANCISCO, CALIFORNIA · JUNE 16-20, 1968

AMERICAN MEDICAL ASSOCIATION'S 117th ANNUAL CONVENTION · BROOKS HALL

new pocket Bronkometer® tpr*

(isoetharine 0.6%; phenylephrine HCl 0.125%; thenyldiamine HCl 0.05%)

TWIST • PRESS • RELIEF:

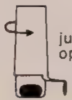
patients get potent bronchodilation faster, easier

The most advanced aerosol design— over two years in development and testing

- *Always ready for instant use.* No assembly problems, no loose pieces, no delay. Faster and easier for patients' to use—faster and easier for physicians to demonstrate.
- *Closed, clean dispenser.* Twist-away mouthpiece guard gives almost complete freedom from dust, dirt, pocket particles. Can't activate or come apart accidentally —automatically locks when not in use.
- *Requires no shaking.* Bronkometer formula is a solution, not a suspension.
- *Re-usable, break-resistant Plastic Actuator* refills in seconds.
- *Unique formula with Isoetharine*† brings potent bronchodilation *plus* decongestion . . . with minimal sympathomimetic side effects.

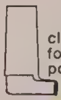
†Dilabron®, brand of isoetharine

In Bronchial Asthma, Emphysema, Chronic Bronchitis—brings fast, sustained relief of bronchospastic symptoms



just twist to open mouthpiece

press for metered dose



close mouthpiece for carrying in pocket or purse

*twist...*press...*relief

motion study shows simplicity and rapidity of use

Older-style units must be hurriedly assembled at time of patient's need. Awkward fumbling may increase patient's anxiety and fear.

New Bronkometer tpr eliminates waste motions. Patient simply twists mouthpiece and presses for relief. Fast, easy operation enhances sense of security.

Pocket Bronkometer® tpr

COMPOSITION: Each ml of solution supplies at the mouthpiece 20 metered doses of 350 mcg isoetharine methanesulfonate (0.6%), 70 mcg phenylephrine HCl (0.125%) and 30 mcg thenyldiamine HCl (0.05%) with saccharin and menthol plus fluorochlorohydrocarbons as inert propellants. Preserved with ascorbic acid 0.1% and alcohol 30%.

RECOMMENDED DOSAGE: The average dose is one or two inhalations. Occasionally, more may be required. It is important, however, to wait one full minute after the initial one or two inhalations in order to be certain that another is necessary. In most cases, inhalations need not be repeated more often than every four hours, although more frequent administration may be necessary in severe cases.

PRECAUTIONS: Although Bronkometer is relatively free of toxic side effects, too frequent use may cause tachycardia, palpitation, nausea, headache, changes in blood pressure, anxiety, tension, restlessness, insomnia, tremor, weakness, dizziness and excitement as is the case with other sympathomimetic amines. Bronkometer should not be administered along with epinephrine or other sympathomimetic amines as such drugs are direct cardiac stimulants and may cause excessive tachycardia. They may, however, be alternated if desired. Dosage must be carefully adjusted in patients with hyperthyroidism, hypertension, acute coronary disease, cardiac asthma, limited cardiac reserve and in individuals sensitive to sympathomimetic amines, since overdosing may result in tachycardia, palpitation, nausea, headache or epinephrine-like side effects.

HOW SUPPLIED: Bronkometer tpr Actuator and 10 ml Refill (Code No. 1184); Bronkometer 10 ml Refill only (Code No. 1183); Bronkometer 10 ml Vial with Oral Nebulizer (Code No. 1193); Bronkometer 20 ml Vial with Oral Nebulizer for desk or bedside (Code No. 1182).

BREON **BREON LABORATORIES INC.**
90 Park Avenue, New York, N.Y. 10016

Vistaril®

HYDROXYZINE PAMOATE

an antianxiety agent that serves a human need...

"The danger involved in prescribing dependency producing medication for relief of anxiety lies in the fact that we do not know in advance the dependency proneness of the individual."[1]

A woman who is undergoing the emotional stresses of the menopause may, for the first time, need an antianxiety agent. But she may also be susceptible to drug abuse.

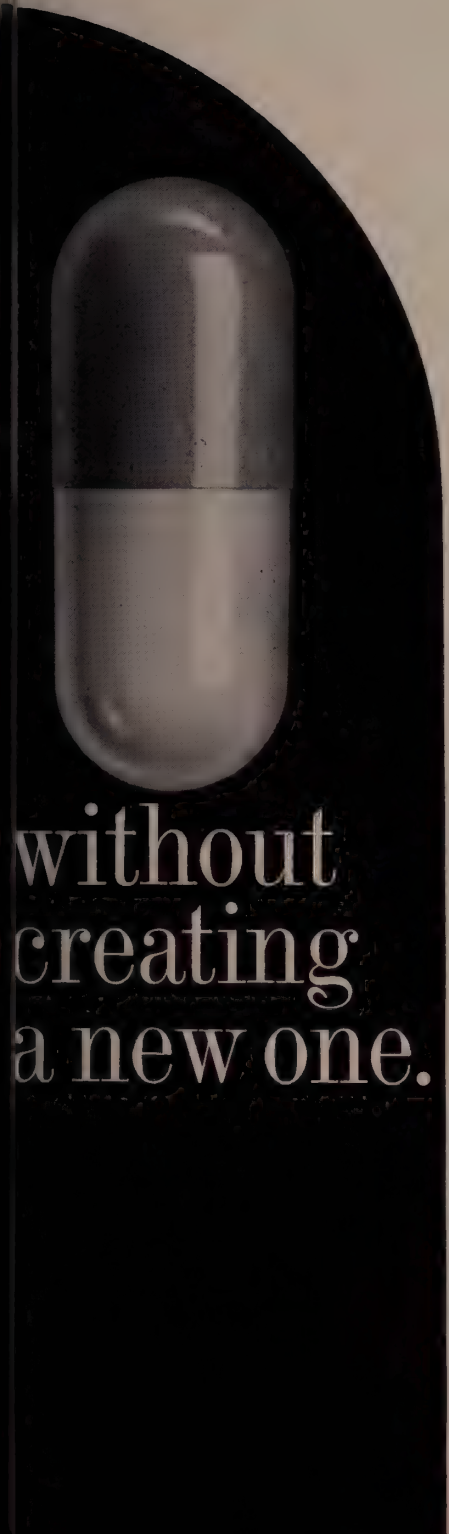
Vistaril can fulfill the need for tranquilization without creating a new need—dependency.

Vistaril calms anxiety and agitation quickly—usually begins to work in 15-30 minutes. And, in more than ten years of clinical use, after more than a billion doses to date, there have been no reported instances of dependency on hydroxyzine.

When the need for antianxiety medication is reduced or no longer exists, Vistaril dosage may be lowered or discontinued without ill effects.

Recommended starting dose, anxious menopausal patient, 50 mg. t.i.d.

With Vistaril, it is as easy to stop therapy as it is to start.



Contraindications: Hypersensitivity to hydroxyzine. The parenteral solution, for intramuscular or intravenous use, *must not* be injected subcutaneously or intra-arterially.

Hydroxyzine, when administered to the pregnant mouse, rat, and rabbit induced fetal abnormalities in the rat at doses substantially above the human therapeutic range. Clinical data in human beings are inadequate. Until adequate data are available to establish safety in early pregnancy, hydroxyzine is contraindicated during this period.

Precautions: Hydroxyzine may potentiate the action of central nervous system depressants such as narcotics and barbiturates. In conjunctive use, dosage for these drugs should be decreased as much as 50%. Because drowsiness may occur, patients should be cautioned against driving a car or operating dangerous machinery. The usual precautions for intramuscular injection should be followed; soft-tissue reactions have rarely been reported when proper technique has been used. Hydroxyzine parenteral solution for intramuscular use should be injected well within the body of a relatively large muscle. In adults, the preferred sites are the upper outer quadrant of the buttock (i.e., gluteus maximus), or the mid-lateral thigh. In children, preferably the mid-lateral muscle of the thigh. In infants and small children the upper outer quadrant of the gluteal region should only be used when necessary, as in burn patients, in order to minimize the possibility of damage to the sciatic nerve. The deltoid area should be used only if well developed, such as in certain adults and older children, and only with caution to avoid radial nerve injury. Injections should not be made in the lower and middle thirds of the upper arm. Aspiration should be done to help avoid intravascular injection. On reported intravenous injection a few instances of digital gangrene have occurred distal to the injection site, considered to be due to inadvertent intra-arterial injection or possibly periarterial extravasation. Therefore, particular caution (aspiration and site injection) should be observed to insure injection only into intact veins; avoid either intra-arterial injection or extravasation. Intravenous administration should be accomplished slowly, no faster than 25 mg. per minute, and not to exceed 100 mg. in any single dose. In order to avoid possible adverse effects it is recommended that hydroxyzine parenteral solution be diluted to at least 50 cc. with sterile normal saline and administered over a period of four minutes or more, preferably into the tubing of a running intravenous infusion.

The intravenous administration of this drug is not recommended for children under 12 years of age.

Adverse Reactions: Drowsiness may occur; if so, it is usually transitory and may disappear in a few days of continued therapy or upon dosage reduction. Dryness of the mouth may occur with higher doses. Involuntary motor activity, including rare instances of tremor and convulsions, has been reported, usually with higher than recommended dosage.

When this product is given intravenously undiluted, minimal amounts of intravascular hemolysis occur at the site of injection. Giving the maximum recommended intravenous dose (100 mg.) to adults results in immediate transient hemolysis with the liberation of a total of 2-3 grams of hemoglobin, which, in some individuals, can cause small amounts of hemoglobinuria. This compares with the normal red cell destruction from which approximately 8 Gm. of hemoglobin are liberated every 24 hours. If the hydroxyzine is diluted with 50 cc. of normal saline and given during a period of four minutes or more, this phenomenon does not occur.

Supply: Vistaril (hydroxyzine pamoate) Capsules: Equivalent to 25 mg., 50 mg., 100 mg. hydroxyzine HCl. Vistaril (hydroxyzine pamoate) Oral Suspension: Equivalent to 25 mg. hydroxyzine HCl per 5 cc. teaspoonful. Vistaril (hydroxyzine HCl) Parenteral Solution: 25 mg./cc.–10 cc. vial and 50 mg./cc.–2 cc. and 10 cc. vial; Isoject,® 25 and 50 mg. per cc., 1 cc. per unit.

More detailed professional information available on request.

References: 1. Greenhouse, H. R.: Medication and the Dependent Personality, Symposium of Non-Narcotic Drug Dependency and Addiction, The Amer. Psychiat. Assn., N.Y. County Dist. Branch, New York, N.Y., March 10, 1966.

Pfizer **LABORATORIES DIVISION**
New York, N.Y. 10017

ANNUAL CONVENTION

Medical Society of the State of New York

FEBRUARY 9 through 13, 1969

The Americana, New York City

Scientific Program

Any State Society member who wishes to present a paper before a scientific section or a general session is requested to write to Bernard J Pisani, M.D., Chairman of Scientific Program Committee at the address given below.

A short abstract of the proposed presentation should accompany the letter.

Scientific Exhibits

Requests for scientific exhibit space should be addressed to Albert H. Douglas, M.D., Chairman, Scientific Exhibits Subcommittee of Convention Committee, at the address given below.

Scientific Motion Pictures

Requests to present a motion picture in the motion picture theatre at the convention should be addressed to Kenneth B. Olson, M.D., Chairman, Motion Picture Subcommittee, at the address given below.

Address all communications to the chairman
Medical Society of the State of New York
750 Third Avenue
New York, New York 10017

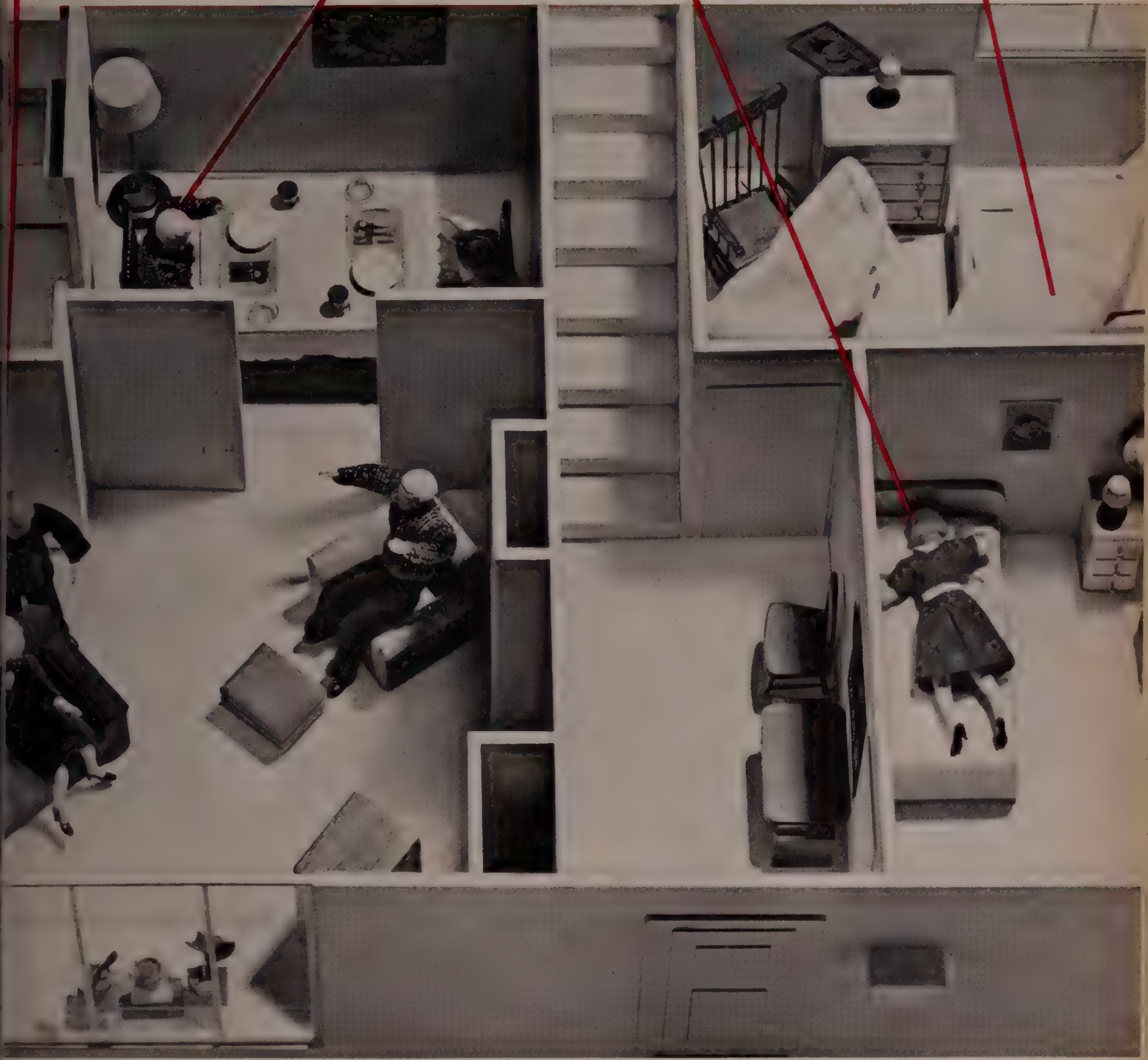
When the agitated geriatric disrupts the home…

His daughter can't please him. There is "just no living with him."

His disturbances at the table make every meal a nightmare.

His teen-age granddaughter won't invite friends home because of his outbursts.

His slovenly room and habits create more tension.



In moderate to severe anxiety…

- Mellaril helps control the most frequent symptoms: marked tension, agitation, apprehension, restlessness, hypermotility
- Mellaril often alleviates anxiety-induced somatic complaints
- Mellaril frequently helps strengthen emotional resources
- Mellaril helps the patient maintain realistic contact with environment, closer harmony with family

Contraindications: Severely depressed or comatose states from any cause, and in association with or following MAO inhibitors; severe hypertensive or hypotensive heart disease.

Precautions: Hypersensitivity reactions (e.g., leukopenia, agranulocytosis) and convulsive seizures are infrequent. Pigmentary retinopathy has been observed where doses in excess of those recommended were used for long periods of time. May potentiate central nervous system depressants, atropine, and phosphorus insecticides. Where complete mental alertness is required, administer the drug cautiously and increase dosage gradually. In addition, orthostatic hypotension (especially in female patients) has been observed. Epinephrine should be avoided in treatment of drug-induced hypotension.

Side Effects: Pseudoparkinsonism and other extrapyramidal disorders are infrequent; drowsiness, especially in high doses early in treatment, may occur; nocturnal confusion, dryness of the mouth, nasal stuffiness, headache, peripheral edema, lactation, galactorrhea, and inhibition of ejaculation are noted on occasion; photosensitivity and other allergic skin reactions may occur but are extremely rare.

for moderate to severe anxiety

Mellaril®
(thioridazine)
25 mg. t.i.d.

SANDOZ

Before prescribing, see package insert for full product information.

68-114

Easy on
the Budget...
Easy on
the Mother

Tablets & Elixir

For Iron Deficiency Anemia

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brand of FERROUS GLUCONATE

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NO-CAL Coffee
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NO-CAL Coffee
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The Savers.

Eleven delicious sodas.
Two delicious sweeteners.
(Granulated and liquid.)
And a complete line of luscious fruit flavored syrups for cooking recipes. All—sugar and salt-free.
The Savers—for your dieters.
From No-Cal... America's first and finest family of sugar-free products.
Prescribe them with confidence.

When it's time for Thorazine® brand of chlorpromazine

...can you depend on less?

For profound calming effect in moderate to severe mental and emotional disturbances of everyday practice.

Before prescribing, see complete information, including adverse effects reported with phenothiazines and symptoms and treatment of overdosage, in SK&F literature or *PDR.* The following is a brief precautionary statement.

Contraindications: Comatose states or the presence of large amounts of C.N.S. depressants.

Precautions: Potentiation of C.N.S. depressants may occur (reduce dosage of such agents when used concomitantly). Use with caution in patients with chronic respiratory disorders. Antiemetic effect may mask overdosage of toxic drugs or obscure other conditions. Administer in pregnancy only when necessary. Because of possible drowsiness use cautiously and warn patients who operate vehicles or machinery.

Adverse Reactions: Drowsiness; dry mouth; nasal congestion; constipation; amenorrhea; miosis; mild fever; weight gain; hypotensive effects, sometimes severe with I.M. administration; epinephrine effects may be reversed; dermatological reactions; parkinsonism-like symptoms on high dosages (in rare instances, may persist); lactation and moderate breast engorgement (in females on high dosages); and less frequently, cholestatic jaundice (use cautiously in patients with liver disease). Adverse reactions occurring rarely, include: mydriasis; agranulocytosis; skin pigmentation; epithelial keratopathy; lenticular and corneal deposits (after prolonged substantial doses).

Available: Tablets, 10 mg., 25 mg., 50 mg., 100 mg. and 200 mg.; Spansule® capsules, 30 mg., 75 mg., 150 mg., 200 mg. and 300 mg.; Injection, 25 mg./cc.; Syrup, 10 mg./5 cc.; Suppositories, 25 mg. and 100 mg.

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Smith Kline & French Laboratories, Philadelphia

163rd ANNUAL CONVENTION

Medical Society of the State of New York

FEBRUARY 9 through 13, 1969

The Americana, New York City

SCIENTIFIC PROGRAM

SCIENTIFIC EXHIBITS

SCIENTIFIC MOTION PICTURES

TECHNICAL EXHIBITS

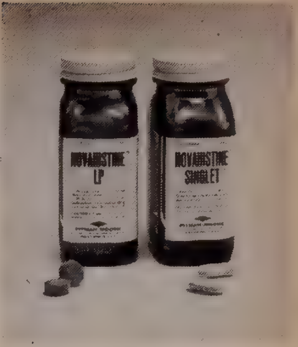
HOUSE OF DELEGATES

PRESIDENT'S DINNER

Some U.R.I. patients are more miserable than others.

That's why we make Novahistine® tablets in two different formulations.

And let you control the dosage.



Each Novahistine LP tablet contains phenylephrine hydrochloride, 25 mg.; and chlorpheniramine maleate, 4 mg.
Each Novahistine Singlet tablet contains phenylephrine hydrochloride, 40 mg.; chlorpheniramine maleate, 8 mg.; and acetaminophen, 500 mg.

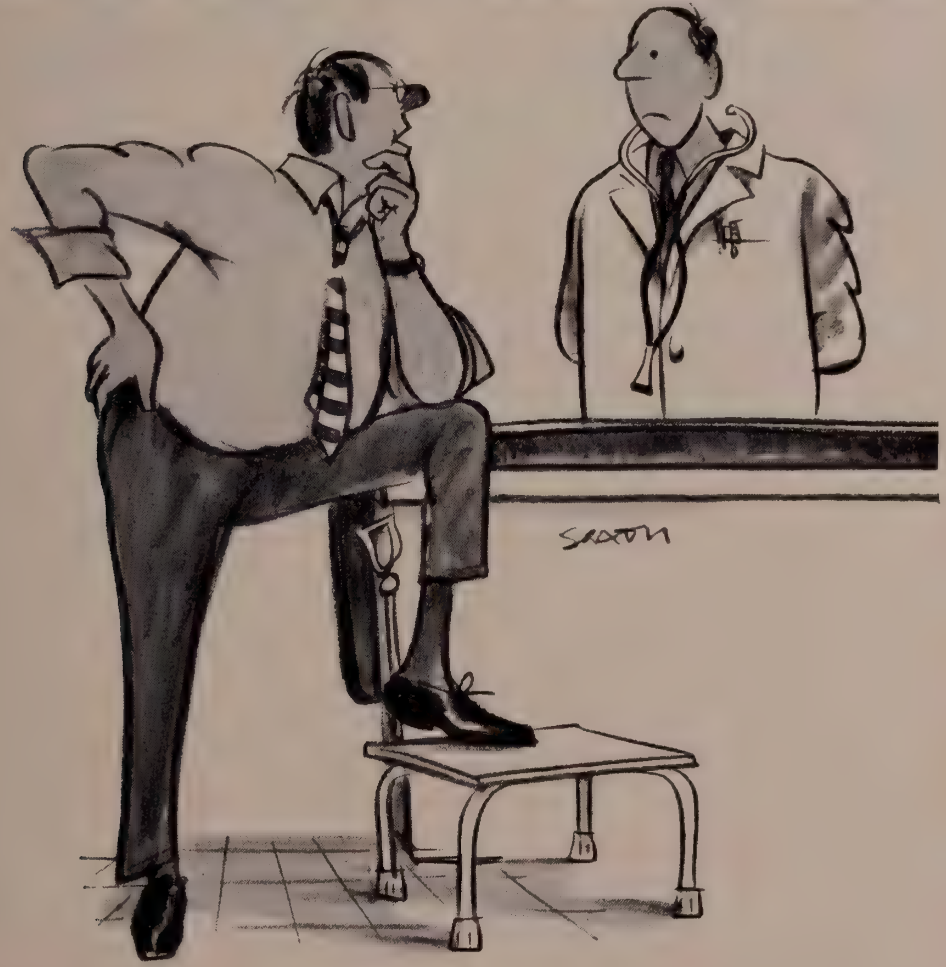
With Novahistine LP tablets and Novahistine Singlet™ tablets you have the range and flexibility of decongestant dosage that lets you prescribe for the needs of the individual patient.

Novahistine LP tablets are most useful for relief of nasal congestion in patients without pain or fever. Novahistine Singlet tablets, which provide analgesic-antipyretic effect, as well as decongestant action, are indicated for upper respiratory infections accompanied by pain, aches and fever.

Whether you prescribe Novahistine LP or Novahistine Singlet, a total daily dose of 3 or 4 tablets will usually provide effective, continuous relief.

Use cautiously in patients with severe hypertension, diabetes mellitus, hyperthyroidism or urinary retention. Caution ambulatory patients that drowsiness may result.

DOW **PITMAN-MOORE** DIVISION OF THE DOW CHEMICAL COMPANY, INDIANAPOLIS



"Nothing else I've tried seems to work, so I decided to give you a crack at it."

Vacation trip....

Motion sickness?

This time it'll be different. Emetrol taken before the trip begins will usually prevent nausea and vomiting. Emetrol is effective and safe...most helpful where safety is most important. It acts locally—not systemically.

RORER
WILLIAM H. RORER, INC.
Fort Washington, Pa.

Emetrol®
phosphorated carbohydrate solution
emesis control

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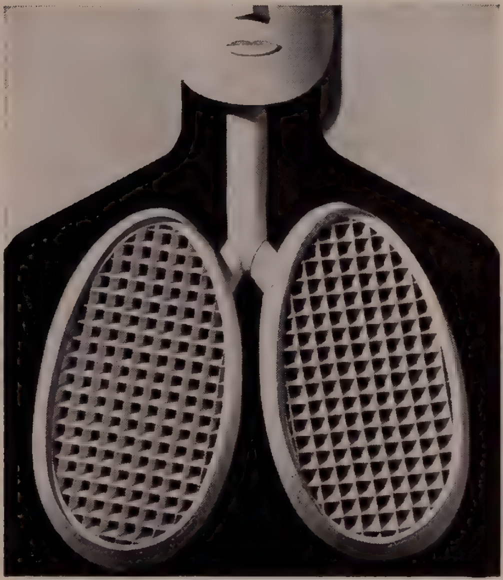
The ventilator pill



Dainite® KI **bronchodilator/expectorant**

Each tablet contains: Aminophylline 3.00 gr, Phenobarbital 0.25 gr, (WARNING: May be habit forming), Ephedrine HCl 0.25 gr, Potassium iodide 5.00 gr, Dried Aluminum Hydroxide Gel 2.50 gr, Benzocaine 0.25 gr.

Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

It helps reduce frequency and severity of asthma attacks, too. And, because it's systemic, you know you get action where you want it . . . in the system.

You might say The Ventilator Pill is a good name for Dainite KI. Your patients will probably say the same thing.

Indications: For the treatment of mild or severe bronchial asthma, and in pulmonary emphysema, in chronic asthma, in chronic bronchitis and in those patients who consistently develop a thick, viscous, tenacious sputum and thus have difficulty in expectorating accumulated secretions from the bronchial tree during and following an asthmatic attack. Dainite® KI has been specifically formulated to provide extensive therapeutic action in the asthmatic patient. Anti-nauseant factors afford the administration of a therapeutic dose of aminophylline without the high frequency of gastric intolerance usually associated with this drug. *Contraindications:* Should not be administered to patients sensitive to aminophylline or sympathomimetic drugs and should be used with caution in patients with cardiovascular disease and hypertension. Also contraindicated in those patients who have had a severe reaction or are sensitive to or have an idiosyncrasy to potassium iodide. *Precautions:* See contraindications. In some elderly patients, barbiturates may cause excitement rather than depression. *Side Effects:* Occasionally nausea, vomiting and gastric irritation occurs. In addition, side effects attributable to potassium iodide may occur, acne, rhinorrhea, metallic taste and parotitis. Prolonged use of iodides may rarely lead to hypothyroidism. Skin rash may be observed in patients hypersensitive to barbiturates. *Dosage:* Adults—1 tablet on arising, 1 tablet at 4 P.M., and 1 or 2 tablets at bedtime.

Neisler Laboratories, Inc., Decatur, Ill.
Subsidiary of Union Carbide Corporation. NEISLER UNION CARBIDE

Medical Meetings

Conference on aging

The seventh annual Governor's Conference on Aging, sponsored by the New York State Office for the Aging, will be held on May 3, 9:00 A.M. to 5:00 P.M., at the New York Hilton Hotel, New York City. Governor Nelson A. Rockefeller will present the Governor's Award as Senior Citizen of the Year to A. Philip Randolph, International President, Brotherhood of Sleeping Car Porters. The program also features Harry Hershfield as master of ceremonies and panel discussions devoted to projects presently operating across the State under the Older Americans Act of 1965. Representatives of New York State government departments and the Projects under the Older Americans Act will provide exhibits and consultation during the day.

Pediatric surgery topic of lecture

The third annual lecture of the New York Society of Pediatric Surgery, a Chapter of the Surgical Section of the American Academy of Pediatrics, is to be held on May 16, 8:30 P.M., at New York University-Bellevue Medical Center, First Avenue and 32nd Street, New York City. Thomas Starzl, M.D., associate in surgery, Northwestern University Medical School, is to be guest speaker on the topic of "Organ Transplantation in Children."

Cardiology Society to meet

The New York Cardiological Society will commemorate its fortieth anniversary on May 18 with a scientific program which features the following guest speakers: William Dock, M.D., Arthur M. Master, M.D., Walter C. Alvarez, M.D., C. Walton Lillehei, M.D., John H. Moyer, M.D., Herman K. Hellerstein, M.D., Mason Sones, M.D., Leroy Vandam, M.D., Irving S. Wright, M.D., Cesar Caceres, M.D., William J. Grace, M.D., and Arthur A. Sasahara, M.D.

The meeting is open to all physicians who are interested in cardiovascular disease. For further information write to: New York Cardiological Society, 47 East 67th Street, New York, New York.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Children's diseases topic of conference

Maimonides Medical Center and its affiliate, Coney Island Hospital, are sponsoring the seventh annual Pediatric Postgraduate Symposium at the Coney Island Hospital, Brooklyn, May 26 through 28.

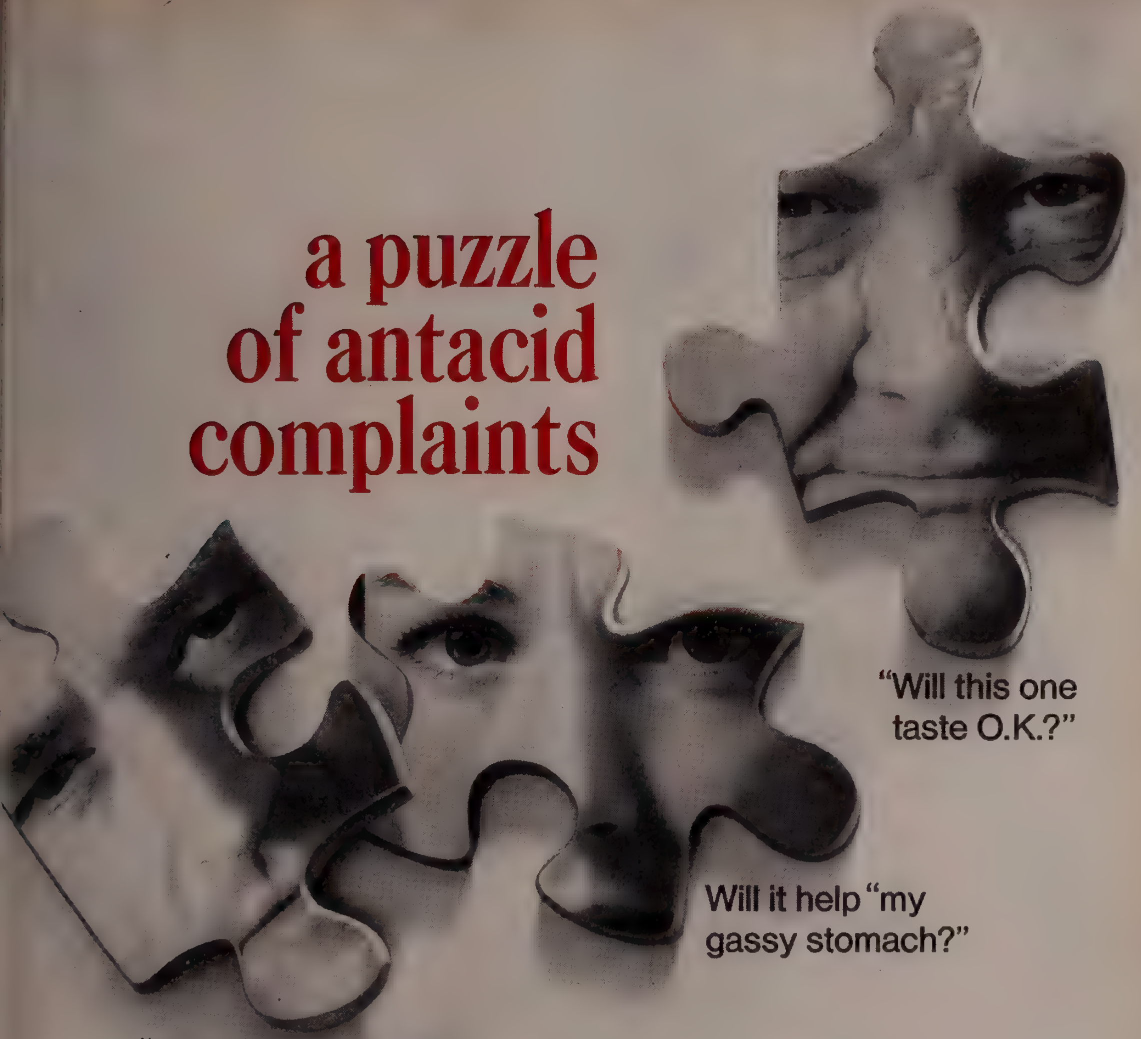
A distinguished faculty of pediatricians and specialists in closely allied fields will conduct the three-day program. The topics covered will include endocrinology, therapy in pediatrics, the adolescent, neuromuscular diseases, genetics, and hematology. Howard A. Joos, M.D., director of pediatric services, Maimonides Hospital, will be guest speaker at the opening session. Joseph Avin, M.D., is cochairman of the symposium.

Immunology topic of meeting

The School of Medicine of the State University of New York at Buffalo announces an International Convocation on Immunology to be held June 17 through 19 at the Statler Hilton Hotel, Buffalo.

The convocation is being held to inaugurate the new Center for Immunology at the University. The function of the Center will be to consolidate and expand fundamental and applied immunologic investigations. The convocation will focus on two fields, "Cell and Tissue Specificity and Immunopathology" by Ernest Witebsky, M.D., professor of bacteriology and immunology.

a puzzle of antacid complaints


"Will this one taste O.K.?"
Will it help "my gassy stomach?"
"Will it stop the pain?"

Mylanta®
aluminum and magnesium hydroxide *plus* simethicone

a solution to peptic ulcer distress

Effective neutralization–
with the two most widely prescribed antacids: aluminum and magnesium hydroxides.

Concomitant relief of G.I. gas distress–
with the proven[1] defoaming action of simethicone.

Prolonged acceptance confirmed–
in 87.5% of 104 patients after a total of 20,459 documented days of therapy.[2]

Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. Dosage: One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

Stuart
Division/Pasadena, Calif.
ATLAS CHEMICAL INDUSTRIES, INC.

in the
control of pain

Talwin®— brand of pentazocine (as lactate)

Contraindications: *Increased Intracranial Pressure, Head Injury, or Pathologic Brain Conditions in which clouding of sensorium is undesirable.* Talwin (brand of pentazocine) should not be administered in these cases, since drug-induced sedation, dizziness, nausea, or respiratory depression could be misleading.

Precautions: *Pregnancy.* No teratogenic or embryotoxic effects attributable to the use of Talwin have been seen in extensive reproductive studies in animals; however, like all new drugs, Talwin should be given with caution to pregnant women. A large number of patients in labor have received the drug with no adverse reactions other than those that occur with commonly used strong analgesics. However, as with other strong analgesics, Talwin should be used with caution in women delivering premature infants.

Ambulatory Patients. Since sedation, dizziness, and occasional euphoria have been noted, ambulatory patients should be warned not to operate machinery, drive cars, or unnecessarily expose themselves to hazards.

Certain Respiratory Conditions. The possibility that Talwin (brand of pentazocine) may cause respiratory depression should be considered in treatment of patients with bronchial asthma. Talwin (brand of pentazocine) should be administered only with caution and in low dosage to patients with respiratory depression (e.g., from other medication, uremia, or severe infection), obstructive respiratory conditions, or cyanosis.

Patients Dependent on Narcotics. Because Talwin is a narcotic-antagonist, patients dependent on narcotics and receiving Talwin may occasionally experience certain withdrawal symptoms. Talwin should be given with special caution to such patients. It has been observed that some patients previously given narcotic-analgesics for one month or longer had mild withdrawal symptoms when the drug was replaced with the analgesic, Talwin. After a short period of adjustment the subjects were usually able and willing to continue taking Talwin, and relief of pain was satisfactory.

Nonaddicted Patients Receiving Narcotics. Symptoms believed to be indicative of antagonism to the opiate may be observed rar with administration of Talwin to patients receiving opiates fo short time. Intolerance or untoward reactions are seldom obser after administration of Talwin to patients who have received sin doses or who have had limited exposure to narcotics.

Impaired Renal or Hepatic Function. Although laboratory tests h not indicated that Talwin causes or increases renal or hepatic i pairment, the drug should be administered with caution to patie with such impairment. Extensive liver disease appears to predisp to greater side effects (e.g., marked apprehension, anxiety, dizzine sleepiness) from the usual clinical dose, and may be the result decreased metabolism of the drug by the liver.

Myocardial Infarction. As with all drugs, Talwin (brand of per zocine) should be used with caution in patients with myocar infarction who have nausea or vomiting.

Biliary Surgery. Until further experience is gained with the eff of Talwin on the sphincter of Oddi, the drug should be used v caution in patients about to undergo surgery of the biliary tr

Adverse Effects: Talwin is relatively free from the undesirable s effects associated with morphine, such as constipation, urinary tention, or severe respiratory depression. Furthermore, Talwin duces less nausea, vomiting, and diaphoresis than meperidine.

In over 12,000 patients who received Talwin intramuscularly, sut taneously, or intravenously, nausea, the most frequent adverse fect, occurred in approximately 5.0 per cent. In decreasing orde occurrence were vertigo, dizziness or lightheadedness; vomit and euphoria. Respiratory depression was reported as an adv reaction in 1.0 per cent.

The incidence of each of the other adverse effects was well be 1.0 per cent: constipation, circulatory depression, diaphoresis, nary retention, alteration in mood (nervousness, apprehens depression, floating feeling), hypertension, sting on injection, h ache, dry mouth, flushed skin including plethora, altered ute

alwin®

and of

pentazocine
(as lactate)

TEVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

in should not be used for patients with
sed intracranial pressure,
njury or pathologic brain conditions.
sufficient experience is gained, it should not
ministered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

Talwin acts as rapidly as morphine; its duration of action may sometimes be less. Relief of pain with Talwin usually lasts three hours or longer.

Less constipation than with morphine
Less urinary retention than with morphine
Less risk of severe respiratory depression than with morphine
Less nausea than with meperidine
Less vomiting than with meperidine
Less diaphoresis than with meperidine

With Talwin — no narcotic controls
Talwin does not require a narcotic prescription or narcotic records. The World Health Organization Expert Committee on Dependence-Producing Drugs concluded that "...there was no need at this time for narcotics control of pentazocine [Talwin] internationally or nationally." (*WHO Tech. Rep. Ser.*, no. 343, 1966, p. 6.)

Talwin relieves pain of all types and all degrees — mild, moderate, and severe — in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ctions during labor, dermatitis including pruritus, dreams,
nesia, and dyspnea occurred rarely after administration of
. Furthermore, each of the following adverse reactions oc-
in less than 0.1 per cent: tachycardia, visual disturbance
d vision, diplopia and nystagmus), hallucinations, disorienta-
eakness or faintness, muscle tremor, chills, allergic reactions
ng edema of the face, taste alteration, insomnia, diarrhea,
s, and miosis; laryngospasm in one patient.

(brand of pentazocine) has not produced severe respiratory
rassment in adults (never apnea), even with large amounts. A
number of newborn infants whose mothers received Talwin
labor had transient apnea. The incidence of temporary dim-
in the rate or strength of uterine contractions is low after
stration of Talwin, similar to that following meperidine hydro-
le. (In reporting no interference with normal labor in patients
ng Talwin, one investigator further stated that the drug may
se uterine activity.) Generally, no significant fetal heart rate
e occurs.

tory tests of blood and of liver and kidney functions have
ed no significant abnormalities. A minimum and probably
ficant increase in the per cent of eosinophils in peripheral
counts and bone marrow occurred occasionally.

is well tolerated by patients with diabetes mellitus, and no
es in insulin requirements have been observed.

e and Administration: *Adults, Excluding Patients in Labor.*
e recommended single parenteral dose is 30 mg., by intra-
lar, subcutaneous, or intravenous route; may be repeated
three to four hours. Pain has been relieved in most patients
ot more than three doses daily. Infrequently, selected patients
eceived single doses as high as 60 mg.

's in Labor. A single, intramuscular 30 mg. dose has been most
nly administered. An intravenous 20 mg. dose has given adequate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

Duration of Therapy. Patients with chronic pain who received Talwin for prolonged periods (e.g., over 300 days) experienced no withdrawal symptoms even when administration was stopped abruptly; furthermore, there was no tolerance to the analgesic effect.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Talwin has not produced apnea or severe respiratory embarrassment in adults, even in large doses. Occasionally, however, moderate respiratory depression may occur. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

Winthrop

Winthrop Laboratories
New York, N.Y. 10016

Medical News

Course offered in Research Instrumentation

The Polytechnic Institute of Brooklyn is sponsoring a summer course in Research Instrumentation to be held July 20 through August 10 inclusive at the Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn.

This course is designed to provide engineers, physical and biological scientists, and science educators with a working knowledge of electronic instrumentation as applied to problems in research. Based on the famous Heath/Malmstadt-Enke system, the course features intensive laboratory experimentation supplemented by lectures, demonstrations, and informal discussions.

Tuition is $450 which covers all laboratory fees, textbook, special notes, and daily lunch. Enrollment will be limited, and the closing date for consideration of applications is May 15. For further information write to: Kenneth R. Jolls, assistant professor of chemical engineering, The Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn, New York 11201.

Organ transplant center opens

A major Organ Transplant Center, featuring an intensive care unit designed exclusively for transplant patients and an extensive renal dialysis unit, was opened on March 28 at Montefiore Hospital and Medical Center in The Bronx.

Opening of the Center, will enable the hospital to perform as many as 50 kidney transplants each year. The Center will also be used to accommodate patients who have undergone transplants of other organs such as livers, lungs, and hearts as soon as initiation of programs in these areas becomes practicable.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Personalities

Awarded. To Vincent J. Freda, M.D., assistant clinical professor of obstetrics and gynecology, College of Physicians and Surgeons Columbia University; and John G. Gorman, M.D., director of the Blood Bank, Columbia-Presbyterian Medical Center, the first Maternity Center Association medal for distinguished service and in recognition of their efforts in developing a potent anti-Rh immunoglobulin... To David M. Bosworth, M.D., New York City, the Second Class Order of the Sacred Treasure by the Japanese Government, in recognition of his contribution to the advancement of orthopedic surgery in Japan since World War II.

Honored. Philip Levine, M.D., New York City, the 1968 award of distinction by the Alumni Association of Cornell University Medical College for his work on the Rh blood factor.

Appointed. Keith M. Schneider, M.D., Great Neck, as chief of pediatric surgery at the Hospital of the Albert Einstein College of Medicine of Yeshiva University.

Antilymphocytic serum and organ transplants

A review of research and clinical work with antilymphocytic serum, currently used to help suppress the body's rejection against organ or tissue transplants between unrelated persons, appears in a recent issue of *The Sciences*.

This article traces the evolution of antilymphocytic serum from the observation that starfish larvae cells devoured rose thorns inserted under their skin, discovered at the turn of the century. This induced the theory that body cells fight foreign invaders through a similar immune mechanism. Later, following the suggestion that homograft rejection is a function of this immune mechanism, the reaction was traced to the lymphocytes.

Antilymphocytic serum which suppresses the action of lymphocytes has already been used with some success in kidney and liver homografts.

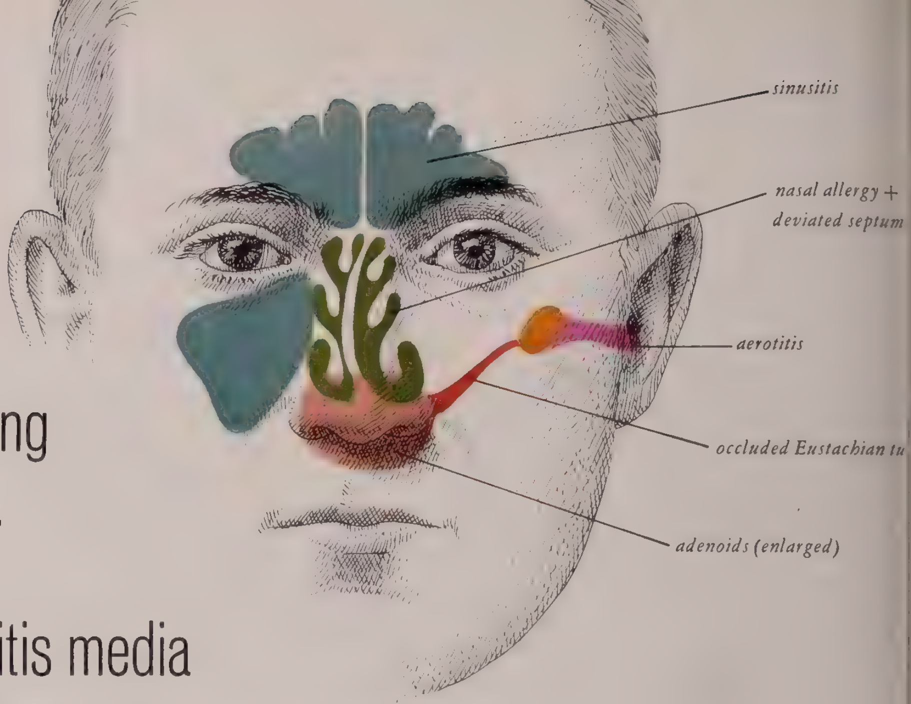
The apparent promise of the antilymphocytic serum is not limited to the area of transplantation. It has already been shown to destroy human leukemic lymphocytes and is currently under study as a potential weapon against some other forms of cancer, the auto-immune diseases, and the arthritides.

vol. 3, no. 2

DORSEY Season

A journal within a journal published periodically in the interests of better medicine by Dorsey Laboratories, a division of The Wander Company, Lincoln, Nebraska 68501. Address communications to Keith W. Sehnert, M.D., Medical Director.

this issue:
serous otitis media
an original article
by Robert H. Lofgren, M.D.



the complaining earache... key to serous otitis media

Robert H. Lofgren, M.D.
Associate Surgeon, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts

Serous otitis media is probably the most common ear problem in children, especially in the wintertime. Diagnosis is usually easy in adults, but may be quite difficult in children, especially the very young child where one has to depend almost entirely on the physical findings.

The symptoms of serous otitis are a fullness in the ear, a mild hearing loss and mild earache. The earache can best be described as a "complaining earache" instead of a "screaming earache" as found in purulent otitis media. A young child may be irritable and pull at the ear. In milder cases, and as the ear recovers, gurgling and popping noises can be heard in the ear.

On examination one may see a yellow tympanic membrane and if a fluid level is present the diagnosis becomes easy. However, the eardrum may be dull gray, or slightly pink, or even perfectly normal. Pneumomassage using a Siegle otoscope or a closed-head electric otoscope must be done on both ears, otherwise the diagnosis will be frequently missed. Attempted movement of the drum with the pneumatic otoscope produces either a sluggish motion of the drum or no motion at all instead of the easily movable normal drum. The Rinne test is negative and there is a 15-20 decibel conductive hearing loss. The bone conduction may be better than normal and an air-bone gap may exist even with the air conduction within normal limits. Occasionally one finds a false nerve deafness on the audiogram when thick glue-like fluid causes immobility of both the oval and round window. Both conditions return to normal when the fluid is removed, but they make the interpretation of screening audiograms very difficult.

There is no single cause for serous otitis. One factor always present is blockage of the eustachian tube, but this alone is not enough to produce fluid. There must also be an inflammatory reaction. Blockage of the eustachian tube may be caused by many conditions. In children the most common cause is enlarged adenoids. In the summer the next most common cause is allergy. Upper respiratory infections or influenza are common causes in the winter. Nasal allergy, acute and chronic sinusitis, nasal septal deformity and cleft palate can all cause eustachian tube obstruction. Some children may have a congenitally small eustachian tube, but fortunately they usually "grow out of the problem."

The first sign of a nasopharyngeal tumor is often a serous otitis. One must always rule this out in any adult who later in life develops repeated or persisting serous otitis. Causes sometimes overlooked are nasogastric tubes after surgery, simple obesity and cardiorenal disease, which may produce congestion in the mucosal lining of the eustachian tube. In recent years we have been seeing a new cause—acute otitis media, where the patient is adequately treated with antibiotics but where drainage has not been stablished either through the eardrum or down the ustachian tube. A sterile exudate is left in the midlle ear.

he inflammatory response may be caused by a harked negative pressure as in air otitis from flying, r it may be from a mild bacterial or viral infection n the middle ear. Serous fluid is a good culture nedium and will frequently go on to purulent otitis hedia, especially if the original blockage was caused y an infectious process such as acute rhinitis or denoiditis. When the infection heals there may be carring in the middle ear mucosa. Mucous glands levelop in this tissue and pour out a thick mucoid naterial. This ear usually looks normal until a neumatic otoscope is used. The objectives in treating serous otitis are to remove the obstructing agent nd to provide drainage from the middle ear. Often his can be accomplished by decongestants and nose lrops. If large obstructing adenoids are present they hould be removed. Sinusitis should be treated with ral decongestants or nose drops, plus antibiotics here indicated. Nasopharyngeal tumors should be reated. Allergies should be treated with antihistanines and, where indicated, by desensitization.

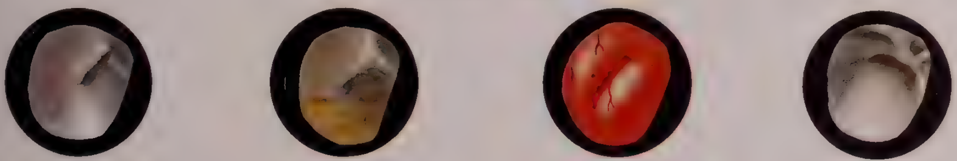
f the fluid does not clear with medical treatment within a week or two, a myringotomy should be done. If there is a question of active infection or if the fluid looks purulent, as is seen at the conclusion of acute otitis, cultures are taken. On adults this can be done in the office without anesthesia. It is no more painful than an intravenous needle for a blood test. A good safe topical anesthetic has a tremendous psychological value to the patient. Children under the age of 1 require no anesthesia. Between the ages of 1 and 3 anesthesia is not absolutely essential although a general anesthetic may be used to avoid the child's possible mistrust at follow-up examinations. I usually do the myringotomy at the same time as the adenoidectomy if the adenoids are enlarged. Once drainage has been established with decongestants or by myringotomy, positive pressure inflation of the middle ear is invaluable in forcing out the serous fluid and keeping it from reforming. The patient can do this himself by performing the Valsalva maneuver. This should be done several times a day, by taking a deep breath, holding the nose and blowing hard against the closed lips for a second or two.

In resistant cases where the fluid reforms as soon as the myringotomy heals, small polyethylene tubes are inserted through the myringotomy site. Insertion of the tubes, even in adults, usually requires an anesthetic. Good anesthesia can be obtained by infiltrating the canal wall with a local anesthetic, using a #27 needle. Once inserted the patient has no sensation of the tubes' presence. Be careful to caution the patient or parents not to allow any water to get into the ear canal while a myringotomy is open or a tube is in place. Water can be kept out by a pledget of lamb's wool in the ear canal or a cotton pledget thickly coated on the outside with petroleum jelly. I check these patients a week after a myringotomy to be sure it is healed and at two month intervals until the tubes have fallen out, usually within three to six months after insertion.

The mucoid type of fluid is so thick and tenacious that it is appropriately called a glue ear. It is aspirated only with difficulty through the eardrum, and occasionally must be removed through a tympanotomy. This thick, glue-like fluid is prone to recur, as the myringotomy usually heals long before the mucous membrane has returned to normal. Repeated myringotomies, as many as ten or twenty, were formerly required for this condition. Now polyethylene tubes are inserted initially when this thick, glue-like material is found. At times a subacute mastoiditis may accompany the serous otitis, which will necessitate a simple mastoidectomy before the condition can be eradicated. Usually the thin serous fluid readily responds to decongestants or to a myringotomy and removal of the eustachian tube obstruction. Occasionally, however, even serous fluid will repeatedly reform. For this, resection of the tympanic plexus of nerves which lies on the promontory of the middle ear has been carried out, as the tympanic branch of the glossopharyngeal nerve is the secretomotor nerve to the ear.

Failure to diagnose serous otitis is the most common cause of the recurrent, almost continuous otitis me-

Otoscopic Views



Normal *Acute Serous* *Acute Purulent* *Chronic Serous* dia seen in young children. In these cases a myringotomy will frequently provide a long-term cure without adenoidectomy or any other surgery. Failure to do this may allow the condition to go on to acute or subacute mastoiditis. Adhesive otitis media with scar tissue binding down the ossicles or tympanosclerosis may also result with permanent impairment of hearing. The prognosis for hearing with adhesive otitis or tympanosclerosis is usually poor. If the adhesions are removed, they reform, and the same is frequently true of tympanosclerosis even after a tympanoplasty. For many of these people a hearing aid is the only solution. The constant negative pressure in long standing serous otitis media may draw in either Schrapnell's membrane or the posterior superior portion of the eardrum forming a pocket to cause a chronic otitis media with cholesteatoma, which may not become apparent until twenty or thirty years later.

The non-medical complications of improper diagnosis or treatment may be even more serious. The irritable child, the frequent bouts of acute purulent otitis media with pain and fever, the expense of antibiotics and doctors, and the time lost from school or work affect the entire family.

In summary, serous otitis has many causes. There is a blocking of the eustachian tube and an inflammatory reaction in the middle ear mucosa, the latter usually caused by a mild infection. The treatment is to provide immediate drainage by decongestants and where necessary, by a myringotomy. The obstructing agent must be removed by surgery if it is adenoid or by oral decongestants, and antihistamines or nasal spray if it is an upper respiratory infection or allergy. Occasionally resistant cases require plastic tubes placed through the eardrum or other more radical surgery. Failure to treat properly leads to hearing loss which may be permanent, repeated acute otitis media or possibly even chronic otitis media with cholesteatoma.

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Ariel, I. M.: Progress in cancer; lymphography and endolymphatic administration of radioactive isotopes for treating cancer, New York State J. Med. **68:** 1247 (May 15) 1968.

A new dimension in visualizing the lymphatic dynamic state when cancerous metastases are transferred via a lymphatic vessel to a lymph node, as well as a means for studying the sequence of events following such transmission, is provided by living lymphography following the injection of radiopaque material into a lymphatic vessel. Since the radiopaque material is retained from six to nine months, changes within the lymph node can be observed. Therapeutic doses of radioactive isotopes are best administered to lymphomas endolymphatically and are most effective in primary lymphomas. This method permits internal irradiation of cancer located within lymphatic vessels (in-transit metastases) and of small cancerous deposits in lymph nodes. Complications are minimal.

Gorman, J. G.: Rh Immunoglobulin in prevention of hemolytic disease of newborn child, New York State J. Med. **68:** 1270 (May 15) 1968.

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If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

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Ariel, I. M.: Progressos de oncologia: lymphographia e le administration endolymphatic de isotopos radioactive in le tractamento de cancere (*anglese*), New York State J. Med. **68:** 1247 (15 de maio) 1968.

Lymphographia in vivo post injection in vasos lymphatic de un substantia radio-opac provide un nove dimension in le visualisation del lymphatic stato dynamic quando metastases cancerose es transferite via un vaso lymphatic ad in un nodo lymphatic. Le technica etiam permitte le studio del evenimentos occurrente post un tal transferimento. Viste que le material radio-opac es retenite durante inter sex e novem menses, alterationes intra le nodo lymphatic pote esser observate. Doses therapeutic de isotopos radioactive es administrate le melio per via endolymphatic in le tractamento de lymphoma. Illos es efficacissime in casos de lymphoma primari. Iste methodo permitte le irradiation interne de cancere a location intra le vasos lymphatic (i.e., de metastases in transito) e de micre depositos cancerose in nodos lymphatic. Le complicationes es minime.

Gorman, J. G.: Immunoglobulina Rh in le prevention de morbo hemolytic in neonatos (*anglese*), New York State J. Med. **68:** 1270 (15 de maio) 1968.

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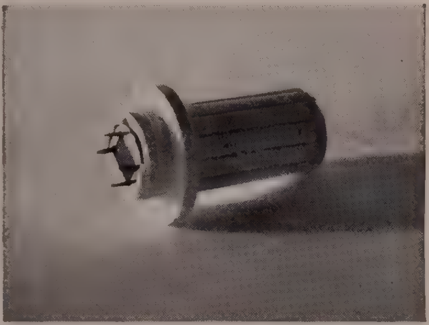

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But no longer. At the urging of the Department executives, and with their enthusiastic endorsement, the periodical has been translated by its editors into a sprightly, highly-readable periodical aimed at audiences found in physicians' waiting rooms. This has been achieved without any sacrifice of accuracy.

Material aimed specifically at physicians is contained in a two-page, tightly-written topical summary on pages perforated to facilitate easy removal and filing either before or after the magazine is added to reception room libraries. Much interest is generated by a question-and-answer section, in which Department and other experts reply to readers' queries.

"Package" presentation technics are being employed from time to time to deal most effectively with a major health problem. For example, a recent issue dealing with smoking evoked broad reaction and resulted in an unusually heavy demand for extra copies.

Significantly, many such requests were received from school health education teachers and nurses who regarded the issue as an important supplement to their efforts to achieve broadened pupil—and parental—understanding of smoking as a health hazard.

Concurrently with the change in direction, *Health News* distribution was increased to 50,000 a month. The expansion of circulation and the new approach in dealing with medical topics have proved their worth.

Hazards of indiscriminate use of LSD getting across

A growing awareness of the dangerous side effects of LSD is contributing to a decline in the use of the drug. This hopeful statement comes from the National Institute of Mental Health and is made by a staff scientist, Jerome Levine.

The seriousness of side effects and the frequency with which they occur are publicized by hospital emergency room reports throughout the country and are having an impact.

The common hazards are more gruesome than pleasurable and consist of the following:

1. *The panic reaction.* This occurs when the drug taker realizes that he cannot control the unique experience the drug has triggered. He desperately wants to end the drug's effect because he "cannot stand it" and fears he is losing his mind.

2. *The paranoid reaction.* During the so called "trip" the individual becomes suspicious that someone is trying to poison him

or to control his mind. These feelings last about three days after the drug wears off.

3. *Recurrence of the drug experience.* Days or even months after stopping the drug, the person unaccountably may repeat his drug-induced reaction. The recurrence frequently appears during some stressful situation, and the person may again fear he is going insane.

4. *Loss of judgment.* Judgment becomes impaired during LSD use. Individuals have been known to walk out of windows because of the conviction that they can fly. Others have reported feelings of invincibility to the extent that they are willing to do extremely dangerous things believing that if their physical body dies their spirit will live on.

This potent drug, discovered thirty years ago and only recently being abused, is a first rate research tool in various mental conditions.

If it ever proves to be therapeutically useful its use will be extremely limited.

It is to be hoped that the misguided few who have abused the drug in the search for a means to shock their society will help to put the genie back in the bottle.

Share Your Medical Journals With Colleagues Overseas

The doctors of the U.S.A. are being asked to send their medical journals—after they have read them—to colleagues overseas (Asia, Latin America, and Africa) who wish to have access to current medical literature but, either because of currency regulations or actual cost involved, cannot themselves subscribe to medical periodicals. We can supply you with the name, address, and medical specialty of doctors in these areas who would be happy to receive these much wanted journals, (*particularly specialty journals*), which you will mail direct to your overseas colleague.

This is a direct "Doctor-to-Doctor" program which is being sponsored by the American Medical Association with the collaboration of The World Medical Association to help alleviate the lack of current medical publications and to further international good will. Your cooperation in this program will be greatly appreciated and your contact with these colleagues in other countries, we can assure you, will prove very gratifying. If you wish to participate in this program, send your name, address, and titles of journals you will contribute to DOCTOR-TO-DOCTOR PROGRAM, ℅ The World Medical Association, Inc., 10 Columbus Circle, New York, New York 10019.

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of
trichomonal vaginitis...

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For the most widespread form of vaginitis the most widely successful therapeutic agent, Flagyl, is clearly indicated.

In trichomonal vaginitis, most physicians have reported a cure-rate of 95 per cent or more with Flagyl when infected male partners are treated concurrently and when treatment is repeated for occasional refractory infections in women.

This high rate of cure obtained with Flagyl is unparalleled. Only systemically active Flagyl reaches the hidden reservoirs of reinfection in male and female genitourinary tracts.

Indications: Flagyl is indicated only in the treatment of trichomoniasis in both the male and female.

Contraindications: Pregnancy; disease of the central nervous system; evidence or history of blood dyscrasia.

Precaution: Complete blood cell counts should be made before, during and after therapy, especially if a second course is necessary.

Side effects: Infrequent and minor side effects include nausea, metallic taste and furry tongue. Gastrointestinal disturbances, flushing and headache sometimes occur, especially with concomitant ingestion of alcohol. The taste of alcoholic beverages may be altered. Other effects, all reported in an incidence of less than 1 per cent, are diarrhea, dizziness, vaginal dryness and burning, dry mouth, rash, urticaria, gastritis, drowsiness, insomnia, pruritus, sore tongue, darkened urine, anorexia, vomiting, epigastric distress, dysuria, depression, vertigo, incoordination, ataxia, abdominal cramping, constipation, stomatitis, numbness or paresthesia of an extremity, joint pains, confusion, irritability, weakness, cystitis, pelvic pressure, dyspareunia, fever, polyuria, incontinence, decreased libido, nasal congestion, proctitis and pyuria. Elimination of trichomonads may aggravate candidiasis.

Dosage and Administration: In women: one 250-mg. oral tablet three times daily for ten days. A vaginal insert of 500 mg. is available for local therapy when desired. When used, one vaginal insert should be placed high in the vaginal vault each day for ten days; concurrently two oral tablets should be taken daily.

In men: When trichomonads are demonstrated, one 250-mg. oral tablet twice daily for ten days in conjunction with treatment of his female partner.

Dosage Forms: Oral tablets—250 mg.
Vaginal inserts—500 mg.

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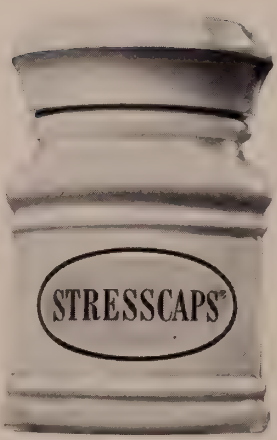

Each capsule contains:

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Vitamin B_6 (Pyridoxine HCl)	2 mg
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Scientific Articles

Progress in Cancer

Lymphography and Endolymphatic Administration of Radioactive Isotopes for Treating Cancer*

IRVING M. ARIEL, M.D., F.A.C.S.
New York City

Associate Clinical Professor of Surgery and Attending Surgeon, New York Medical College, Flower and Fifth Avenue Hospitals; Attending Surgeon and Chief of Soft Somatic Tissue Tumor Service, Hospital for Joint Diseases; Attending Surgeon, Pack Medical Group

A NEW DIMENSION *in visualizing the lymphatic dynamic state when cancerous metastases are transferred via a lymphatic vessel to a lymph node, as well as a means for studying the sequence of events following such transmission, is provided by living lymphography following the injection of radiopaque material into a lymphatic vessel. Since the radiopaque material is retained from six to nine months, changes within the lymph node can be observed. Therapeutic doses of radioactive isotopes are best administered to lymphomas endolymphatically and are most effective in primary lymphomas. This method permits internal irradiation of cancer located within lymphatic vessels (in-transit metastases) and of small cancerous deposits in lymph nodes. Complications are minimal.*

LIVING LYMPHOGRAPHY (lymphangio-adenography) is defined as the roentgenography of the lymphatic channels (lymphangiography) and the lymph nodes (lymphadenography) following the injection of a radiopaque material into a lymphatic vessel. Accordingly, we have been provided with a new dimension in the visualization of the lymphatic dynamic state when cancerous metastases are transferred via a lymphatic vessel to a lymph node, as well as a means for the study of the sequence of events which follow such transmission. The administration of a cancerocidal agent, a radioactive isotope, permits the internal irradiation of not only cancerous deposits within a lymph node, but also of in-transit metastases.

This report details certain of the lessons learned from the foregoing studies, and the clinical results in the diagnosis and treatment of certain cancers are described.

Lymphography in diagnosis of malignant neoplasms

The diagnosis of metastases within the lymph node is dependent on the fact that metastases do not concentrate the injected contrast medium, ethiodized oil (Ethiodol). Normally, the lymph nodes will concentrate the ethiodized oil; when a metastasis of a given size is present, a vacuole remains.

APPEARANCE OF NORMAL LYMPH NODES. The normal lymph node is usually ovoid with a regular contour. However, the normal node may also be of V or J shape, and frequently a small notch in the margin known as the hilum is present, which is the point of entry of the lymphatic trunk. The opacified, normal lymph node presents a homogeneous and granular appearance. Sometimes a normal lymph node may be partially replaced by fat and/or fibrous tissue lending an appearance similar to that of a cancerous metastasis, and a false positive diagnosis is made. Fischer and Thornbury[1] call attention to another defect

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Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Pathology, Clinical Pathology, and Blood Banking, February 16, 1967.

* Grants-in-aid from the City of New York Department of Health, Division of Cancer Research and Control, and the Janet K. Hetherington Memorial Fund for Cancer Research.

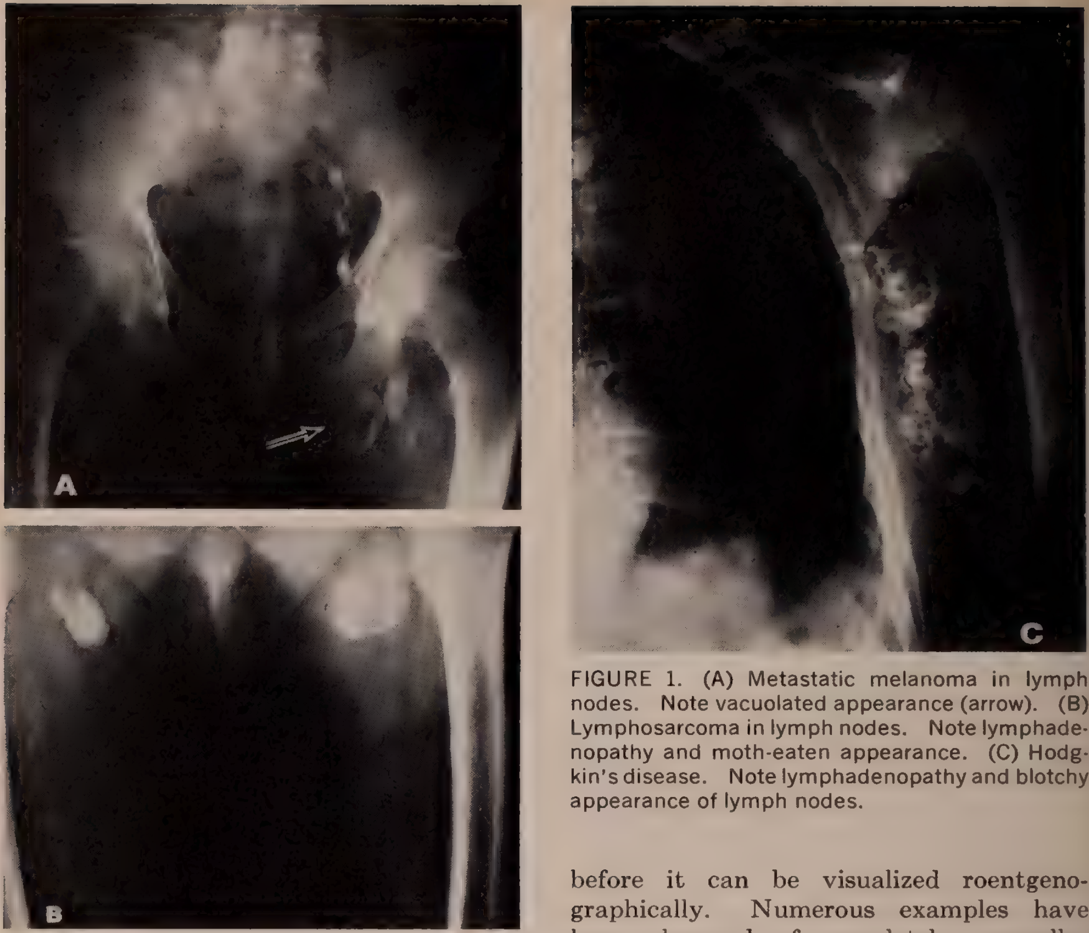


FIGURE 1. (A) Metastatic melanoma in lymph nodes. Note vacuolated appearance (arrow). (B) Lymphosarcoma in lymph nodes. Note lymphadenopathy and moth-eaten appearance. (C) Hodgkin's disease. Note lymphadenopathy and blotchy appearance of lymph nodes.

in normal lymphography which may create a false positive diagnosis, that is, when two nodes lie closely adjacent they give the radiographic appearance of a single node with a small space between suggesting a metastasis. Special studies and oblique views help to delineate these defects.

APPEARANCE OF METASTASES. Metastases will appear as a clear area or vacuole in an otherwise homogeneously filled lymph node (Fig. 1A). The observed patterns of metastases are numerous and varied. Frequently, lymph nodes containing metastases demonstrate marginal filling defects because of the presence of small metastases in the subcapsular region presenting a moth-eaten appearance. Usually these nodes are of normal size and do not become enlarged until extensive metastases are present.

A study by Koehler, Wohl, and Schaffer[2] demonstrated that a metastasis must be a minimum of 5 to 10 mm. in diameter before it can be visualized roentgenographically. Numerous examples have been observed of completely normally-appearing lymph nodes which contained microscopic-sized deposits of cancer.

When a lymph node is completely replaced by cancer, the flow of the injected ethiodized oil completely circumvents this node, and it is not visualized radiographically. Therefore, the absence of opacification may give the surgeon a false sense of security.

The entire replacement of the node by cancer produces an absolute stoppage in the flow of ethiodized oil. Further testament to complete nodal replacement by cancer is the appearance of a pattern of fine reticular collateral lymphatic channels branching off from the area of abrupt obstruction.

The accuracy of diagnosing lymph node metastases by means of lymphography averages about 30 per cent. Errors may be made on two points; from the standpoint of false negatives in which no metastases are observed in a lymph node which appears radiographically normal, and false positives where defects are observed within a node which are not the result of metastases.

Radiographic appearance of lymphoma in lymph nodes

It is in the field of lymphomas that lymphography lends its greatest diagnostic accuracy. In the lymphomas the lymph nodes will be markedly enlarged and will present a moth-eaten appearance throughout. Baum *et al.*[3] have stressed the fact that lymphography demonstrates even the most minor changes within the lymph nodes caused by lymphoma. Two distinct changes occur in the lymphomas. There is an enlargement of the lymph nodes and an alteration in the contrast nodal pattern.

The most typical picture seen in lymphosarcoma is a mottled appearance in an enlarged lymph node, defined as producing a salt and pepper effect (Fig. 1B). Giant follicular lymphoblastoma gives a similar picture, however; the lymph nodes are markedly enlarged and present the salt and pepper effect. In reticulum cell sarcoma, in addition to the lymphadenopathy and the salt and pepper effect, there are blotchy areas caused by incomplete filling. This blotchy appearance is noted to a greater degree in Hodgkin's disease (Fig. 1C). In lymphatic leukemia and in certain instances of myelogenous leukemia, a picture similar to that of lymphosarcoma may be observed. Occasionally, the lymph nodes of metastatic seminoma and sarcoidosis may simulate lymphosarcoma in appearance. Rarely does lymphadenitis of a nonspecific nature mimic the appearance of the lymph nodes as produced by the lymphomas.

In the delineation of the lymphomas, lymphography is a most valuable adjunct, not only as an aid in diagnosis, but also in the assessment of the extent of the malignant neoplastic involvement. Recently, a patient was referred to us for therapy with a diagnosis of Hodgkin's disease made histologically. A lymphogram was done, and the diagnosis was interpreted as lymphadenitis; review of the biopsy slide confirmed this diagnosis. The benefit accorded this patient by lymphography needs no further comment.

Since the increased use of lymphography in the lymphomas, it has been observed that from 30 to 40 per cent of patients with either Stage I or II lymphosarcoma or Hodgkin's disease will have evidence of involvement of their retroperitoneal lymph nodes. Accordingly, we have advocated the routine administration of endolymphatic radioactive isotopes, which will be discussed later in this presentation.

Additional benefits may be derived from lymphography: (1) It permits the oncologist to study both normal and abnormal lymphatic dynamics and to learn more about cancer spread; (2) since the lymph nodes will retain the radiopaque medium for a period varying from six to nine months, any change within the lymph node can be observed, such as either a response to therapy or an increase in size caused by cancerous growth; (3) it offers the radiotherapist a landmark for the placement of radiotherapeutic portals; (4) one can study the response to x-ray therapy by observing any change in the size of the lymph node, particularly a decrease in size; (5) a repeat lymphogram, especially in patients with lymphoma who must be followed for prolonged periods, will provide an assessment as to the status of the malignant process; (6) when chlorophyll is combined with ethiodized oil, all the opacified lymph nodes are stained light green. Therefore, preoperative lymphography aids the surgeon, especially the surgical resident, in the visualization of the lymph nodes during the performance of a lymphadenectomy for cancer. We had used this technic in the past but have discontinued it since the Federal Drug Administration now prohibits the use of chlorophyll in this instance; and (7) it demonstrates to the surgeon the adequacy of his lymph node dissection. A preoperative lymphogram is performed and, on completion of a lymphadenectomy, a repeat roentgenogram taken on the operating table will demonstrate the presence of any retained lymph nodes (Fig. 2). It must be borne in mind that a lymph node completely replaced by cancer (unopacified) will not be exhibited on x-ray film. However, such cancerous nodes are usually markedly enlarged and are readily visible to the surgeon at the time of operation; and (8) it demonstrates abnormalities of the mediastinum by any alteration in the anatomy of the thoracic duct.

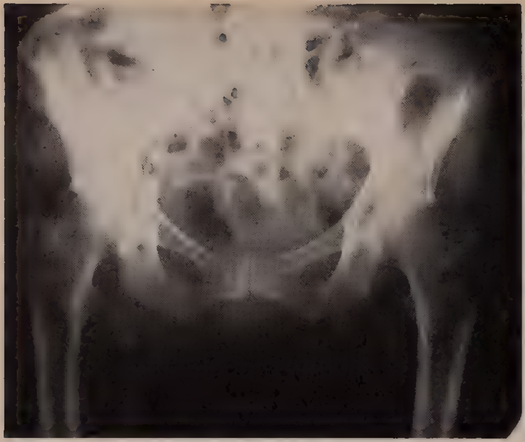


FIGURE 2. Lymphogram demonstrating retained iliac lymph nodes after superficial groin dissection. Metastases produced painful edematous extremity; symptomatic improvement after isotopic lymphogram.

Complications

Fischer and Thornbury,[1] in a review of 100 consecutive lymphograms performed, cite the following complications: (1) fever, 24 patients; (2) radiographically demonstrable contrast embolization in lung, asymptomatic, 6 patients, and liver, asymptomatic, 2 patients; (3) extremity edema, worsened, 3 patients; (4) penile edema, 2 patients; (5) lymphangitis, 2 patients; (6) superficial thrombophlebitis, 2 patients; (7) aseptic incision separation, 2 patients; (8) allergy to patent blue violet, 2 patients; and (9) postconization parametritis exacerbation, 1 patient.

In our series of 125 lymphograms performed by the author and his colleagues, no complications were encountered. Ten patients complained of a transient sense of ill-feeling which they could not pinpoint; 5 of these patients complained of transient mild nausea. The only reaction we have observed was that of slow healing of the incision at the injection site. Inasmuch as many of our patients received radioactive isotopes endolymphatically administered with the ethiodized oil, we believe the slow healing to be, in all probability, the result of leakage at the site of incision. The simple procedure of pouring 1 L. of normal saline solution over the wound before it is closed by suture has obviated this difficulty in the last 50 patients treated.

Spillage of the contrast medium into the lung parenchyma via the thoracic duct is inherent in the technic. As a result, although symptoms are not produced in a patient with normal pulmonary function, a few serious sequelae have been described in patients with extensive pulmonary disease, and 2 fatal fat embolizations have been reported.[4,5] This complication has been averted in our patients by means of limiting the amount of contrast medium injected. We do not inject more than 4 ml. into each lower-extremity lymphatic vessel and a maximum of 3 ml. into each upper extremity lymphatic vessel.

Fischer and Thornbury[1] have demonstrated that patients who have had recent conization of the cervix should not have lymphography performed until about two weeks after the surgery, because a low-grade parametritis exists after surgery, and lymphography potentially causes an exacerbation of this problem.

An occasional patient may show a sensitivity to the blue dye injected intradermally to visualize the lymphatic vessels. At first we used FDC number 1 which we found most satisfactory. The Federal Drug Administration has prohibited its use, and we now use a less satisfactory blue dye, direct sky blue. Rarely is a patient sensitive to the iodine; however, we had 1 such patient who developed a macular dermatitis which responded readily to treatment.

Lymphatic dynamics

A knowledge of the normal lymphatic anatomy and physiology provides us with a better understanding of the changes which may occur as a result of metastasis, those changes which may occur following the performance of certain surgical and radiologic procedures, and will illuminate our understanding as to the best possible course of treatment to be followed.

Normal lymphatic dynamics

Normally, when ethiodized oil is injected into a lymphatic vessel, the medium will be transported throughout the lymphatic network with only a slight delay before deposition in the lymph nodes draining the region. The radiopaque material remains within the lymphatic vessels for a period varying from three to six hours and will drain within twenty-four hours in almost every instance. In contrast to blood flow, lymphatic flow is either extremely slow or stagnant when the extremity is in the dependent position. With the patient in a horizontal position, it may take from one to two hours to inject 10 ml. of ethiodized oil, using a pressure pump. Accordingly, following the intralymphatic injection of ethiodized oil, serial roentgenograms will provide an index of the lymphatic distribution pattern.

Lower extremity lymphatic vessels. The lymphatic trunks of the lower extremity usually follow the course of the greater saphenous vein (saphena magna system). The lymphatic vessels vary from 0.25 to 1 mm. in diameter, usually retaining their caliber as they ascend toward the inguinal region and usually following a straight course to end abruptly (Fig. 3A). When a contrast medium is injected into a lymphatic vessel on the dorsum of the foot, the lymphatic vessels are visualized as one or more trunks coursing proximally along the anteromedial aspect of the leg, converging toward the knee, then ascending and dividing into 12 to 16 divisions as they enter the superficial inguinal lymph nodes (injection site 1, Fig. 3B).[6] If the opaque material is injected into a lymphatic vessel along the lateral aspect of the foot, the lymphatic vessels are seen to course proximally toward the popliteal fossa (saphena parva system), where one or two popliteal nodes are usually found (injection site 2, Fig. 3B)[6]; the latter are found routinely in dogs, whereas in the human being they are absent in a significant number of patients (Fig. 4). The lymphatic vessels continue to course proximally to the deep lymphatic chain and terminate in the superficial inguinal vessels which course to the thigh and extend mesially to enter the groin in juxtaposition to the femoral vessels. Somewhere along the course of the lymphatic vessels, valves are usually found which tend to prevent backflow. The lymph nodes of the saphena parva system, draining the back of the leg and following the course of the lesser saphenous vein, are said to lie deeper and more craniad than those draining the trunk of the greater saphenous system.

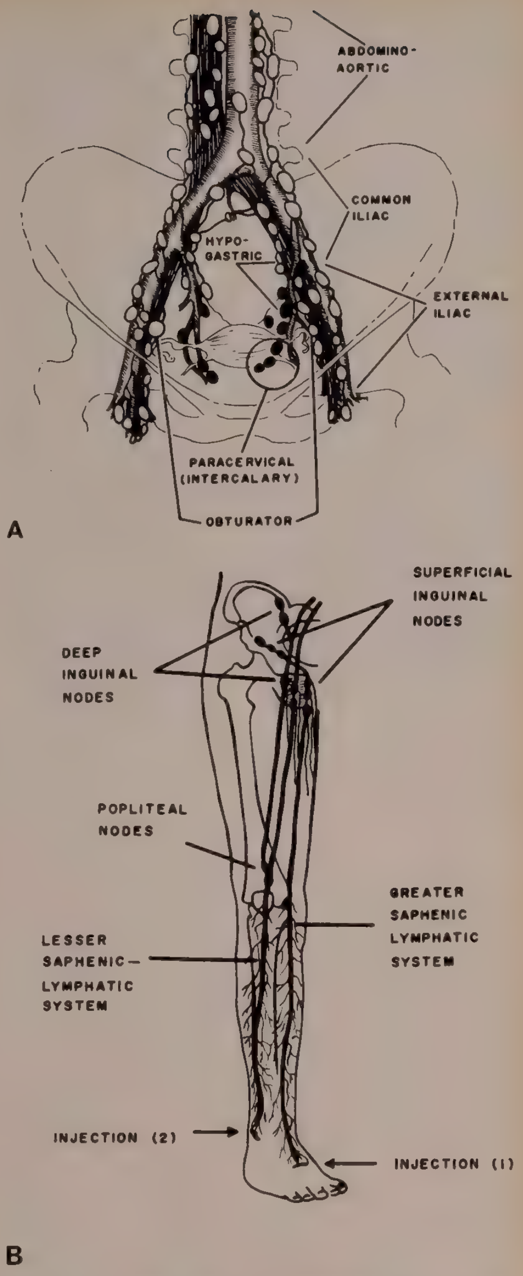


FIGURE 3. (A) Anatomy of lower abdominal lymph nodes. (B) Lymphatic vessels of lower extremity. Injection site 1, on dorsum of foot, drains into greater saphenous lymphatic system. Injection site 2, lateral aspect of ankle, drains into lesser saphenous system, into popliteal nodes, and then to inguinal lymph nodes. (Permission Arch. Surg. **94:** 117 (Jan.) 1967.)[6]

Inguinal and iliac lymph nodes. There are from 4 to 10 inguinal nodes normally, both superficial and deep, presenting a variable pattern. Efforts to divide this group into subgroups based on a relationship to the greater saphenous vein

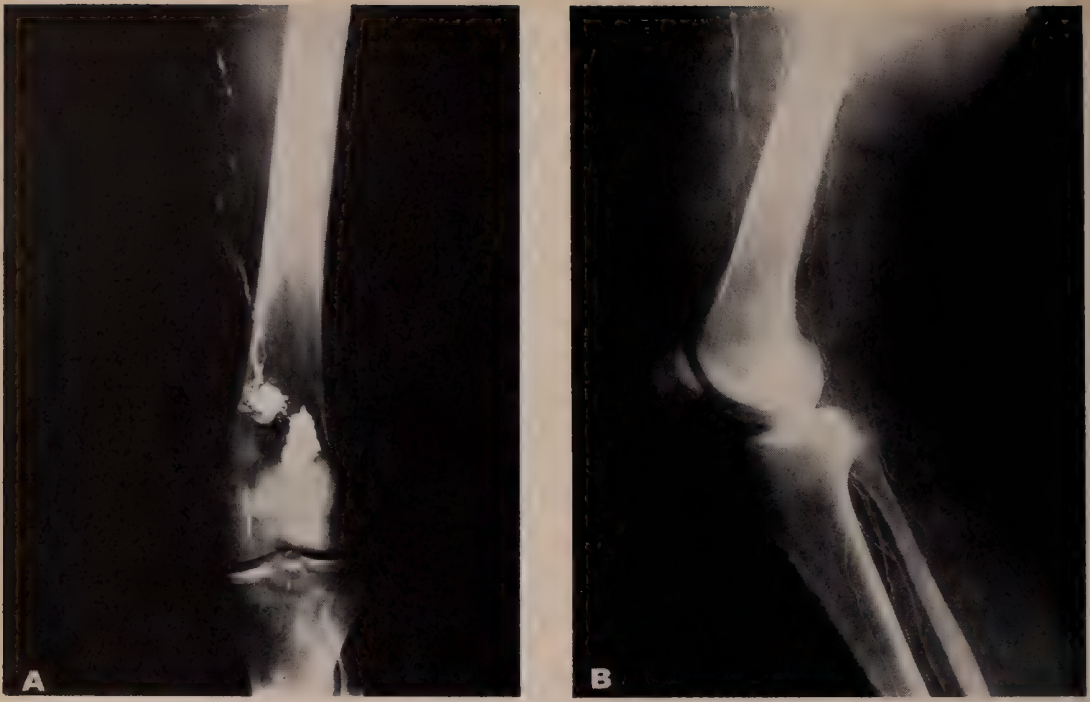


FIGURE 4. (A) Lymphogram of normal man demonstrating two popliteal lymph nodes. Injection made posterior to internal malleolus (courtesy H. W. Fischer, M.D.). (B) Lymphogram of patient with melanoma, performed as in (A), demonstrating well-developed chain of lymphatic vessels coursing popliteal space; no lymph nodes present. Dissection revealed one popliteal lymph node completely replaced by fat.

are believed to be of no practical use in clinical radiographic diagnoses.

As originally described by Rouvier,[7] the efferent lymphatic vessels from the inguinal nodes continue proximally to the external iliac chain of nodes to divide into three chains: a lateral chain located lateral to the external iliac artery (1 to 4 nodes), a middle group which lies on the posterior surface of the external iliac vein (2 to 4 nodes), and a medial group (3 to 4 nodes) posterior to the external iliac vein usually in juxtaposition to the lateral pelvic wall. The obturator node is considered a part of the medial group of the external iliac chain of nodes and is found radiographically related; it may lie either in direct continuity with the remainder of the medial chain, or it may be somewhat distant as a solitary node within the obturator fossa usually between the external iliac vein and the obturator nerve and vessels.

Continuing proximally, the common iliac chain, 4 to 12 nodes lying in close relationship to the common iliac artery and vein, subdivides into the hypogastric nodes, 2 to 8 in number, and courses along the hypogastric artery; from the common iliac nodes, several trunks course craniad along the aorta and inferior vena cava to form the abdomino-aortic lymph node group (25 to 45 nodes). The abdomino-aortic nodes are divided into four groups: (1) right lateral aortic, (2) left lateral aortic, (3) preaortic, and (4) retroaortic. Efferent lymphatic vessels from the abdomino-aortic chain empty into the cisterna chyli usually at the level of the second lumbar vertebra. Rarely can lymph nodes be visualized in the posterior mediastinum, but not infrequently supraclavicular nodes may be seen in the region of the termination of the thoracic duct.

UPPER EXTREMITY LYMPHATICS. There are usually two groups of lymphatic vessels in the upper extremity, a lateral and a medial which join above the elbow and usually follow the basilic vein along the inner aspect of the arm to the axillary chain of lymph nodes (Fig. 5). The axillary nodes vary in number, are interconnected by many trunks, and their efferents may drain either directly into the subclavian vein or may lead to the supraclavicular nodes and then

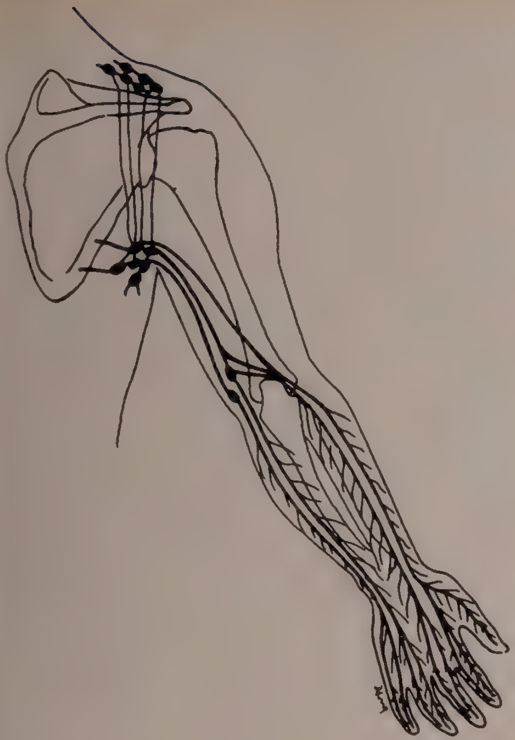


FIGURE 5. Lymphatic vessels and lymph nodes of upper extremity. Note communications from axillary to supraclavicular lymph nodes. (Permission Arch. Surg. **94:** 117 (Jan.) 1967.)[6]

empty into the subclavian vein. Inconsistently, one to two small lymph nodes may be visualized in the epitrochlear region along the medial aspect.

Lymphatic-vascular communications. A communication normally exists between the lymphatic and venous systems. Rusznyak, Foldi, and Szabo[8,9] have demonstrated an anastomosis between the lymphatic vessels and the veins especially in the thyroid, kidney, and liver. Blalock *et al.*[10] demonstrated the presence of numerous connections between the lymphatic vessels and the inferior vena cava, the azygous, and other veins especially after ligation of the thoracic duct. Pressman *et al.*[11] demonstrated the existence of a communication between the lymph nodes and the blood vessels by injecting air into the lymph nodes of animals; the air was seen in both the lymphatic vessels and the veins. Wallace *et al.*[12] demonstrated direct lymphatic-venous communications in the normal individual, found most frequently in the cervical region and to a lesser extent in the upper extremity, and the communications were more abundant in those individuals with lymphatic obstruction.

It is not surprising to note these connections between the lymphatic and venous systems, inasmuch as, embryologically, the lymphatic sacs are formed by a process of budding from the blood vascular endothelium. Budding sacs from the anterior cardinal veins give rise to the lymphatic vessels of the head and neck. Sprouts from the mesonephric vein develop paired sacs which become the precursors of the skeletal lymphatic vessels; two additional sacs are derived from the mesonephric vein, one later becomes the cisterna chyli and the lower thoracic duct, and the other forms the lymphatic vessels of the abdominal viscera.

Effects of metastases—altered lymphatic dynamics

Metastases in lymphatic vessels. The lodgment of tumor implants either within the lymphatic vessels or the lymph nodes may produce an alteration in the normal lymphatic dynamics often determined by the location and degree of obstruction. The blockage of a lymphatic vessel in either the leg or the arm may produce one or a combination of the following alterations in collateral lymphatic flow: (1) The anterior compartment may be completely blocked, shunting the lymphatic flow into the posterior compartment; (2) the anterior chain may be incompletely blocked, producing a partial shunt into the posterior compartment, resulting in function of both compartments; and (3) both compartments may be functional without evidence of block.

Accordingly, a cancer located on the dorsum of the foot may spread to the popliteal lymph nodes either because of an anatomic shunt to the posterior lymphatic chain or because of an obstruction in the anterior lymphatic chain.

Popliteal lymph nodes. When present, the popliteal nodes drain the lesser saphenous lymphatic system and may drain the greater saphenous system as well. Therefore, cancer cells may and do lodge in these nodes. Accordingly, for a malignant neoplasm in the location of drainage into the popliteal nodes, such as directly inferior to the popliteal space, the lateral aspect of the foot, or the heel, the nodes should be included in the therapeutic plan.

It has been stated, "metastasis to the popliteal nodes is so rare that the possibility of its occurrence should not enter into the discussion of the management of melanoma of the lower extremity inferior to the condyles."[13] We are in disagreement with this premise, for we have seen many instances of metastasis of melanoma and other cancers (epidermoid carcinoma and sarcoma) to the popliteal and epitrochlear lymph nodes. Although the popliteal lymph nodes are absent in a certain percentage of human beings, they are, however, present in others. The probability exists that these nodes undergo attrition with advancing age, as do many lymph nodes, and they are present in older individuals in a nonfunctioning, atrophic form.

Our data further suggest that if the lymphogram demonstrates a collateral route from the greater saphenous to the lesser saphenous system, the popliteal nodes should definitely be considered in the therapeutic plan. If lymphograms are not performed, at least a clinical search should be made in the popliteal and epitrochlear regions in all patients seen with either primary or secondary cancers distal to these sites.

METASTASES IN LYMPH NODES. When metastases in the lymph nodes have reached sufficient size, the resultant blockage will shunt the lymph into alternate channels to maintain the integrity of lymphatic flow. A vast network of potential, not normally functioning lymphatic vessels will be enlisted into service, and those in the immediate vicinity of the obstruction will first become functional. Figure 6 is the lymphogram of a patient with metastatic melanoma to the left inguinal region taken five days after the injection of the contrast medium. Stagnation of the lymphatic vessels was present, and collateral circulation developed via the presacral chain of nodes. Eventually metastases were demonstrated in the lymph nodes of the opposite groin. Should this adjacent network prove insufficient, new groups of lymphatic vessels become functional in an effort to re-establish lymphatic flow. Often an unpredictable and bizarre form of lymphatic network will assume the function of lymph transportation, and presumably cancer cells, for great distances uninterrupted by lymph nodes.

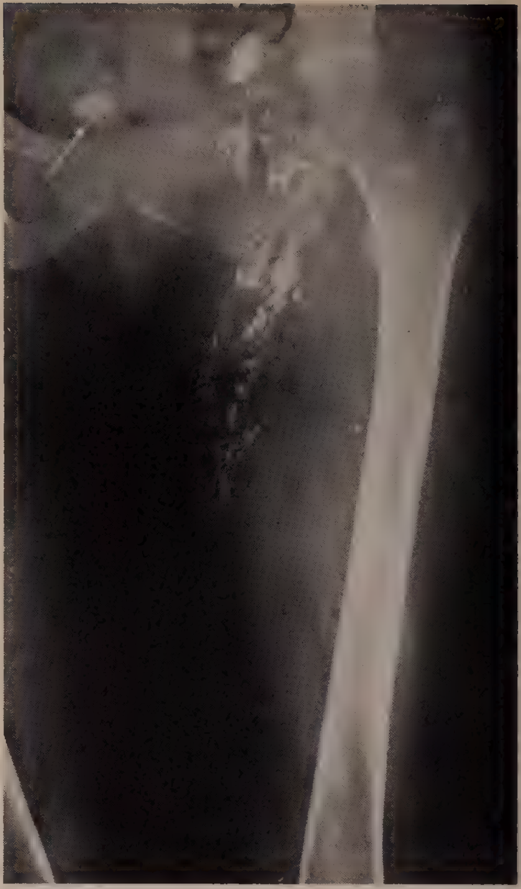


FIGURE 6. Lymphogram of patient with metastatic melanoma to left inguinal region, taken five days after injection of ethiodized oil. Note stagnation of lymphatic vessels and development of collateral circulation where presacral node visualized in midline (arrow). Note space-occupying lesions in inguinal lymph nodes characteristic of metastases.

The nature of the collateral lymphatic vessels is often determined by the level or location of an obstruction. Obstruction in the para-aortic lymphatic vessels may produce an atypical collateral network which may extend into the visceral lymphatic vessels. Obstruction at the level of the porta hepatis may produce such stagnation of the lymphatic system distal to the blockage that the lymph nodes may be compressed and destroyed by the back pressure. Wallace *et al.*[12] demonstrated that obstruction at the thoracic duct produced by posterior mediastinal lesions hindered the normal flow of lymph and

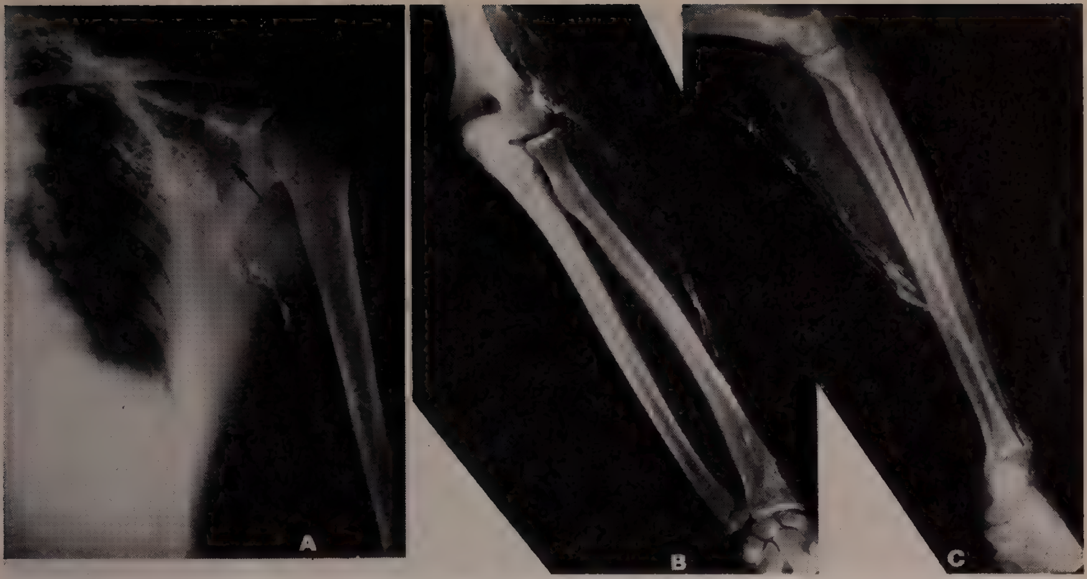


FIGURE 7. Lymphograms of patient with metastases in axilla from primary melanoma of left lateral chest wall. (A) Note defect in lymph node characteristic of space-occupying lesion or metastasis (arrow). Also note filling of supraclavicular lymph nodes which also contain metastases (B and C). Lymphograms demonstrating retention of dye within lymphatic vessels three days after its injection. Note tortuous course, irregular contour, and variaton in caliber of vessels.

induced retrograde filling of the gastrointestinal trunk as well as the intercostal lymphatic vessels.

Those collaterals called into play after an obstruction has become extensive are so eccentric and unpredictable that they defy any effort at interpretation, and the application of therapeutic modalities is nearly impossible. This was demonstrated in an obstruction in the iliac nodes secondary to a carcinoma of the cervix which produced a lymphatic collateral chain in the anterior abdominal wall to the axilla where a metastatic cancer was encountered.[14]

Perivascular lymphatics. The existence of potential spaces in perivascular locations was recently described by Wallace *et al.*[12] These spaces were successfully demonstrated by the investigators as an additional collateral route for the transport of lymph and tumor cells. They liken these perivascular spaces to the perineural or endoneural spaces which have been amply demonstrated to play a major role in the dissemination of tumor emboli. Although they have observed these perivascular spaces, they have been unable to establish their exact anatomy. Are they actual potential spaces between the vessel wall and its surrounding membrane, or do they constitute an integral part of the lymphatic system? However, these authors have shown conclusively the existence of a direct connection between the lymphatic system and these potential spaces to which lymph is transported and which offers a possible route for the unopposed transport of tumor cells. These spaces, located within the perivascular sheath, have been seen in patients with and without edema.

Stagnation of lymph. When radiopaque material is injected into a lymphatic vessel, normally it will have emptied from the lymphatic vessels in from four to twenty-four hours. In the presence of obstruction, stagnation ensues and the injected material will remain within the lymphatics for long periods; as long as two and a half months as determined by the authors and perhaps longer, but measurements have not been made.

Clinically, a stagnant lymphatic state may be manifest by the appearance of edema. An impediment to the free flow of lymph causes an increase in lymphatic pressure with the resultant deposition of lymph within the interstitial spaces of the extremities, producing edema; however, stagnation of lymphatic flow has been observed without resultant edema. We interpret stagnant lymphatic flow as presumptive evidence of the existence or an obstruction in either the proximal chain of lymph nodes or within the proximal lymphatic vessels.

Figure 7 is the lymphogram of a patient with metastases in the axilla from a primary melanoma of the left lateral side of the chest wall. This patient manifested a direct lymphatic connection between the axillary and supraclavicular lymph nodes, illustrating a route for the passage of tumor emboli from the axilla into the supraclavicular region. The lymphogram showed the presence of metastases within the lymph nodes of the axilla; it demonstrated the retention of the contrast medium within the lymphatic vessels three days after the performance of the lymphogram, indicative of stagnation in the lymphatic flow. In some instances, metastases within the lymph nodes may be of such small size as to go undetected lymphographically. For example, the stagnant state of the distal lymphatic vessels in 1 patient prompted the excision of a groin lymph node for histologic study which revealed the presence of metastases.

Lymphatic stagnation with ensuing edema may be only temporary, providing the development of collateral circulation is adequate. Should this occur, then the free flow of lymph within the lymphatic vessels will be re-established, and the edema will subside. However, if an adequate collateral circulation has not developed, the edema will become more pronounced as the lymphatic pressure is increased.

Blocker *et al.*[15] have demonstrated that the normal intralymphatic pressures are subatmospheric in the lower extremity (0 to minus 16 mm. water) with a decreasing gradient upward to the thoracic duct. With blockage, the intralymphatic pressure in the lower extremity is positive, going as high as 60 to 80 mm. water. One patient with an inferior vena cava syndrome caused by a mediastinal tumor with generalized edema from the nipple inferiorly had the extremely high intralymphatic pressure of 400 mm. water in the lower extremity.

Reversal of flow. After a period of failure to establish satisfactory collateral circulation, a reversal in lymphatic flow occurs with the development of a functional superficial chain of dermal lymphatic vessels. In such instances, subsequent regurgitation of lymph occurs distally into a network of dermal lymphatic vessels (Fig. 8).

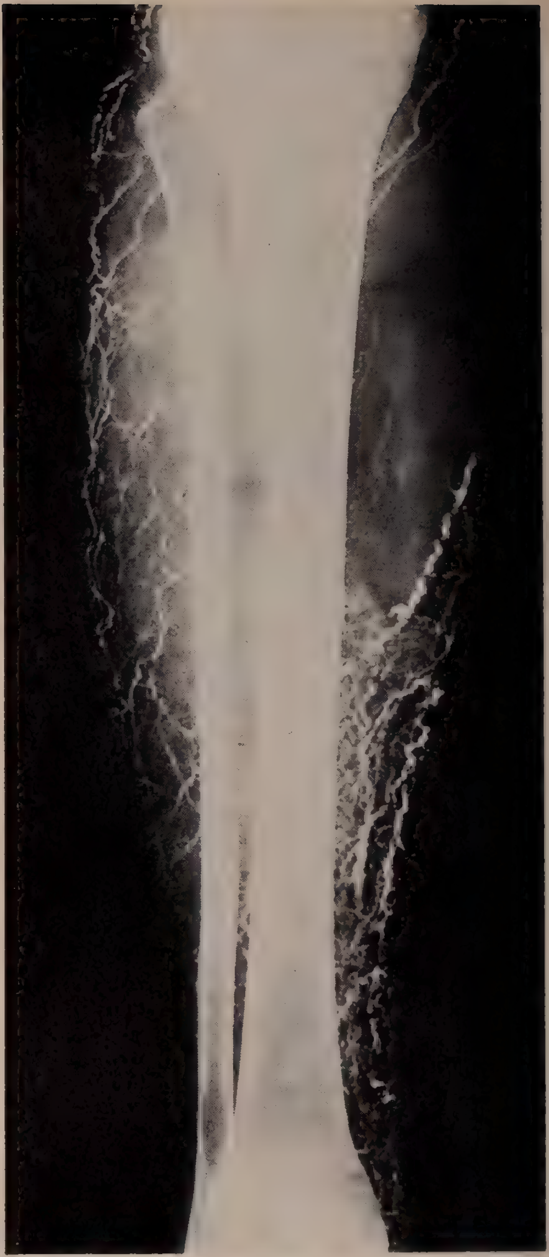


FIGURE 8. Marked lymphedema following radical groin dissection for melanoma with development of extensive network of dermal lymphatic vessels. (Permission Am. J. Roentgenol. **91:** 1187 (1964.)[12]

Lymphaticovenous anastomosis. Previous comments have been made regarding

TABLE I. I^{131} concentration in blood immediately after endolymphatic injection of 30 microcuries I^{131} ethiodized oil 10 ml. volume

Groups	Microcuries I^{131}
Patients without evidence of lymphatic obstruction or metastases to inguinal lymph nodes (average, 4 patients)	6.5
Patients with evidence of lymphatic obstruction or metastases to inguinal lymph nodes (average, 3 patients)	30

the normal existence of lymphaticovenous anastomoses. In the presence of obstruction under the pressure of metabolic necessity, potential, nonfunctioning lymphaticovenous openings become functional, and certain new communications develop in the need to mobilize a collateral circulation for the stagnant lymph, present under an increased head of pressure resulting from obstruction.[1,7,12] Under such circumstances, the transport of tumor cells from the lymphatic into the vascular circulation is probably facilitated.

Lymphatic circulation time. We have observed, as have Stehlin *et al.*,[16] that in the presence of obstruction and following isotopic administration into a lymphatic vessel of the foot, there is a delay in the time it takes for the isotope to reach the inguinal lymph nodes. To ascertain the lymphatic circulation time from foot to groin, a Geiger counter is placed over the groin as the endolymphatic administration of iodine-131 ethiodized oil is begun into a foot lymphatic vessel, and the first recording is taken as the isotope reaches the groin. In 6 patients without evidence of obstruction, the time averaged five minutes and varied from three to eight minutes. In the presence of clinically detectable metastases in the lymph nodes, the time averaged nine minutes and varied from five to fifteen minutes.

I^{131} ethiodized oil concentration in blood. At the completion of the injection of 10 ml. ethiodized oil containing 30 microcuries I^{131}, the concentration of I^{131} in the blood could be considered an index of lymphatic-vascular communication. The data are presented in Table I and demonstrate a significantly increased quantity of I^{131} in the blood of patients with metastases in the inguinal lymph nodes. Some of this may have been because of spillover via the thoracic duct into the circulation; however, the small volume injected (10 ml.) minimizes this possibility.

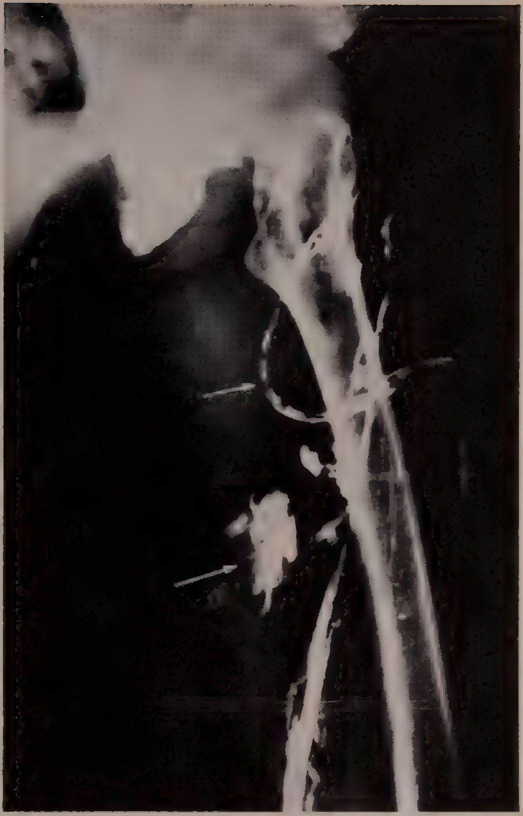


FIGURE 9. Lymphogram taken three days after performance of radical groin dissection for melanoma. Note injected ethiodized oil removed by means of Hemovac (upper arrow) within wound site. Note lymphocele (lower arrow).

Effects of discontinuous lymph node dissection on lymphatic dynamics

Hazards of the operation. We have demonstrated that the performance of a discontinuous operation for melanoma is not without hazard.[6,17] The following sequence of events occurs following the performance of a groin dissection.

1. There is an extensive escape of lymph through the severed lymphatic vessels resulting in the formation of a lymphocele (Fig. 9). A lymphogram was performed three days after the radical groin dissection for a malignant melanoma; a drain was left in situ. Salient in this instance is the

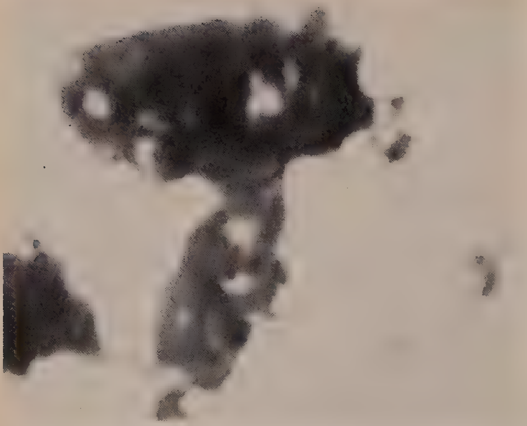


FIGURE 10. Melanoma cell recovered from drainage following radical groin dissection for melanoma (hematoxylin and eosin stain × 740).

observed escape of lymph and ethiodized oil from the lymphatic system into the free tissue spaces of the dissection site, because the innumerable lymphatic vessels severed during the course of the dissection were not patent permitting the leakage; the drain functions as a suction apparatus for the lymph and ethiodized oil. When the drainage tube is removed, the ethiodized oil is retained within the free tissue spaces with the formation of a tract along the course of the tube.

Cancer cells in transit within the lymphatic vessels are deposited into the free tissue spaces where they may seed and grow, being revealed as metastases (Fig. 10).

Herman, Benninghoff, and Schwartz[18] have demonstrated that a lymphocyst will subsequently become an integral part of the newly-formed lymphatic system with the formation of afferent and efferent communicating vessels. However, this is a function of time; the lymph and, presumably, cancer cells will remain in the free tissues for a prolonged period.

2. A sealing off of the lymphatic vessels occurs at the incisional site. As a result, one or all of the following mechanisms occur: (1) The lymphatic vessles may seal off and block the incisional region with the resultant retention of lymph in those lymphatic vessels distal to the operative site; (2) re-establishment in continuity may take place by regrowth of the severed lymphatic vessels; (3) the blocked lymphatic vessels may form collateral channels with adjacent lymphatic vessels with the subsequent re-establishment of lymphatic flow (Fig. 11); and (4) due to lymphatic blockage, and in the presence of an inadequate development of collateral circulation, a regurgitation of lymph occurs within the subsequently functional superficial or dermal lymphatic channels. As a result, edema of the extremity may occur.

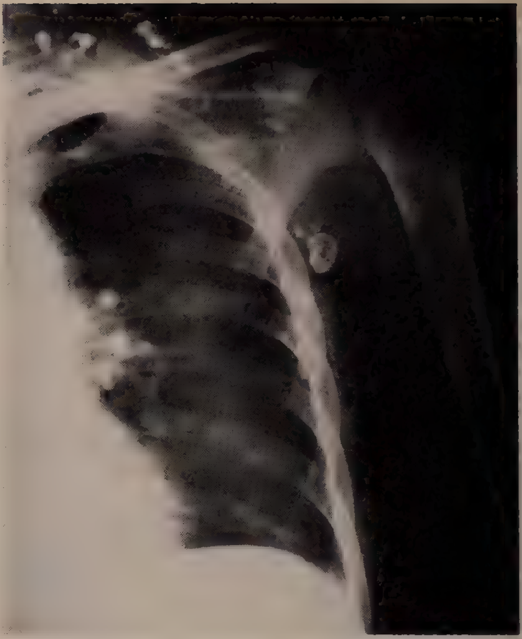
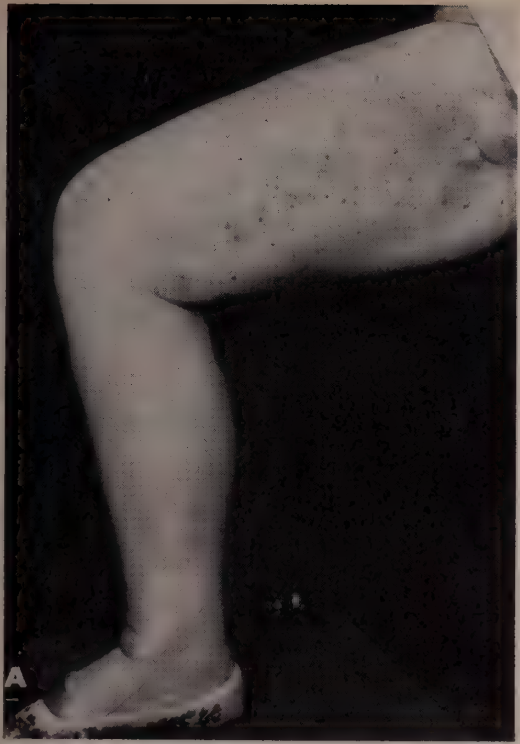
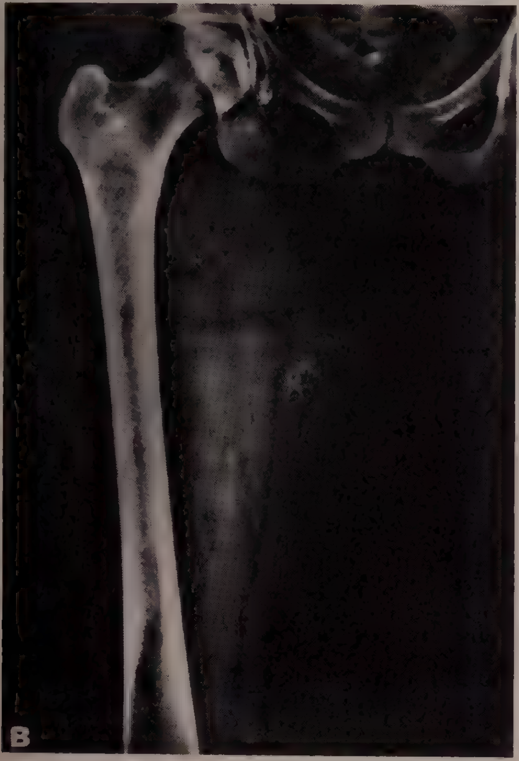


FIGURE 11. Lymphogram demonstrating reconstituted lymphatic circulation. Regenerated lymphatic vessels communicate freely with supraclavicular lymph nodes; new collateral circulation developed with internal mammary chain of lymph nodes. Note residua lymph node in axilla harboring metastatic melanoma. Left radical axillary dissection for melanoma performed two years previously elsewhere.

Satellitosis of melanoma

It is not uncommon to find the development of dermal satellite metastases involving the skin of the leg following extensive metastasis to the lymph nodes of the groin or subsequent to the surgical excision of these nodes. Satellite cancers have been noted to occur in those regions of expansive dermal lymphatic development secondary to an obstruction. It is believed that tumor emboli become implanted within the subcutaneous tissue and/or dermis via these dermal lymphatic vessels. Figure 12 is the lymphogram of a patient with metastatic





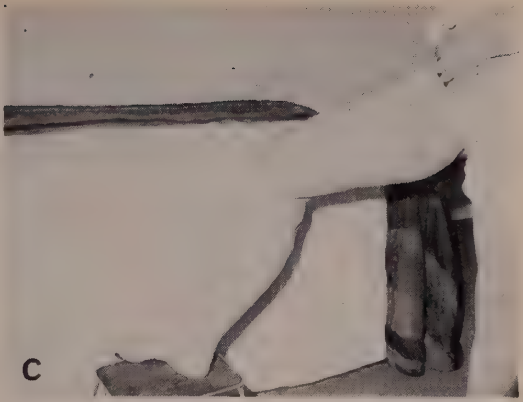


FIGURE 12. Patient with metastatic melanoma on whom partial groin dissection performed two years before lymphography, who developed extensive satellitosis. (A) Clinical photograph demonstrating numerous satellite lesions involving chiefly medial aspect of right thigh. (B) Lymphogram demonstrating extensive collateral lymphatic circulation and showing large number of dermal vessels arising from deep lymphatic vessels at sites of satellitoses. (C) Appearance of right leg five years after groin dissection and two years after therapeutic lymphogram. Note complete disappearance of satellitoses. (Permission Arch. Surg. **94**: 117 (Jan.) 1967.)[6]

melanoma in the left inguinal lymph nodes taken four days after the injection of the contrast medium and demonstrating lymphatic stagnation. A partial groin dissection had been performed two years prior to the development of numerous satellitoses which involved mainly the medial aspect of the thigh. The lymphogram shows the extensively developed collateral lymphatic circulation with its large number of dermal vessels arising from the deeper lymphatic vessels and extending to the skin at sites of the satellite lesions. This patient was treated by the intralymphatic administration of radioactive isotopes given at the time of the lymphogram, and she remains well three years after treatment; the satellite metastases have disappeared, and new lesions have not developed.

Malignant melanoma may spread either by direct infiltration or via lymphatic channels into the adjacent tissues, with the resultant deposition of cancer cells in the regional lymph nodes. Stehlin *et al.*[16] have applied the epigraph, in-transit metastases, to those cancer cells within the lymphatic vessels. This term serves to emphasize the fact that "cancer cells are conveyed via the lymphatic vessels to the regional lymph nodes." Stagnation of lymphatic flow, possibly attributable to proximal obstruction, hinders transportation, and the stalled cancer cells implant and multiply to become a fixed metastatic deposit. The latter should be differentiated from the "floating cell" in transit within the lymphatics. Metastases may be found within the deep lymphatic vessels as well as in the newly developed dermal and subcutaneous lymphatic network (Fig. 13). Accordingly, satellitoses may be considered the result of cancer cells presumably traveling in a retrograde manner within the tiny dermal lymphatic vessels, developed in consequence of lymphatic obstruction with failure to promote adequate routes of collateral lymphatic flow; at least this is one mechanism in their development.

Stehlin and colleagues[14,19] have described the lymphatic route as being responsible for satellitoses but have neglected to call attention to the reversal of flow, with the functionally developed network of superficial dermal lymphatic vessels as a probable mechanism attendant with the development of satellite dermal metastases.

Metastases within the lymphatic vessels of the extremity may be present at any depth, and this should be considered in any planned attack on malignant melanoma of an extremity. Consequently, melanoma cells may be found within the lymphatic vessels as (1) floating cells en route to the regional lymph nodes; (2) fixed within the deeper lymphatic vessels where they remain and grow; or (3) within the dermal lymphatic vessels transported in retrograde fashion and coming to a standstill to grow as satellitoses.

Treatment of certain cancers by endolymphatic administration of radioactive isotopes

The deliverance of a cancerocidal radioactive source directly into a malignant neoplasm offers a theoretically ideal method of treatment. The endolymphatic administration of radioactive isotopes offers a means for irradiating cancers within the lymphatic vessels and metastatic deposits within the lymph nodes. This section will briefly outline our work in progress in the treatment of certain cancers by the administration of radioactive isotopes intralymphatically.

Method. As previously described,[20] a modification of the technic of Kinmonth[21] was used. Briefly, the lymphatic vessel of a hand or foot was identified by the intradermal injection into an intermetacarpal or intermetatarsal web space of 1.5 ml. of an 11 per cent aqueous solution of the blue dye, alphazurine 2 G. Shortly thereafter, nonradioactive ethiodized oil was injected into the cannulized lymphatic vessel.

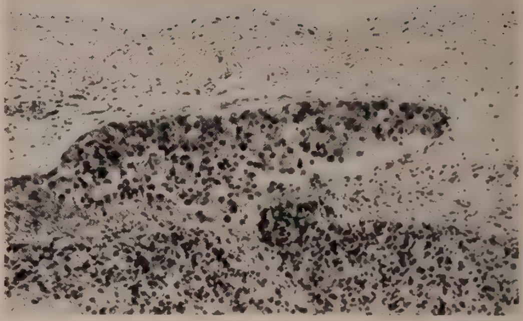


FIGURE 13. Photomicrograph demonstrating malignant melanoma within lymphatic vessels of leg amputated for melanoma (hematoxylin and eosin stain). (Courtesy G. K. Higgins, M.D.)

MATERIALS—TYPE OF ISOTOPE FOR ENDOLYMPHATIC ADMINISTRATION. I^{131} ethiodized oil is a special preparation of radioactive ethiodized oil and contains 37 per cent iodine in organic combination with ethyl esters of the fatty acids of poppy-seed oil. A certain portion of the stable iodine has been replaced by I^{131}. This isotope has a maximum beta energy of 0.6 mev. and a maximum penetration is tissue estimated at 2 mm. The major therapeutic effect is from the beta ray, with very little, if any, obtained from the gamma ray. Its half-life of 8.5 days is beneficial. I^{131} ethiodized oil has the further advantage of being both diagnostic and therapeutic.

Radioactive gold-198 is administered intralymphatically as a submicron colloidal suspension. This isotope has a physical half-life of 2.7 days, with a maximum beta ray energy of 0.96 mev. and maximum penetration in the tissue of 3.8 mm.

Radioactive yttrium-90 is administered intralymphatically in the form of small plastic micromicrospheres measuring 1 to 4 microns in diameter.* The isotope is attached and permanently bound to these tiny spheres. Y^{90} is a pure beta ray emitter with a half-life of 2.5 days and an average beta ray energy of 0.96 mev.

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* Manufactured by 3M Company, St. Paul, Minnesota.

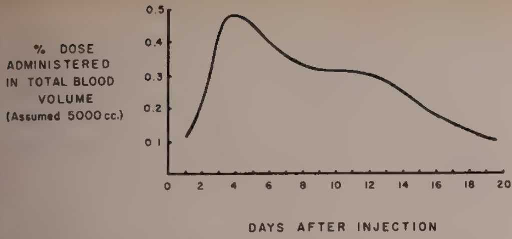

FIGURE 14. Blood level of I^{131} ethiodized oil after intralymphatic injection of 25 millicuries. (Permission Surg. Gynec. & Obst. **124:** 25 (Jan.) 1967.)[35]

Radioactive chromic phosphate has been administered intralymphatically by Burger.[22] The substance is a suspension of 0.5- to 1.5-micron particle size. The active isotope, P^{32}, is a pure beta ray emitter with a maximum penetration in tissue of 8 mm., and the isotope has a half-life of 14.5 days; its maximum beta ray energy equals 1.7 mev.

The isotope best suited for endolymphatic administration awaits elucidation.

METABOLISM OF ADMINISTERED ISOTOPE. *Concentration of I^{131} ethiodized oil in blood.* Blood samples were taken immediately following the endolymphatic administration of I^{131} ethiodized oil. Blood samples taken each subsequent day in 4 patients revealed the average peak activity in the blood to occur four to five days after the isotopic administration and equaled the small amount of 0.4 per cent of the administered dose. Then a gradual decline in activity was noted until the tenth to eleventh day, at which time there was a slight increase, followed by a steady decline; a slight amount of radioactivity was noted in the blood at twenty days (Fig. 14).

Seitzman *et al.*[23] have demonstrated that practically all of the radioactivity is concentrated in the plasma and that the plasma iodine is not ether-extractable and, therefore, the iodine is present in an ungraded form.

Ethiodized oil in thyroid gland. Measurements of activity over the thyroid gland for one week after the endolymphatic administration of the I^{131} ethiodized oil revealed no significant pick-up by the gland. However, during the second week, scans over the thyroid gland on several patients did reveal sufficient pick-up to present a representative scintiscan of the gland. Accordingly, we routinely administer a small dose of Lugol's solution, beginning four to five days after the endolymphatic administration of I^{131} to block the pick-up by the thyroid gland of the administered nuclide. Examination of the urine for radioactivity revealed a very small excretion, roughly 1 to 1.5 per cent of the administered dose being present during each day of two weeks that estimations were performed.

Our data further suggest that the coincidence of a slight peak in the blood level occurring at about the tenth to eleventh day and the ability to obtain adequate scintiscans of the thyroid gland at the same period would indicate that the administered I^{131} ethiodized oil had suffered degradation with release of free iodine into the circulation at this time. The slight increase in the I^{131} ethiodized oil concentration within the blood would suggest this to be from a release of free iodine. However, with the thyroid gland blocked, the ethoidized oil within the circulation is rapidly excreted by the kidneys.

Measurements were not performed on perspiration and feces, although it has been demonstrated that an excretion of iodine can occur via these routes, but the amount would be too small to be of clinical significance.[24]

DOSAGE OF IRRADIATION OBTAINED. In several patients the dosage of irradiation was calculated by performing counts against an I^{131} standard in a well counter.* The dosage in rads was calculated after the technic of Hine and Brownell.[25] The following formula was used:

$$\text{Dose (in beta rads to total decay in vivo)} = 73.8 \times \text{concentration (microcurie/Gram} \times 0.187) \; (\text{E for } I^{131} \times T_{\text{eff}} \text{ effective half-life}).$$

At the completion of the groin dissection, the lymph nodes were placed in formalin for forty-eight hours, dissected free from the surrounding tissue, and small portions weighed and counted in the well counter. The bulk of material analyzed consisted of active lymphoid tissue. Efforts to count tumor tissue resulted in erratic findings with very little radioactivity present.

The data presented in Table II reveal the tremendous beta rad dosage delivered to the lymph nodes. The femoral lymph node received a calculated 45,500 beta rad dosage,

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* Manufactured by Nuclear-Chicago Corporation, Des Plaines, Illinois.

TABLE II. Dose in rads to lymph nodes after endolymphatic administration of 20 millicures of I^{131} ethiodized oil*

Lymph Node	Beta Rad Dose
Left femoral	45,500
Left inguinal	30,450
Left common iliac	20,320
Left obturator	14,200
Left hypogastric	15,750
Left periaortic	12,220

* Groin dissection performed eight days after endolymphatic isotopic administration; counts performed two days after groin dissection.

and the lowest dosage after the administration of 20 millicuries with I^{131} ethiodized oil was to the periaortic lymph node which received 12,220 beta rads.

The administered dosage is gained strictly from beta rays; inasmuch as the gamma ray is insignificant, we did not consider that it contributed to the therapeutic effect. The half-life of I^{131} ethiodized oil has been estimated to be 8.5 days, but we estimate its effective half-life to be six days, similar to that reported by Seitzman *et al.*[26] They later demonstrated by total body count that this approximation was correct because they found the effective half-life of I^{131} ethiodized oil to be 5.8 days. Fischer[27] has demonstrated in dogs that the effective half-life of I^{131} ethiodized oil averages six days.

DOSAGE AND DISTRIBUTION OF ENDOLYMPHATICALLY ADMINISTERED RADIOACTIVE GOLD. Au^{198} was used in several patients, but we were unable to obtain samples of lymph nodes to measure the effective dosage in rads. External counting, immediately after the administration of 25 millicuries of Au^{198}, demonstrated a significant pick-up in the lymph nodes and, to a lesser extent, a concentration of the administered isotope in the liver and the spleen; no activity was observed in the lungs.

Studies with the endolymphatic administration of Au^{198} for malignant melanoma have been performed by Jantet *et al.*[28] They calculated that after the injection of 30 millicuries of Au^{198} into each leg, an estimated level of 26,500 and 35,000 rads was obtained in certain regions of the excised nodes; they did not include the gamma dosage since they believed it to be inconsequential. Jantet and associates aimed at a radiation level to the lymph nodes of 20,000 rads, but in later patients they strove for a dosage of 70,000 rads and have given as much as 70 millicuries to some of their patients.

Studies with the intralymphatic injection of Au^{198} in dogs by Schwartz *et al.*[29] have yielded similar findings; the largest concentration of the isotope was in the thoracic lymph nodes, and the liver retained from 13 to 30 per cent of the residual activity.

We have administered from 20 to 50 millicuries of Au^{198} endolymphatically.

HISTOLOGIC CHANGES. The lymphograms demonstrate that only active lymphoid tissue within a lymph node will concentrate the administered isotope. Large metastatic deposits of cancer will not concentrate either the administered Au^{198} or the I^{131} ethiodized oil. A variety of histologic response has been noted, varying from a foreign body reaction with the appearance of histiocytes and giant cells (the result of irritation from the ethiodized oil), to the complete destruction of the lymph node, and in some instances, destruction of cancer cells resident within that node. Figure 15 demonstrates one such lymph node of a metastasis of malignant melanoma to the axilla. Four weeks before the axillary dissection, 20 millicuries of I^{131} ethiodized oil had been injected into a lymphatic vessel of the hand. The dosage to the lymph node obtained by counting the excised specimen was calculated to be 25,500 beta rads. The histologic section revealed almost complete destruction of the cancer, which George Higgins, M.D., pathologist to the Pack Medical Foundation and Group, interpreted to be radiation effect. Associated with the destruction of the melanoma was a release of melanin pigment.

VOLUME OF SOLUTION INJECTED. It has been demonstrated that the distribution of the radioactive isotopes is a function of the volume injected. For the treatment of malignant melanoma, it is hoped to concentrate the radioactivity within the femoral, inguinal, and iliac lymph nodes. Accordingly, from 4 to 6 ml. of I^{131} solution are injected. When Au^{198} is given, usually 1 to 2 ml. of nonradioactive ethiodized oil are administered, after which the Au^{198} in a solution of 2 to 3 ml. is given. The plain ethiodized oil is given initially to render the lymph nodes radiopaque.

The administration of larger volumes

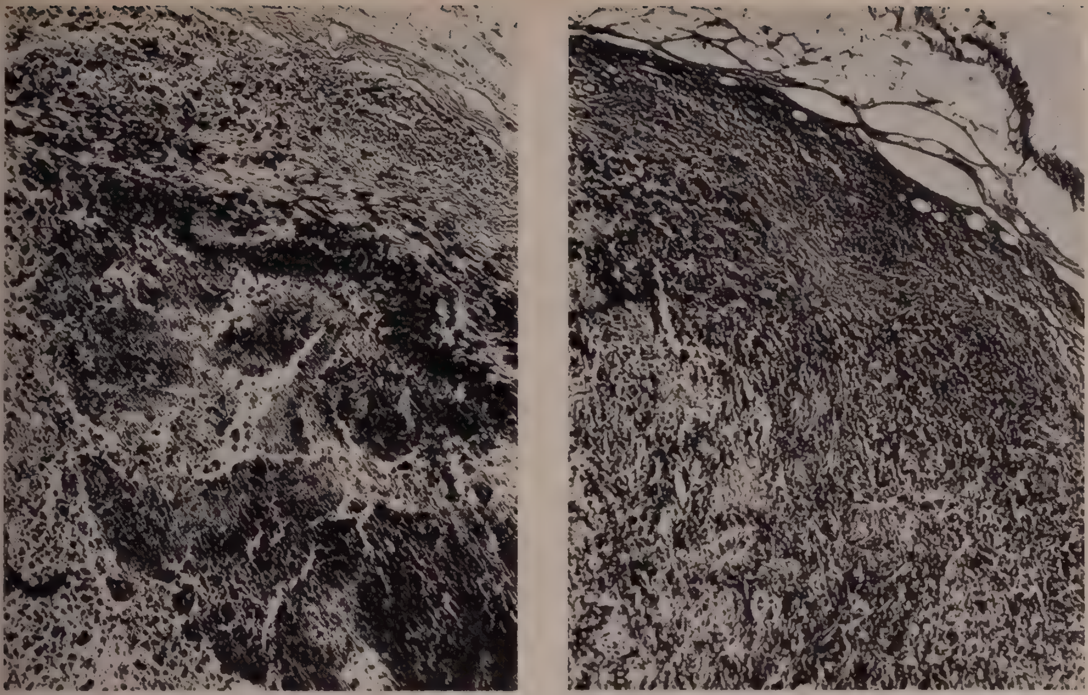

FIGURE 15. (A and B) Photomicrographs demonstrating destruction of metastatic melanoma in lymph node four weeks after intralymphatic administration of 20 millicuries of I^{131} ethiodized oil. Free melanin deposits present in abundance (hematoxylin and eosin stain).

permits the filling of the periaortic lymph nodes with subsequent filling of the thoracic duct and overflow into the lungs. Volumes from 10 to 15 ml. are used in the treatment of lymphomas when it is desirable to irradiate the periaortic lymph nodes. However, for the treatment of melanoma, smaller volumes of solution are given to concentrate the I^{131} within the desired lymph nodes. Jantet *et al.*[28] attempted to obtain a higher volume or concentration of Au^{198} by injecting from 0.25 to 2.8 ml. of solution. The first part of the injection was given slowly, but the last half of the dosage was injected as rapidly as possible to produce greater extravasation of the solution through the walls of the lymph trunks. In 1 patient they increased the total volume to 4.5 ml., injecting the latter part rapidly to produce greater extravasation of solution into the limb lymphatic vessels.

Fischer[27] has demonstrated in dogs that a better balance in distribution of colloidal Au^{198} can be obtained by the alternation of the intralymphatic injection of the colloid and a flushing solution such as saline. His preliminary findings suggest that a modification of particle size and surface characteristics might favor the suitable intralymphatic distribution of the nuclide.

Treatment of lymphoma by endolymphatic administration of radioactive isotopes

The endolymphatic administration of radioactive isotopes offers an excellent means for the delivery of therapeutic dosages of irradiation in the lymphomas. Unlike metastatic cancer in the lymph nodes which does not concentrate the administered ethiodized oil, the primary lymphomas do concentrate the ethiodized oil when given endolymphatically. Accordingly, when radioactive I^{131} ethiodized oil is administered into a lymphatic vessel, large dosages of irradiation can be obtained in certain of the chains of lymph nodes.

INDICATIONS FOR THERAPY. It has been demonstrated that from 30 to 40 per cent of all patients harboring Stage I or Stage II Hodgkin's disease or lymphosarcoma present evidence of lymphomatous involvement of the periaortic lymph nodes. Accordingly, we believe that all patients with lymphoma,

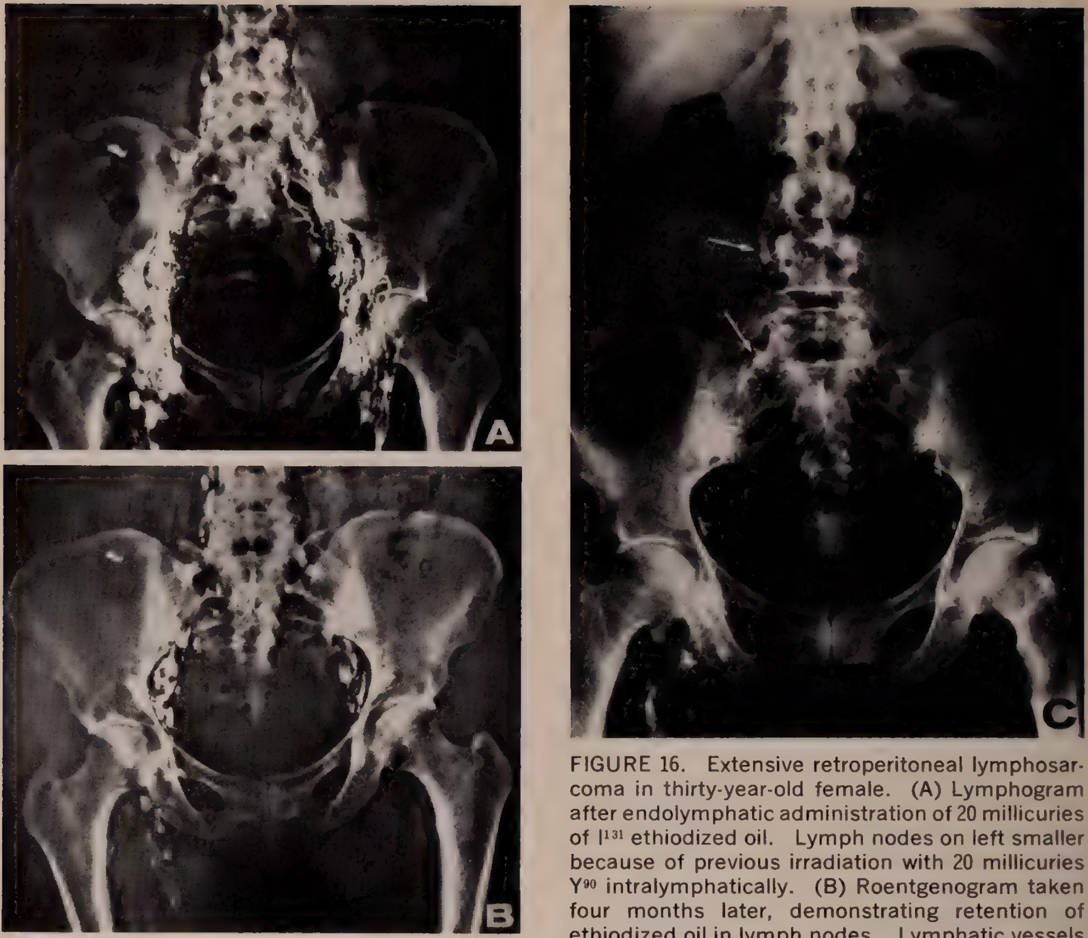

FIGURE 16. Extensive retroperitoneal lymphosarcoma in thirty-year-old female. (A) Lymphogram after endolymphatic administration of 20 millicuries of I^{131} ethiodized oil. Lymph nodes on left smaller because of previous irradiation with 20 millicuries Y^{90} intralymphatically. (B) Roentgenogram taken four months later, demonstrating retention of ethiodized oil in lymph nodes. Lymphatic vessels not visualized as they are emptied of ethiodized oil. Lymph nodes much smaller in size, presumably result of irradiation and partially due to escape of contrast medium. (C) Lymphogram made two and a half years after that of (A). Only occasional lymph node noted (arrows). Lymphatic vessels patent and functional. (Permission Am. J. Roentgenol. **99:** 404 (Feb.) 1967.)[38]

if limited to the neck, axilla, or both, should receive radioactive isotopes given into the lymphatic vessels of both feet to irradiate the pelvic and periaortic lymph nodes. This has been done in 10 patients to date with excellent results. It is too early to discuss the future of this form of treatment in the particular stages of the disease. This form of therapy is in keeping with that advocated by Healy, Amory, and Friedman[30] many years ago in which they practiced the treatment of contiguous lymph nodes by external radiation therapy, although they were not clinically involved. The same procedure has been followed in a more radical manner in which all of the lymph node-bearing areas were treated by external irradiation as advocated by Kaplan[31] of Stanford University, California, and Tubiana[32] of the Institut Gustave Roussy, France.

When the retroperitoneal and/or pelvic lymph nodes are found to be the primary seat of malignant lymphoma, the endolymphatic administration of large dosages of radioactive isotopes offers a method of treatment by internal irradiation. The isotope is delivered to the primary site of the malignant process, and large dosages of irradiation, varying from 20,000 to 40,000 rads beta, can be obtained. Figure 16 is that of a young woman who was found to have extensive retroperitoneal lymphosarcoma at the time of exploratory laparotomy. She was treated by endolymphatic radioactive isotope therapy and remains perfectly well five years later.

As part of a generalized treatment program in those patients with Stage IV

TABLE III. Total treatment of patient with disseminated Hodgkin's disease*

Date	Medication and Treatment	Response
November 7, 1963	Hydroxyurea, 0.5 Gm. three times a day, ten days	Sense of well-being; weakness and nausea persist
November 15, 1963	Bilateral lymphogram of lower extremities with intralymphatic administration of 25 mc. I^{131} ethiodized oil for irradiation of inguinal, iliac, and retroperitoneal Hodgkin's disease	Patient felt stronger, inguinal lymph nodes smaller, cough bothersome, temperature rise to 100 to 102 F., and sense of well-being
December 19, 1963	Thoracentesis, 300 cc. fluid removed from right hemithorax. Renewal of hydroxyurea, 0.5 Gm. three times a day, fifteen days	Cough relieved, fever and weakness persist
January 2, 1964	Thoracentesis, 1,200 cc. fluid removed from right hemithorax	Sense of well-being
January 9, 1964	Nitrogen mustard, 45 mg. intravenously	Prolonged pancytopenia treated by multiple whole-blood transfusions, marked improvement
January 12, 1964	Orthovoltage x-ray to mediastinum, 300 r three times a day	Discontinued because of pancytopenia
February 10, 1964	Cobalt treatment to mediastinum, anterior and posterior ports, 3,700 r tumor dose in thirty-six days; cyclophosphamide (Cytoxan), 200 mg. each day for one week	Disappearance of mediastinal mass; cyclophosphamide discontinued because of leukopenia
February 20, 1964	Thoracentesis, 1,500 cc. fluid from right side of chest	Symptomatic relief
February 27, 1964	Thoracentesis, 1,500 cc. fluid from right side of chest	Symptomatic relief
April 9, 1964	Thoracentesis, 1,200 cc. fluid from right side of chest; Y^{90}, 50 mc. injected into right side of chest	Cessation of hydrothorax
May 14, 1964	Bilateral lymphogram of arms with intralymphatic injection of 40 mc. I^{131} ethiodized oil	Anemia and weakness; disappearance of axillary and cervical lymphadenopathy
July 23, 1964 to December 14, 1964	Prednisone, 5 to 10 mg. each day orally and vinblastine sulfate (Velban), 7 mg. intravenously, once a week	. . .
December 14, 1964 to February 20, 1965	Vinblastine sulfate, 7 mg. intravenously, every second week	Patient gaining weight and feels strong; no symptoms or evidence of disease
February 20, 1965 to September 23, 1965	Vinblastine sulfate, 10 mg., once a week	Asymptomatic except for slight pain in right side of chest
November 2, 1965 to January 18, 1966	Vinblastine sulfate, 10 mg. intravenously once a week; vincristine, 6 mg. intravenously; and prednisone, 15 mg. daily	Generally asymptomatic. Occasional night sweats and fever
January 27, 1966	Lymphogram, 26 mc. I^{131} ethiodized oil into lymphatic vessel of left foot	. . .
February 15, 1966	Vincristine, 1 mg. intravenously	Recession of axillary lymph node. Feeling well
May 12, 1966	Whole-blood transfusions (4)	Patient generally asymptomatic
June 13, 1966 to October 15, 1966	Vinblastine sulfate, 20 mg. intravenously; dexamethasone (Decadron), 2.25 mg. once a day; iron and folic acid once a day	Condition excellent. Patient generally asymptomatic. No evidence of disease
November 22, 1966 to January 3, 1967	Cortisone, intravenously	No evidence of disease. Condition excellent
February 25, 1967	Lymphogram, 30 mc. I^{131} ethiodized oil into lymphatic vessel of right hand	Developed slight axillary adenopathy. Condition excellent

* Patient: male, twenty-six years. Abnormal condition: involvement of axillary, inguinal, and retroperitoneal lymph nodes; bone marrow, and mediastinum. Chief complaint: severe constitutional symptoms—fever, anorexia, and malaise.

Hodgkin's disease or lymphosarcoma showing evidence of generalized dissemination of their lymphomatous process, a nicety of judgment is required to treat the generalization of the disease.[33] In such instances, localized external radiation therapy can be administered to the mediastinum and cervical regions, which do not receive the proper irradiation endolymphatically administered. Intralymphatic isotope therapy can be administered for the irradiation of the femoral, inguinal, iliac, obturator, hypogastric, and periaortic lymph nodes. This form of therapy can be utilized in the treatment of the axillary lymph nodes by injecting the isotope into the lymphatic vessels of both hands. In conjunction, systemic anticancer chemotherapy can also be administered. Table III represents the treatment regimen followed and the course of the disease in a young boy who was extremely ill with generalized Hodgkin's disease.

Treatment of malignant melanoma by endolymphatic isotopes

The proper treatment for malignant melanoma is controversial. If the primary tumor is adjacent to the lymph node-bearing region, the preferred procedure is a dissection in continuity with the primary melanoma, the intervening lymphatic vessels, and the primary echelon of lymph nodes in which metastases occur.[34] However, if the metastases in the lymph nodes are distant from the primary site, such as a melanoma of the foot with metastases in the inguinal lymph nodes, the proper course of therapy is questionable.

Some surgeons in favor of the discontinuous dissection believe the resection of the regional lymph nodes should be performed at the initial surgical session; others are of the opinion that a delay of from three to four weeks should ensue before surgical resection of the regional lymph nodes. The reasoning here is hypothetical, that is, to allow a sufficient period to elapse for those melanoma cells within the lymphatic vessels to be transported and ultimately trapped in the regional lymph nodes. In support of the concept whereby a groin or an axillary dissection should be performed, even in the absence of clinical evidence of metastasis to lymph nodes, is the observation that approximately 38 per cent of patients with malignant melanoma of either the trunk or extremities have metastasis to the ipsilateral regional lymph nodes during their lifetime.[13]

Elective endolymphatic isotope therapy for possible metastases in lymph nodes. We have elected to administer the radioactive isotopes intralymphatically in an effort to develop some means for internally irradiating those lymph nodes which may harbor occult melanoma metastases. However, the fact that the malignant melanoma does not concentrate the radioactivity would preclude this method for the treatment of clinically manifest metastases in the regional lymph nodes.

We have used this procedure for patients without clinical or roentgenographic evidence of metastases in their regional lymph nodes from the primary melanoma. These patients are given either a course of I^{131} ethiodized oil, Au^{198}, or Y^{90} micromicrospheres endolymphatically in the hope that the large dosages of irradiation will destroy the occult metastases. Despite the fact that the malignant melanoma does not concentrate the isotope, nevertheless small deposits of cancer consisting of several cells resident within a hostile environment of extreme radioactivity would be subject to the radiation effect.

Jantet *et al.*[28] reported encouraging results from the endolymphatic administration of Au^{198} during the period 1957 to 1963. In their series of 13 patients so treated, none developed metastases in the lymph nodes; 11 patients are alive and free from either recurrence or metastases from one and a half to five years after treatment; in 2 patients metastases developed supposedly within the intervening lymphatic vessels. During the same period, Jantet treated 8 other patients with primary malignant melanoma by conventional surgery; 7 of these patients developed metastasis to the lymph nodes or more distant sites within one to three years after the primary treatment, and 6 of these patients have died.

In our series of 10 patients treated by the elective endolymphatic administration of isotopes (I^{131} ethiodized oil), all were well and free from evidence of melanoma from six to fifty-four months after therapy. One patient treated electively with 25 mc. Au^{198} developed metastatic melanoma to the inguinal and iliac lymph nodes seven months later which was treated with radical groin dissection. We now know that a much larger dose is indicated and is well tolerated.

ENDOLYMPHATIC ISOTOPES FOR SATELLITOSES. Another possible use for endolymphatic isotope therapy is palliative, in those patients who develop dermal or subdermal metastases between the primary melanoma and the site of a lymph node dissection, such as the groin. These deposits or satellitoses may grow to extensive proportions and become most disabling. Previous studies have demonstrated that one of the mechanisms whereby these metastases occur is by regurgitation of the lymph following an obstruction with the resultant functional development of the dermal lymphatic channels (Fig. 12).[35] It is believed that melanoma cells in transit become fixed within these dermal lymphatic vessels where they lodge and grow, being seen clinically as satellitoses.[16] In such instances, the endolymphatic administration of radioactive isotopes has proved beneficial.

ENDOLYMPHATIC ISOTOPES, PREOPERATIVE TO GROIN OR AXILLARY DISSECTION. Preoperative endolymphatic isotopic therapy may be given to those patients without clinical evidence of metastases in the lymph nodes by the surgeon who routinely removes the regional lymph nodes, even by a discontinuous dissection. Our data do not permit an evaluation for this indication, inasmuch as only 1 patient in our series survived fifty months after treatment, and in 1 other patient evidence of metastases developed and death resulted. Theoretically, the procedure has merit, and large doses of irradiation may be given not only for in-transit metastases but also possibly to the unexcised or overlooked lymph nodes within and without the operative scope.

Treatment of other cancers by endolymphatic radioactive isotopes

Other investigators have explored the endolymphatic route in the treatment of pelvic cancer by radioactive isotopes: Siegel and Liebner[36] in a series of 18 patients with cancer of the cervix, vulva, and endometrium; Fischer[27] as an adjunct to radiotherapy in carcinoma of the cervix; Chiappa, Galli, and Palmia[37] in over 100 patients with pelvic lymphoreticulopathy and malignant lymphoma; and Seitzman *et al.*[23] in 15 patients with carcinoma of the testis and penis.

We have used endolymphatic radioactive isotope therapy in several patients with seminoma and adenocarcinoma of the testes. It offers a good method of administering large doses of internal irradiation supplemental to the irradiation delivered from external sources.[38]

Figure 17 is the lymphogram of a patient who had received large doses of irradiation by supervoltage teletherapy. The presence of residual lymph nodes after such large doses of external irradiation is evident in the lymphogram. Whether this represents residual lymph nodes or new, regrown lymph nodes is open to question.

Further studies and a longer period of evaluation are necessary to determine the exact role which the intralymphatic isotopic administration plays in the treatment of certain forms of cancer; we are pursuing these studies with vigor.

Conclusion

Lymphography permits the visualization of metastases in the lymph nodes, thereby aiding in planning the policies for treating a cancer; the over-all diagnostic error is 30 per cent, both false positive and false negative.

Lymphography offers an excellent means of diagnosing lymphomas and indicates the extent of the disease as well as the method for delivery of therapeutic doses of irradiation.

Since the lymph nodes will retain the radiopaque medium for a period varying from six to nine months, any change within the lymph node can be observed, such as either a response to therapy or an increase in size because of cancerous growth.

It offers the radiotherapist a guide for placing radiotherapeutic portals.

One can study the response to x-ray therapy by observing any change in the size of the lymph node, particularly a decrease in size.

A repeat lymphogram, especially in patients with lymphoma who must be followed for prolonged periods, will provide

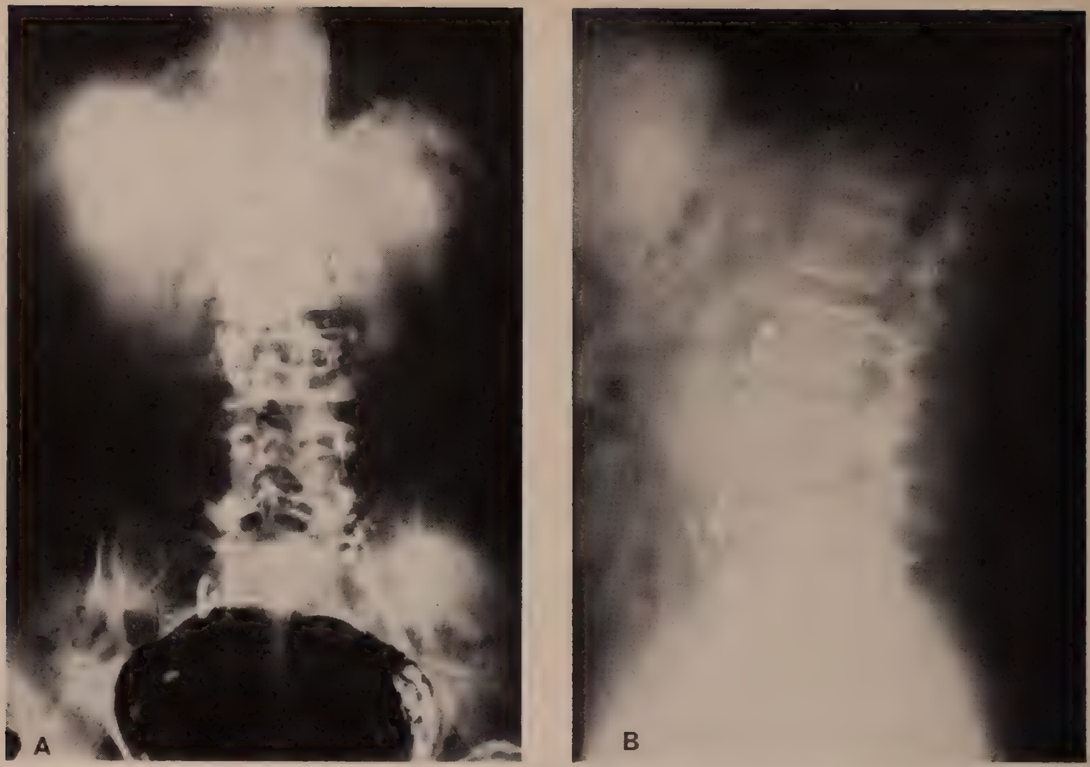

FIGURE 17. Forty-five-year-old male who had testicle removed for seminoma. Lymphograms made six months after course of supervoltage roentgen therapy; tumor dosages of 2,875 rads in eight days to right iliac nodes, 2,016 rads in ten days to prelumbar nodes, and 2,120 rads in ten days to epigastric nodes. Note residual lymph nodes and functional capacity of lymphatic vessels. (A) Anteroposterior. (B) Lateral. (Permission Am. J. Roentgenol. **99:** 404 (Feb.) 1967.)[38]

an assessment as to the status of the malignant process.

When chlorophyll is combined with ethiodized oil, all the opacified lymph nodes are stained light green. Therefore, preoperative lymphography aids the surgeon, especially the surgical resident, in the visualization of the lymph nodes during the performance of a lymphadenectomy for cancer.

It demonstrates to the surgeon the adequacy of his lymph node dissection.

It demonstrates abnormalities of the mediastinum by any alteration in the anatomy of the thoracic duct.

Metastases in the lymph nodes produce the following alterations in lymphatic dynamics: (1) stagnation of lymphatic flow which may produce edema. The "take" of cancer cells in transit is facilitated, as is the transport of cancer cells into the vascular compartment via lymphatic-vascular communications because of an increased head of lymphatic pressure; (2) collateral lymphatic channels become so extensive and erratic as to defy interpretation and any anticancer therapeutic program. Cancer cells may be conveyed uninterruptedly for great distances and to almost any region in the body; and (3) if the collateral lymphatic circulation is inadequate, a reversal of lymphatic flow occurs via a group of newly developed and functional dermal lymphatic vessels. This is one modus operandi in the formation of dermal metastases (satellitoses of melanoma).

A discontinuous operation for melanoma, that is, the removal of the primary melanoma plus a groin or axillary dissection while completely ignoring the intervening lymphatic vessels, not only aggravates the situation described,[4] but also permits the escape of cancer cells via the severed lymphatic vessels into the free tissue spaces where they may seed and grow.

The endolymphatic administration of radioactive isotopes I^{131} ethiodized oil, Au^{198}, Y^{90} micromicrospheres, and chromic phosphate, permits the internal irradiation of cancer located within the lymphatic vessels (in-transit metastases) and of small cancerous deposits in the lymph nodes. This procedure has been used for melanoma, cancer of the testes, gynecologic cancers, and carcinomas of the extremities; it is particularly useful in the treatment program for all lymphomas.

Complications are minimal and, in my experience, of no clinical significance.

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Rh Immunoglobulin in Prevention of Hemolytic Disease of Newborn Child*

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It is a great honor to be asked to give the eighteenth Augustus B. Wadsworth Lecture. This is easily the most important occasion of my career, and I hope you will indulge me if I begin by making some philosophic observations. During the talk, I would like to give you an account of the development of an idea into what we hope will be a practical measure against hemolytic disease of the newborn child. It is a particular pleasure to be invited to speak by a group of public health professionals because I do not consider myself a professional in any field except blood banking. I am an amateur hematologist, an amateur immunologist, an amateur geneticist, an amateur obstetrician, and, tonight, an amateur public health physician. With hemolytic disease it is necessary to cross between all of these disciplines, and the present project has developed very much from communication across disciplines. "How sweet it is," as Jackie Gleason says, to be invited to talk to professionals because at the outset the professionals, the establishment, were very strongly against this idea. Everyone said, "Don't bother with it; it won't work." One of the ways of estimating how good an idea is, is to see how strong the immediate reaction of an expert is when you suggest it to him. If he objects violently, you know that it must have some merit. I don't know whether or not this will hold up in the future.

Beginning

The history of this idea began in Albany because the discovery of the principle on which the whole thing is based was made by a friend and co-worker of Augustus Wadsworth, Theobald Smith, who was an alumnus of Albany Medical College. In 1909 Smith[1] wrote: "Passive antibody mixed with antigen renders the antigen quite inactive as an immunizing agent," the first and still very adequate definition of antibody-induced immunosuppression. His particular system was a diphtheria toxin-antitoxin mixture, and it has since been seen that this phenomenon occurs with other antigens in many animal and human systems.

Let us look at hemolytic disease of the newborn child from the point of view of epidemiology and public health. The reason it has taken so long to apply Smith's phenomenon toward prevention is that everybody's mind was fixed on the mother who is sensitized, has antibodies, and is having babies with hemolytic disease. Everybody was geared to managing and treating such a mother. We should have been thinking of how to define the population at risk and what might be done to the whole population to prevent affected pregnancies from occurring in that population. This is the basic principle behind almost all public health measures.

Now to restate hemolytic disease of the newborn child. An Rh negative mother is married to an Rh positive father. The fetus inherits the Rh factor from the father. The father may be homozygous, in which case every baby will be Rh positive or hetero-

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zygous in which case 50 per cent of the babies will be Rh positive. Rh positive red cells of the fetus get into the mother's circulation and stimulate an immune response, the anti-Rh antibody. The fetus that starts the immune response escapes the disease because the antibody formation does not develop in time to harm that fetus. However, in later pregnancies, the antibody crosses back—actually it is pumped back by a placental transport mechanism—into the fetal circulation and coats the fetal red cells if they are Rh positive. They are destroyed in the spleen of the fetus, and all symptoms and signs of hemolytic disease are a direct result of the anemia resulting from this fetal blood destruction.

It is very much easier to do something about a disease once the mechanism of pathogenesis is understood, and we have to thank Levine, Katzin, and Burnham[2] for unraveling in 1939 this particular mechanism. One of their patients who had had babies with hemolytic disease had a violent reaction when given a transfusion of the husband's blood. Here were the raw pieces of information which they put together into a very simple hypothesis which they were then able to show was correct. Then it became possible to attack the disease logically. This is the element presently missing from a disease like Hodgkin's disease where, if a clear-cut pathogenetic mechanism were known, hundreds of researchers would zero in on it, basing their work and their experiments on a nice clean theory.

Levine, Katzin, and Burnham's theory made it immediately possible to prevent completely Rh disease. This was by the socially unacceptable eugenic method of having no Rh positive men marry Rh negative women. Thus, theory provided immediately an effective method of prevention. In a way it is a question of how far we are willing to go to prevent a disease. Obviously, what we want is to retain our social status quo, that is, to give the Rh negative woman freedom to marry whomever she wants and also freedom from hemolytic disease. We also need a method which is not too complicated to put into general use because logistics, as I am sure you know better than I, preclude applying a complicated measure in public health.

Now I would like to highlight some features of Rh hemolytic disease. First, only the 7S immunoglobulin G or gamma G antibodies cross the placenta. Gamma M and gamma A antibodies do not. Immunoglobulin G anti-Rh therefore is the antibody that causes the disease. Second, another parameter has recently been studied very extensively, the "original antigenic sin" fetal-maternal hemorrhage. The development of the Kleihauer, Braun, and Betke test in 1957[3] made this possible. This is a test which is simple in theory but difficult in practice. A film of the mother's blood is fixed in alcohol, eluted in acid buffer, stained with hematoxylin, and then counterstained with eosin. Adult red cells are decolorized; because of acid elution of hemoglobin, fetal cells retain their hemoglobin. A count of fetal red cells seen during a five-minute scan is recorded. This test is sensitive enough to detect 0.1 ml. of fetal blood in the entire 5,000 ml. of the mother's circulation.

> TO PREVENT THE *20,000 to 40,000 new sensitizations that occur every year in the United States, 400,000 doses of Rh immunoglobulin need to be given. Every time an Rh negative mother delivers a baby, if the baby is Rh positive and ABO compatible, there is a risk situation and Rh immunoglobulin must be injected. If these measures were widely applied, very few new sensitizations to the Rh factor would occur; and once the present crop of sensitized mothers pass the child-bearing period, the disease will drop to a very low level in the community.*

By studying a large number of mothers (perhaps the best work is by Woodrow and Finn[4] and their group in Liverpool), it was clearly shown that fetal cells are, in fact, transferred from the baby to the mother. They do cross the placenta during pregnancy, tending to be in larger amounts over the last weeks, and at delivery, there is a definite increase in the amount of cells and the number of mothers in whom it happens. This observation makes sense in that the trauma of placental separation and the contractions of delivery might well result in fetal red cells entering the maternal circulation. It is really amazing that they don't get across more often than they do. About 15 per cent of mothers have relatively large numbers of fetal cells detectable by the Kleihauer, Braun, and Betke[3] test.

The third piece of background information very important in this disease is that there are no naturally occurring antibodies to Rh. It is a completely different antigen-antibody system from the ABO system, because an Rh immune response, started by red cell introduction or injection, has to be started from scratch. It has been observed that one injection of Rh positive red cells into an Rh negative individual will trigger the immune mechanism in only a percentage of cases. Those individuals in whom an antigenic stimulus fails to trigger immunity are left without any immunologic memory of that Rh stimulus, and years later the next antigenic stimulus with Rh positive cells will behave just as if it were a very first stimulus. The individuals who become sensitized by the stimulus will make a tremendous response on receiving Rh positive blood again. The titer of one of our Rh negative male volunteers who had been sensitized by one injection of Rh positive blood one year before jumped from a barely detectable level to 4,000 in seven days. This is characteristic of the secondary immune response after a second stimulus. Many other systems are wrongly called primary immune responses in the immunologic literature. For example, injecting sheep red cells into mice does not evoke a true primary response. It is not comparable to the Rh stimulus because a single primary injection of sheep red cells into a group of mice will bring out a response in 100 per cent of individuals. A single injection of Rh positive cells into an Rh negative person may sensitize only 10, 20, or 30 per cent of the individuals, depending on the dose of red cells.

What families are at risk in the community? Fifteen per cent of mothers are Rh negative; 85 per cent of husbands are Rh positive. Multiply them together, and that makes about 12 per cent. Thus, one in eight of all families is at risk. Now of these, eventually only about 12 per cent of the mothers will be sensitized to the Rh factor.

Mechanics of disease

Rh disease has to be set up by two Rh positive pregnancies or by a previous injection of Rh positive blood and then one Rh positive pregnancy. Nevanlinna,[5] from Finland, was really the first to emphasize this two-pregnancy concept, and it has stood up very well. In the initiating pregnancy, fetal cells cross into the maternal circulation during pregnancy, and there is an extra pulse of cells at delivery. Fetal cells may survive up to one hundred twenty days after delivery. The first time that an antibody can be detected is six weeks after delivery of the Rh positive baby. Sometimes the antibody is not detectable until the four-month and even the six-month sample after delivery. This illustrates that the primary response to the Rh antigen has a tremendously long latent time interval, as compared with the rapid within-forty-eight-hour latent period of the secondary response.

In the first affected pregnancy, the mother enters pregnancy already initiated, her immune mechanism having been triggered by a previous antigenic stimulus, pregnancy, or transfusion. The Rh titer will characteristically be low, and if this pregnancy is Rh positive, the titer will rise in the second half of the pregnancy.

An initiating Rh positive pregnancy and the first affected pregnancy are always next to each other, ignoring Rh negative pregnancies which may occur in between. There is no such thing as an initiating pregnancy followed by another Rh positive pregnancy, which is unaffected, and then the first affected pregnancy.

There are various patterns of Rh antibodies that can follow an Rh positive baby. The first occurs when the mother is not initiated, that is, there is no triggering of her immune response. This is the result in 85 or 90 per cent of the mothers who have an Rh positive pregnancy. This lack of stimulating immunity or lack of priming will be proved by the fact that no Rh antibodies appear post partum, and she will go through another Rh positive pregnancy without a rise in antibody titer and for some weeks after the subsequent delivery without the appearance of antibodies. Of course, the next Rh positive pregnancy can perfectly well be an initiating pregnancy, in which case we would see delayed low titer postpartum antibodies at this time. Another very important point is that the initiating pregnancy does not have to be the first pregnancy. It may well be the first, second, third, or fourth Rh positive pregnancy; even the eighth Rh positive pregnancy can be the initiating one, in which case the ninth would be the first affected. With only a 10 to 15 per cent risk of triggering the immune mechanism, a lucky mother can go through several Rh positive pregnancies without being sensitized.

It is exactly analogous to Russian roulette with a one chance in six of shooting your brains out. A lucky person might shoot seven or eight times and still survive.

We have considered the mother who has the stimulus but by chance, more than anything else, does not respond. The second pattern represents the typical case of a mother who was sensitized. We find antibodies at six weeks, we find them again at six months, and then as she goes on the titer may drop a little, but in the second half of the next pregnancy her Rh titer will jump, and an affected baby will be delivered.

The third pattern is where we find antibodies post partum, but after about several more months or a year, they have disappeared and are undetectable. Going into the next pregnancy, however, the Rh titer jumps just as high as in the second pattern and the baby is just as sick, even though the mother entered the pregnancy without detectable antibodies. In the fourth pattern no antibodies at all are detected post partum, yet this mother is sensitized. Her antibody titer will rise in the next pregnancy, and the baby will be just as sick. Such mothers are sensitized without antibody.

A mother who is not sensitized needs fairly large doses of Rh positive cells to get immunity started, whereas once sensitized, she becomes sensitive to extremely small amounts of Rh positive cells, perhaps on the order of 0.001 ml. or even 0.0001 ml.

There are various things that affect the risk to the individual family. You can assure an Rh negative mother who is newly married and intends to have several children that her first baby will be almost certainly unaffected; however, the first baby may trigger an immune response and then the second will be affected if it is Rh positive. The families at highest risk are mothers who are married to an ABO compatible Rh positive homozygous husband, which means every baby will be Rh positive and ABO compatible. If the father is Rh positive heterozygous, the risk actually drops down to one-fourth because to cause the disease there must be two pregnancies, each with a 50 per cent chance of being Rh positive. If the husband is ABO incompatible, the prognosis or the future risk of this family is much less than it would be if he was ABO compatible. It was first observed by Levine[6] in 1943 that ABO incompatible babies are less common than expected in families of sensitized Rh negative mothers. This is because an ABO incompatible Rh positive baby is actually ten times less likely than the compatible to initiate an immune response to Rh. It was Nevanlinna and Vainio[7] who showed that ABO protection, as it is now called, works at the initiating pregnancy but has very little ameliorating effect on first or later affected pregnancies. In other words, an ABO incompatible baby, if the mother has been previously sensitized, is likely to be just as sick or nearly as sick as the ABO compatible baby.

I have probably said too much about the various characteristics and features of the disease, but it is because of these features that the disease has an Achilles heel, which is the fact that the mother is not permanently or irrevocably sensitized at the time the first baby is born. There is still a chance to interrupt sensitization.

Smith's[1] phenomenon, that passive antibody given either with the antigen, sometime before the antigen, or sometime after the antigen, will completely prevent that antigen from starting an immune response, as I have said, has been very widely observed in many systems and in many animals. However, most of the workers who noticed this phenomenon found it was getting in their way; that it hindered rather than helped. They wanted immunity to diphtheria and to poliomyelitis, and when they encountered this phenomenon which prevented good immunity, they sought ways of getting around it. Nobody had thought of utilizing or exploiting the phenomenon for a good purpose. This was the position in 1960. At that time Freda, Gorman, and Pollack,[8] (Dr. Freda is with Columbia and Dr. Pollack with the Ortho Research Foundation) in discussions, came up with the idea of using this phenomenon, which was widely documented in the immunologic literature but little noticed, for Rh negative mothers. At the same time and quite independently from us, in Liverpool, Finn *et al.*,[9] for a different reason, came up with exactly the same plan. They were led to the idea while studying the Kleihauer, Braun, and Betke test. They saw the Rh positive fetal cells in maternal blood films and said, "How can we get rid of them?" Obviously, the only agent which will get rid of Rh positive cells and not harm the mother is anti-Rh antibody. They were not aware, at the time, of the passive antibody protection or immunosuppression phenomenon that Smith[1] had seen; however, they were aware of ABO protection and hoped to mimic this with anti-Rh antibody.[9]

The first step was to obtain Rh antibody in a form that could be injected into an Rh negative individual. We decided from the beginning to use gamma globulin made from plasma that contained Rh antibodies. We selected gamma globulin because it was readily packaged, simply injected, and because it was free from serum hepatitis. Fraction 2 gamma globulin has been used in millions of doses and does not transfer hepatitis. Freda, Gorman, and Pollack[8] prepared the first batch of Rh immunoglobulin in 1961. To do this, they pooled the plasma obtained from plasmapheresis from five highly sensitized Rh negative men and fractionated it into gamma globulin. The original titer of the pool was 1:1,028 by the Coombs method, and this was increased to 1:100,000 in the final gamma globulin. We injected the first vial of this material into an Rh negative volunteer in 1961 and obtained a circulating antibody titer of 1:32 within eight hours. It was still 1:32 in twenty-four hours. The half-life of human immunoglobulin G antibody in the circulation is about twenty-eight days, which is long compared with some animal gamma globulins which have a half-life of from two to four days.

Experiments

Then we began the experiments at Sing Sing prison to establish that this form of passive antibody would actually cause immunosuppression.[8] The first experiment was done with 9 volunteers who were given an intensive Rh antigenic stimulus of five injections of 2 ml. of Rh positive blood at monthly intervals. At the end of a year, 4 out of 5 of those not given the gamma globulin had become actively immunized to the Rh factor, whereas none of 4 men given 5 ml. of Rh immunoglobulin twenty-four hours before the red cells in each occasion became actively immunized. Of course we had to wait until the passive antibody had cleared before we were sure they were not immunized. The second experiment was then done with 27 men who were given two injections of Rh positive cells at six-month intervals. These two injections were a sufficient stimulus to immunize actively 8 out of 13 men, but of 14 given the same two stimuli and given 5 ml. of Rh immunoglobulin three days after the first injection and two days after the second injection, none became immunized. If the statisticians will permit me to add these results, you can see that antigenic stimuli that actively immunized 12 out of 18 volunteers completely failed to immunize any of 18 if Rh immunoglobulin was given along with, or even three days after, the red cells. We now knew that we had an agent which gave very strong, if not complete, immunosuppression despite intense antigenic stimulus with Rh positive cells. Our experience in injecting this in a large number of men over a number of years showed that there were no side-effects whatsoever: no hepatitis and no allergic reactions.

We did further experiments at Sing Sing prison aimed at seeing what dose of Rh immunoglobulin was necessary to obtain immunosuppression. At this point we were running out of volunteers, so the groups were small. To make up for the small groups, we gave very intense antigenic stimulus of six injections of 10 ml. of Rh positive blood at monthly intervals. This is a very intense stimulus, and one would expect it to immunize 8 or 9 out of 10. Four men got six injections of red cells and 1 ml. of Rh immunoglobulin half an hour after each injection of red cells. None became immunized. Of 3 men that got the same stimulus and 0.1 ml. of Rh immunoglobulin, none became immunized. Of the 4 men who got the same stimulus and 0.01 ml. of Rh immunoglobulin, only 1 out of

4 became immunized. There were 3 men who got less than 0.01 ml. One of them got 0.001, 2 of them got 0.0001 ml., and all 3 became immunized. This showed that immunosuppression was effective down to 0.1 ml. and that 0.01 ml. failed but possibly still had some immunosuppressive effect. The 5-ml. dose of Rh immunoglobulin that we had been using previously was therefore in great excess.

Since the many batches of Rh immunoglobulin that have been prepared have varied greatly in strength and titer of antibody, it has become necessary to establish more objective units of antibody. Rather than injecting a certain volume of a particular batch, we should inject a certain number of micrograms of Rh antibody or some other more objective unit. At this point we had effectiveness and safety in Rh negative men, and Dr. Freda, who is the obstetrician of our group, was willing at last to begin using it in Rh negative mothers.

Further studies

Now for some real speculation! How does passive antibody prevent active immunity? One effect is that it clears the antigen out of the body very rapidly. For instance, after Rh immunoglobulin, Rh positive cells that are circulating all disappear from the circulation within forty-eight hours. This is probably not the whole story. There must be also an immunosuppressive effect at a later point in the immune process.

Nossal *et al.*[10] from Melbourne have discovered a very remarkable antigen-trapping mechanism in the lymphoid follicles of lymph nodes and spleen. In lymphoid follicles there are specialized dendritic reticular cells whose processes interweave between the lymphocytes. Antigen is trapped on the surfaces of the cell membrane of these processes jammed up against the cell surface of the lymphocytes. Autoradiographic grain counts over this area of trapping are 200 times background so that there is a tremendous concentration of antigen. Ada and Lang[11] have shown that this trapping mechanism is dependent on circulating antibody and that the unimmunized animal does not trap antigen. As immunity develops, a trapping mechanism is set up.

Now the teleologic function of this mechanism, to my mind, is almost certainly to assure a much more intense and certain stimulation of the lymphoid cells which are going to make the antibody. If antigen passed through the lymph follicles without stopping, there wouldn't be much chance to stimulate immunologically competent cells; however, if it is trapped like this, the resulting high concentration of antigen becomes a very effective antigenic stimulus. I think that the logical place for Rh immunoglobulin or other passive antibody to work is right here. In other words, if the antibody that we are giving is high quality, high binding, and constant antibody, it combines with antigen and prevents it from providing the stimulus which is necessary for the immune response. Möller and Wigzell[12] in Sweden have shown that the passive antibody works by stopping cell multiplication. Immunologists now are very interested in immunosuppression by passive antibody, and some excellent work is being done. I am sure the mechanism of action will soon be unraveled; however, from the public health point of view, fortunately we do not have to wait until that time before we begin using the technic.

I shall now describe the trials of Rh immunoglobulin in mothers which were begun in 1964. To select mothers for the trial who are at risk of being initiated we set up the following criteria. The mother has to be Rh negative and she has to have delivered an Rh positive baby. At the end of pregnancy, the antibody screening test on a postpartum sample must show negative findings. A direct Coombs test on the baby's cells has to show negative findings. In other words, the mother is proved unsensitized up to this point. The baby has to be ABO compatible because an ABO incompatible baby greatly lowers the risk, and much larger numbers of ABO incompatible pregnancies would be needed to get a significant answer. Next we cross-match the Rh immunoglobulin against the mother's cells. The reason for this is that Rh immunoglobulin contains large amounts of extremely powerful Rh antibody, and if it were given inadvertently to an Rh positive individual, it might cause hemolysis. A mother that fits all these criteria is unsensitized and at considerable risk of an immunity being started.[13]

Results

Now let us consider the combined results from the various trials now being conducted: Clarke's[14] trial in Liverpool and Baltimore; the Columbia trial; the Long Beach trial of Jennings and Sullivan[15]; the Cornell trial of Queenan[16]; the trial of John Robertson, M.D.,[17] of Edinburgh, who worked with us at Sing Sing prison and went back to Edinburgh to start a trial; and Schneider and Preisler[18] in Freiburg, West Germany. The first four are using the Rh immunoglobulin produced by W. Pollack, Ph.D.* Liverpool is using an Rh antibody-containing gamma globulin made by the Medical Research Council in England, and the Germans are using a commercially made Rh-containing gamma globulin made in West Germany.

To understand the results, we must look at what happened to mothers who were not treated. There were 108 mothers at Columbia who had an Rh positive ABO compatible baby. All were unsensitized at the postpartum sample, and all were followed carefully with antibody screening tests for at least six months. Fourteen out of 108 developed active immunity post partum revealing that they had become sensitized by the pregnancy and that it had been an initiating pregnancy. Of 150 mothers who undertook the same risk but were given either 5 ml. or 1 ml. of Rh immunoglobulin within three days of delivery, none developed active antibodies.

This shows that the Rh immunoglobulin will prevent development of the antibodies normally occurring after delivery of an Rh positive baby; however, remember that mothers can be sensitized without the development of detectable antibody, so that a second or subsequent Rh positive pregnancy is needed to provide critical biologic proof of nonsensitization. If a mother is still unsensitized after she delivers another Rh positive baby, we consider this proof that the previous baby did not trigger her immune mechanism.

Of 14 mothers from the Columbia control group who have delivered a subsequent Rh positive baby, 4 out of 14 were sensitized to the Rh factor at the time of delivery. Of 16 mothers who have so far delivered another Rh positive baby but were treated at their previous risk pregnancy, none have become immunized. Adding the worldwide figures together, we see that 42 subsequent Rh positive deliveries have occurred in the treated group and no mothers are sensitized, whereas of the 37 subsequent Rh positive babies born to mothers who were not treated at their previous pregnancy, 10 of the mothers are sensitized to the Rh factor. At the six-month point, of 492 control mothers, 62 became sensitized in the postpartum period, and of 539 mothers who undertook the same risk but were given Rh immunoglobulin or other anti-Rh gamma globulin, none became sensitized. Passive antibody will definitely prevent the development of normally occurring postpartum antibodies. Subsequent delivery figures are now, I think, getting to the point of statistical significance, where I, for one, am convinced that we are getting a very strong immunosuppressive effect in the treated group.[19]

Conclusion

To sum up, we can look at the implication of these results in two ways. Let us consider first the population at large. There are 4 million deliveries in the United States, roughly 400,000 risk pregnancies in which the mother might get sensitized. To prevent the 20,000 to 40,000 new sensitizations that occur every year, 400,000 doses of Rh immunoglobulin need to be given. Every mother is now tested for the Rh factor. Every time an Rh negative mother delivers a baby, it is necessary to collect the cord blood and perform ABO and Rh typing. If the baby is Rh positive and ABO compatible, there is a risk situation and Rh immunoglobulin must be injected. The crossmatch must be done. Blood samples must be sent to the blood bank. The blood bank has to test them, and the results have to be conveyed to the obstetrician. He has to make the decision as to whether or not this is a case to be injected, and then he has to inject the Rh immunoglobulin. This is much more of a logistic effort than one might think. But if these measures were widely applied, I believe that very, very few new sensitizations to the Rh factor would occur, and that once the present crop of sensitized Rh negative mothers pass the childbearing period, the disease will drop to a very low level in the community. Many things need to be done before this time comes, but based on the figures from the trials, there is every reason to expect that it will be a reality in a few years.

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For the individual family at risk where there have not yet been any children but where there is concern because the mother is Rh negative, it means that, provided the mother, after the delivery of each Rh positive baby, is given Rh immunoglobulin, her risk will be very close to zero. She can have as many babies as she wants, with little danger of hemolytic disease.

Rh immunoglobulin is now being produced in many countries including the United States. The Ortho Pharmaceutical Corporation has an application with the National Institutes of Health, and approval is hoped for within a year. To conclude, the best advice I can give right now is that an Rh negative woman at risk should not become pregnant until Rh immunoglobulin is available.

Addendum

In the Columbia trial of Rh immunoglobulin, as of January 25, 1968, the number admitted to the trial were 273 treated and 144 controls. The fraction sensitized at six months after the initial Rh positive delivery were 0 in 227 of those treated and 15 in 128 controls.

The fraction sensitized at the subsequent Rh positive delivery were 0 in 33 of those treated and 4 in 16 controls.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

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Current Concepts of Burn Injury

Part I

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BURN TRAUMA OCCUPIES a significant place as a force producing death and incalculable human suffering. Although accurate statistics are not available, it has been estimated that in the United States alone, from 7,000 to 8,000 persons die annually of burn injury and an estimated 2 million persons receive medical treatment for burns during this same twelve-month period.[1-5] Levenson and Lund[3] have stated that approximately 10,000 hospital beds per day are occupied by those burned. Moyer[4] has claimed that from 2 to 6 million hospital-bed days per year are used primarily for the treatment of the burned patient. More than one half of all burn victims are below the age of four and above the age of sixty-five.[3,5] Arturson and Ponten[6] in a review of 669 burn cases in Uppsala, Sweden, noted that two thirds of all burns occurred in the home, and, in particular, 95 per cent of all childhood burns occurred in the home. These figures are supported by the studies of Artz and Reiss[1] and Levenson and Lund.[3]

Abramson,[7] emphasizing the significance of burns in children, stated that thermal injury is the major cause of accidental death in the preschool age group. Boles[8] has listed accidents as the leading cause of death in the one- to fourteen-year-old group, with the burn accident second in frequency and severity only to the auto accident. Bleck[9] studied 457 burned children admitted to the Duke University Hospitals and classified the etiology of the burns as follows: 55 per cent, clothing ignition; 25 per cent, direct contact with flame, hot ashes, or hot stoves; 15 per cent, gas or kerosene ignition; and 5 per cent, scald injuries. Colebrook *et al.*[10] related 80 per cent of all burn deaths in English children to the ignition of clothing. McDowall[11] in a study of 850 burned children noted a scald-to-flame etiologic ratio of 1.25 to 1 and reported 57 of 61 deaths in his series associated with burning clothing. Becker and Artz[12] also reported a higher relative incidence of scald burns in children. Arturson and Ponten[6] reported a reversal of this trend in adults where at least one half of the burns were caused by fire rather than hot liquids. Blocker *et al.*[13] in reviewing 1,000 burn patients of all ages admitted to the University of Texas Medical Branch in Galveston claimed 75 per cent due to flash (explosion) and flame injury, 15 per cent to hot liquids, 5 per cent to contact with hot objects, 3 per cent to electrical injury, and 2 per cent to chemical burn.

While the figures and the causes vary, certain facts assume prominence: most burns occur at home; the helpless, namely the young child and the elderly, are the most frequent victims; scald burns are common in children; but most certainly, burn deaths in all age groups are most often related to flame injury, and burning clothing appears to be a critical propagating factor. McDowall[11] and Moyer[4,14] specifically implicated night clothes in their reports. Colebrook *et al.*[10] listed raised cotton, linen, and viscose rayon garments as prime offenders. Crikelair[15] has demonstrated the great danger of flammable clothing, has called for public education to increase the demand for permanent flame-retardant fabrics, and has urged the textile industry to perfect, produce, and market such clothing.

Open fires, unprotected heating units, kerosene stoves, and exposed electrical wires and sockets are other major factors in burn trauma. Epileptic patients, as an adult group, appear particularly prone to burn injury, but despite the frequency of injury, their burns are usually of the limited contact variety with an associated low mortality rate.[6] Among chemical agents frequently causing burns are sulfuric acid and lyes.[13]

Burn prevention must receive considerably greater attention than it has in the past. These authors have in many instances indicated the high percentage of burn accidents which are truly preventable. Further study of burn epidemiology, an increasing appreciation of the significance of flammable clothing, and the means to reduce the more common burn hazards comprise logical social and medical goals.

Pathologic anatomy

Skin presents the manifest damage after burn trauma, but multisystem injury with particular reference to liver and kidney has been well documented clinically and experimentally in instances of severe burns. Arturson[16] has studied the "burn syndrome" and characterized it as primarily related to changes in fluid balance and presenting symptoms in three main temporal phases: (1) within the first forty-eight hours injured vasculature and increased capillary permeability lead to acute circulatory insufficiency; numerous organs appear congested, edematous, and with multiple hemorrhagic sites; (2) during the third to the eighth day post burn, severe body fluid, protein, and electrolyte alterations compounded by infection produce degenerative changes in major organs; and (3) beginning during the second week after injury, major organ atrophy and incipient fibrotic repair develop against a background of nutritional deficiency, infection, and general systemic exhaustion.

ORGANS AND SYSTEMS. *Skin.* The primary burn injury is usually directed against the skin where it is immediately apparent. Simplicity of discussion demands a classification of the depth of skin burn. Superficial as contrasted to deep, and partial-thickness as contrasted to full-thickness skin destruction comprise reasonable diagnostic terms. Traditional terminology, however, demands reference to the following "degree" classifications of skin burn:[1]

First degree is a very superficial injury with destruction of the outer layer of epidermis, usually characterized by erythema after a variable latent period.

Second degree is destruction of the entire epidermis and part of the underlying dermis; secondary skin appendages must persist in the deeper aspects of this wound which therefore qualifies as a partial-thickness burn. The thicker the skin burned, the less will be the relative depth of destruction and the greater the likelihood of retained viable dermal appendages. Clinically the second-degree burn can be characterized by blister formation, pain, and a pink-red coloration.

Third degree is usually the destruction of the entire skin thickness, but this is not essential as long as all of the secondary skin appendages are destroyed. The full-thickness or deep burn may be charred or pearly-white and usually is a nonblistered, relatively anesthetic wound which has no capacity for spontaneous skin regeneration from its depth.

Evans *et al.*[17] have studied the physical requirements for producing thermal skin injury in a series of 510 controlled flash burns effected in 44 human Caucasian volunteers. They concluded that the total quantity of heat and its delivery, as well as the spectral composition of the incident radiation, are important factors in the ultimate degree of skin destruction. A high intensity carbon-arc light was used to deliver focused heat for 0.5 seconds to a 1.27-cm.[2] area. Heat greater than 2 calories per square centimeter produced a first-degree burn; greater than 3.2 calories per square centimeter, a superficial second-degree burn; more than 3.9 calories per square centimeter, a deep second-degree burn; and over 4.8 calories per square centimeter, a third-degree injury. A constant heat source ultimately produced the same injury as that delivered in a thermal pulse manner, but the same amount of total heat energy produced more severe skin destruction if the shorter wave lengths of radiant energy were emphasized. The more rapidly the same quantity of heat was applied and the higher the preinjury skin temperature, the greater was the degree of burn. Controllable and reproducible physical forces evidently influence the skin response to radiant heat energy.

King, Reynolds, and Price[18] studied various physical means of delivering heat to anesthetized dogs over a prescribed area and recorded the extent of increased capillary permeability of the wounds by noting the distribution of Evans blue dye (T-1824) in the areas burned. They used dry metal contact at 70 C. for sixty seconds, steam scald at 95 C. for five seconds, alcohol flame at 750 C. for ten seconds, and flash explosion of high octane gasoline in an oxygen atmosphere producing 2,000 C. for 0.009 seconds. Realizing that Evans blue dye links predominately to the albumin of plasma protein, King presumed that the wound coloration would provide an index to burn-induced skin vascular damage with increased capillary permeability. This would offer a means of comparing the burn wounds and studying the rate and distribution of burn wound edema. He concluded that the dry metal contact, flame, and scald burns produced relatively similar injuries, but the flash burn offered less damage.

Regardless of the form of thermal energy delivered to skin, the response is characterized by a certain degree of cellular destruction. Coagulation, desiccation, and finally carbonization of tissue will occur as the temperature and duration of exposure to the energy source increases.[19] At lower levels vascular injury is critical with immediate arteriolar constriction followed by vasodilation with increased permeability and progressive edema formation.

Controlled burns of the bowel and mesentery of the rabbit have been studied by Robb[20] using cinephotomicrographic technic. In first-degree burn, dilatation of arterioles and venules has been noted. Second-degree injury has been characterized by platelet precipitation along venule walls, microembolization, stasis, and intravascular venule thrombosis. In the third-degree burn both arteriole and venule platelet thrombi and stasis have been documented. Intravenous inoculation with Escherichia coli bacteria and topical Staphylococcus endotoxin have increased the vascular injury with ultimate destruction of the microcirculation in burned tissue.

The significance of the vascular injury in burns has been further demonstrated by Order *et al.*[21] using a rat model exposed to a 20 per cent body surface area third-degree burn of the back produced by a ten-second exposure to boiling water. By performing postmortem arteriography studies, they showed that occlusion of the entire subpapillary vascular plexus was evident twenty-four hours after injury. By three weeks post-burn, moderate revascularization of granulation tissue was evident. A second-degree injury was produced by three-second exposure to boiling water. Arteriography in such cases demonstrated a persistence of some arterial plexi through the first week, with subsequent re-establishment of full arterial patency and the retention of viable dermal elements. Infection produced by inoculation of the second-degree injury with Pseudomonas aeruginosa caused progressive arterial thromboses associated with perivascular bacterial invasion and ultimate destruction of all remaining dermal elements.

In essence, it may be stated that the fundamental early pathophysiologic and anatomic response to burn is on the vascular level, although direct cellular destruction by thermal energy does occur.

Liver. Liver damage in association with extensive burns has been studied by numerous investigators. Arturson[16] offered a morphologic and biochemical analysis of liver changes after burn trauma in the rat. His experimental model utilized a 25 per cent body surface area burn effected by exposure of skin to water at 90 C. for twenty seconds. On day 1 post burn, a rapid loss in total hepatic weight, a decrease in the size of hepatic cell nuclei, and a marked depletion of liver glycogen, ribonucleic acid, protein, and water occurred. During the next two days, the "degenerative" phase developed and was characterized by swelling, vacuolar degeneration, and nuclear ballooning within the hepatic cells, with evident fatty change and focal necrosis. The "regenerative" phase, lasting from day 3 to day 10 post burn exhibited increased hepatic cellular mitotic activity, and increased liver content of protein, lipids, and nucleic acids. "Repair" followed for approximately three weeks, during which time the burn wound healed and hepatic regeneration was noted. The "convalescent" period, beginning thirty days after injury, was marked by anatomic and biochemical parameters returning to within 30 per cent of control levels.

Davis and Abbott,[19] in reviewing changing concepts in the pathology of thermal burns, also referred to demonstrable hepatic edema and necrosis but did not implicate the hepatic changes in the cause of death. They attributed the liver alterations to a reduced hepatic blood flow with attendant anoxia related to generalized circulatory insufficiency. Pack,[22] Wolff, Elkington, and Rhoads,[23] and Erb, Morgan, and Farmer[24] appreciated the focal necrosis and degenerative changes in human hepatic tissue after burn death. Wolff, Elkington, and Rhoads attributed hepatic damage, which they illustrated with elevated serum bilirubin levels and increased retention of sulfobromophthalein, to a burn "toxin," infection, and/or anoxia related to capillary stasis. Erb, Morgan, and Farmer's study, based on 61 autopsies on fatally burned children, strongly indicted the tannic acid method of treatment. Of the 27 tanned cases dying at three to nineteen days post burn, 24 demonstrated variable degrees of hepatic necrosis. Of the entire untanned group, including 7 who died at about this same interval post burn (three to fourteen days), none had evident hepatic necrosis, although many showed liver edema and congestion. This study hastened to point out, however, that death was not necessarily attributable to the tannic acid-induced hepatic necrosis since all the patients that died, whether tanned or not, at similar periods after injury had similar clinical pictures.

Baker[25] studied 96 fatally burned human beings at autopsy and demonstrated numerous instances of hepatic necrosis but could not discern its cause. Benaim, Pattin, and Rappaport[26] confirmed the concept of frequent hepatic damage after burn trauma in a study of liver biopsies performed in 15 burn cases. This study concluded that acute hepatic changes in function and anatomy occurring during the first week after injury were consistent with those known to occur in association with numerous types of shock. Ultimate reparative changes were displayed in surviving patients, but no certain etiology for liver damage was proferred. Stenberg and Hogeman[27] gave iodine-131 tagged Rose bengal dye intravenously to burned rabbits and found that major deviations in normal hepatic uptake and excretion of this dye occurred in the first three days after burn, with gradual improvement thereafter in rabbits destined to survive. They related hepatic dysfunction primarily to a generalized postburn circulatory disorder.

Hepatic damage is an integral part of the burn syndrome. Its etiology is assumed by most authorities to be related to a nonspecific generalized circulatory deficiency.

Kidney. Histopathologic study of kidney tissue in fatal burn cases having exhibited renal failure antemortem has documented the occurrence of numerous tubular and glomerular casts, tubuloepithelial necrosis and rupture, congestion, and parenchymal inflammation.[28] Original concepts of renal damage in the burned patient considered proximal and distal tubular necrosis as the basic pathologic change.[19, 24, 28] Later work has emphasized that the main functional and anatomic lesion is in the glomerulus.

Sevitt[29] has described two main types of burn-induced renal failure, temporary and persistent. The temporary form is related to an early decrease in glomerular filtration rate secondary to renal vasoconstriction and is characterized by a decrease in urine output and elevations in blood urea nitrogen and creatinine. It is considered commonplace and insignificant. Persistent renal failure presents symptoms of either an oliguric or nonoliguric type, the latter being milder and more frequent in occurrence.

Decreased urine output is described as due to, but not proportional to, decreased glomerular filtration rate. Differential and independent sodium and chloride excretion patterns, differential sodium and water reabsorption patterns, continued potassium excretion, and absence of glycosuria are deemed evidence of persistent tubular function. Glomerular dysfunction more appropriately accounts for the chemical signs of kidney failure.

Vertel and Knochel[30] noted in autopsy material a lack of correlation between histologic evidence of renal tubular necrosis and the degree of clinical renal failure. They, like Sevitt, have indicated the glomerulus as the locus of burn-induced renal damage. These investigators also stressed the occurrence of the two varieties of kidney failure, oliguric and nonoliguric. They considered the nonoliguric form more common, often not diagnosed because of the higher urine volumes maintained and associated with fewer injured nephron units.

Cameron and Miller-Jones[31] in a study of 720 burned children reported 22 cases of frank renal failure with blood urea nitrogen values in excess of 100 mg. per 100 ml. A total of 21 of these children died. The critical renal lesion was demonstrated in the glomerulus.

The significance of the renal response to burn trauma is accepted by all authors in the field. The prime role of the glomerular lesion is acknowledged, but its anatomic and functional origins are unclear. Evaluation of renal function will be discussed under considerations of therapy.

Respiratory tract. Burn damage to the respiratory tract can be likened to skin damage since it results from direct contact of respiratory epithelium with particle-containing superheated air or to the inhalation of smoke containing the noxious fumes from various burning substances.[19] Connell[32] in studying 50 burned patients with obvious respiratory tract damage related the degree of injury to the prolonged contact of respiratory mucosa with flame or high-temperature gases. Surface damage promoted edema, increased secretion, and bronchiolar obstruction. The fragile terminal alveolar sacs were easily disrupted in such cases. Lower-tract injury was presumed by Connell to be frequently fatal. Mallory and Brickley,[33] of the Massachusetts General Hospital, in reviewing the Coconut Grove fire experience in Boston, declared the most characteristic lesion to be that of a diffuse membranous bronchitis often leading to slough of mucosa and obstruction. These authors related the injuries and deaths they studied to the high concentration of inhaled carbon monoxide and oxides of nitrogen, to irritating vapors, and to associated anoxia. Postmortem studies revealed intense hemorrhagic tracheobronchitis and pulmonary edema. Twenty years later Phillips and Cope,[34] from the same institution, restated the significance of the pulmonary lesion in burns and stressed its clinical association with flame injuries sustained in closed spaces (indoors).

Stone *et al.*[35] reported 24 deaths among 27 cases of respiratory tract burns. They defined the pathophysiology of the pulmonary burn in 3 stages: (1) respiratory insufficiency marked by intrapulmonic hemorrhage, interstitial edema, and alveolar-capillary membrane disruption; (2) pulmonary edema; and (3) bacterial pneumonia usually caused by Staphylococcus aureus and/or Ps. aeruginosa. In their studies of respiratory tract burns in rats, they found that increasing the humidity and/or temperature of the inspired air and adding smoke to the environment increased the magnitude of pulmonary injury and the mortality rate.

Gastrointestinal tract. The association of gastrointestinal ulceration with burns has been appreciated since the report by Curling[36] in 1842 which documented 10 cases of duodenal ulceration following burns. Friesen[37] reviewed the genesis of this problem in extensive experimental work on dogs. Utilizing a scald burn produced by immersion of 40 per cent body surface area in water at 100 C., he concluded that hemoconcentration was the most important factor in the development of Curling's ulcer. Hemoconcentration was assumed to be critical in causing mucosal congestion and the increased susceptibility of gastroduodenal mucosa to acid-pepsin digestion, since no dog in his series developed such an ulcer without definite evidence of hemoconcentration. Friesen discussed thromboembolism, "toxin" (particularly histamine), shock, and adrenal cortical hypersecretion, as other proposed theoretical bases for ulcer formation but ruled out the prime importance of each in his experimental design. Ryan *et al.*[38] reviewed 351 burn cases at Charity Hospital, New Orleans, and noted that Curling's ulcer was present in 7.4 per cent of the cases. Hemoconcentration and increased adrenal cortical steroid production were postulated to be causative factors. Abramson[39] studied Curling's ulcer in children and reported the results of autopsies performed in 90 fatal burn cases. Gastrointestinal hemorrhage had occurred in 50 per cent of his cases and perforation in 13 per cent. The majority of the ulcerations occurred in the duodenum; the remainder occurred in the prepyloric area of the stomach and the lower third of the esophagus. Abramson also theorized the importance of hemoconcentration but referred to septic emboli and hyperadrenocorticism as possible additional contributing factors. Other authors have similarly documented gastrointestinal ulceration as part of the "burn syndrome."[19,24]

Miscellaneous. Pack[22] illustrated the generalized postburn organ response of hyperemia, congestion and focal hemorrhage, and necrosis in brain, spleen, adrenals, bone marrow, and lymph nodes. Davis and Abbott[19] reported changes in these same organs and commented on thymus degeneration after burn trauma. Erb, Morgan, and Farmer[24] reported similar diffuse organ changes and also noted nonspecific central nervous system congestion and edema. Jaworska and Hanc[40] studied the cerebral tissue reaction to burn trauma in children. Aside from instances of head burns with direct deep heat coagulation of cerebral tissue, they demonstrated a frequent occurrence of cerebral-tissue congestion, edema, and ecchymoses followed by fatty degeneration and myelonecrosis. In cases surviving for longer periods, evidence of reparative gliosis was seen. Fozzard,[41] on the basis of postmortem studies in human beings and dogs, described postburn myocardial lesions.

It is apparent from this review that burn trauma when severe in depth (degree) and area (per cent of body surface) cannot be considered simply a skin injury. Multisystem reaction and organ deterioration has been repeatedly demonstrated, and although the etiology of certain aspects of the "burn syndrome" is unclear, the pathologic anatomic findings are certain and significant.

ELECTRICAL BURN INJURY. The previous allusion to the pathogenesis of burn trauma, particularly concerning skin changes, was basically descriptive of flash, flame, and scald injuries. The physical aspects of the electrical burn merit separate consideration, although the ultimate tissue destruction may be similar to that caused by other burn modalities.

Synder[42] has analyzed the extent of electrical burn as dependent on stimulus (electrical source) and recipient (person burned) factors. Considering stimulus, alternating current (A.C.) is more destructive than direct current (D.C.), and 1,000 volts and greater would be considered high tension in character. Brown[43] also stressed the increased danger of alternating current, indicating that 80 miliamperes A.C. can produce death while 250 milliamperes of D.C. can often be tolerated. Sachatello and Stephenson,[44] referring to the electrical source, indicated that current arcing, or flashover, occurring when a recipient nears a high-tension line, can yield electrical burns with arc temperatures reaching 2,500 C. as well as can direct contact between electrical source and recipient.

Recipient factors are primarily concerned with host resistance to the passage of electrical energy.[45] As the current enters the host tissues, electrical energy is converted to heat in direct proportion to the local tissue resistance measured in calculable ohms. The higher the tissue resistance, the more impedance to the passage of electrical current and the more conversion of electrical energy to heat. This results in increased local burn and decreased electrical systemic effect. Moisture on the skin surface decreases local electrical resistance while dry, heavily calloused skin will offer greater resistance. Bone has the highest resistance, followed in order of decreasing resistance by fat, tendon, skin (particularly dependent on thickness and moisture), muscle, and blood vessels. Nerves offer the lowest resistance. Bone, with its great resistance, will sustain the greatest amount of destruction when encountering a given amount of electrical current. Blood vessels conduct current well, but in instances of high-tension burns there will be damage to the media, while the closer intima is spared since it is constantly cooled by the flowing blood. Ultimate necrosis of the media and delayed hemorrhage and/or progressive thrombosis may result.

In most cases of electrical contact burn, both entrance and exit burns will occur. The particular path of current through the body will follow the line of least electrical resistance and will be determined by the grounding disposition of the host. The exit injury is of lesser extent than the entrance wound, but the damage to internal organs by the internal current passage is even more critical. Should a significant amount of current pass through the heart, fatal ventricular arrhythmias can occur; should the brain be traversed, loss of consciousness, convulsion, and respiratory center failure are possible complications. A natural conclusion regarding the destructive potential of an electrical burn is that the greater the local resistance at the contact point, the greater the conversion of electrical energy to heat, the greater the local burn, and the less the systemic conduction.

CHEMICAL BURN INJURY. Most chemical burns are caused by acids and alkalis, and both are frequently encountered in home and industry.

Concentrated acids, such as sulfuric and nitric, possess the capacity to destroy tissue by their marked affinity for water and ability to precipitate vital protein complexes.[22]

Alkalis, such as sodium and potassium hydroxides (lyes) and calcium oxide (lime), react with skin components to produce soaps from surface fat compounds and alkaline albuminates from proteins in an exothermic reaction.[46] The deleterious chemical changes plus released heat of reaction produce profound skin destruction. The formation of a soft penetrable eschar allows still deeper lye penetration; extension in depth of the lye burn injury occurs until all lye is combined.

Pathophysiology

Burn shock of a variable magnitude constitutes the unified concept of massive organic response to major burn injury. Shock implies a state of inadequate tissue perfusion, an impaired circulatory mechanism, a relative deficiency between metabolic needs of tissue, and the supply of critical metabolites to these tissues presumably on a circulatory basis.[47] Accepting such a general impression of the fundamental reaction of the organism to burn does not, however, define or detail the basic subsystem changes and relative roles in the causation and propagation of the burn shock state. Although conclusions based on our reasonable but incomplete analyses to date will be offered, segmental discussion of the various forces operating in burn shock will clearly indicate the vast lacks in knowledge that make any conclusions and/or therapeutic implications subject to only conditional acceptance.

HEMODYNAMIC FACTORS. Crews[48] has simply referred to the basic pathophysiologic alteration post burn as regional vascular destruction with increased capillary permeability and massive and early fluid losses into and through the damaged tissues. This results in an acute hypovolemic state, burn shock. The implication is clearly that of a primary vascular injury culminating in a circulating volume deficit.

Artz and Reiss,[1] Levenson,[3] and Reiss *et al.*[49] have stated similar concepts. Burke and Constable[50] also emphasized the importance of thermal injury to the capillary, arteriole, and venule walls causing increased vascular permeability and transudation of vast quantities of fluid, electrolyte, and protein into the interstitial spaces resulting in marked decrease in plasma volume. This decrease in blood volume is in turn considered the mechanism of reduced tissue perfusion.

Cope and Moore[51] in 1947 and Cope *et al.*[52] detailed the nature of these profound fluid shifts following burns by demonstrating the increase in the extravascular-extracellular space, noting the increased flow of lymph from the burned extremity in dogs and demonstrating the high protein concentration in burn blister fluid (60 to 80 per cent of plasma protein concentration). These authors postulated that through the burn-damaged vasculature, plasma water was lost in excess of protein and albumin in excess of globulin. The net result of these movements was a paradoxical increase in plasma protein concentration, despite decreased total plasma protein, effecting an increased plasma colloid osmotic pressure, promoting further dehydration of unburned tissues.

Horn,[47] extensively reviewing numerous etiologic considerations in burn shock, considered hemodynamic factors as primary but not the only forces active in this syndrome. Breed[53] has also concentrated on the cardiorenal aspects and offered therapeutic theories on the basis primarily of fluid support and diuretics. Blocker[54] heads his list of changes in the acute phase of burn shock with an increase in capillary permeability and follows with decreases in cardiac output, blood volume, and liver blood flow.

In discussing the causative mechanisms in burn shock, Arturson[16] turns primarily to circulatory insufficiency based on extensive extravascular losses of blood volume. Peripheral blood pooling, marked by increased blood to lymph transport, fibrinogen blockage of lymphatic return resulting in increasing edema, and increased capillary permeability even in unburned tissues presumably based on acidosis and excessive amounts of circulating histamine and serotonin, combine to yield a decreased venous return, reduced cardiac output, and inadequate tissue perfusion.

Moyer and associates[55,56] have also identified the negative forces operational in burn shock as within the hemodynamic area but have varied from the previous authors in the sequence of fluid events and the particular elements involved. Vaporizational heat loss, that is, increased evaporative water loss via the burned skin, and massive sodium loss into the burned tissues are the key factors in their opinion. This group's thesis is that the simple reduction in circulating blood volume secondary to increased capillary permeability is not the basis for burn shock. They have based this on the experimental demonstration of edema accumulating in free subcutaneous transplants of burned rat tail skin within several hours following transplant, too soon theoretically for any vascular connections between burned skin and normal tissue to have developed, and the clinical demonstration of adequate burn shock resuscitation with sodium-containing fluid in the face of a rising hematocrit, and evidence of recovery without correction of oligemia. The group indicated that a decreased circulating red blood cell mass and decreased plasma proteins are less significant but operational factors in burn shock.

The significance of vaporizational heat loss seems certain not only in burn shock but throughout the entire burn course prior to the achievement of skin coverage. Burke and Constable[50] stress its importance to be later in the course of the burn syndrome than do Moyer and associates. Horn and Converse[57] similarly demonstrated the role of vaporizational heat loss in burned rats, indicating it to be the most important parameter in the ultimate result after a 40 per cent full-thickness scald burn. Jelenko[58] relates this evaporative water loss to a disruption of complex protein-water bonds in the skin as well as to burn-induced changes in stratum corneum lipids. Cohen,[59] using a microhygrometer, demonstrated an increase in evaporative water loss of 16 times greater than normal even through a dry escharified wound in human burned subjects studied under normal ward conditions. Moncrief and Mason[60] claimed enormous water losses by evaporation through burned skin on the basis of critical weight studies. Roe[61] has further corroborated the quantitative significance of evaporative water loss through the burn eschar. The dissipation of body heat calculated by all of these authors as measurable caloric expenditures can exceed the capacity of the burned individual to supply this amount of energy.

It must be concluded that burn shock is related to the immediate hemodynamic response of the burned patient. Losses of fluid and electrolyte, particularly sodium, into burned tissues have been shown; this leads to a reduction in effective circulating blood volume culminating in inadequate tissue perfusion. The extravascular-extracellular loss of precious fluids is undoubtedly aggravated by the external losses in the form of water evaporation via the burned skin. That these fluid losses and shifts occur in direct proportion to the percentage of body surface area burned is manifest and will be further discussed under therapeutic considerations.[49]

Horn[47] has developed further the "inadequate capillary flow" concept and states that with resultant tissue hypoxia there is a cellular shift from aerobic to anaerobic metabolism. The latter mechanism possesses an appreciably lesser compensatory capacity to sustain the organism in the throes of a stress reaction. Structural cellular decomposition and acidosis develop and irreversible burn shock ensues.

TOXIC FACTORS. Arturson[16] has theorized that the initial skin injury can result in the release of cellular proteases and other nonspecific products of thermal breakdown of cells. The proteases are considered capable of producing vascular endothelial damage, splitting plasma proteins, and with the other unidentified products can effect plasma changes capable of generally disturbing vital biochemical reactions. Rosenthal, Hartney, and Spurrier[62] have claimed a "toxin" present in the blood of acutely burned human beings to be demonstrable by three technics: cytotoxic effect on HeLa cells; cytolytic effect on red blood cells of acute burn victims; and the presence of precipitinogens when tested against the sera of healed burn patients. This group also claims the ability to show an "antitoxin" to neutralize the three toxin-induced reactions. The antitoxin which has been found in human beings up to five years following burns is present in the gamma globulin fraction and, therefore, is considered a true antibody. On the basis of experimental work in rats, Matter[63] has concluded that a "toxin" of protein origin from deeply burned skin can yield an antigen-antibody reaction in the burned organism on an autoimmune basis. These authors all agree that the significance of these postulates is unclear.

Malm,[64] in reviewing this aspect of burn pathophysiology, states that much of the investigative work done on toxin-definition with crude burned skin extracts has been inadequately controlled with particular reference to the lack of bacteriologic evidence of sterility of extracts and with the use of many other agents simultaneously when therapeutic aspects of "antibodies" were evaluated. Malm and Slawikowski[65] have offered some personal but inconclusive experimental work in rats intimating the presence of protective antibodies three and five months following survival after single 25 per cent full-thickness burns. Small repeated burns in the donor group of rats resulted, however, in a confusing increased mortality rate in the test rat model. Alexander and Moncrief[66] experimentally and clinically have demonstrated a variable but altered antibody response to various antigenic stimuli following burn trauma. Bocanegra *et al.*[67] in critically studying the use of convalescent human burn plasma therapy in severely burned children have been unable to demonstrate, using the precipitin test, any circulating antibodies against a nonspecific "toxin."

In Eastern Europe and Russia, however, one can find considerably more and stronger subscribers to the significance of the antigen-antibody reaction in the pathophysiology of the burn syndrome. In Prague, Dobrkovsky, Dolezalova, and Pavkova[68] followed "antibody titers" in 30 human burn cases using collodion particles in an agglutination technic. They found the highest titers on the third postburn day, postulated that the antibodies developed against skin antigens formed from disintegrated skin products, and correlated an improved clinical course with a fall in antibody titer. Feodorov and Skurkovich,[69] of Moscow, related their general conclusions reached after experimental studies with dog, rabbit, and horse. While not offering details, they claimed that "burn autointoxication" resulted from the flooding of the burn victim with heat-denatured toxic proteins and that a burn antibody, which was not specific as to species, has been capable of causing a "dramatic disappearance of this autointoxication."

It must be concluded on the basis of studies reviewed that more detailed and comprehensive analyses are required before purely "toxic" considerations can be judged to be significant in the understanding of the burn syndrome.

Bacterial factors. That infection assumes a critical role in the pathogenesis of the burn injury is at this time without doubt; the role of infection in the broader sense as it relates to the management of burns is discussed in a separate section.

Fine[70] studied the bacterial factors in shock and concluded that the bacterial factor is the most significant one in producing the "irreversible state." He has theorized that in hemorrhagic shock, the body's resistance to normally resident bacteria and their products is reduced to a critical level and that antibiotics given before, during, and after a usually fatal exsanguination experiment in dogs can protect against the irreversible shock state and allow ultimate immediate recovery and long-term survival.

Arturson[16] has stated that in burn-induced gastrointestinal ileus, increased bacterial endotoxin production coupled with decreased hepatic detoxification capacity as related to the previously documented postburn liver damage can produce significant deleterious systemic effects. The ultimate theoretic assumptions regarding endotoxin-induced damage relate to the potentiation of catecholamine activity, resultant overstimulation of vascular smooth muscle, vessel decompensation, deepening of shock, and death. The critical role of E. coli endotoxin in hemorrhagic shock by this mechanism has been demonstrated by Zweifach and Thomas.[71]

Bacterial factors appear to operate in shock and probably are active in burn shock. The relative significance of their role in the syndrome is not certain. As indicated previously, however, the absolute importance of bacterial factors in the overall burn syndrome is unquestioned and deserving of later detailed presentation.

Hormonal factors. That endocrine activity is intimately associated with the metabolic reaction to the major burn injury will be evident from the following clinical and experimental studies; it will also be evident that the adrenal response in particular occupies a prominent role in the early burn syndrome. Therapeutic implications will be documented in a later section.

Wilson, Lovelace, and Hardy[72] studied the adrenal cortical response of 12 human beings with burns of greater than 15 per cent body surface area. The urinary excretion pattern of the hydroxycorticoids showed an immediate increase post burn with a tendency to remain equal to or higher than the normal ranges throughout the course of the disease. The 17-ketosteroid excretion pattern, however, presented a sudden rapid rise after injury with a later fall below normal values during the chronic burn wound phase. Eosinophil counts decreased to near zero within several hours and remained low for several days. A later rise in the eosinophil count was presumed due to accommodation to stress with a more normal level of adrenal cortical activity and an improved prognosis. Wight *et al.*[73] also noted the tendency for the eosinophil count to drop sharply immediately following the burn and then gradually rise beginning on the third day. A later rise of eosinophils was considered a favorable prognostic sign. A count, however, of greater than 400 per cubic centimeter of blood before the tenth day post burn was considered an indication of possible impending adrenal cortex failure.

Feller[74] studied adrenal cortical function in 20 burn patients by measuring urinary 17-hydroxycorticoid and 17-ketosteroid excretion patterns. He confirmed the early high excretion rates and correlated an early decreasing excretion rate with adrenal insufficiency and a poor prognosis. ACTH stimulation tests in this group revealed an interesting but questionably significant differential adrenal response, the lesser response being present in the hydroxycorticoid group. Evans and Butterfield[75] while investigating 23 cases noted the adrenal cortical response to parallel the severity of the burn and intimated that the stress response to burn as manifested by the functioning adrenal cortex "would appear to promote survival."

Sevitt[76] confirmed much of these same findings and noted that adrenal cortical function was likely mediated by cerebral or hypothalmic activity via the anterior pituitary elaboration of ACTH. Markley *et al.*[77] also related the increase in urinary steroid excretion to the severity of the burn. This study, based on 44 burn patients, noted a particularly responsive hydroxycorticoid production and a lesser ketosteroid excretion after injury. Although the details of these studies can be considered valuable, the simpler basic concept put forth by Lewis and Page,[78] that shock can be induced more easily in adrenalectomized animals, states the still current and general appreciation of the role of the adrenal gland in stress. Apparently the presence of corticosteroids (and epinephrine) is not essential for shock to occur, but if present in normally predictable quantities, these hormones do afford some protection to the organism under stress.

Experimentally, steroid levels have been measured in rat blister fluid,[79] in rat plasma where the maximal levels were recorded at one hour post burn,[80] and in nephrectomized burned dogs where a decreased steroid production was confirmed indicating that the kidney plays a role in adrenal function and its responsiveness to ACTH.[81]

Goodall and associates[82–84] have studied the metabolism of the adrenal medulla and using bioassay technic analyzed the urine, adrenals, and lumbar sympathetic ganglionic tissue for epinephrine and norepinephrine in 14 burn deaths. They noted 10 of 14 to have subnormal urinary excretion of epinephrine metabolites during the terminal stage, as well as reduced medullary and sympathetic ganglion norepinephrine content, all indicative of adrenal medullary insufficiency. It was stated, however, that these findings may have been consistent with the manner of dying rather than the cause of death. Simple exhaustion of the burn stress overstimulated sympathetic nervous system and adrenal medulla was considered the mechanism of the terminal depletion of norepinephrine and epinephrine.

Cope *et al.*[85] and Sevitt[76] have described unremarkable thyroid function after major burn injury. Increased posterior pituitary activity with increased antidiuretic hormone elaboration has been claimed by one author[76] while Dobson *et al.*[86] have related an increase in circulating antidiuretic hormone to the documented liver malfunction.

In reviewing endocrine alterations following thermal injury, it seems that the complex endocrine responses are significant but not yet fully defined.

METABOLIC FACTORS. Overstimulation of the metabolic processes relative to available oxygen results in steady biochemical deterioration and ultimately, if compensatory processes become exhausted, to irreversible shock and death.

Carbohydrate metabolism is immediately affected by the shock state with its attendant reduced tissue perfusion and hypoxia. The primary reactions shift from aerobic to the less efficient anaerobic form with a net decline in cellular maintenance energy.[47] Rapid utilization of available carbohydrate occurs[3] along with marked decrease in neoglycogenesis. This has been demonstrated by Kalina *et al.*[87] in flame-injured rats where 25 per cent body surface area burns resulted in a prompt decrease in glycogen production and a fall of glycogen levels in liver and muscle to approximately 25 per cent of normal values. Stoner and Threlfall[88] in their investigations have noted that glycogen depletion in the heart in various forms of shock starts only after extensive utilization of liver and muscle glycogen. The protective implications of this sequence of energy deprivation are manifest.

Protein metabolism is probably not of immediate significance in burn shock, but later in the burn illness nitrogen balance enters an often demonstrated negative phase continuing for a prolonged period. Braasch, Bell, and Levenson[89] in studying experimental burns in the rat described peak urinary nitrogen excretion three to four days following injury and continuing for at least twelve days. Reiss, Pearson, and Artz[90] carried out detailed metabolic studies on 5 burned human beings beginning on the day of burn and continuing for from sixty to one hundred eighty days. They too described an early and severe negative nitrogen balance with high urinary nitrogen excretion. In this particular group of severely burned adults the catabolic phase lasted approximately twenty-eight to thirty days with a correlation of dissolution of 30 Gm. of whole body tissue for each 1 Gm. of nitrogen lost. Weight losses ranged from 8.2 to 11.7 kilograms of lean body mass during this time. The nitrogen excretion pattern often reached levels in excess of that calculable on the basis of simple tissue breakdown. The explanations offered for this discrepancy included the dissolution of particularly nitrogen-rich tissue (skin and collagen) and the catabolism of proteins other than those in host protoplasm, such as plasma and liver proteins.

Cope *et al.*[91] had earlier studied nitrogen excretion in burned patients and had indicated a dissociation of potassium and nitrogen excretion rates suggesting that not all the nitrogen excreted was attributable to cellular breakdown. The studies by Braash, Bell, and Levenson[89] and Reiss, Pearson, and Artz[90] confirmed the dissociative nitrogen: potassium: phosphorous excretion patterns as incompatible with the known relative amounts of these ingredients in normal protoplasm. On this basis this group presumed the metabolic change was caused by either the retention of liberated potassium and phosphorous, the release of particularly rich nitrogen stores, or a nitrogen source other than catabolized tissue. Harkins and Long[92] have indicated that in scalded rats an immediate increase occurs in plasma aminonitrogen in amounts proportional to the extent of the burn. Hirshfeld *et al.*[93] also documented the significance of nitrogen losses during the burn syndrome in 23 human beings. These authors stressed the vast quantities of nitrogen that could be lost via burn wound exudate as well as in urine, stool, and vomitus. Although a momentary state of positive nitrogen balance can be achieved under circumstances of high protein intake, the Reiss, Pearson, and Artz[90] study indicated that none of their 5 cases, even after one hundred eighty days, had achieved an over-all nitrogen equilibrium with replacement of all previously excreted nitrogen. Most authors agree that over-all clinical gain can be achieved even in the throes of the inevitable negative nitrogen balance.

Fat is lost to the body during catabolic and anabolic phases after the burn injury. The calculation of quantity of fat so metabolized is indirect and based on considerations of weight loss and nitrogen excretion rates.[90]

Increased potassium excretion occurs early post burn, based in part on tissue destruction, and when associated with the constant provision of low potassium intake negative potassium balance ensues. Average daily potassium loss in burned children has been measured at the low constant rate of 15 mEq. per square meter of burned surface.[94] Throughout even later phases of the burn syndrome, however, negative potassium balance, despite high intake, has been recorded.[89,90] The significance of this is not certain.

Sodium is lost in large quantities throughout the burn shock period and continues as long as burn wounds persist. Moyer and associates[55,56] have repeatedly stressed the significance of the role of a functional sodium loss in burn shock. Sodium is sequestered in burn wound edema and is dissipated in wound exudate, even through a dry burn eschar, and is probably depleted from unburned cells as well. Batchelor, Sutherland, and Colver[95] described the difficulties of controlling long-term sodium balance studies in 26 cases of burned children and adults. They concluded there was no particular correlation of sodium metabolic patterns with the age of the patient but reported marked variation from patient to patient in the amount of urinary sodium in the early postburn period. Bondoc *et al.*[94] were more definite, however, and based on meticulous water and electrolyte balance studies in 10 burned children, they calculated an average daily sodium loss of 259 mEq. per square meter of actual burn surface.

Calcium, phosphorous, and magnesium metabolic studies have also been performed but without remarkable conclusions. Calcium and phosphorous balances are variable, difficult to interpret, with a marked fecal lag, often negative after a deep extensive burn, and probably not of prime therapeutic concern. Magnesium balance probably parallels nitrogen balance but with sufficient variability to question any definite demonstrable trend.[1,90]

In concluding the metabolic aspects of burn pathophysiology, it is worth restating the prominent deleterious role played by evaporative water loss via the burned skin. This destructive force, consuming energy in amounts of up to 4,000 calories per day in severe cases, constitutes a prime etiologic force in the hypermetabolism of the burn syndrome. This quantity of heat loss and its attendant demands on the energy-producing potential of the host can contribute greatly to the ultimate decompensation of the organism.

NERVOUS FACTORS. The nervous system is involved during burn shock and throughout the healing phase. The differential roles of pain, voluntary neurogenic discharge, and autonomic activity are difficult to define accurately at this time, but their participation in the clinical response to burn trauma is empirically significant. Dolecek and associates[96,97] relating an extensive experimental and clinical burn experience have indicted the central nervous system as a critical control organ in the initial adaptive response of the victim. This group has conceived of the nervous reaction to burn injury as being "harmfully exaggerated" and on this basis has employed "neuroplegic" mixtures of drugs, such as ergots, antihistamines, and local anesthetics, to dampen these neurogenic forces. Their clinical results are discussed under therapeutic considerations.

Experimentally in rats with standardized

25 per cent flame burns, Dolecek and associates have reported that "neuroplegics" do the following: (1) decrease the usual adrenal ascorbic acid depletion noted post burn, (2) decrease the generally accepted muscle and liver glycogen depletion, (3) block the usual rise in blood glucose, and (4) block the usual rises in blood unesterified fatty acids, alpha-ketoglutarate, and citrate. These changes are indicative of a decreased protein catabolic reaction and maintenance of a functioning Kreb's cycle. Theoretically, the break in the neurogenic over-reaction is mediated in part by depression of the excessive adrenal response to burn stress.

Vishnevsky, Krakovsky, and Shraiber[98] have indicated their belief in the crucial role of the central nervous system, particularly in the mediation of pain, in the pathogenesis of burn shock. The use of intravenous local anesthetic agents and bilateral paranephric and perivascular procaine (Novocain) blocks which produce analgesia and autonomic blockade are offered to lend credence to their theory. Nikitina[99], also reporting from the Vishnevsky Institute, U.S.S.R., declared the value of intravenous procaine in suppressing neurogenic-induced damage to the liver, kidney, heart, and adrenals after experimental burns in dogs.

Although it is reasonable to presume that the central nervous system is involved in a complex, undefined, but contributing manner in burn shock, it is also evident that the empiric studies referred to require considerable detailed quantitative analysis before their theoretic bases and implications can be fully accepted.

Mortality rates in burns

Prognosis in the burn case is perhaps more predictable than with other forms of major trauma. This is related at least in part to the particular measurable aspects of the burn injury, notably the extent and depth of the burn. Bull and Squire[100] and Bull and Fisher[101] analyzed mortality-rate factors in over 2,800 burns treated at the Birmingham Accident Hospital, England, and reported the two most significant parameters to be: (1) the percentage of full-thickness body surface area burn and (2) the age of the patient. Using the probit analysis method, a statistical maneuver capable of converting biologic data with its S-shaped distribution curve, and along it the normally distributed factor of individual susceptibility, to a straight-line (linear curve) analytic system, Bull and his associates were able to construct grids relating predictable mortality rate to age of patient and percentage of full-thickness body surface area burn.

With the possibility of exceptions at either age extreme and with any given extent of burn, these investigators concluded that up to age thirty, burn tolerance is reasonably stable, but above age thirty any given per cent of burn will afford a worse prognosis. Their conclusions are perhaps best appreciated by noting the LA_{50} (per cent body surface area full-thickness burn necessary to produce a predictable 50 per cent mortality rate) for each of their studied age groups: birth to fourteen years, 51 per cent; fifteen to forty-four years, 55 per cent; forty-five to sixty-four years, 23 per cent; and over sixty-four years, 9 per cent. More narrow age analyses, including birth to four years and thirty to forty-four years, led to their more general concept that age thirty is the pivotal age in reaction to burn. Before prognosticating from their mortality rate grids, they also recommended age adjustments when encountering particularly satisfactory previous health or, on the other hand, intercurrent disease in any age group.

Moyer[102] considered the LA_{50} generally to be on the high side after analyzing death rates from burns in four American hospitals from 1944 to 1951. He concluded an over-all mortality rate of 83 per cent in burns of more than 55 per cent body surface area and a 24 per cent mortality rate in burns above 15 per cent area. Pruitt *et al.*[103] relating their experience in 1,100 cases at Brooke Army Medical Center reported LA_{50} as follows: birth to four years of age, 42 per cent; birth to fourteen years, 48 per cent; fifteen to forty-nine years, 56 per cent; and over fifty years, 30 per cent. They further claimed that among patients from birth to four years of age, burns up to 30 per cent body surface area were as well tolerated as within the older age groups but that burns of more than 30 per cent area were poorly handled by these very young children. Hájek *et al.*,[104] from Prague, agreed with the previous studies in stating that age of patient, extent and depth of burn, and previous health were the most significant factors in predicting burn deaths.

Rittenbury *et al.*[105, 106] in analyzing over 1,800 burns treated at the Medical College of Virginia and using probit analyses similar to those used by Bull offered a more detailed set of prognostic factors, including the relative significance of each. They prefaced their reports with a reminder of the significant error inherent in such studies at either biologic extreme of age and extent of burn. The most significant forces affecting burn mortality rates in their series were: (1) area of full-thickness burn, 95 per cent of the survivors had less than 20 per cent deep body surface area burns, 71 per cent of the nonsurvivors had deep burns in excess of 20 per cent body surface area, no patient with deep burn of more than 60 per cent area survived, and 99 per cent of those with only superficial burns survived; (2) age of patient, only one fourth as important as extent of burn, buti nevertheless, beyond age forty, a crit cal decrease in burn tolerance was evident; (3) pulmonary complications, occurred in only 10 per cent of the survivors but in 70 per cent of the nonsurvivors; (4) central nervous system complications, 70 per cent of this group died; (5) burn shock, occurred in only 8 per cent of the survivors but in 70 per cent of the nonsurvivors; (6) pre-existing disease, 60 per cent of all burn cases with documented liver disease died, cardiovascular disease was diagnosed in only 10 per cent of the nonsurvivors, and previous renal disease was also significant; and (7) race, the Negro patient fared less well with any given extent of burn than did the Caucasian patient. Sex of the patient and time of hospital admission post burn were considered insignificant in their effects on the burn mortality rate. While claiming a 20 per cent over-all mortality rate among all burn admissions, Rittenbury *et al.*[105, 106] supported the assumption by Pruitt *et al.*[103] that in children under age four burns of more than 25 per cent of area were more poorly tolerated than such burns in the older age groups. Of particular note was the realization that of the nonsurviving patients over sixty-five years of age, 20 per cent had burns of less than 5 per cent of body surface area.

Phillips and Cope[107, 108] have reported no significant recent improvement in the over-all burn mortality rates but claimed longer survival time in fatal cases with particular reference to the ability of current early resuscitative measures to carry the burn victim through the first two to three postburn days. They considered the prime killer in burns to be respiratory tract damage, causing 42 per cent of their burn fatalities, with later burn wound sepsis as also significant. Bull and Fisher[101] also considered the fatal burn patient to be dying at a later period after injury than was previously the case. The timetable of death according to Phillips and Cope[107] indicated 22 per cent of the deaths occurred on the day of burn and 16 per cent and 11 per cent during the next two twenty-four-hour periods. There was then a decrease in mortality rate on the third and fourth days post burn with a high death rate again occurring during days 5 to 8 after injury.

Wartman[109] studied the causes of death in 41 young male adults with burns of 30 to 60 per cent body surface area. Respiratory damage was critical in the first twenty-four hours following trauma; during days 2 to 7 shock, progressive respiratory tract complications, sepsis, pulmonary infarcts and "renal failure" were reported. During the second postburn week, shock combined with sepsis and peptic ulcer with bleeding were prevalent causes of death. Later and in lesser numbers, sepsis, bleeding ulcer, and hepatitis were indicted. Feller and Kendrix[110] reviewed in detail 60 burn fatalities at the University of Michigan where an over-all mortality rate of 15 per cent was reported. Listed in the order of frequency were: (1) infection, the leading cause of burn deaths; offending organisms, mainly Ps. aeruginosa and Staph. aureus, coagulase positive with average time of death of three weeks; (2) pulmonary embolus with an average time of death of seventy-one days post burn; (3) pre-existing disease among older patients, particularly cardiovascular disease; (4) initial trauma specifically related to shock and respiratory tract damage and occurring within two days of injury; (5) iatrogenic, drug errors, and overtransfusion, especially in children; (6) adrenal insufficiency which was documented with certainty in only 1 case despite the frequent demonstration of adrenal hemorrhage at autopsy. Pneumonia was considered a critical form of sepsis in this series.

In summary it can be appreciated that burn fatality is clearly and predictably related to (1) extent of full-thickness body surface area burn, (2) age of patient with the pivotal period of decreasing tolerance to burn in the fourth decade of life, (3) the occurrence of pulmonary and cerebral complications, (4) the state of previous health, and (5) the magnitude of early and late burn wound sepsis.

Initial evaluation

Immediate over-all appraisal of the burn victim is essential to proper management. The sequence of various emergency treatments will depend on this initial critical evaluation which should include the following:

1. Extent of burn as expressed in per cent of body surface area;
2. Depth of burn with the realization of the far greater significance of third-degree (deep) as contrasted with second-degree (superficial) injury;
3. Site of burns with singular reference to the important facial and head area, other critical sites would include particularly eyes, hands, feet, and genitalia;
4. Respiratory function with realization of the importance of ascertaining a history of smoke inhalation, deep oronasal-facial burns with frequently associated respiratory tract damage,[34] labored breathing, and level of consciousness;
5. Mental status in that confusion, agitation, delirium, stupor, and coma can be indicative of hypoxia on the basis of significant respiratory tract damage and/or burn shock;
6. Age of patient with reference to previous health and to the age-based tolerance to the burn injury as discussed in the section under mortality rate in burns;
7. Associated injuries, such as fractures, lacerations, head injury,[111] and closed chest and abdominal trauma.

Pulaski and Tennison during the late 1940's proposed a simple method of evaluating percentage of body surface area involved in burns.[112] Their concept evolving as a crude "rule of nines" remains as a reasonably satisfactory guide to early diagnosis and fluid therapy and can be readily recalled as follows in the adult:

Head (7) and neck (2) = 9 per cent
Each upper extremity = 9 per cent
Anterior trunk = 2 × 9 = 18 per cent
Posterior trunk (13) + buttocks (5) = 2 × 9 = 18 per cent
Each lower extremity = 2 × 9 = 18 per cent
Genitalia = 1 per cent

These estimates have been refined along several lines: The anterior trunk comprises less than 18 per cent, probably closer to 13 per cent; the lower extremities each represent closer to 20 per cent and each upper extremity probably closer to 10 per cent.[113] For scattered areas of burn, estimates of surface percentages can be achieved by using the palmar surface of the hand and fingers with fingers adducted as equal to about 1 per cent of total body surface. More important, however, is the differential consideration of relative body surface areas in the child who in general has a much greater proportion of head surface than of lower extremities.[113] The guide in this situation has been to estimate head area at 19 per cent at birth (10 per cent more than the adult) at the expense of the 2 lower extremities. With each year of age up to ten, 1 per cent is substracted from the head area and added in equal amounts to each lower limb.[114] After ten years of age, the adult percentages are employed.

Depth of burn is often difficult to evaluate on initial examination and is more so in pigmented skin. This has prompted Goulian and Conway[115] to experiment with bromphenol blue as an indicator dye to distinguish deep from superficial burn destruction. By means of intravascular protein linkage, staining of all tissues with an intact vascular tree results; this dye is subsequently rapidly cleared from viable tissues through normal circulatory mechanisms. In areas of vascular damage and increased permeability, however, the dye produces slower but ultimately deeper coloration with delayed clearing, and in nonviable zones it will produce an intense strain of indefinite duration. Mladick, Georgiade, and Thorne[116] have developed a thermographic technic based on recording the heat emission of burned skin as infrared waves and developing the infrared patterns on polaroid film. The end result of such a thermograph is a shaded portrait of the burned region delineating areas of reduced vascularity and heat emission as dark zones (the colder, the more deeply burned) contrasted with the more opaque-appearing normal warmer zones. Despite the presentation of these technics, most clinicians still rely on the previously noted physical traits of deeply and superficially burned skin. The passage of time makes these characteristics more apparent.

Returning to the differences in the pediatric age group, the relatively thinner skin of the infant with its poorly developed hair follicles is more likely to sustain, after a given burn contact, a deep or full-thickness burn injury than is the thicker skin of the adult. It must also be appreciated that any given percentage of deep burn in the child will produce a more profound systemic effect probably related to the greater body surface area to body mass (and therefore to weight and to blood volume) ratio in children.[3,7,117]

Respiratory tract injury must be suspected in any burn victim with a history of unconsciousness, smoke inhalation, or a flame burn sustained indoors, particularly if deep burns are evident about the head, nose, and mouth.[34] In the pediatric age group especially, where the airway is smaller, lesser amounts of burn-induced edema can produce obvious mechanical obstruction. In instances in which respiratory tract damage is highly suspected or definite, early tracheostomy with ventilatory assistance must be considered.[1,3,117]

Although the burn per se becomes the focus of diagnostic and therapeutic concern, inspection for associated injuries with special attention to head trauma, closed chest and abdominal wounds, fractures, and lacerations must be carried out and appropriate decisions regarding management effected.

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Part II will appear in the June 1 issue of the JOURNAL.

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The Americana, New York City

Correlation Conferences in Radiology and Pathology

St. Luke's Hospital Center
New York City

Editors
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Retrosternal Mediastinal Mass

Case history

Nancy Hoge, M.D.: The patient is an asymptomatic twenty-six-year-old Scottish female immigrant. On a routine physical examination, she was found to have an enlarged thyroid gland, a Grade II apical systolic murmur, and anemia, which subsequently responded to oral iron therapy. The radiographic examination of the chest showed a large mass in the left anterior mediastinum, which was known to have been present for at least one and a half years.

Past history was remarkable only in that she admitted to occasional palpitations when lying flat, which quickly disappeared. She was one of twins, weighed $2^1/_2$ pounds at birth, and was jaundiced at five days.

Laboratory data included normal or negative values for urinalysis, serology, and chemistries for the evaluation of enlarged thyroid gland and anemia except for an initial hemoglobin of 11.7 Gm. per 100 ml., which responded after two weeks of iron sulfate treatment to a level of 12.8 and continued to rise to 13.8 Gm. Electrocardiogram, phonocardiogram, and catheterizations of the right side of the heart and pulmonary artery were within normal limits.

Radiographic discussion

Dr. Hoge: Routine radiographic examination of the chest, including a cardiac esophagram in four projections, showed no evidence of individual cardiac chamber enlargement (Fig. 1A, B, and C). In the region of the pulmonary artery, and inseparable from it, was a large bulging mass which projected anteriorly on the lateral projection and contained multiple scattered speckled calcifications (Fig. 1C). An angiocardiogram was performed which showed that the pulmonary artery was normal and completely separated from the mediastinal mass (Fig. 1D). The most likely diagnoses considered at this time were bronchogenic cyst, thymic cyst or tumor, or teratodermoid tumor.

Surgical discussion

Hugh F. Fitzpatrick, M.D.: Through a left anterior inframammary incision in the third intercostal space, the anterior mediastinal mass was exposed (Fig. 2A). It appeared smooth, encapsulated, and completely covered by mediastinal pleura and was situated directly anterior to the main stem pulmonary artery (Fig. 2B). The mediastinal pleura was incised, and by sharp dissection the mass was removed without disruption of the capsule of the tumor. The patient's postoperative course was uneventful.

Pathologic discussion

Artemis Nash, M.D.: The specimen was an 8- by 6- by 4-cm. unilocular cystic mass filled with yellow-gray grumous material. The outer surface was smooth and

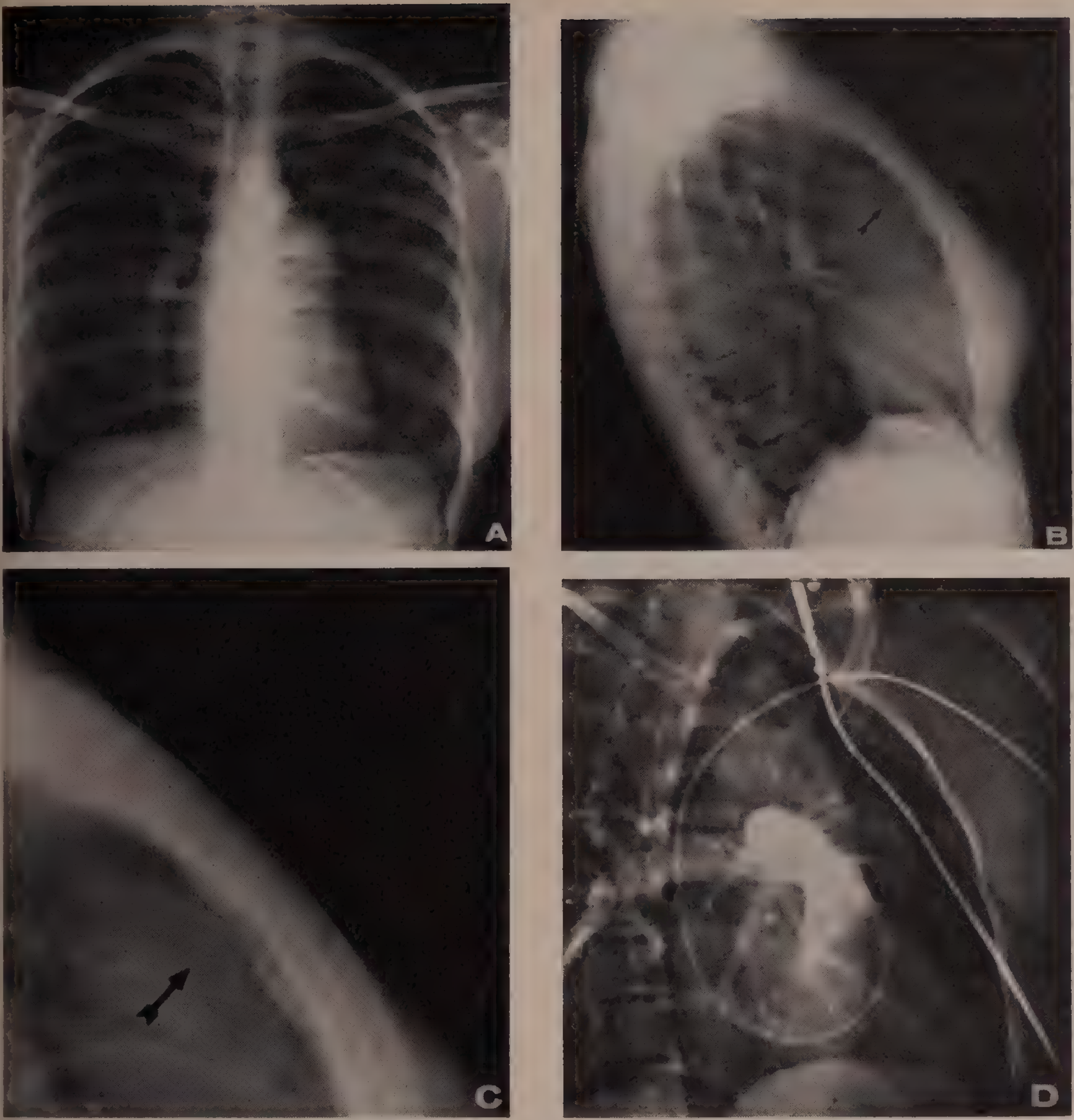

FIGURE 1. (A) Frontal roentgenograms of chest showing smooth rounded mass contiguous with cardiac shadow in region of pulmonary artery. (B) Lateral projection of chest showing retrosternal position of mass. (C) Detail of retrosternal mass shows collection of irregular calcific densities within it. (D) Selected film of angiocardiogram in left posterior oblique projection showing normal pulmonary artery and anterior location of mass.

covered by a delicate, moderately vascular fibrous membrane with areas of yellow-tan discoloration (Fig. 3A). The inner lining was shiny and contained multiple nodular excrescences, many of which had irregular papillary surfaces (Fig. 3B). Some of these nodules were of a hard, calcific consistency. No gross hair or teeth were present.

Histologic sections revealed multiple cystic and gland-like structures lined variously by simple columnar, pseudostratified ciliated, and squamous epithelium (Fig. 4). One of the spaces was filled with keratin. Occasional strands of smooth muscle were present around the respiratory type of epithelium, but no other well-differentiated structures of mesodermal derivation were seen. Spotty calcific deposits seemed to be related to degenerating areas in the fibrous stroma of the polypoid excrescence, associated with amorphous necrosis and hyalinization. There was no evidence of cancer.

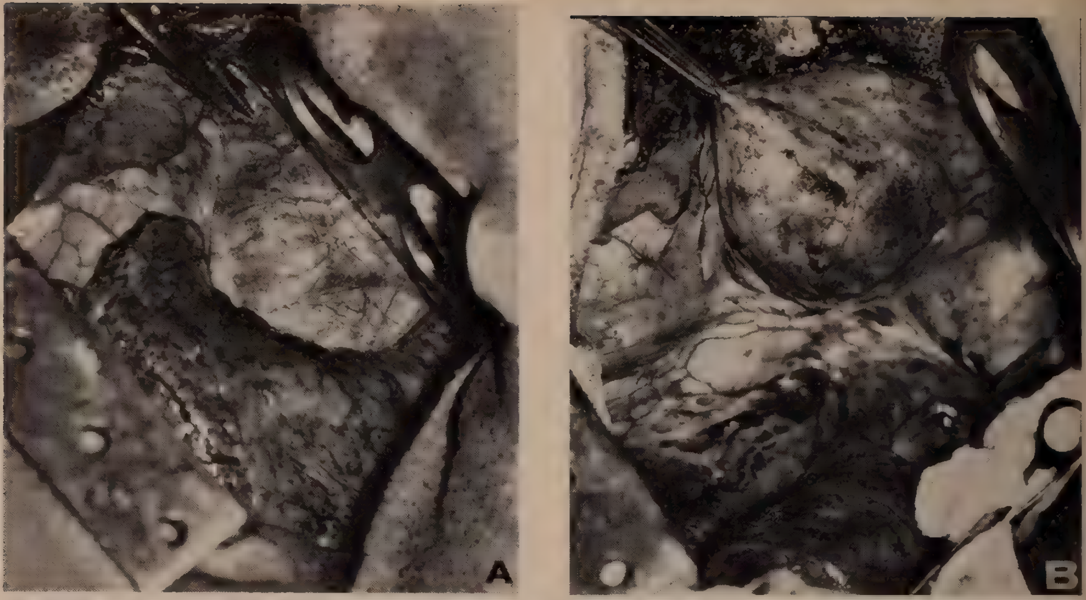

FIGURE 2. (A) Operative photograph with left upper lobe of lung retracted inferiorly exposing mass covered by mediastinal pleura. (B) After incision of mediastinal pleura, tumor is elevated from position over pulmonary artery.

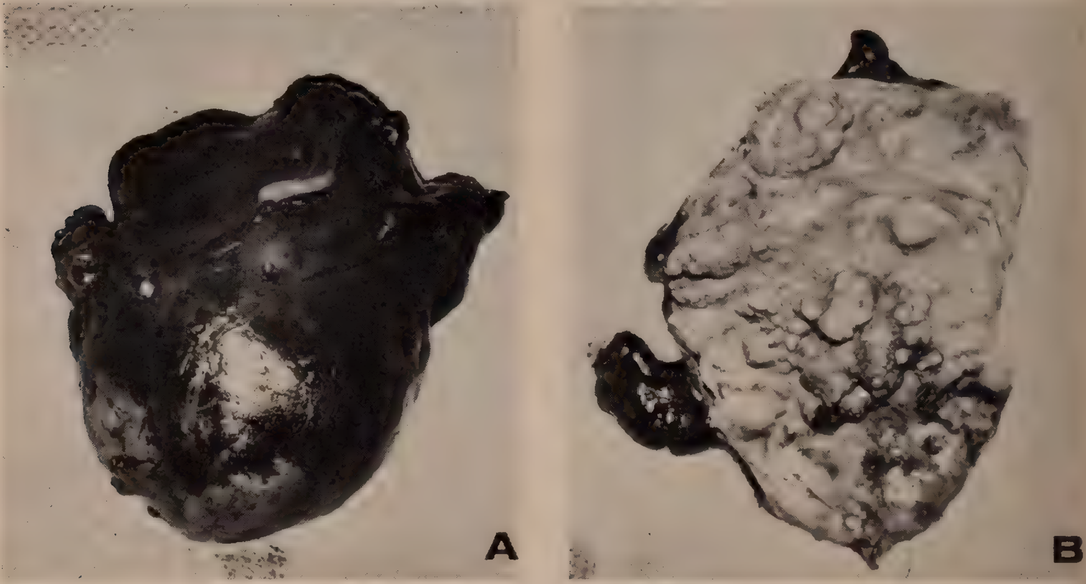

FIGURE 3. (A) Outer aspect of mass showing relatively smooth contour covered by vascular connective tissue membrane. (B) Inner aspect of specimen revealing cystic nature of mass with nodular excrescences on lining.

Comment

Dr. Hoge: According to Nelson, Shefts, and Bowers,[1] the order of frequency of the most common tumors of the mediastinum are lymphoma, neurogenic tumors, bronchogenic cysts, teratodermoids, and pericardial cysts. Herlitzka and Gale[2] place teratodermoids as the second most common. Neurogenic tumors usually occupy the posterior mediastinum, goiters and thymomas the anterior superior mediastinum, teratodermoids and pericardial cysts the anterior inferior mediastinum, and

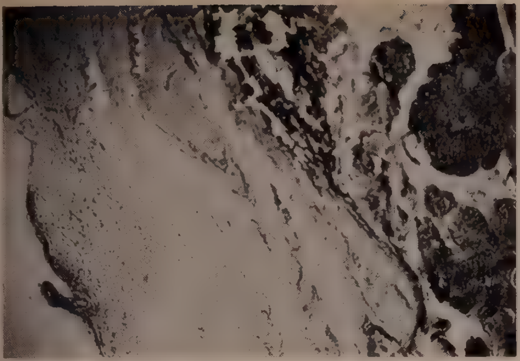

FIGURE 4. Portion of respiratory epithelium lining cyst wall (left) adjacent to thymus gland (right).

lymphomas and bronchogenic cysts the hilar mediastinum.

The anterior mediastinal region is the site of complex developmental changes. This fact correlates well with the theories of congenital origin of these tumors and with the almost invariable location of teratodermoids in the anterior mediastinum. Presumably, these tumors are present from birth, but active growth and symptoms may not become manifest until adolescence or adult life. They may occur from three months to sixty-nine years of age, but they are most common in the early adult years, with an average age of twenty-seven years.[3] Patients usually are asymptomatic but many complain of cough, substernal pain, or occasional dyspnea and palpitation.

Radiographically, lesions are usually discrete circular or globular homogeneous densities and often contain calcium or plaques of bone or teeth. Sometimes, with larger growths, there is nothing roentgenographically characteristic of either size or shape. Reaction in the surrounding tissues, atelectasis, and pleural effusion may blend with the tumor outline causing it to lose its characteristic sharp borders, and the process may appear to occupy the entire hemithorax. Even benign dermoids may cause pleural effusions. Rapid enlargement of the tumor due to hemorrhage, infection, or rupture may cause acute onset of airway obstruction, necessitating immediate thoracotomy.

In the anterior superior mediastinum, we find the goiters and thymomas, both of which may contain calcium densities. Intrathoracic goiters frequently extend inferiorly from the thoracic inlet and are occasionally retroesophageal. They may be bilateral or unilateral. Thymomas may be lobular or rounded and are usually retrosternal in position. Bronchogenic cysts are usually located in the posterior hilar mediastinum in relation to the trachea and the major bronchi. Roentgenographically, they appear as smooth rounded masses with fluid density. Rarely, when communication occurs with the tracheobronchial tree, they may demonstrate an air-fluid level.

Pericardial cysts also are present as smooth, rounded, sharply demarcated lesions of uniform density but are usually adjacent to the pericardium, diaphragm, and the chest wall antero-inferiorly. Because of their position, they may be confused with diaphragmatic hernia, dermoid cyst, or pericardial fat pad.

Other conditions may be mistaken for mediastinal neoplasms. They include cardiovascular abnormalities, diaphragmatic defects, and esophageal or pulmonary lesions. If there is a suspicion of a vascular abnormality, angiocardiograms are essential for proper evaluation. Before this procedure became widely used, exploration was performed with a diagnosis of mediastinal tumor in cases of the right side of the aorta, dilated left atrium, aneurysms of the common carotid artery and ascending aorta, and often because of dilatation of the pulmonary artery.

Dr. Nash: The composition of this tumor consisting of mature structures representing the three embryonic germ layers, namely ectoderm, entoderm, and mesoderm, justifies its classification as a teratoma.[3] Its cystic nature is characteristic of the majority of these tumors in this location as it is of those arising in the ovary. The relative proportions of the component tissue derivatives may vary greatly, and one type may so predominate over the others as to mislead pathologic interpretation if careful and thorough sampling of the specimen is not carried out. A typical example of this type is the so-called "dermoid cyst" of the ovary, erroneously named for the overgrowth of the integumentary tissue, even though, when examined carefully, it invariably contains representations of the other germ layers.

A noteworthy feature of this case was the presence of thymic tissue in the outer aspect of its wall. This finding is apparently extremely common in the mediastinal teratoma.[4,5] Whether the thymus gland is the site of origin of these tumors or its proximity a mere coincidence remains inconclusive.

According to Schlumberger,[5] the close relationship of the thymic anlage to the third branchial pouch in the embryo and its migration to the mediastinum with its inherent possibilities of developmental disturbances renders it a plausible site of origin for these teratoid tumors.

Our present case might be considered a good example of this mechanism, especially since it showed a predilection for the formation of a respiratory type of epithelium, characteristic of the branchial pouch.

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2. Herlitzka, A. J., and Gale, J. W.: Tumors and cysts of the mediastinum; survey of one hundred and seventy-four mediastinal tumors treated surgically during the past eighteen years at the University of Wisconsin Hospitals, A.M.A. Arch. Surg. **76:** 697 (1958).
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Exchange of skin bacteria between patients and hospital personnel

Although the transfer of virulent microorganisms from hospital personnel to patients and from patients to personnel is not a new discovery, P. Dineen, M.D., writing in a recent issue of *Surgery, Gynecology & Obstetrics*, feels that it deserves re-emphasis, especially since the possibility of skin bacteria transference has not received a great deal of attention. The object of this investigation was to study the number of organisms on the hands of hospital personnel to determine whether or not skin bacteria were transfered in the process of handling patients. After studying 150 subjects who used three different hand washing procedures, it was concluded that patients and personnel exchange bacteria readily during routine handling. The direction of the transfer is related in part to the number of organisms present on the hands, with the lower-count skin surface more likely to be the recipient. The most frequent organism found was Staphylococcus aureus. The exchange cycle can be broken only by antiseptic washing of the hands after every contact with the patient.

The subjects were divided into three groups of 50 each, with hand washing procedures assigned by group as follows: (1) group 1: one-minute wash with 3 ml. of a 3 per cent hexachlorophene detergent before contact with the patient and the same procedure after; (2) group 2: hand washing with 3 ml. of the active quaternary ammonium compound. The foam was rubbed into the hands for one minute before handling the patient, and the same procedure was carried out after contact; and (3) group 3: the procedure was exactly the same as that of group 2 except that instead of the quaternary ammonium foam, a placebo, which looked the same, was used. Fingertips were pressed against an agar nutrient which contained neutralizers for the antiseptics used. Plates were inoculated and colonies counted.

The hand antiseptic procedures used were effective in reducing bacteria on the skin and keeping them at a relatively low level. This was not true in the placebo group, however, which showed large increases in the number of bacteria. Washing with hexachlorophene detergent and application of the aerosol quaternary ammonium antiseptic produced initial reductions of bacteria of 47 per cent and 71 per cent respectively. The numbers of bacteria culturable after this reduction were an average of 15.6 in the hexachlorophene group and 10.4 in the foam subjects. These numbers increased 41 and 62 per cent respectively with patient contact and were promptly reduced to average levels of 13.2 and 12 after the final antiseptic application.

Necrology

Apology to Ian C. Funk, M.D.

Owing to an inadvertent error, Ian C. Funk, M.D., of Albany, was erroneously listed in this Department in the issue of April 15, 1968, page 1075, instead of his father, Casimir Funk, D.Sc. (University of London), who died in Albany in November, 1967. The JOURNAL regrets this error and apologizes herewith to Dr. Funk.

Albert H. Cochran, M.D., of Port Chester, died on March 20 at the age of sixty-seven. Dr. Cochran graduated in 1927 from Emory University School of Medicine. He was an honorary member of the medical staff at St. Agnes Hospital (White Plains). Retired, Dr. Cochran was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herbert O. Grossmann, M.D., of New York City, died on October 22, 1967, at the age of sixty. Dr. Grossmann received his medical degree from the University of Freiburg in 1931. He was an associate attending otolaryngologist at Syndenham Hospital, an assistant attending otolaryngologist at Jewish Memorial Hospital, and an adjunct otolaryngologist at Beth Israel Hospital. Dr. Grossmann was a member of the American Academy of Allergy, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Hochman, M.D., of Katonah, died on March 4 at the age of seventy-two. Dr. Hochman graduated in 1923 from Cornell University Medical College. He was a Diplomate of the American Board of Obstetrics and Gynecology and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Jerome S. Leopold, M.D., of New York City, died on April 2 at the age of eighty-six. Dr. Leopold graduated in 1906 from Harvard University Medical School. A former clinical professor of pediatrics at New York University School of Medicine he was a consulting pediatrician at Lenox Hill and Misericordia Hospitals. Dr. Leopold was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Russell J. McGraw, M.D., of Coral Gables, Florida, formerly of Richmond Hill, died on November 24, 1967, at the age of seventy-three. Dr. McGraw graduated in 1916 from Long Island College Hospital. He had been a consulting pediatrician at Mary Immaculate Hospital. Dr. McGraw was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Paul Reiser, M.D., of New York City, died on March 28 at the age of fifty-nine. Dr. Reiser graduated in 1933 from New York Homeopathic Medical College and Flower Hospital. He was a senior clinical assistant urologist at The Mount Sinai Hospital and a senior assistant attending urologist emeritus at Lenox Hill Hospital Outpatient Department. Dr. Reiser was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Pierre Auguste Renaud, M.D., of Montgomery, died on December 21, 1967, at the age of seventy-eight. Dr. Renaud graduated in 1913 from Long Island College Hospital. He had been a consulting surgeon at Methodist Hospital of Brooklyn and Lutheran Hospital and an honorary surgeon at St. Luke's Hospital (Newburgh). Dr. Renaud was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the Pan-American Medical Association, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

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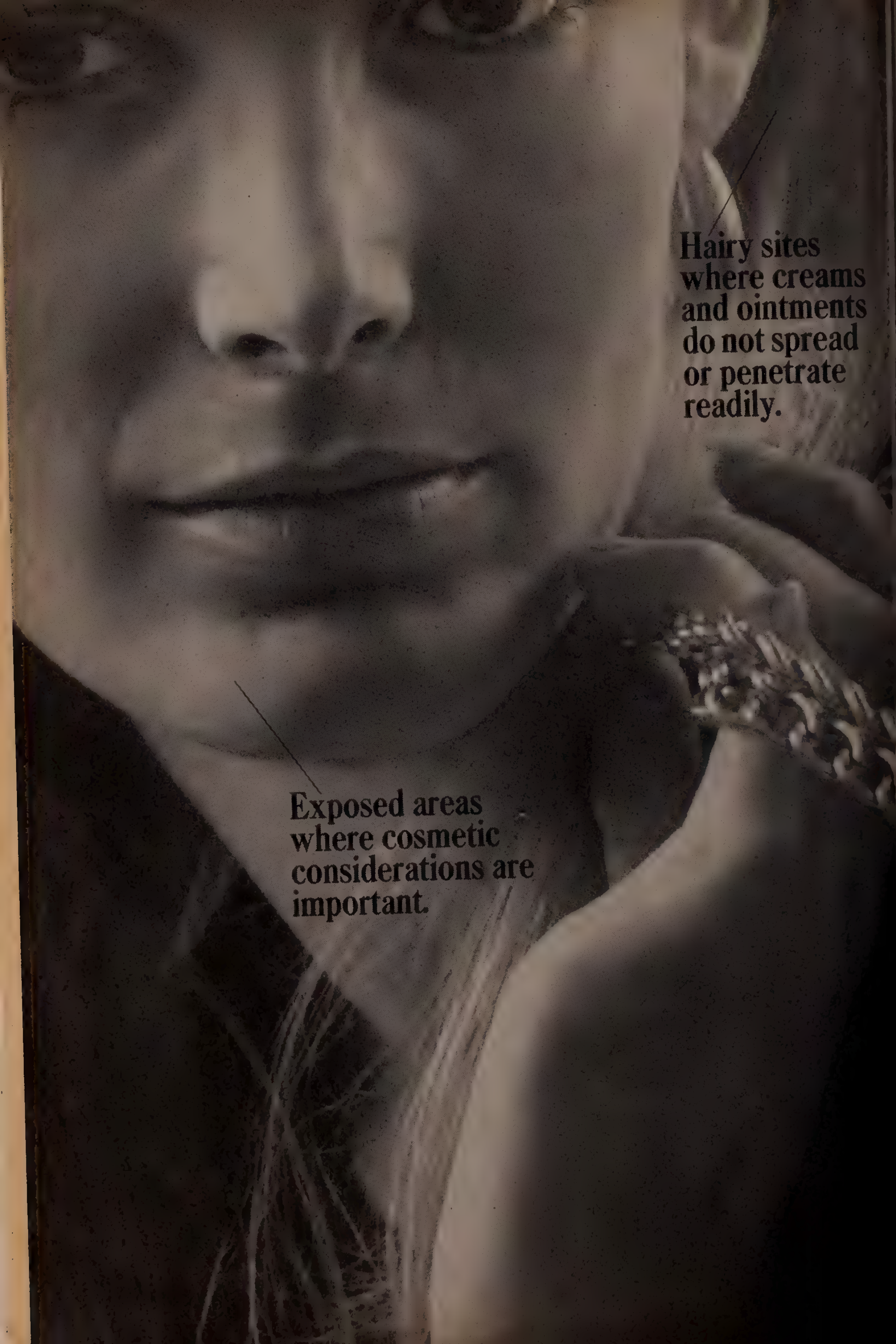
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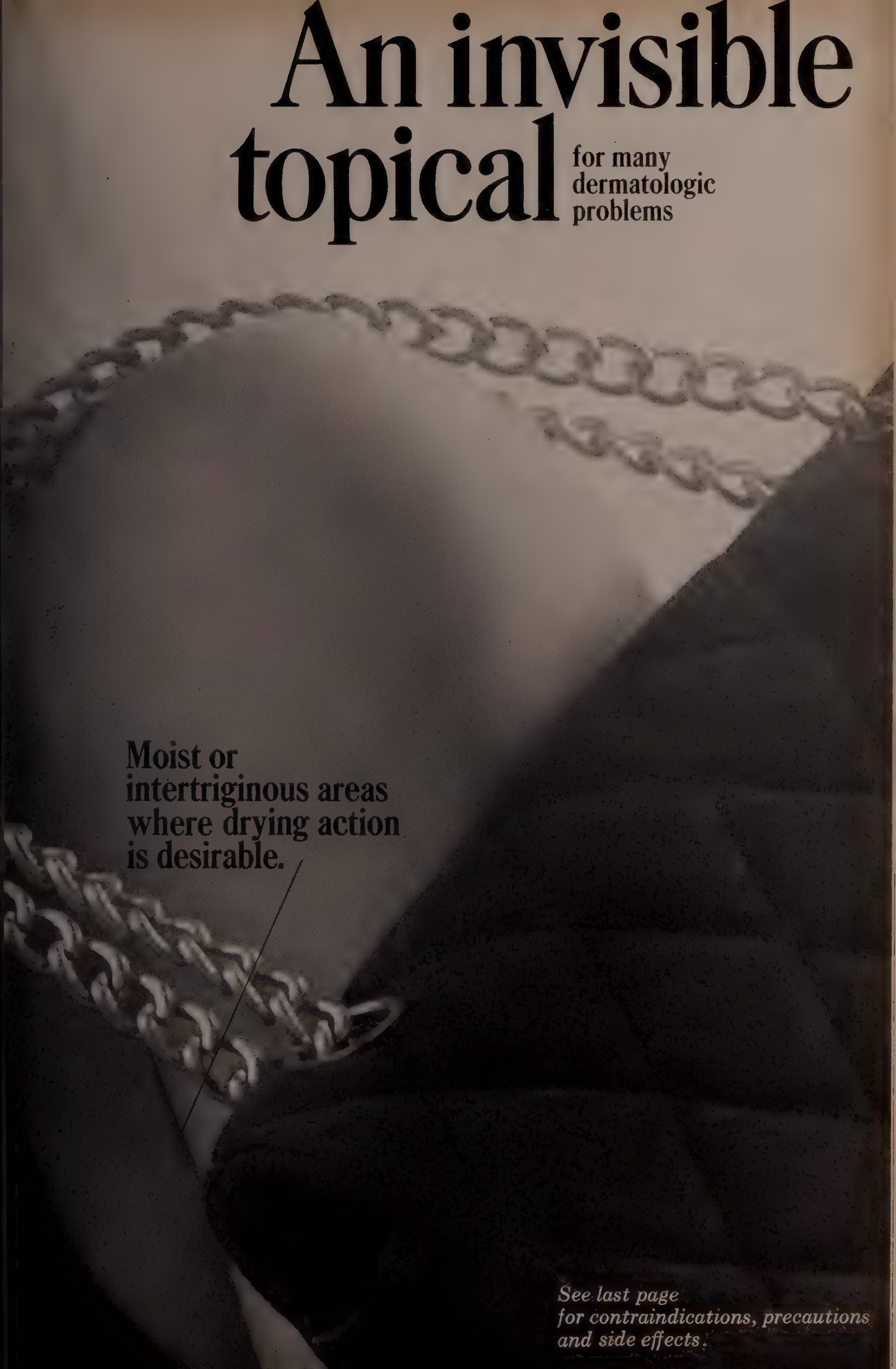

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Contraindications: Tuberculous, fungal, and most viral lesions of the skin (including herpes simplex, vaccinia, and varicella). Not for ophthalmic use. Contraindicated in individuals with a history of hypersensitivity to any of the components.

Precautions: In some patients with dry lesions, the solution may increase dryness, scaling, or itching. Application to denuded or fissured areas, such as genital or perianal sites, may produce a burning or stinging sensation. If this persists and dermatitis does not improve, discontinue medication. Although propylene glycol has antiseptic activity, there should be careful initial evaluation and follow-up of infected sites. Incomplete response or exacerbation of lesions may be due to true infection, which requires susceptibility testing and appropriate therapy. On the other hand, saprophytic or low grade infections may clear spontaneously under the influence of Synalar Solution alone. Where severe local infection or systemic infection exists, the use of systemic antibiotics should be considered, based on susceptibility testing. While topical steroids have not been reported to have adverse effect on pregnancy, the safety of their use on pregnant females has not absolutely been established. Therefore, they should not be used extensively on pregnant patients, in large amounts, or for prolonged periods of time.

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continued from page 1301

Joseph G. Rivkin, M.D., of Miami Beach, Florida, formerly of Brooklyn, died on March 18 at the age of eighty-three. Dr. Rivkin graduated in 1907 from Long Island College Hospital. He had been a consulting physician in rectal surgery at Jewish Chronic Disease Hospital and a senior proctologist at Beth-El Hospital Outpatient Department. Dr. Rivkin was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Below-knee amputation for ischemic gangrene

In vascular occlusional disease with gangrene, the commonly accepted criteria for below-knee amputation are (1) palpable popliteal pulse; (2) normal oscillographic findings at calf level; and (3) absence of muscle ischemia. R. C. Lim, Jr., M.D., *et al.*, writing in a recent issue of *Surgery, Gynecology & Obstetrics,* feel that although the advantages of below-knee amputation are obvious, these criteria are highly restrictive and few patients can meet them. For the last five years, the authors have disregarded these restrictions and have performed midcalf amputations whenever the condition of the skin at the proposed incision level permitted. During this period, 55 primary below-knee amputations were performed in 53 patients, and results were compared with those found in the records of 40 above-knee amputations performed during the same period. In the below-knee group, the mortality rate was 16 per cent as against 35 per cent in the above-knee group.

The patients ranged in age from twenty-four to ninety-nine, for an average of sixty-four years. Thirty of the amputations were performed in diabetic patients and 25 in nondiabetic or arteriosclerotic patients.

Of the 53 patients, 8 (9 amputations) died in the hospital, for a mortality rate of 16 per cent. The average age of the dead patients was seventy-seven years. The causes were cerebrovascular accident, pneumonia, and cardiac failure. Of the 46 below-knee amputations in the 45 surviving patients, 8 (17 per cent) failed and required subsequent above-knee procedures. The failures occurred in patients with advanced vascular insufficiency, irreversible ischemic changes, and secondary infections. The amputations were successful in 88 per cent of the diabetic patients; in arteriosclerotic patients, 76 per cent. The patients who had angiograms were divided into two groups, corresponding to success or failure of operations. In both groups, half the patients had severely diseased or completely occluded superficial femoral arteries. The profunda artery was mildly involved in about 66 per cent of the patients, with moderate to severe involvement in the other third. The popliteal artery was occluded in 68 per cent of those patients whose amputations were successful and in 83 per cent in whom it failed. Total occlusions of the popliteal trifurcation arteries occurred in 98 per cent of the successful group and 100 per cent of the unsuccessful group.

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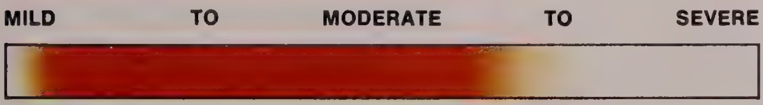

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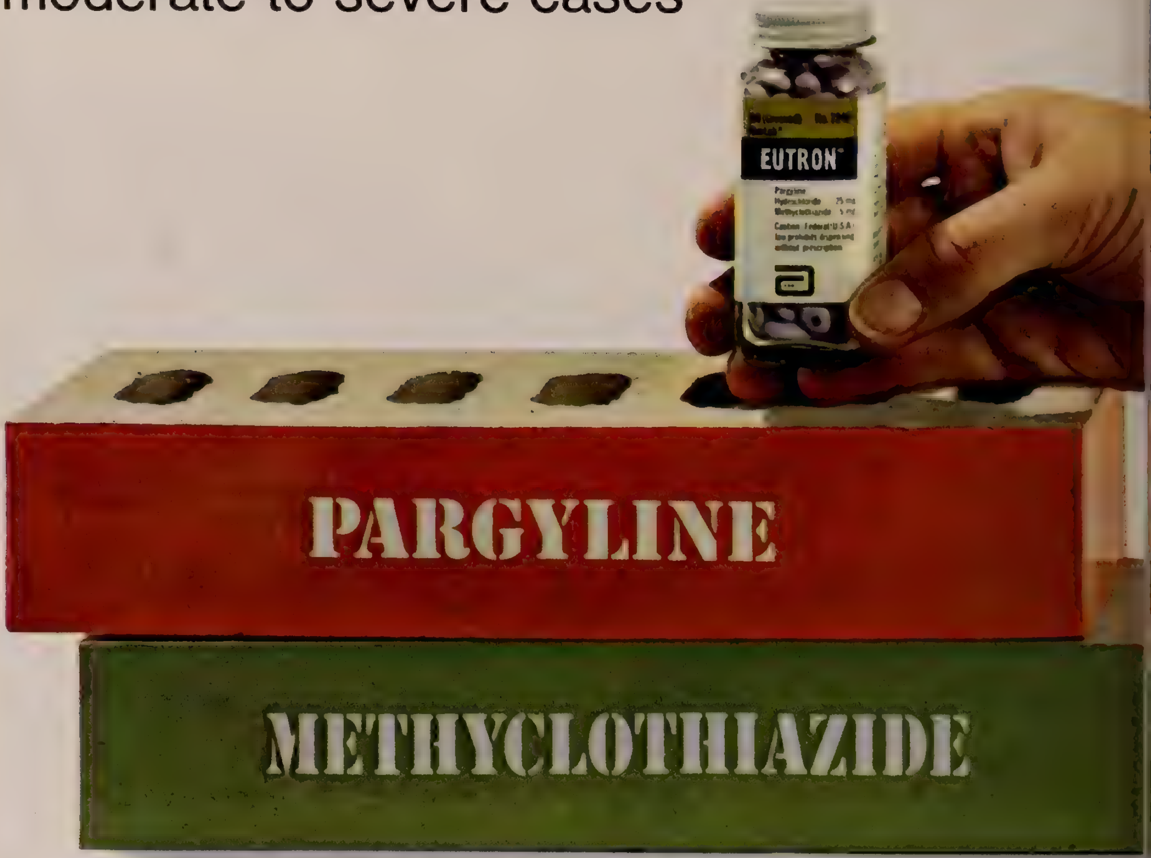

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Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

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Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. . 804438R

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Book Notes

Textbook of Endocrinology. Edited by Robert H. Williams, M.D. Fourth edition. Quarto of 1,258 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $24.

Since publication of the first edition of this textbook in 1950, a vast body of knowledge concerning endocrinology and metabolism has been accumulated. Consequently, in this new edition a greater emphasis has been placed on new observations rather than on old.

The contributors are established as excellent investigators, teachers, and authors in their respective fields, and they discuss the pathogenesis of clinical disorders and the rationale for therapy in terms of basic information, both old and new.

The editor has tried to coordinate the coverage of various subjects and eliminate large amounts of repetition although some has been permitted for proper emphasis. Reference lists are selective rather then exhaustive and they include a number of recent reviews, since these often offer many additional bibliographic references.

Numerous major changes in content and authorship have been made in this edition, 11 of the 24 authors being new contributors and most of the chapters largely being rewritten. Consequently, this is predominantly a new book.

Handbook of Bacteriological Technique. By F. J. Baker, F.I.M.L.T., F.I.S.T. Second edition. Octavo of 482 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Fabrikoid, $14.75.

In this new edition emphasis again has been placed on technical methods rather than on theory. Although some of the original text remains, much has been brought up-to-date and new material added. In particular, there is a new section on the maintenance of laboratory animals.

Nomenclature and classification is based broadly on Cowan and Steel's *Manual for the Identification of Medical Bacteria.* A good bibliography is presented at the end of the text as well as general notes and numerous mathematical tables.

Current Pediatric Therapy 3. By Sydney S. Gellis, M.D., and Benjamin M. Kagan, M.D. Quarto of 1,029 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $24.30.

In this new edition an intensive effort has been made to incorporate all significant advances of the past two years in the management of ill children. To this end the editors have invited material from 92 contributors not represented in the last edition and have asked all others to bring their material completely up-to-date.

Throughout the book it is assumed that the physician has arrived already at a logical diagnosis and, also, that he has turned to the text to learn exactly how the particular condition in question is being treated by a physician who has had more extensive experience than his own.

The editors feel that the vast bulk of childhood diseases require little in the way of medication. However, numerous conditions do require the careful administration of specific drug therapy. As these conditions may be encountered only infrequently, the physician then requires a careful and detailed guide to their management. A section listing alphabetically each therapeutic agent mentioned has been included to assist the doctor in selecting the form and available dosage of the various drugs.

Iatrogenic behavior disorders

An increasing incidence of behavioral reactions is being encountered with the burgeoning production and use of all types of drugs. Self-medication, the use of drugs the long-term effects of which have not been established, and a growing tendency for patients to seek specialized care, all conspire to make the problem highly complex both for the physician and the patient. A. B. Hagedorn, M.D., and R. M. Steinhilber, M.D., writing in a recent issue of *Minnesota Medicine*, present 4 cases to illustrate the subtle development of serious behavioral reactions that may result from use of common drugs.

The 4 illustrative cases included (1) a twenty-three-year-old female college senior, diagnosed as having an impulsive rage reaction secondary to use of a methamphetamine-phenobarbital preparation; (2) a housewife, forty-four, suffering from acute hallucinosis secondary to meprobamate withdrawal; (3) a man, fifty-nine, with paranoid confusion secondary to digitalis toxicity; and (4) a man, fifty-one, diagnosed as having delusions of grandiosity secondary to hypercortinism.

The last case mentioned was a patient with a ten-year history of rheumatoid arthritis who could not take aspirin because it upset his stomach. He had begun giving himself cortisone injections about fifteen months before being seen by the authors. Ten days before the consultation, he had told a relative that he had given himself forty times his usual dose of cortisone that day. About a month prior to the consultation, he had begun a pattern of behavior inconsistent with his usual jovial and whimsical nature. Hospitalization and reduction of his corticosteroid dosage over a period of two weeks resulted in symptomatic remission.

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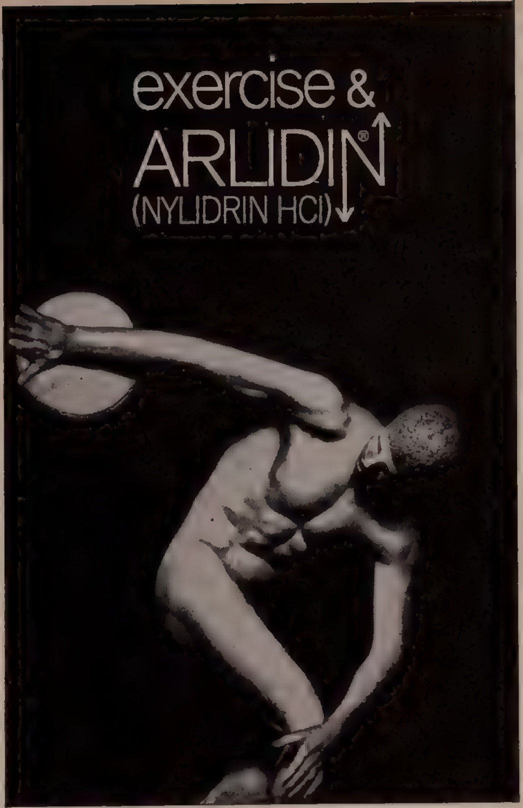

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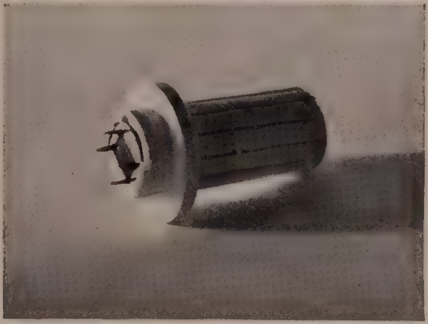

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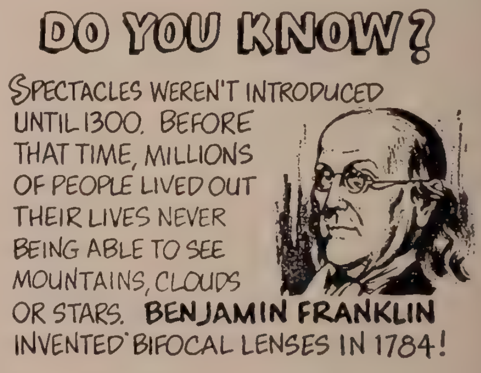
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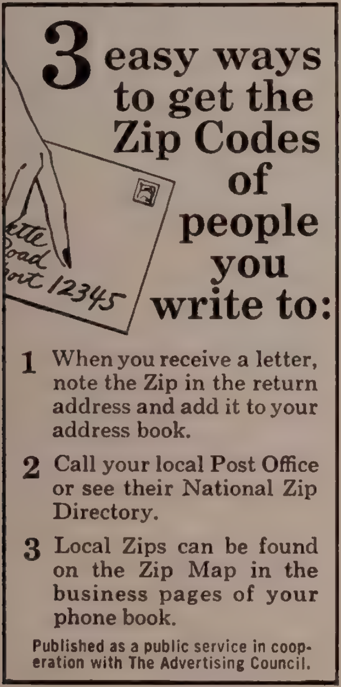
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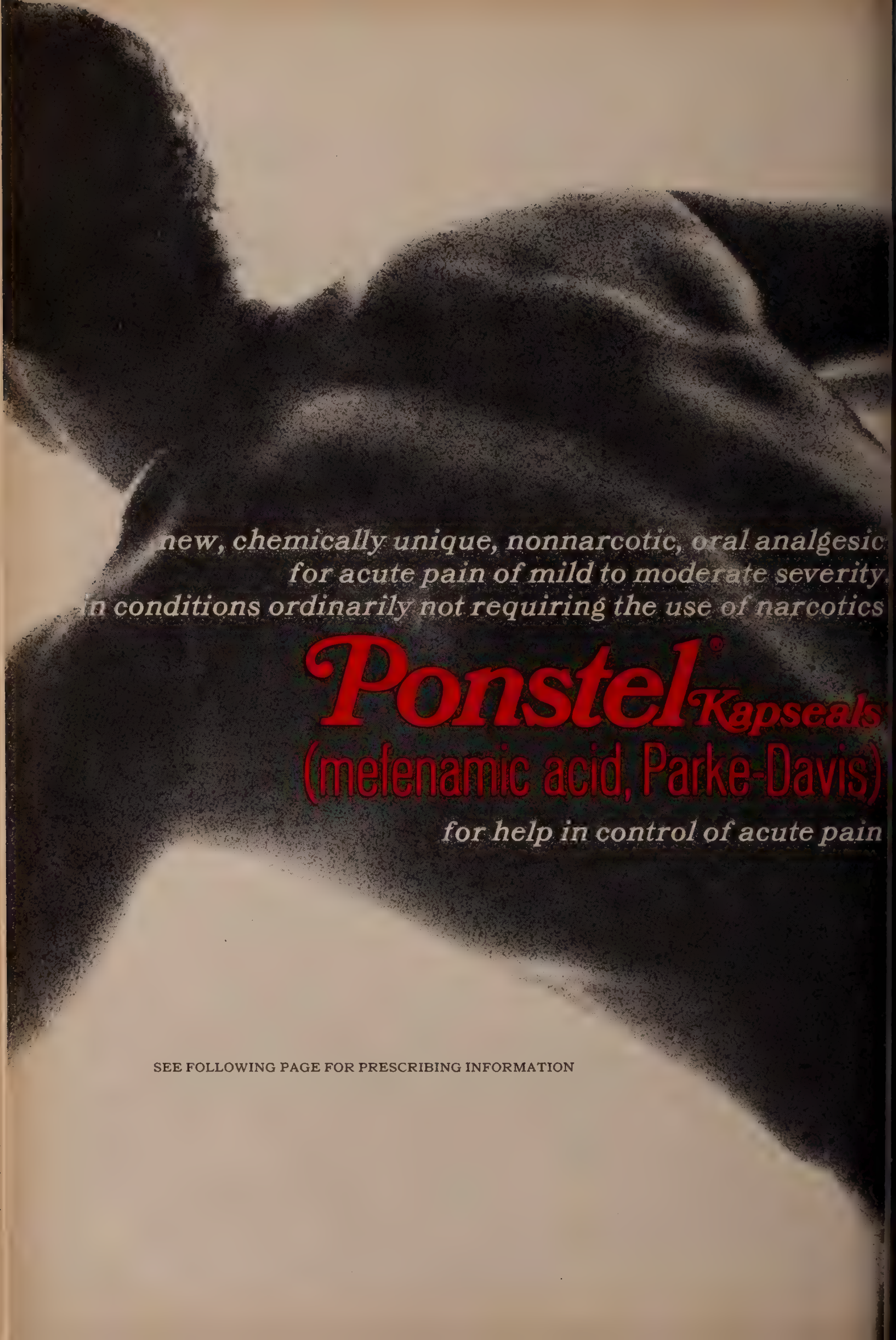
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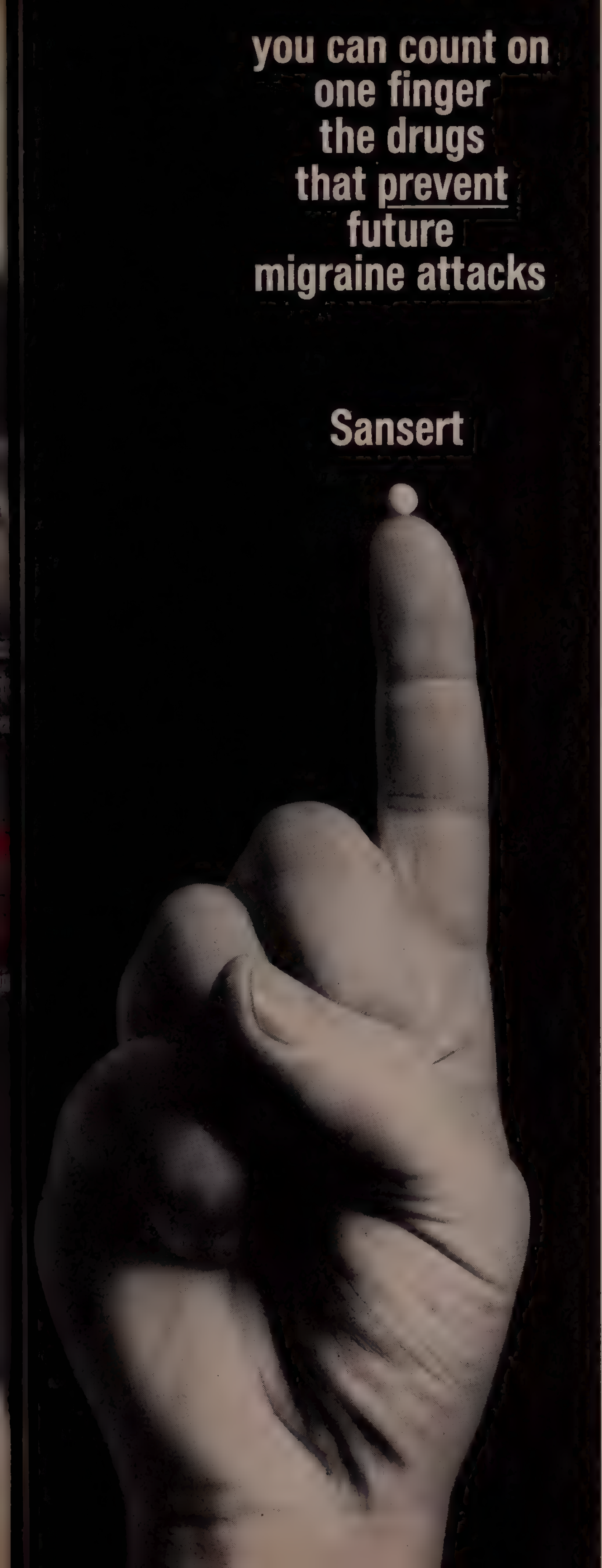

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Before prescribing, please consult complete product information, a summary of which follows:

Indications: Indicated as adjunctive therapy to control emotional and somatic factors in gastrointestinal disorders.

Contraindications: Patients with glaucoma; prostatic hypertrophy and benign bladder neck obstruction; known hypersensitivity to chlordiazepoxide HCl and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering Librium (chlordiazepoxide hydrochloride) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards. As with all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with either compound alone have been reported with Librax. When chlordiazepoxide hydrochloride is used alone, drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally with chlordiazepoxide hydrochloride, making periodic blood counts and liver-function tests advisable during protracted therapy. Adverse effects reported with Librax are typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

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How Supplied: Librax® Capsules, each containing 5 mg chlordiazepoxide hydrochloride (Librium®) and 2.5 mg clidinium bromide (Quarzan®)—bottles of 50 and 500.

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New York State Journal of Medicine

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References: 1. Sulzberger, M.B., and Witten, V.H.: *M. Clin. North America* 43:887, May, 1959. **2.** Hodges, F.T.: *GP* 14:86, Nov., 1956. **3.** Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. **4.** McLean, I.E.D.; Graham, K.T., and East, M.O.: *Practitioner* 189:82, July, 1962.

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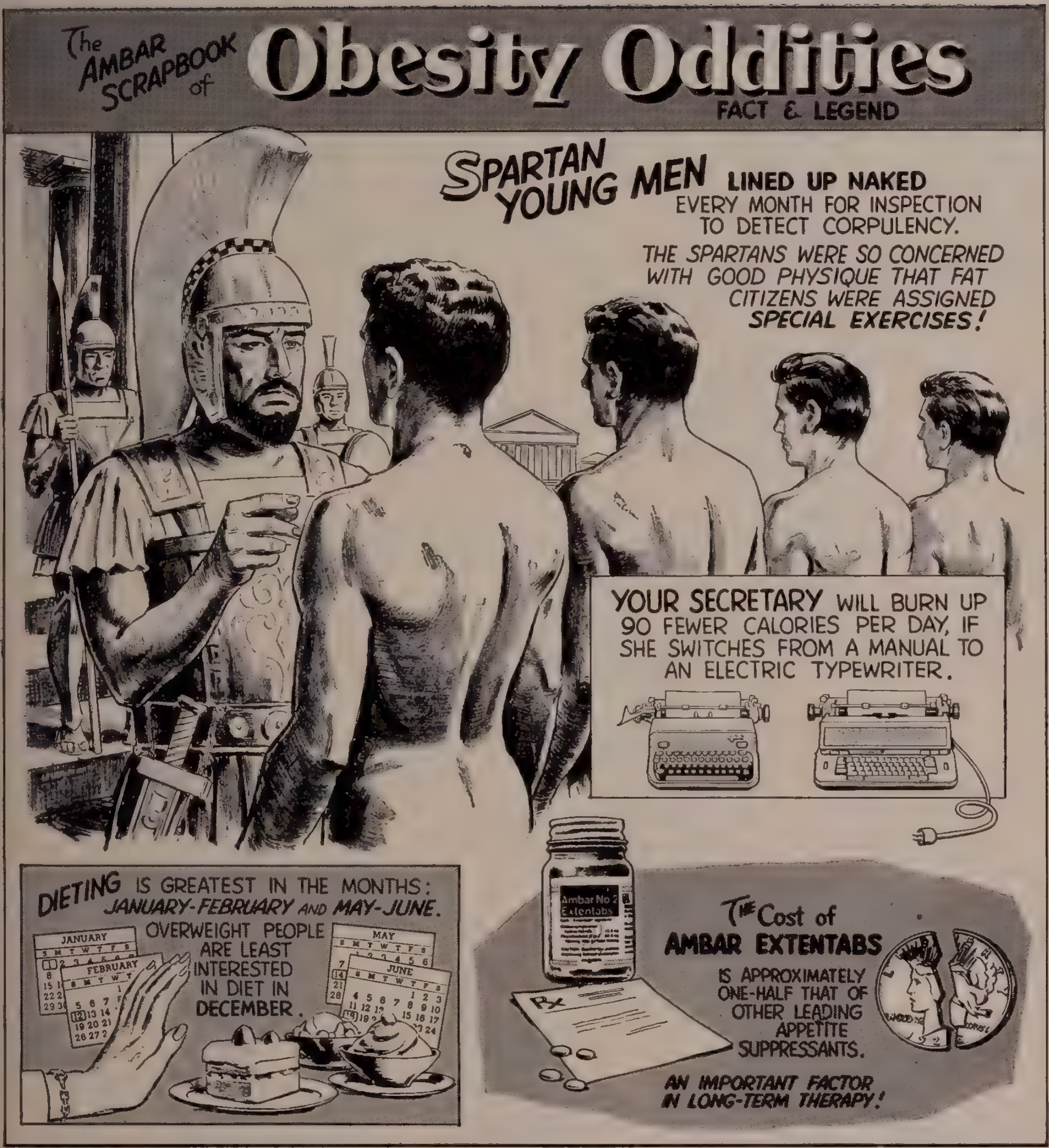
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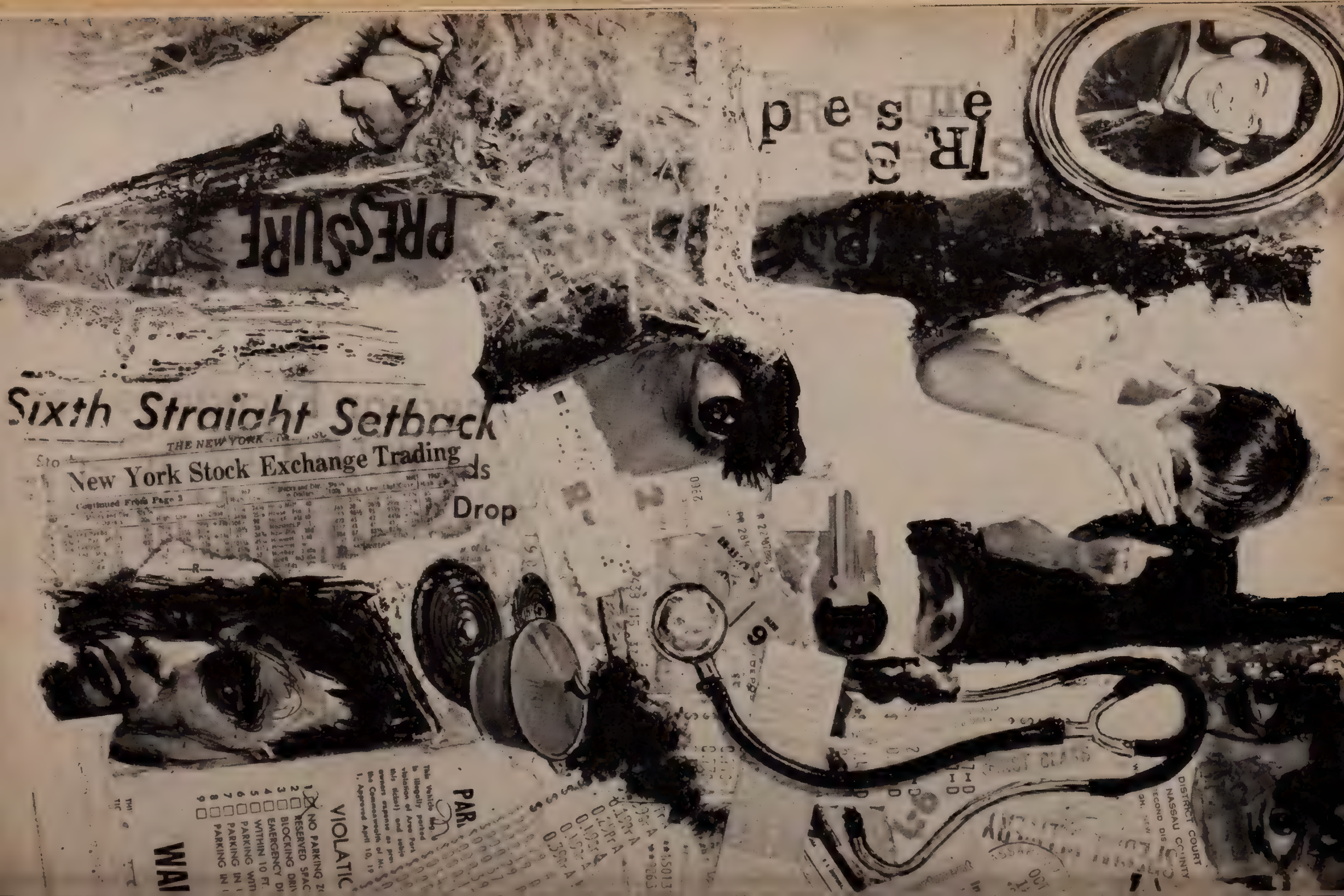
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in the hypertensive patient

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PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin require ments in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia agranulocytosis, aplastic anemia, jaundice. Nausea vomiting, diarrhea, dizziness, vertigo, paresthesias purpura, rash, urticaria, photosensitivity or othe hypersensitivity reactions may occur. Cutaneous vas culitis precipitated by thiazide diuretics has beer reported in elderly patients on repeated and continu ing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia neonatal thrombocytopenia, and neonatal jaundice Whenever adverse reactions are moderate or severe the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reporte include excessive sedation, nightmares, nasal con gestion, conjunctival injection, enhanced suscepti bility to colds, muscular aches, headache, dizziness dyspnea, anorexia, nausea, increased intestinal mo tility, diarrhea, weight gain, dryness of mouth, blurre vision, flushing of skin, and pruritus. Skin rash, dysuria syncope, nonpuerperal lactation, impotence or de creased libido, angina pectoris, other direct cardia effects (e.g., premature ventricular contractions, flui retention, congestive failure), and CNS (includin ocular) sensitization have been noted. Use cautiousl in hypertensive patients with coexistent coronary a tery disease to avoid precipitous drop in blood pres sure. Since reserpine may increase gastric secretio and motility it should be used cautiously in patient with history of peptic ulcer, ulcerative colitis, or othe gastrointestinal disorders. May precipitate biliary coli in patients with gallstones, or bronchial asthma i susceptible patients. May cause hypotension, inclu ing orthostatic hypotension. Since significant hypote sion and bradycardia may develop during anesthesia discontinue two weeks prior to surgery. A Parkinson' disease-like syndrome, usually reversible with d creased dosage or discontinuance of therapy, ha been observed. Anxiety, depression, or psychosis ma develop. Pre-existing depression may be aggravate

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Abstracts

Deibel, R., Cohen, S. M., and Ducharme, C. P.: Serology of rubella; virus neutralization, immunofluorescence in BHK21 cells, and hemagglutination inhibition, New York State J. Med. **68:** 1355 (June 1) 1968.

Sera from 317 persons, including laboratory personnel and high school girls, were tested for rubella antibody. Comparative data obtained by neutralization of viral interference, IF immunofluorescence in BHK21 (baby hamster kidney cells), and HI (hemagglutination inhibition) were generally in agreement, but antibody was more frequently detected by HI and IF. Two rubella virus strains were used, and sera included specimens of current infections, of pregnant women, and of children with congenital anomalies or retardation. Some discrepancies occurred in recognizing recent rubella infections and in detecting antibody. Rubella antibody was found in more than half the children six months to two years of age who had congenital malformations or showed retardation. These tests are of value in differentiating congenital rubella infection from genetic anomalies of the effects of other infections.

Sours, J. A.: Clinical studies in anorexia nervosa syndrome, New York State J. Med. **68:** 1363 (June 1) 1968.

Anorexia nervosa carries a mortality rate of 5 to 15 per cent and an associated morbidity rate of 34 to 65 per cent as far as chronic psychopathology and sexual dysfunction are concerned. It is diagnosed principally in terms of differentiation from panhypopituitarism. Pathophysiologic findings are the end result of elective restriction of food. There are many psychodynamic formulations for the condition, including neurosis. A study of 115 patients with anorexia nervosa revealed that the peak age at onset was between ten to fifteen years, and 75 per cent of the patients were single females who had been ill less than two years. It is a disturbance in separation-individuation, a psychosomatic disorder in sexual dysfunction encountered in pubescent girls, borderline male adolescents, and borderline young female adults.

Abstracts in Interlingua

Deibel, R., Cohen, S. M., e Ducharme, C. P.: Serologia de rubella; neutralisation virusal, immunofluorescentia in cellulas BHK21, e inhibition del hemagglutination (*anglese*), New York State J. Med. **68:** 1355 (1 de junio) 1968.

Seros ab 317 subjectos—personal de laboratorio e pueras de etate lyceal—esseva testate pro le presentia de anticorpore anti rubella. Datos comparative obtenite per (1) neutralisation de interferentia virusal, (2) immunofluorescentia (IF) in cellulas renal de hamsteres neonate (BHK21), e (3) inhibition del hemagglutination (HI) esseva generalmente de accordo, sed anticorpore esseva detegite plus frequentemente per HI e IF. Duo lineas de virus de rubella esseva usate, e le donatores del seros includeva subjectos currentemente portatores de infection, gravidas, e juveniles con anormalitates congenite o retardamento disveloppamental. Certe discrepantias occurreva in le recognition de recente infectiones per rubella e in le detection de anticorpore. Anticorpore anti rubella esseva trovate in plus que un medietate del juveniles de etates ab sex menses ad duo annos in qui malformationes congenite o retardamento disveloppamental habeva essite constatate. Tal tests es de valor in le differentiation inter congenite infection per rubella e anormalitates genetic resultante del effectos de altere infectiones.

Sours, J. A.: Studios clinic in le syndrome de anorexia nervose (*anglese*), New York State J. Med. **68:** 1363 (1 de junio) 1968.

Le mortalitate in anorexia nervose es inter 5 e 15 pro cento. Le cifra del morbiditate associate con illo es inter 34 e 65 pro cento, con le termino morbiditate coperiente psychopathologia chronic e dysfunction sexual. Illo es diagnosticate principalmente per differentiation ab panhypopituitarismo. Le constatationes pathophysiologic es le resultato final de elective restrictiones dietari. Il existe numerose formulationes psychodynamic pro le condition, incluse neurosis. Un studio de 115 casos de anorexia nervose ha revelate que le plus frequente etate del patientes al tempore del declaration del morbo esseva inter 10 e 15 annos. Septanta-cinque pro cento del subjectos afficite esseva non-maritate feminas qui habeva essite malade depost minus que duo annos. Il se tracta de un disturbation in le processo del separation e individuation, i.e., de un disordine psychosomatic e specificamente de un stato de dysfunction sexual que es incontrate in pueras pubescente, in marginal adolescentes mascule, e in marginal juvene femininas adulte.

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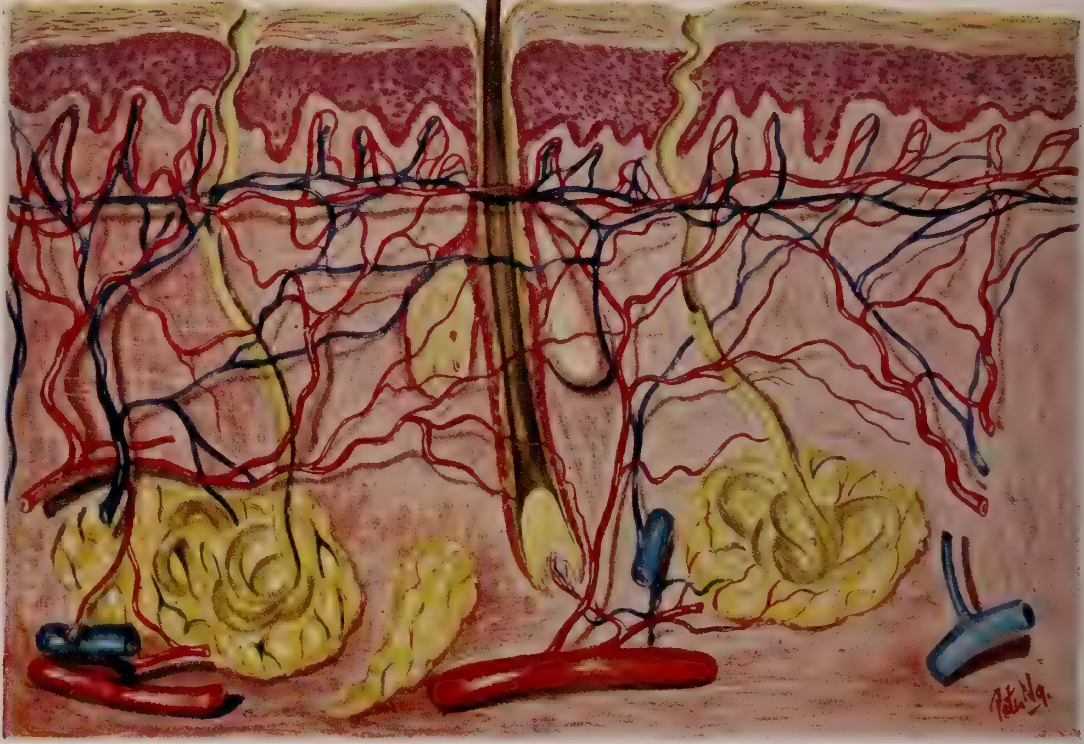

Results on skin are final proof of any topical antibiotic's effectiveness

No in vitro test can duplicate a clinical situation on living skin. 'Neosporin' (polymyxin B—bacitracin—neomycin) Ointment has consistently proven its effectiveness in thousands of cases of bacterial skin infection. The spectra of the three antibiotics overlap in such a way as to provide bactericidal action against most pathogenic bacteria likely to be found topically. Diffusion of the antibiotics from the special petrolatum base is rapid since they are insoluble in the petrolatum, but readily soluble in tissue fluids. The Ointment is bland and nonirritating.

Caution: As with other antibiotic preparations, prolonged use may result in overgrowth of nonsusceptible organisms and/or fungi. Appropriate measures should be taken if this occurs. Articles in the current medical literature indicate an increase in the prevalence of persons allergic to neomycin. The possibility of such a reaction should be borne in mind.

Contraindications: This product is contraindicated in those individuals who have shown hypersensitivity to any of its components.

Supplied: Tubes of 1 oz., ½ oz. with applicator tip, and ⅛ oz. with ophthalmic tip.

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Medical Meetings

Hepatitis in the tropics topic of meeting

The Tropical Disease Center is sponsoring a one-day symposium on "Hepatitis in the Tropics," on May 18, from 9:00 A.M. to 5:00 P.M., in Regina Coeli Hall, St. Clare's Hospital, 426 West 52nd Street, New York City.

The program features the following topics: "Natural History of Hepatitis," Robert McCollum, M.D., professor of epidemiology, Yale University Medical School, and Sheila Sherlock, M.D., professor of medicine, Royal Free Hospital Medical School, London, England; "Hepatitis as a World Problem," James Mosley, M.D., chief, foreign quarantine program, U.S. Public Health Service, and Charles Davidson, M.D., associate director, Thorndike Memorial Laboratory, Harvard Medical School; "The Use of Gamma Globulin in the Tropics," Col. Marcel Conrad, M.C., U.S.A., chief, Department of Hematology, Walter Reed Army Institute of Research; "Gamma Globulin Prophylaxis," Saul Krugman, M.D., professor and chairman, Department of Pediatrics, New York University Medical School; and "Treatment of Hepatitis," Sheila Sherlock, M.D., William Eisenmenger, M.D., associate professor of medicine, Cornell University Medical College, and Charles Davidson, M.D.

Registration is limited to 150; there is no fee. For further information contact: Kevin M. Cahill, M.D., director, The Tropical Disease Center, 415 West 51st Street, New York, New York 10019.

Chemotherapy in rheumatic diseases topic of symposium

To mark its twentieth anniversary, The Arthritis Foundation presents a symposium on Chemotherapy in the Rheumatic Diseases, on May 20, 9:00 A.M. to 5:00 P.M., at The Waldorf-Astoria, New York City.

The program will feature the following topics: "Rheumatic Inflammation: Current Concepts of Pathogenesis," Morris Ziff, M.D., professor of internal medicine, University of Texas Southwestern Medical School; "Evolution of Steroids and Their Value in the Control of Rheumatic Disease," Howard F. Polley, M.D., professor of medicine, Mayo Graduate School of Medicine; "Other Anti-Inflammatory Agents and Their Potential: A Critical Overview," Charley J. Smyth, M.D., professor of medicine, University of Colorado Medical Center; "Progress in the Control of Hyperuricemia and Gout," J. Edwin Seegmiller, M.D., chief, Section on Human Biochemical Genetics, National Institute of Arthritis and Metabolic Diseases; and "Reactions and Implications—Panel Discussion," James A. Page, M.D., director of advanced clinical research, Merck Sharp & Dohme Research Laboratories; Ephraim P. Engleman, M.D., clinical professor of medicine, University of California Medical Center; and William E. Reynolds, M.D., medical director, The Arthritis Foundation.

Registration fee is $10. For further information contact: symposium coordinator, The Arthritis Foundation, 1212 Avenue of the Americas, New York, New York 10036.

Postgraduate courses in ophthalmology

The Post-Graduate Institute of the New York Eye and Ear Infirmary, formerly the Institute of Ophthalmology of the Americas, is sponsoring the eleventh series of postgraduate courses for specialists in ophthalmology to be held from September 4 through December 4.

The courses will include the following topics: Advances in Ocular Prostheses; Biomicroscopy; Cataract Surgery; Corneal Contact Lenses; Corneal Surgery, Enucleation and Evisceration; Glaucoma; Gonioscopy; Indirect Ophthalmoscopy; Lacrimal Sac Surgery, Low-Vision Aids; Motor Anomalies; Ocular Geriatrics; Ocular Neuro-Ophthalmology; Ocular Radiology; Ocular Therapeutics; Ocular Trauma; Ophthalmoscopy; Pathology; Pediatric Ophthalmology; Perimetry; Physiological Optics; Plastic Eye Surgery; Pleoptics; Practical Ophthalmology for the General Practitioner; Radioisotopes in Ophthalmology; Refraction; Retinoscopy; Tonography and Applanation Tonometry; and Uveitis. At the conclusion of this series, there will be a one-week postgraduate course designed as a review in Basic Sciences in Ophthalmology.

For further information contact: Jane Stark, registrar, Post-Graduate Institute of the New York Eye and Ear Infirmary, 310 East 14th Street, New York, New York 10003.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Medical Schools

Central New York Regional Medical Program

Noble Foundation fellowships. The Noble Foundation fellowships for summer study in northern New York hospitals have been awarded to 18 senior medical students. These fellowships, sponsored by the Edward John Noble Foundation, are designed to extend the clinical experience of the future physicians and introduce them to the practice of medicine in the community. Although this is the third year of the programs this will be the first time the Massena Memorial Hospital, the Lewis County General Hospital (Lowville), the General Hospital (Saranac Lake), and the Alice Hyde Memorial Hospital (Malone) have participated. Other participating hospitals are the E. J. Noble Hospitals (Alexandria Bay, Canton, and Gouverneur); A. Barton Hepburn Hospital (Ogdensburg); and Potsdam Hospital. The students are given ten-week assignments under the fellowships and during this time will gain experience in several departments of the hospitals as well as in the locality. They will attend clinics, accompany doctors on house calls, and generally participate in the medical and social aspects of community life. Weekly seminars will be held in which the students review medical topics and discuss their experiences with local physicians and Upstate Medical Center faculty members.

Albany Medical College

New faculty members and promotions. Robert H. Cress, M.D., University of Alabama, and Ernst Fischer, M.D., Medical College of Virginia, have been named to the Department of Physical Medicine and Rehabilitation. William T. Strauss, M.D., has been promoted from assistant professor to associate professor, Department of Postgraduate Medicine; and Harold Singer, M.D., formerly an instructor, has been promoted to assistant professor of pediatrics.

Albert Einstein College of Medicine

New director of otolaryngology. Robert J. Ruben, M.D., became the director of the Division of Otolaryngology and associate professor of surgery on June 1.

Cornell University Medical College

Visiting professorships instituted. The establishment of the William D. Stubenbord Visiting Professorships has been announced by Dean John E. Deitrick. An endowment of $150,000, has been received from The Louis Calder Foundation "in memory of Louis Calder, Sr., and Louis Calder, Jr., and in recognition of the outstanding professional services and long friendship of Dr. William D. Stubenbord for them and members of their families." Under the terms of the award, the departments of the College will, in rotation, be host to visiting scholars "of superior distinction" in their individual fields. Each visiting professor will reside at the College for approximately a week and during that time will deliver a special lecture and hold seminars with faculty and students. The first visiting professor is expected to be in residence before July.

Rehabilitation center to become part of complex. The Burke Rehabilitation Center, White Plains, is to be affiliated with the medical teaching and treatment complex (the College, The New York Hospital, The Hospital for Special Surgery, and Memorial Hospital). The program will provide the Cornell Medical Community with facilities for teaching, research and patient care in physical medicine, rehabilitation, and related areas. A major aim of the cooperative will be the ultimate construction by the Burke Foundation of a model intermediate care center as an integral part of the Cornell Medical Community in New York City.

Downstate Medical Center

New faculty appointments. New faculty appointments recently announced are: Attallah Kappas, M.D., professorial lecturer in medicine; Bruno Amadeo, M.D., and Sakiko T. Ladinsky, M.D., clinical instructors in pathology; Melinda I. Mc Vicar, M.D., William J. Mesibov, M.D., and Carol M. Seidenstein, M.D., clinical assistant professors in pediatrics; and Polizoes Polizos, M.D., clinical instructor in psychiatry.

Faculty promotions. The following faculty members have received promotions: Benjamin Kissin, M.D., psychiatry, and Charles M. Plotz, M.D., medicine, to professor; to associate professor: Paul Dreizen, M.D., medicine, Hossein Ghadimi, M.D., pediatrics, Alan S. Josephson, M.D., medicine, and Peter K. Kottmeier, M.D., surgery. To assistant professor: Charles E. Hogg, M.D., anesthesiology, Natalie Strutynsky, M.D., radiology, and I. Ping Tang, M.D., anesthesiology. To clinical assistant professor: Susan A. Ventre, M.D., pediatrics. To clinical instructor: Carl R. Goodman, M.D., rehabilitation medicine, Chin-Tang Huang, M.D., medicine, and Aurora R. Vil-

continued on page 1343

Buy Bonds where you work.

They do.

Why do our servicemen buy U.S. Savings Bonds? Their reasons are the same as yours and mine: saving for the future, supporting freedom. And because they're fighting for freedom, too, maybe servicemen see the need more clearly than many of us. Buy Bonds. In more than one way, it makes you feel good.

New Freedom Shares

Now, when you join the Payroll Savings Plan or the Bond-a-Month Plan, you are eligible to purchase the new type U.S. Savings Notes — Freedom Shares — as a bonus opportunity. Freedom Shares pay 4.74% when held to maturity of just four-and-a-half years (redeemable after one year), are available on a one-for-one basis with Savings Bonds. Get the facts where you work or bank.

Join up. America needs your help.

U.S. Savings Bonds, new Freedom Shares

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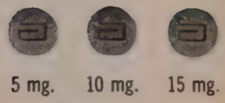
An anorectic will help her lose weight–but can she keep it off? You need more than a pill (even ours) to do that!

That's why Abbott offers you a pill plus a program.

The Product

For smooth appetite control plus mood elevation

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form



For patients who can't take plain amphetamine

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
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The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.

the secret of controlling your weight

Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories. 801444

To help you control your weight

lease see Brief Summary
next page.

Ask Your Abbott Man For Free Supplies

Brief Summary

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

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lanueva, M.D., pediatrics. To instructor: Marie R. Villano, M.D., anesthesiology.

Faculty notes. Stanley S. Bergen, Jr., M.D., associate professor of medicine, was elected vice-chairman of the Advisory Council to the Commissioner of Hospitals of the City of New York. Monte Malach, M.D., clinical assistant professor of medicine, was elected to the Board of Directors of the New York State Society of Internal Medicine. Julius E. Stolfi, M.D., clinical professor of medicine, has been appointed to the Committee on Medical Service of the American College of Physicians. Montague Ullman, M.D., professor of psychiatry, has received the Parapsychology Foundation's 1967 Treatise Contest Award for his paper "Dream Studies and Telepathy: An Experimental Approach," which was coauthored by Dr. Stanley Krippner.

Grants. A total of $187,748 was received during February, 1968, for research grants. The grants provide for renewal of seven studies already in progress, two supplements, and two new projects.

Lectures. J. S. Griffith, professor of applied mathematics, Bedford College, University of London, delivered the visiting scholar lecture on March 4. Professor Griffith spoke on "Biochemical Control Processes and Neural Organization." On March 18, Adrian Kantrowitz, M.D., professor of surgery, Downstate Medical Center and director, Surgical Services, Maimonides Medical Center, spoke on "Advances in Therapy for the Serious Cardiac Patient."

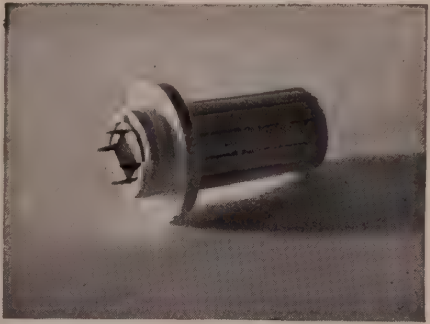
Mount Sinai School of Medicine

New pathology chair established. Hans Popper, M.D., was named, on March 29, the Irene Heinz Given and John La Porte Given Professor of Pathology. Dr. Popper is chairman of the School's Department of Pathology and serves, also, as its dean of academic affairs. The chair, endowed in the sum of $1,000,000, was established by The Irene Heinz Given and John La Porte Foundation, Inc., which previously endowed a chair in pediatrics at Johns Hopkins School of Medicine and a chair in obstetrics and gynecology at Cornell University Medical College.

The guest speaker at the investiture was Sidney Farber, M.D., S. Burt Wolbach, Professor of Pathology, Children's Hospital Medical Center of Harvard University. Dr. Farber spoke on "The Role of the Pathologist in the Understanding and Control of Cancer."

To fight TB-
find it first!

Make tuberculin testing routine
with every physical examination.



TUBERCULIN, TINE TEST
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Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

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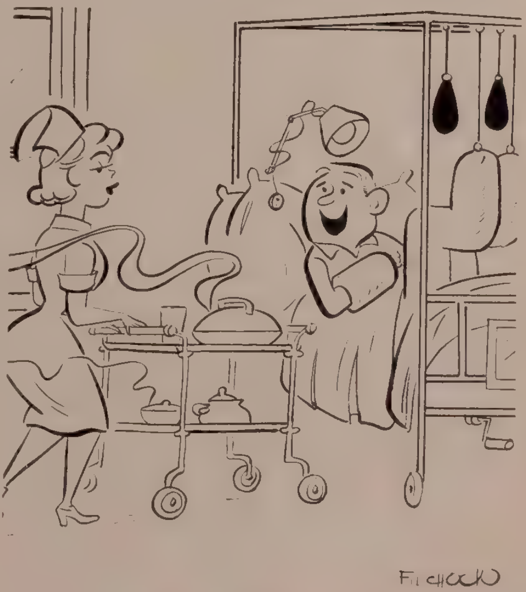


"Oh boy! Breakfast in bed!"

Medical News

Justice Department assumes drug control

On April 7, Presidential Reorganization Plan No. 1 became effective, creating a new Bureau of Narcotics and Dangerous Drugs in the Department of Justice. The new Bureau assumes the responsibility for the drug enforcement functions previously delegated to the Bureau of Narcotics and the Bureau of Drug Abuse Control.

The reorganization plan was originally proposed by the President in his special message on crime to the Congress on February 7, 1968, at which time he forecasted that the new Bureau would ". . . bring to the American people the most efficient and effective Federal enforcement machinery we can devise." The Bureau of Narcotics and Dangerous Drugs also assumes the education functions previously delegated to the Bureau of Narcotics and the Bureau of Drug Abuse Control.

Inpatient rehabilitation service opens at Downstate's University Hospital

The Rehabilitation Medicine Inpatient Service at Downstate's State University Hospital opened February 14. This new service is for patients who are disabled due to disease, trauma, or congenital deformity with treatment directed toward enabling the patient to return home as a self-sufficient person and, where possible, to obtain gainful employment.

The new treatment areas include facilities for physical therapy, occupational therapy, vocational counseling, speech evaluation and therapy, psychologic testing, and social services. There are also various types of electrodiagnostic equipment in a large, copper shielded room to insure that electronic circuitry in the building will not interfere with evaluation.

New air pollution unit formed

The School of Public Health of Columbia University, the Department of Air Pollution Control of New York City, and the New York State Department of Health, have joined in sponsoring a new center to study the effects of air pollution on health in the New York metropolitan area.

A small core group for planning, named the "Air Pollution Epidemiologic Research Unit," has been established and will continue for three years. Under the direction of Robert M. Albrecht, M.D., the unit proposed the following plan of investigation:

1. The development of a system of continuous health monitoring in Washington Heights and central Harlem, for correlation with the City's air sampling network.
2. Epidemiologic studies of the effects of selected pollutants.
3. Basic biomedical studies on the effect of air pollutants on human beings and animals.
4. Epidemiologic collaboration in clinical studies related to treatment and prevention of chronic diseases whose effects could be attributed to air pollution or aggravated by it.
5. The unit will train researchers to overcome the shortage of epidemiologists and other research workers.

Human cell-culture plant being constructed

Construction of the world's largest human cell-culture plant has begun at Roswell Park Memorial Institute, Buffalo, and is expected to be in operation late in 1968. The plant will be a key element of the Institute's comprehensive program in cancer research.

The cell-culture plan project is under the supervision of George E. Moore, M.D., director of public health research, New York State Department of Health. Its first project will be to produce virus grown in conjunction with white blood cells, which will be used as part of the Institute's over-all program in leukemia research. As the role of virus in cancer becomes better understood, this plant may also be used for the production of therapeutic agents, such as vaccine.

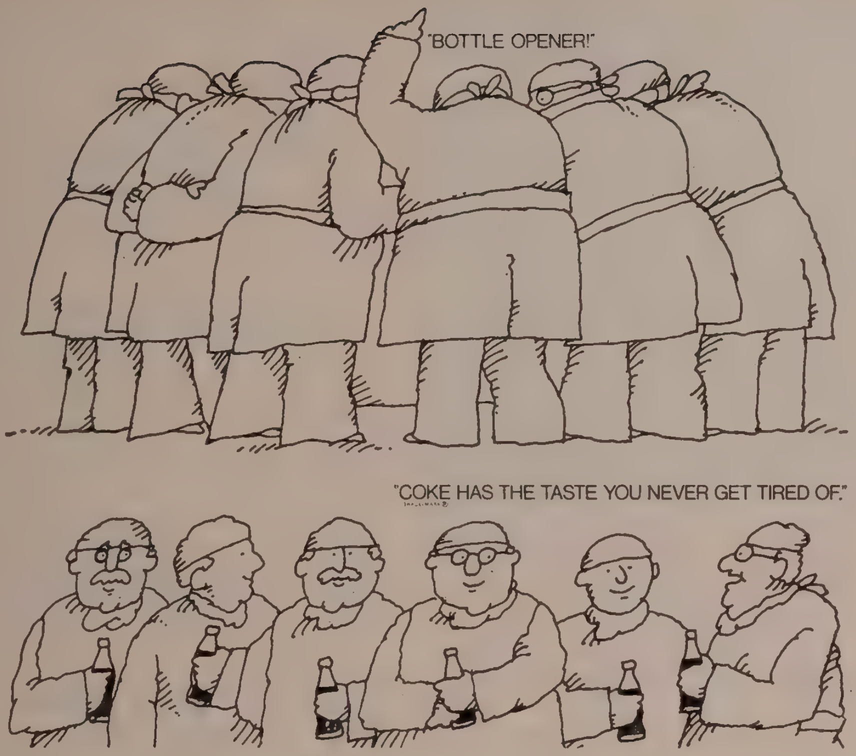
Personalities

Named. David Hammerman, M.D., New York City, as chief of the division of medicine, Montefiore Hospital and Medical Center.

Elected. As officers of the Industrial Medical Association at their annual meeting April 24 in San Francisco: second vice-president, Norbert J. Roberts, M.D., associate medical director, Standard Oil Company; secretary, Gilbeart H. Collings, Jr., M.D., medical director, New York Telephone Company; and two members of the Board of Directors, Harold H. Golz, M.D., staff consultant on environmental health, American Petroleum Institute, and Leon J. Warshaw, M.D., medical director, United Artists Corporation . . . as president of the Greater New York Hospital Association, Samuel J. Gelman, M.D., Scarsdale.

Installed. As president of the Industrial

Material for inclusion in the medical news section must be received six weeks prior to publication date.


"BOTTLE OPENER!"
"COKE HAS THE TASTE YOU NEVER GET TIRED OF."

"COCA COLA" AND "COKE" ARE REGISTERED TRADE MARKS WHICH IDENTIFY ONLY THE PRODUCT OF THE COCA COLA COMPANY

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Medical Association, David H. Goldstein, M.D., medical director, *New York Times*.

Speakers. At the fourth annual scientific meeting of the American Academy of Facial Plastic and Reconstructive Surgery, Inc., Hollywood Beach, Florida, April 27 through 30: Sidney S. Feuerstein, M.D., associate professor, Mount Sinai Medical School; Benito Rish, M.D., assistant clinical professor of surgery, head and neck division, Albert Einstein School of Medicine; Ira D. Rothfeld, M.D., instructor, department of Otolaryngology, Mount Sinai School of Medicine; Irving B. Goldman, M.D., professor emeritus, Department of Otolaryngology, Columbia University; and John Cinelli, M.D., director plastic surgery, New York Eye and Ear Infirmary.

Use of lower-extremity prosthetic limbs

In predicting the successful use of prosthetic appliances in elderly lower-extremity amputees, a dynamic evaluation, involving the use of a temporary or intermediary walking device, has appeared in a recent issue of *Archives of Physical Medicine and Rehabilitation* by A. D. Anderson, M.D., V. Cummings, M.D., S. K. Levine, M.D., and A. Kraus, M.D. Their report on 92 elderly lower-extremity amputees shows that 67 derived functional benefit from the artificial limb. The mortality rate or risk of amputation of the remaining leg was no greater than that which may be expected in an elderly population with vascular disease.

The series consisted of 92 lower-extremity amputees over sixty years old for whom prostheses were prescribed. The mean age was seventy years. In all, vascular insufficiency was the underlying reason for amputation. In 78 patients the amputation was unilateral; in the rest, bilateral; there were no bilateral above-knee amputations in this series, however. Of the total of 92 patients, 41 had been previously reported and were not tabulated in this communication. Of the 51 tabulated, there were 14 above-knee and 37 below-knee amputations; 27 women and 24 men.

In categorizing performance of unilateral amputees according to broad functional equivalents described, 31 of 48 below-knee amputees became functionally independent, while only 9 of 30 above-knee amputees reached that level. Men having unilateral amputations tended to achieve a higher functional level than women with unilateral loss. During the five-year individual follow-up, 9 patients lost the remaining leg. These losses all occurred among 27 patients who had had some major manifestation of vascular disease after getting their prostheses.

After the picnic even Gramps Was a victim of intestinal cramps

Parepectolin for quick relief of acute diarrhea
...soothes colicky pain with paregoric*
...consolidates fluid stools with pectin
...adsorbs irritants with kaolin,
and protects intestinal mucosa

In elderly patients it is particularly important to stop the diarrhea fast. Parepectolin helps you control diarrhea promptly and gain the patient's confidence until etiology has been determined.

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Each fluid ounce of creamy white suspension contains:
*Paregoric (equivalent) .... (1.0 dram) 3.7 ml.
Contains opium (¼ grain) 15 mg. per fluid ounce.
warning: may be habit forming
Pectin .... (2½ grains) 162 mg.
Kaolin (specially purified) .... (85 grains) 5.5 Gm.
(alcohol 0.69%)
Usual Adult Dose: One or two tablespoonfuls three times daily.

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Books Received

*The following books were received during the month of March, 1968.**

Nephrology. Volume I and II. By Jean Hamburger, G. Richet, J. Crosnier, J. L. Funck-Brentano, B. Antoine, H. Ducrot, J. P. Mery, and H. de Montera. With the collaboration of P. Royer in the chapters on pediatrics. Translated by Anthony Walsh, F.R.C.S.I. Quarto of 1,312 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $50 the set.

Studies of the Development and Decay of the Human Frame. By Joseph Trueta, M.D. Quarto of 389 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $18.

Textbook of Gynecologic Endocrinology. Edited by Jay J. Gold, M.D. Quarto of 682 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $23.50.

Surgery of the Aged and Debilitated Patient. Edited by John H. Powers, M.D. Quarto of 611 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $20.55.

Plant Toxicity and Dermatitis. By Kenneth F. Lampe, Ph.D., and Rune Fagerström, Pharm. Dr. Quarto of 231 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $9.25.

Thyrotoxicosis. Proceedings of an International Symposium, Edinburgh, May, 1967. Edited by W. James Irvine, M.B. Octavo of 259 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $9.75.

The Year 2000. A Framework for Speculation on the Next Thirty-Three Years. By Herman Kahn and Anthony J. Wiener. Quarto of 431 pages, illustrated. New York, The Macmillan Company, 1967. Cloth, $9.95.

Medical Department, United States Army. Physical Standards in World War II. Editor in Chief, Colonel Robert S. Anderson, MC, USA. Editor for Physical Standards,

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

Charles M. Wiltse, Ph.D., Litt.D. Octavo of 356 pages, illustrated. Washington, D.C., Office of the Surgeon General, Department of the Army, 1967. Cloth,$3.00.

Heredity, Disease, and Man: Genetics in Medicine. By Alan E. H. Emery, M.D. Octavo of 247 pages, illustrated. Berkeley, University of California Press, 1968. Cloth, $6.95.

A Ciba Foundation Symposium on Communication in Science: Documentation and Automation. Edited by Anthony de Reuck and Julie Knight. Octavo of 274 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $12.50.

A Ciba Foundation Symposium on Cell Differentiation. Edited by A. V. S. de Reuck and Julie Knight. Octavo of 257 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $12.

A Ciba Foundation Symposium on Health of Mankind. Edited by Gordon Wolstenholme and Maeve O'Connor. Octavo of 297 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $12.

Ciba Foundation Study Group No. 30. The Balkan Nephropathy. Edited by G. E. W. Wolstenholme and Julie Knight. With 29 illustrations. Duodecimo of 123 pages. Boston, Little, Brown and Company, 1967. Boards, $3.50.

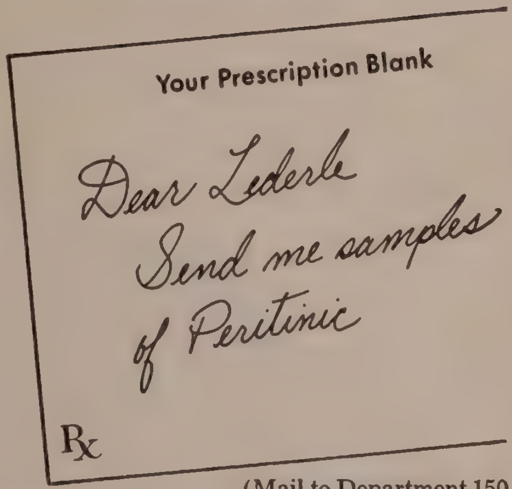
Modern Trends in Immunology 2. Edited by Robert Cruickshank, M.D., and D. M. Weir, M.D. Octavo of 342 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $12.75.

Diagnostic Laboratory Hematology. By George E. Cartwright, M.D. Fourth edition, Revised and Enlarged. Octavo of 441 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $10.

Drugs in Current Use 1968. Edited by Walter Modell, M.D. Octavo. New York, Springer Publishing Company, 1968. Paper, $2.75.

Here's what you do to get samples of the

anticostive* hematinic



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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic?)

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A tablet-a-day provides:

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● Dioctyl Sodium Sulfosuccinate (to counteract constipating effect of iron)	100 mg
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Vitamin B_6	7.5 mg
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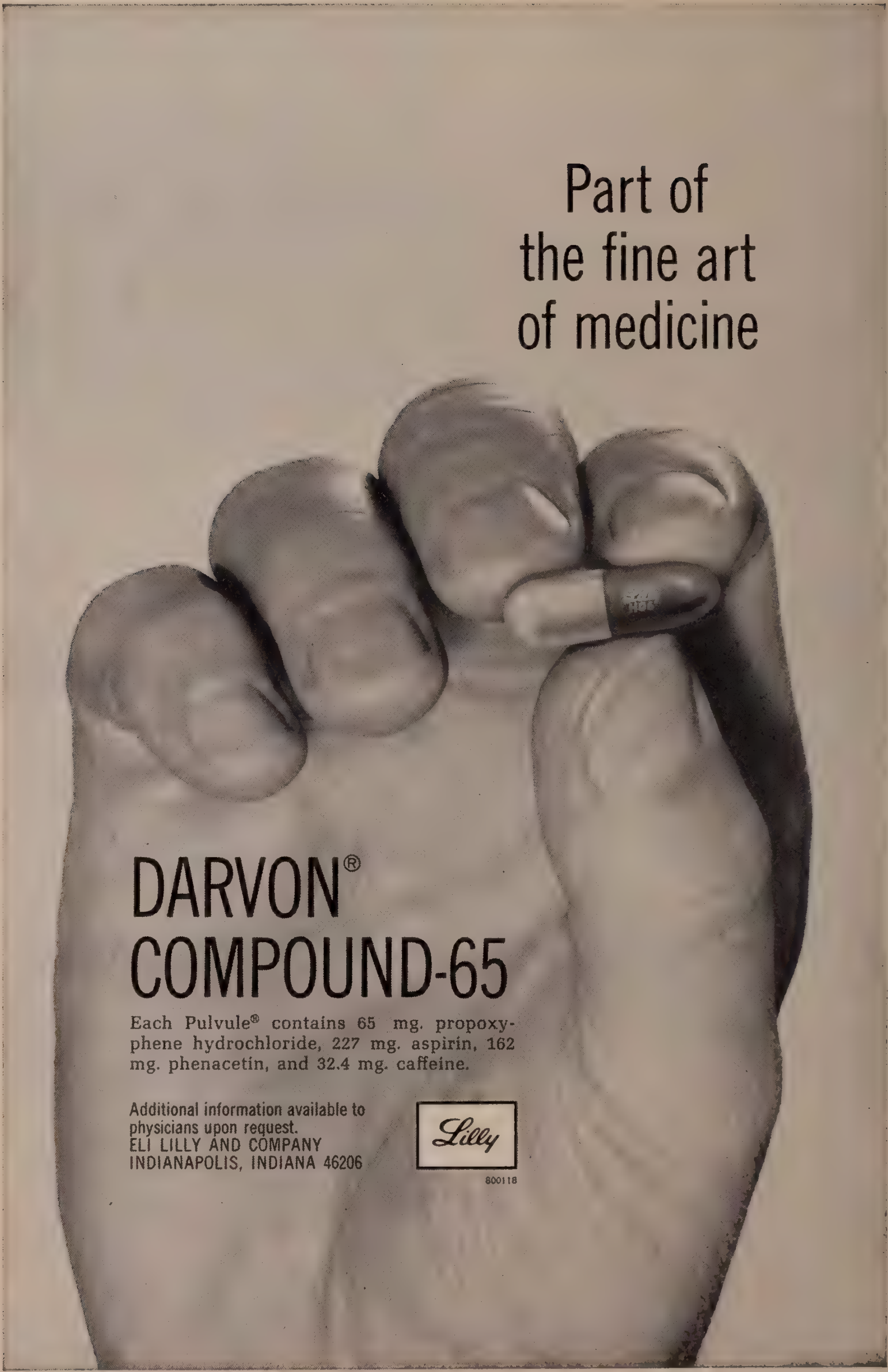
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Editorials

The annual report

Since mid-February the JOURNAL staff has been busy collecting, collating, and consolidating all that has been written of the actions of your House of Delegates and of the reports of officers, commissions, and reference committees on which these actions were based.

This material adds about 250 pages to this June 1 issue of the JOURNAL and makes of it a formidable book.

And this running account of the activities of your State Medical Society over the past year is formidable. One is astounded by the complexity of it. The index lists close to 2,000 items, ranging from automobile safety to workmen's compensation.

Each of these activities was passed on by the appropriate reference committee and brought to the attention of the House of Delegates. Your elected representatives know exactly what has been going on.

One change in committee assignments affects the JOURNAL. On the recommendation of the Reference Committee on Scientific Activities and Publications it was approved by the House of Delegates that the Publication Committee be disbanded and that in its place the Council appoint one of its members to act as liaison with the JOURNAL. The reasons for this are reported in the report of the Reference Committee. We are pleased to announce that George Himler, M.D., the former chairman of the Publication Committee, will act in this capacity.

This annual report forms a background text for all the material you receive via the *News of New York*, "Hot Line," *Capitol News*, and "Ad Rem." It truly may be said that the membership of the Medical Society of the State of New York is an informed membership.

Why hospitalization costs are high

It cost community hospitals an average of $58.06 to provide a patient with a day of care in 1967. This was 15.4 per cent higher than in 1966 when the average cost was $50.31. Wages and salaries account for $36.30 of the present per day expense as compared with $30.92 in 1966. Hospitals on the average now employ 264 persons for each 100 patients. Twenty years ago the ratio was 148/100.

At one time the operating room was the technical center of the hospital. Today there are other technical enclaves beside the operating room—the clinical laboratory, the blood bank, the recovery room, the intensive care unit, and most recently the cardiac care unit. All of these refinements are essential to any hospital that serves as a true medical center for its community. They require specialized staff and equipment unavailable even ten years ago.

One recently installed intensive coronary care unit, consisting of eight beds, requires twenty-four-hour coverage by cardiologists, a specially trained group of 18 nurses, and the most sophisticated electronics equipment now available for constant monitoring of the patient to provide instant diagnosis and treatment of all complications that may arise.

In addition to heart rate, pulse and pacer monitors, and an oscilloscope, all ceiling-hung, each bedside has an electrocardiograph machine and defibrillator and pacemaker equipment. Portable monitoring units at each bedside, connected to the central station, show systolic, diastolic and venous pressure, and temperature.

Central nurses' station equipment can continually monitor any 2 patients' physiologic pressures and temperatures at one time. A console at the station displays all patients' electrocardiograms on individual monitoring oscilloscopes and pulse rate meters. The central station will monitor on a continuous basis each patient's electrocardiogram and constantly stores this information for the current forty-second period on a magnetic tape cartridge.

Should signals of distress from a patient be displayed on the monitoring equipment, an alarm button will sound at the nurses' station in addition to a light signal of distress, sending a medical-nursing team to a stricken patient's aid in seconds. If more than "all hands on deck" are needed, the nurses' station has a "panic button"—to summon help from an adjacent patient care unit in the hospital. In the event of an alarm condition, the ECG information about a patient stored on the forty-second tape cartridge will be printed on the central station electrocardiograph machine.

In addition, patients' physiologic information from each bedside can be switched to a display, recording, and data storage system in the adjacent treatment laboratory. The information may be recorded on an eight-channel optical recorder, presented on an eight-channel oscilloscope, and/or recorded on a seven-channel, three-speed analog magnetic tape recorder. The tape recorder can play back at the recorded speed or an increased or decreased speed for screening; selected sections then can be printed. The tape recorder also can be programmed to record automatically patient information every fifteen, thirty, or sixty minutes for one-minute periods.

This dream of science fiction is no longer fiction. It is actually at work saving lives in our hospitals.

Similar technologic advances are in actual use in all departments. They are bound to raise the cost of hospitalization, but they lower the mortality rate.

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Serology of Rubella

Virus Neutralization, Immunofluorescence in BHK21 Cells, and Hemagglutination Inhibition*

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From the Division of Laboratories and Research,
State of New York Department of Health

SERA FROM 317 PERSONS, *including laboratory personnel and high school girls, were tested for rubella antibody. Comparative data obtained by neutralization of viral interference, IF (immunofluorescence), in BHK21 (baby hamster kidney cells), and HI (hemagglutination inhibition) were generally in agreement, but antibody was more frequently detected by HI and IF. Two rubella virus strains were used, and sera included specimens of current infections, of pregnant women, and of children with congenital anomalies or retardation. Some discrepancies occurred in recognizing recent rubella infections and in detecting antibody. Rubella antibody was found in more than half the children six months to two years of age who had congenital malformations or showed retardation. These tests are of value in differentiating congenital rubella infection from genetic anomalies of the effects of other infections.*

TESTS FOR RUBELLA ANTIBODY were performed on sera from 317 persons and included specimens submitted for diagnostic tests, from laboratory personnel, and from high school girls. Comparative data obtained by neutralization of viral interference, IF (immunofluorescence) in BHK21 (baby hamster kidney cells), and HI (hemagglutination inhibition) were in general in agreement, but antibody was more frequently detected by HI and IF. The incidence of rubella antibody was rare in children between six months and two years of age in the absence of congenital anomalies or retardation. The incidence was 80 to 90 per cent in persons over ten years of age as determined by hemagglutination inhibition and immunofluorescence and about 60 per cent or less by neutralization. Immunofluorescent and HI antibody levels were constant with few exceptions in adults from whom repeated serum samples were taken over periods of from three to thirteen years.

Immunologic studies in rubella have been based on a variety of technics: neutralization demonstrated by prevention of viral interference[1] or CPE (cytopathic effects),[2,3] hemagglutination inhibition,[4] immunofluorescence,[5] complement fixation,[6] and tissue hemadsorption inhibition.[7] Of prime concern in diagnostic serology is the selection of a method that is simple, specific, sensitive, and rapid. This is especially desired in determining the immune status of pregnant women in the first trimester because of the association of rubella infection with fetal anomalies and retardation. This report presents the results of a comparative study of neutralization, IF, and HI procedures in current and past rubella infections. The use of BHK21 cells in which rubella virus develops to high titer in a few days[8] provided in this laboratory a system for the rapid development of viral

* Supported in part by General Research Support Grant 1-S01-FR-05559 and Research Grant AI-07507 from the National Institutes of Health, U.S. Public Health Service, Bethesda, Maryland.

antigen readily demonstrable by immunofluorescence. Data are included on the persistence of antibody in adults based on tests of repeated serum specimens taken over periods up to thirteen years, on the incidence of antibody in healthy New York State residents, and in children with congenital anomalies and retardation.

Materials and methods

Virus strains. Two rubella virus strains were used, M33 isolated by Parkman, Buescher, and Artenstein in 1961[1] and received from the American Type Culture Collection in 1965; and strain 64-0360, isolated in this laboratory at the height of the rubella epidemic in 1964 in New York State from a throat culture from a ten-year-old patient.

Sera. Serum specimens submitted for the diagnosis of rubella included sera from current infections, pregnant women, and children with congenital anomalies or retardation. Tests for rubella antibody were also made with sera from sixteen- to eighteen-year-old high school girls* and from members of the Virus Laboratory staff, from whom 2 or more specimens were available, taken over periods up to thirteen years; all sera were stored at minus 20 to minus 25 C.

Cell cultures. The line of baby hamster kidney cells, BHK21, clone 13,[9] was received in 1964 through the kindness of Sonja Buckley, M.D., of the Rockefeller Foundation Virus Laboratories.† Cultures were grown in bottles, Roux or 200-ml., or Leighton tubes with cover slips with Eagle's medium containing 10 per cent FBS (fetal bovine serum) inactivated at 56 C. for thirty minutes and 10 per cent tryptase phosphate broth. After monolayers developed, three to four days, the cell cultures were maintained in Eagle's medium with 3 per cent of the serum and 0.2 per cent of 2 M tris hydroxymethyl aminomethane, with fluid changes at two- and three-day intervals.

The line of monkey kidney cells, LLC-MK_2, received in 1963 from Robert N. Hull, Ph.D.,** was grown and maintained in medium 199 with 2 per cent FBS with fluid changes at two- or three-day intervals after uniform monolayers developed. For neutralization tests, disposable glass tubes were seeded with 0.5 to 0.7 ml. of cell suspensions containing 100,000 cells per milliliter and were used three to five days later after a fluid change.

All media contained 100 units of penicillin and 100 micrograms of streptomycin per milliliter. No evidence of Mycoplasma was found in tests of concentrated cell suspensions of either line.

Neutralization tests. Rubella virus strain M33 was used in the neutralization tests. Stock virus and sera were diluted in maintenance medium 199 in Hanks' balanced salt solution with 2 per cent inactivated FBS and 25 per cent pooled normal rabbit serum. The test sera were inactivated for thirty minutes at 56 C., and serial twofold dilutions were prepared beginning with 1:4 or 1:8. Each dilution was mixed with an equal volume of the test virus diluted to contain 20 to 100 IND_{50} per 0.1 ml. The test mixtures were incubated for one hour in a water bath at 37 C. Three tubes of LLC-MK_2 cells were inoculated with each test mixture in 0.2-ml. amounts. After an adsorption period of thirty minutes at 35 C., 1-ml. amounts of maintenance medium were added to the tubes. In subsequent procedures, a different pipet was used for each tube to avoid cross-infection with unneutralized rubella virus. The cultures were incubated for seven days at 36 C. with fluid changes on the second or third day and on the seventh day before challenge with from 100 to 3,200 $TCID_{50}$ of Coxsackie A9 virus. Titrations of the stock rubella virus and the challenge virus were performed in each test. A normal rabbit serum and an anti-rubella rabbit immune serum were included as controls. All patients' sera were tested in a dilution of 1:4 for antibody against Coxsackie A9 virus. The cultures were examined for cytopathic effects three or four days after challenge. Cytopathic effect typical of Coxsackie virus observed in 1 or more cultures per serum dilution was considered to be evidence of neutralization of rubella virus. Antibody titers are expressed as the reciprocal of the serum dilution.

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* Sera and data on histories kindly supplied through the courtesy of Julia Freitag, M.D., Director, Bureau of Epidemiology, Division of Preventive Services, State of New York Department of Health, Albany, New York.

† Stocks of cell cultures were stored frozen. The number of transfers in this laboratory varied from 5 to 27.

** Lilly Research Laboratories, Indianapolis, Indiana.

IMMUNOFLUORESCENCE. *Preparation of cell films.* BHK21 cell cultures for tests of sera for which large batches of cell films were required were grown in bottles and inoculated three to four days after seeding with sufficient virus to give cytopathic effects of moderate intensity in three to four days. The virus input varied from about 0.25 to 2 $TCID_{50}$ per cell. For special tests with cells grown on cover slips, virus dosage per cell was from about 1:1 to 1:10. Fluids were changed once, usually the day before cells were harvested. Cells of infected and uninfected control cultures were scraped from the walls of containers after rinsing with 6.8 per cent sodium chloride solution phosphate buffered at pH 7.6[10] or removed with 0.02 per cent tetrasodium salt of ethylenediaminetetraacetic acid (Versene) after rinsing with magnesium and calcium-free Earle's balanced salt solution. The cells were washed once in the buffered sodium chloride solution, spread on slides, and dried in air. Fixation was carried out in cold acetone for ten minutes, repeated in fresh acetone, and the slides were then left at room temperature for at least thirty minutes according to the procedures in use at the National Communicable Disease Center. Lots of from 100 to 250 or more cell films were prepared at one time. The slides were stored at minus 50 C. Such cell films with rubella-infected cells have remained satisfactory for at least eight months.

Preparation and absorption of conjugated antihuman gamma globulin. The methods for conjugation of antihuman gamma globulin with fluorescein isothiocyanate have been described.[11] The conjugates were absorbed with BHK21 cells. One milliliter of conjugate was added to from 0.1 to 0.2 ml. of cells which had been sedimented at 750 g for fifteen minutes. Cell-conjugate mixtures were left at 4 C. for about eighteen hours with occasional shaking and then centrifuged. The absorption was repeated if necessary, at times also with beef liver powder, to reduce or remove nonspecific staining. The conjugates were titrated against a 1:8 dilution of serum that lacked rubella antibody and a 1:32 dilution of a serum of high titer to select the dilution giving strong specific fluorescence with little or no nonspecific staining. Conjugates were generally used in dilutions of 1:16 or 1:32.

Staining. The diluent for sera and conjugates was sodium chloride solution phosphate buffered at pH 7.6. Diagnostic specimens of sera were screened at 1:8 and 1:32 dilutions with infected and uninfected cells, and titrations were made as indicated in twofold dilutions up to 1:512. In each day's test, control sera were included: one without antibody at a 1:8 dilution and a convalescent-phase serum at 1:32. After treatment of the cell films with diluted serum or subsequently with labeled globulin, the slides were incubated for thirty minutes at 35 C. in a moist chamber. Washing after each treatment consisted of a quick rinse in saline pH 7.6 followed by two five-minute washes each time with fresh saline. The films were finally rinsed in distilled water and mounted in 90 per cent glycerol in saline. Serum titers are expressed as the reciprocal of the highest dilution of serum with which typical and specific fluorescence was seen in cells in several fields of different areas of the film.

HEMAGGLUTINATION INHIBITION TEST. Essentially the technic of Stewart *et al.*[4] was used except for the following modifications:

Preparation of hemagglutinating antigen. BHK21 cells were grown in 200-ml. square bottles. When the cell sheet was complete, the medium was removed, and 12 ml. of inoculum of strain M33 were added. The multiplicity of inoculum was between 0.5 and 30 $TCID_{50}$ per cell. After three hours of adsorption at 36 C., the fluid was removed and serum-free maintenance medium was added consisting of Eagle's medium with 0.3 per cent 2 M tris solution, penicillin, and streptomycin. After two days, the medium was changed. On day 3 or 4 when most of the cells showed a strong cytopathic effect, the fluids were harvested and tested for hemagglutinating activity. The antigen was stored at minus 70 C.

Preparation of RBC (chick red blood cell) suspension. The procedure of Stewart *et al.*[4] was followed. Suspensions of RBC from one-day-old chicks (0.12 per cent) were used in the hemagglutination test.

TABLE I. Rubella antibody titers in diagnostic specimens determined by neutralization and immunofluorescence*

Immunofluorescence Titer	Neutralization Titers — Number of Sera							
	<8	8	16	32	64	128	256	512
<8	12	...	...	...	...	...	...	...
8	2	1	1	2†	1†	...	...	...
16	...	...	4	3	5†	...	3†	...
32	...	...	2	7	1	2†	2†	1†
64	...	...	...	...	1	5	2†	...
128	...	...	...	...	...	2	1	...
256	...	...	...	...	1†	1	1	...

* Test strain: M33.
† Fourfold or greater differences.

Fifty per cent suspensions of RBC from adult chickens were employed in the pretreatment of sera.

Tests for hemagglutination. Tests for hemagglutination were performed in tubes or by the micromethod in disposable plastic U plates.[12] Serum-antigen mixtures were incubated at 4 C. for two hours before addition of chick red blood cells. Most of the serum titrations were by the micromethod.

Diluents. Suspension of chick red blood cells, 0.12 per cent, were prepared in phosphate buffered saline bovalbumin borate solution, pH 6.2.[13] Antigen and sera were diluted in borate saline, pH 9.[13]

Results

Rubella virus strains M33 and 64-0360 were selected for immunofluorescence tests because they appeared to differ somewhat antigenically when tested in ferrets.[3] For adaption to BHK21 cells, the initial inocula were the twentieth passage in African green monkey kidney cells of strain M33 and the sixth of 64-0360. Infectivity titers after several passages were from 10^7 to $10^{8.5}$ $TCID_{50}$ per milliliter. With both strains, strong immunofluorescence was demonstrated before CPE and infectivity titers were maximal. With strain M33, strong immunofluorescence was demonstrated in seventy-two hours and with strain 64-0360 in seventy-two to ninety-six hours. Comparative tests by IF with cell films of both strains were made with 111 sera from 67 individuals. No significant differences in titers with the 2 strains were found. Twenty-four of the sera tested in the BHK21 cell system were also examined by IF with chronically infected $LLC\text{-}MK_2$ cells at the National Communicable Disease Center, U.S. Public Health Service, Atlanta, Georgia, with corresponding results.

TABLE II. Rubella antibody titers in diagnostic specimens determined by neutralization and hemagglutination inhibition*

Hemaggutination Inhibition Titer	Neutralization Titers — Number of Sera							
	<8	8	16	32	64	128	256	512
<10	15	1	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...
20	...	1	2	1	...	1†	...	...
40	3†	...	...	1	...	2†	1†	...
80	...	...	...	...	...	1	...	...
160	...	2†	...	3†	3	...	1	...
320	1†	...	1†	2†	3†	1	2	...
640	...	...	1†	3†	...	...	2	...
1,280	...	...	...	...	1†	...	1†	1
2,560	...	...	2†	2†	2†	7†	1†	...

* Test strain: M33.
† Fourfold or greater differences.

Good agreement was obtained between the results of immunofluorescence and neutralization tests in the detection of antibody in diagnostic specimens. When antibody was present, neutralizing titers were frequently higher than IF titers (Table I). Neutralizing titers, greater by at least fourfold, occurred in sera that had immunofluorescence titers of 32 or more. In 2 of 14 sera in which no neutralizing antibody was detected in a 1:8 dilution, immunofluoresence antibody was present in low dilution. One of these had a neutralizing titer of 4, and the other was from a patient given gamma globulin fifteen days earlier. In a comparison of the results of neutralization and HI tests, little correlation in titer was seen throughout the different levels of antibody; in general, HI titers were much higher (Table II). Moreover, of 19 sera from patients that lacked neutralizing antibody, 4 had HI titers of 40 or more. In a series of 139 sera from sixteen- to eighteen-year-old high school girls, HI antibody was also found in 35 of 54 sera that failed to neutralize rubella virus (Table III); 19 had HI titers of 40 or higher, and 16 reacted only in a dilution of 1:10. Of the latter, 14 were tested by IF and 12 reacted (Table IV). In the 2 sera which were negative by neutralization and IF but had HI titers of 1:10, the presence of a nonspecific inhibitor must be considered. In a comparison of HI and IF in tests of diagnostic specimens, the HI method was much more sensitive when antibody was present, but there were more frequent instances of IF antibody in the absence of HI than the

TABLE III. Incidence of rubella antibody in sixteen- to eighteen-year-old girls in relation to history of rubella

Rubella History	Number	HI Antibody Number	HI Antibody Per Cent	HI and Neutralizing Antibody Number	HI and Neutralizing Antibody Per Cent
None; no family contact	54	44	81	28	54
None; family contact	9	9	100	5	56
Rubella; no family contact	24	20	83	19	79
Rubella; family contact	44	40	91	30	68
No information	8	7	87	3	43
TOTALS	139	120	86	85	61

reverse. In contrast, with 49 of the sera from the sixteen- to eighteen-year-old girls, good correlation was found between HI and IF results in the detection of antibody; the HI titers again tended to be superior (Table IV).

In the diagnoses of recent infections, samples of paired sera from several cases were not sufficient for all 3 test methods. Fourteen cases of current infection were identified by one or more of the methods (Table V). There were disagreements in the results with sera from 4 patients; in Cases 4, 7, and 12, only one of the three test procedures showed a fourfold or greater antibody rise, one each by neutralization, HI, or IF, and in Case 8, significant antibody rises were detected by IF and HI but not by neutralization. Thus, by selection of only one method for testing, these recent infections might not have been recognized. Antibody was detected by each of the test methods as early as two or three days after the reported onset of illness, possibly reflecting development of antibody during the prodromal period or residual antibody from previous infections.

The data on incidence of rubella antibody in different age groups based on results with each of the 3 test methods showed that in accordance with the findings of others,[14–16] a high incidence was reached in the eleven- to twenty-year age group and remained high in the older group, especially as determined by HI and IF, and also that evidence of primary infection in children under two was rare (Table VI). With the sera of 139 high school girls tested by HI, there was no relationship between the presence of antibody and a history of rubella or family contact (Table III). Similar observations have been reported based on neutralizing antibody titers.[14]

TABLE IV. Rubella antibody titers by immunofluorescence and hemagglutation inhibition*

Immunofluorescence Titer	HI Titer, Number of Sera <10	10	40	160	640
<8	11	2	. . .	. . .	. . .
8	. . .	5	3	. . .	. . .
16	. . .	5	6	1	. . .
32	. . .	2	4	3	. . .
64	. . .	. . .	2	1†	. . .
128 or >	. . .	. . .	. . .	. . .	4†

* Sera from girls sixteen to eighteen years old.

† Sera had neutralizing antibody. All other sera lacked neutralizing antibody.

In our series, neutralizing antibodies appeared to be somewhat more frequent in girls with a history of rubella but because of the small number tested, the difference was not statistically significant.

Information on the persistence of antibody in adults was obtained by tests of sera from 24 members of the laboratory staff varying in age from twenty-four to sixty-seven (Table VII). In all the age groups, irrespective of the interval between the first and last specimens, there were essentially no changes in immunofluorescence titer except in one person in the twenty-one to thirty age group who showed a rise in titer from less than 8 to 32 between 1961 and 1964 without a history of rubella, suggesting an inapparent infection during that period. Titer changes were noted by

TABLE V. Rubella antibody in current infections

Case Number	Age (Years)	Day After Onset	Titer Neutralizing	Titer IF	Titer HI
1	4	7	<4	. . .	. . .
		129	32	. . .	. . .
2	7	?	16	. . .	. . .
		+42	128	. . .	2,048
3	11	1	<4	<8	. . .
		28	128	256	>2,048
4	11	3	32	16	>2,048
		24	128	32	>2,048
5	13	1	. . .	<8	<10
		15	. . .	>32	320
6	15	5	32	8	. . .
		33	128	128	>2,048
7	16	5	64	64	>2,048
		33	64	256	>2,048
8	17	2	32	8	32
		30	16	32	512
9	20	0	<4	<8	. . .
		31	256	256	>256
10	>20	2	. . .	<8	<10
		16	. . .	64	160
11	29	?	64	. . .	. . .
		+21	256	64	>256
12	35	?	32	32	128
		+8	16	16	1,024
13	36	1	<4	. . .	. . .
		15	<8	. . .	. . .
		52	32	. . .	. . .
14	37	0	16	. . .	. . .
		36	64	. . .	. . .

TABLE VI. Incidence of rubella antibody in different age groups*

Age (Years)	Neutralization Number of Sera	Neutralization Antibody Number	Neutralization Antibody Per Cent	Hemagglutination Inhibition Number of Sera	Hemagglutination Inhibition Antibody Number	Hemagglutination Inhibition Antibody Per Cent	Immunofluorescence Number of Sera	Immunofluorescence Antibody Number	Immunofluorescence Antibody Per Cent
<2	5	0	0.0	13	0	0.0	4	1	25.0
2 to 10	11	3	27.2	13	5	38.5	8	4	50.0
11 to 20	150	92	61.5	150	131	87.3	53	44	83.0
21 to 30	24	15	62.5	39	33	84.6	27	25	92.6
>30	8	3	37.5	35	28	80.0	24	21	87.5

* Exclusive of current infections and children with congenital malformations or retardation.

HI in 3 persons; 1 in the twenty-one to thirty age group showed a fourfold rise and 2 in the two older-age groups showed eightfold decreases. The constancy of titer in most of the individuals indicates either a remarkable stability of antibody at moderate levels for long periods or possibly reflects the result of reinfections.

Tests were made of sera from 27 infants and young children who had congenital anomalies or were retarded (Table VIII). In the infants less than six months old, 7

TABLE VII. Persistence of rubella antibodies (HI and IF) in titers*

Age Group† (Years)	Year of Bleeding 54	59	60	61	62/63	64	65/66	67
>50		320/32				320/32		320/32
			20/nt**	20/32		20/32		20/32
		20/8				20/8		
	80/8					<10/8		<10/8
		40/32				80/32		
						nt**/<8		<10/<8
41-50		80/8				20/8		20/8
				40/32		20/32		20/32
		20/8				20/8		20/8
					80/32	40/32		40/32
			nt**/32				40/32	80/32
31-40		40/8				80/8		40/8
				80/32		80/32	nt**/32	
			40/32			80/32		
				<10/32		10/32		10/32
		20/32				20/16		20/16
			<10/32			20/32		20/32
				20/32		40/32		
				10/8				10/8
		40/32		40/32				40/32
21-30						80/32		80/32
			80/32		80/32			80/32
					80/32	40/32		40/32
				<10/<8		80/>32		80/64

†Age in 1967.
*Numerator, HI; denominator, IF titers.
In HI tests, serum titrations in 4-fold dilutions; in IF tests, usually 1:8 and 1:32 dilutions only.
**nt = not tested.

of 11 had rubella antibody, but since tests for 19S gamma globulin were not made, instances in which the antibody was of maternal origin were not identified. In the group of infants of six months to two years, however, the finding of antibody in 7 of 13 is strongly suggestive of intra-uterine rubella infection. This incidence is strikingly different from that in children of the same age without birth defects or retardation in whom antibody was rare (Table VI). There were 3 cases in which antibody was detected by IF but not by HI. The occurrence of rubella antibody in this series was frequent during the periods of increased incidence of rubella in New York State and particularly during the epidemic that reached a peak in April, 1964.

TABLE VIII. Rubella antibody in sera from children with congenital malformations or retardation

First Trimester	Age When Bled (Months)	Antibody Neutralization	IF	HI
1963				
July 9	36	...	−	−
1964				
January 3	13	−	−	...
February 4	30	...	+	−
March 5	16	+	+	+
March 5	30	...	...	+
April 6*	17	−	...	+
May 7†	4	−	...	+
June 8	17	+	...	+
June 8	24	...	+	−
July 9	19	+	+	+
August 10	8	−	...	...
1965				
January 3	Birth	+	...	−
January 3	13	+	+	+
January 3	18	...	−	−
March 5	1	−	...	−
April 6	3 weeks	+	...	+
May 7	4	+	+	+
June 8	12	...	+	−
October 12	6	−	−	−
December to February, 1966	8	...	−	−
1966				
January 3**	Birth	+	+	+
March 5	8	...	...	−
April 6	6	...	...	−
August 10	9	...	−	−
September 11	5 days	...	...	+
November to January, 1967	Birth	...	...	−
1967				
November, 1966, to January, 1967††	Birth	...	...	+

* Final diagnosis: toxoplasmosis.

† Rubella virus isolated.

** Mother had same levels of antibody as child.

†† Postmortem findings suggestive of cytomegalic inclusion disease.

Comment

Virus neutralization, HI, and IF applied to the serology of rubella gave, in general, results corresponding to those reported by others.[4,15,17,18] Some discrepancies, however, occurred in the recognition of recent rubella infections and in the detection of antibody. The differences in titers may possibly be attributed to variations in antigen dosage, especially in IF and neutralization, the varying stability of antibody detected by one or another method, or the particular immune gamma globulin reacting. The HI method was the most sensitive in demonstrating high antibody levels, IF the least. Little variation was noted in the incidence or persistence of antibody demonstrated by these 2 methods. The HI method is now widely used because of its rapidity and ease of performance on a large scale. The data obtained in this study suggest that diagnostic serology and surveys of populations for immunity to rubella may be improved by supplementing HI with IF tests, particularly whenever equivocal results are obtained. The significance of HI or IF antibody in the absence of neutralizing activity in relation to immunity to rubella infection cannot be evaluated without further data.

The high incidence of antibody in sixteen- to eighteen-year-old girls could well be a reflection of the 1964 rubella epidemic. In the absence of major outbreaks, one may expect a decrease in the rate of immunity in women of child-bearing age. Periodic surveys for the incidence of rubella antibody may be of value in detecting the early stages of epidemics and providing data useful in vaccination programs.

The early appearance of antibody in some cases of rubella infection two or three days after onset of illness, emphasizes the need for the first serum specimen to be taken as soon as possible when rubella is suspected, particularly in pregnant women in the first trimester.

The finding of rubella antibody in more than half of the children six months to two years of age who had congenital malformations or showed retardation stresses the value of these tests in the differentiation of congenital rubella infection from genetic anomalies or the effects of other infections.

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Clinical Studies in Anorexia Nervosa Syndrome*

ANOREXIA NERVOSA carries a mortality rate of 5 to 15 per cent and an associated morbidity rate of 34 to 65 per cent as far as chronic psychopathology and sexual dysfunction are concerned. It is diagnosed principally in terms of differentiation from panhypopituitarism. Pathophysiologic findings are the end result of elective restriction of food. There are many psychodynamic formulations for the condition, including neurosis. A study of 115 patients with anorexia nervosa revealed that the peak age at onset was between ten to fifteen years, and 75 per cent of the patients were single females who had been ill less than two years. It is a disturbance in separation-individuation, a psychosomatic disorder in sexual dysfunction encountered in pubescent girls, borderline male adolescents, and borderline young female adults.

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ANOREXIA NERVOSA is a therapeutic challenge to both internists and psychiatrists, as well as a fascinating psychosomatic disorder from the standpoint of nosology, diagnosis, and pathogenesis. This disorder carries a mortality rate of 5 to 15 per cent and an associated morbidity rate of 34 to 65 per cent as far as chronic psychopathology and sexual dysfunction are concerned.[1–3] According to the sociologic studies of Pflanz,[3] anorexia nervosa is an uncommon malady principally affecting girls in the second decade, at a risk of 5 to 75 per 100,000. Any epidemiologic data, however, include only easily recognized cases. Those undetected and subclinical cases of pubescent girls who reject their sexuality are probably common and in large part either spontaneously remitting or easily treated with supportive therapy by a general physician.

Anorexia nervosa is curious, and its history is a short one.[4] The first recorded case was published by Norton in 1694, followed later by Gull's description in 1868. Subsequent reports until 1914 were principally phenomenologic until Simmonds' description of pituitary deficiency which resulted in a marked clinical interest in endocrinology in the search for the cause of anorexia nervosa.[4] In 1936, however, Ryle's report on psychic trauma shifted interest back to psychogenesis.[4] In the last fifteen to twenty years, there has occurred an international revival of interest in anorexia nervosa marked by the studies of Bliss and Branch,[5] Bruch,[6–7] Thomä,[8] and Selvini.[9] And in 1965 this interest culminated in a multidisciplinary conference on anorexia nervosa held at Göttingen University.[10]

Concepts and theories

The diagnostic criteria for anorexia nervosa are controversial. Agreement is seen principally in terms of differentiation from panhypopituitarism.[11,12] Bliss and Branch's[5] criterion of loss of 25 pounds or more because of psychologic factors does not discriminate between primary and secondary psychogenic anorexia. King's[13] primary and secondary divisions of anorexia nervosa are not clinically helpful in that King's aim was to create a specific nosologic entity, "an obscure organic disease, a primary disorder of appetite regulation." The predominant tendency today in diagnosis is to view anorexia nervosa not in terms of traditional nosologic

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groups but along the lines of a syndrome with both primary and secondary signs and symptoms. Thus anorexia nervosa is phenomenologically defined by its component signs and symptoms. Voluntary restriction of food, avoidance of eating, and pursuit of thinness are observable phenomena usually associated with apparent pleasure and pride over the demonstrable control exercised by the patient. Rarely is anorexia a first symptom. Hunger may actually persist throughout the illness. It is often found that overactivity and increased energy output without fatigue are prodromal, but these signs may not be clinically recognizable because they are hidden in sports, schoolwork, and subtle ritualistic activities. Amenorrhea and decreased libido can occur as primary signs in that they may precede the onset of food refusal. Secondary features are present in varying degrees, depending in large part on the basic character structure of the patient and the latter's transactions within the family matrix.[4]

Bruch[12] has made an attempt to differentiate between two groups of anorexia nervosa patients. The hallmark of true anorexia nervosa for Bruch is food refusal and the pursuit of thinness with the singular goal of achieving autonomy and effectiveness through bizarre control of the body and its needs. She asserts that the over-all psychopathology can be either neurotic or borderline schizophrenic, the latter mainly manifested in cognitive disturbances. She believes that the borderline abnormal condition is more commonly found in these patients. She asserts that the following triadic disturbance is pathognomonic to anorexia nervosa: (1) disturbance in body image and body concept of delusional proportions, fundamentally expressed by lack of concern over emaciation; (2) disturbance in the accuracy of perception or cognitive interpretation of stimuli arising within the body (failure to interpret enteroceptive signals indicating nutritional needs, deficient awareness of hunger and appetite, nutritional disorganization with bizarre food preferences and cravings, and often alternating food refusal and bulimia, overactivity and denial of fatigue, and inability to recognize internal affects and emotional reactions); and (3) a paralyzing sense of ineffectiveness: action only in response to demands from others and compliance camouflaged and denied by negativism and stubborn defiance. She distinguishes between hysterical and schizophrenic noneaters. For both groups, food refusal is not based on the motivation of achieving autonomy and a sense of effectiveness. The hysterical anorexic patient is aware of hunger and weakness and complains about weight loss as does the schizophrenic patient, if not too withdrawn or negativistic. Both groups use food in a symbolic way, the schizophrenic patient with more ritualistic and bizarre behavior.

Thus by combining phenomenology and developmental disturbances noted in her studies of patients with anorexia nervosa, Bruch[6,7] has described a very significant group of such patients. She has for this reason suggested a specific anorexia nervosa syndrome which excludes many patients generally regarded in the literature as both typical and atypical anorexia nervosa cases.

Pathophysiologic findings

The pathophysiologic findings in anorexia nervosa are, it appears, the end result of the elective restriction of food.[14] These disturbances include emaciation, the development of lanugo hair, hypothermia, hypotension, bradycardia, amenorrhea or delayed menarche, decreased libido, dehydration, carotenemia, hypoproteinemia, anemia caused by decreased red blood cell volume, leukopenia associated with decreased number of polymorphonuclear leukocytes, relative lymphocytosis, and abnormalities in endocrine function entirely reversible on refeeding.[4,15] In severe starvation, hypokalemia and circulatory collapse can occur. The possibility of long-standing malnutrition leading to chronic brain syndrome in anorexia nervosa has been suggested by Eittinger.[16] Metabolic findings in anorexia nervosa have been well documented.[4] Delta glucose values are normal after refeeding. Glucose tolerance is restored to normal after the patient's nutrition has been made normal.[17] Insulin response is abnormally sustained, occasionally even after refeeding, according to several studies.[17] The significance of this finding, however, has not been determined. Water balance is restored after refeeding as is total estrogen output. Several studies have noted that follicle-stimulating hormone secretion is in some cases low after refeeding.[18]

Russell *et al.*[18] have noted that pituitary gonadotropins show no consistent rise to normal after refeeding. They associate this endocrine finding with the fact that frequently menstrual function is not restored in anorexia nervosa patients even after their nutrition is established. Thyroid function is entirely normal in these patients when their nutritional status is restored. Pituitary-adrenal function is normal in terms of steroid values after refeeding and metyrapone (Metopirone) (SU 4885) studies.[19]

Anorexia nervosa is often referred to as a disturbance in appetite regulation.[6] There is a great deal in the psychiatric literature on the subject of hunger. Neurophysiologic and neuropsychologic mechanisms have been postulated either singly or in combination to explain the eating disturbance.[20] Their proponents often ignore the fact that the neurophysiology and psychology of hunger and satiety are hardly delineated even though a great deal of research has been done. The glucostatic mechanism and ventromedian hypothalamic glucoreceptors are integral parts of the mechanism regulating food intake. The neurophysiology of hunger, however, appears to be the crude and basic apparatus for regulation of food intake. Much more important are the effects of affective states, eating habits, and the conflicted emotional attitudes toward food. In addition to this, adipose tissue stores may "serve as the basic 'memory' for the mechanism of correcting errors of day-by-day regulation."[20] In addition to the neurophysiologic and affective aspects of food intake regulation, the role of learning throughout development is of extreme importance. An individual must learn to recognize hunger signals as well as those of satiety, a developmental process which involves both preverbal and verbal operant conditioning as well as identificatory learning within the family.

Even though there is a correlation between glucose utilization, hungry feelings, and gastric hunger contractions, the use of miniaturized intragastric electronic and pressure equipment has demonstrated a very low correlation between gastric contractions and hunger. Furthermore, in relation to anorexia nervosa patients, both intragastric pressures and gastric peristaltic activity have been shown to be unremarkable in those patients thus far studied.[4]

It is often overlooked that the anorexia nervosa patient varies in her perception and recognition of hunger. Appetite can wax and wane during starvation. She may have no desire for food, feel nauseated at the thought of eating, be acutely uncomfortable by "hunger pangs," and assuage her distress by drinking water; also, she can experience hunger only at night. She can use any number of maneuvers to displace and redirect her desire for food: preparing dinner for the family, taking over the kitchen duties from the mother, feeding other patients during hospitalization, and perusing popular food-illustrated magazines; after months or years of starvation, hunger can practically cease. Hunger may also wane during purges, when the patient initiates vomiting and uses cathartics excessively and thereby often produces a disturbance in the electrolyte balance.

A host of psychodynamic formulations can be found in the literature for anorexia nervosa.[4] Each formulation, in a sense, is correct for certain individual patients with this disorder. Oral pregnancy fantasies, found principally in amenorrheic pubescent girls fearful of sexuality are probably not as specific to the anorexia nervosa patient as once suggested in the literature. Commonly encountered dynamic themes are: guilt over aggression to an ambivalently viewed mother, dependent seductive relationship with a passive father, fear and avoidance of pubertal and adult sexuality and responsibilities, and, often at the same time, desire for control, autonomy, and self-initiated behavior.

The classic formula for neurosis has been applied to anorexia nervosa.[21] Jessner and Abse[22] were particularly vocal when emphasizing "early oral deprivation, followed by a period of closeness and gratification" and later ambivalence and displacement of anal defiance, as key dynamics in anorexia nervosa.

In the last decade, however, dynamic formulations of anorexia nervosa have not been so widely based on drive theory and traditional psychoanalytic concepts. Thomä's[8] studies are the exception in that he focuses on eating functions and drive disturbances. Selvini[23] has avoided the eating function in anorexia nervosa. The anorexic patient is not afraid of food; rather, "the feeling that the nourished body is threatening, gnawing, and indestructible" is what frightens the anorexic patient. The body is felt to be a threatening entity which must not be destroyed but held in check. Around this concept, Selvini has elaborated a developmental theory combining much of the Klein-Fairbairn theoretic position with addition of her own empirical clinical and family studies. Central to the anorexic defense structure is splitting of the ego which gives rise to "coanaesthetic diffidence" which, she feels, is akin to Bruch's concept of conceptual and perceptual disturbances in anorexia nervosa. She also embraces a similar neuropsychologic theory involving the mother who will not allow the child to recognize her own signals and needs. Like Bruch, she believes that anorexia nervosa is a "special psychosis" midway between depression and paranoid schizophrenia.

Bruch's developmental concepts of anorexia nervosa are a synthesis of neurophysiology and development psychology. She has relied heavily on the concepts of Hebb, Piaget, and Harlow.[4] From a synthetic developmental learning theory, starting with a Piagetian sequence of presymbolic conceptualization, Bruch[6,7] has constructed a pathogenesis of falsified learning experiences (codification in the brain of incorrect learning experiences attained at various levels of maturation). Essentially, this is the same formulation she employs for developmental obesity and schizophrenia.

Unlike Selvini, Bruch[12] does not restrict the diagnosis of anorexia nervosa to female patients. The low frequency of anorexia nervosa in males is attributed to the importance of the hysterical and phobic mechanisms that equate pregnancy with fat for the young female anorexic patient. Falstein believes that the dynamics of the male anorexic patient are characteristic: Through starvation the male anorexic patient attempts to control or kill the incorporated mother and remove the fat he associates with the female form.[4] In the male anorexic patient, traumatic homosexual experiences are frequently found, especially seduction by a father. The prognosis for the male anorexic patient is generally regarded as more malignant, especially in terms of exfoliation of symptoms into frank paranoid psychosis involving grandiose delusions and stratagems for control and power.

Psychiatric and medical studies of anorexia nervosa patients, seen over the years at the Columbia-Presbyterian Medical Center, have demonstrated a wide spectrum of deviancy in the developmental histories of these patients. Patients admitted to Babies Hospital have mainly come from materially comfortable suburban or rural families; they were mostly females and either in late childhood or pubescence.[24] On the other hand, those patients admitted to the New York State Psychiatric Institute were urban, of mixed sex, pubescent to late adolescence or young adult, had a longer duration of illness, and required lengthy hospitalization. This group tended to display more psychopathologic, findings, especially the disintegrative variety, particularly those disturbances in cognition and perception delineated by Bruch.[6,7]

Background of patients

A study of 115 patients diagnosed as having anorexia nervosa, admitted to the Columbia-Presbyterian Medical Center from 1932 to 1964, revealed that the peak age at onset for these patients was between the ages of ten to fifteen.[4,25] The mean weight loss was 35.9 pounds, with the weight at hospitalization ranging between 67 and 81 pounds. Over 75 per cent of the patients were single females who had been ill for less than two years. The developmental histories of these patients suggested that they as children had been well nurtured and advantaged. They were exposed to and stimulated by athletic and cultural contacts and events. They were the pride and joy of their parents, often born to fulfill a mission of improving the family status or replacing a dead or disappointing sibling. Preschool oppositional behavior had been for the entire group minimal to nil. Their compliance in the early years was outstanding. Encouragement toward self-expression was grossly lacking in these families. Exemplary performance in school was inculcated and usually obtained but with little sense of personal achivement, gain, or pleasure. The mothers tended to be ambitious, joyless women, often proud of their own accomplishments. Although reasonably successful, the fathers felt inferior to the mothers. With the family, they were apt to be warm but retiring.

The families were preoccupied with proper behavior, decorum, attractive physical appearance, noteworthy performance, and laudable accomplishment. Thinness and an appealing physical appearance were overvalued. Family normality and allegiance to its norms were emphasized. In adolescence the child's conformity was transmuted frequently into an impotent rebellion. As preschoolers, these children reluctantly separated from their mothers. The first day of school was recalled with narratives of mother-child anguish over separation, and in adolescence vestiges of separation anxiety persisted, even after resolution of the eating disorder. Cognitive and perceptual disturbances were the outstanding findings in the older group of anorexia nervosa patients. The younger patients, who had been evaluated and treated at Babies Hospital, tended to have more effective ego functions. As children they had been given greater freedom in expressing their needs and a greater opportunity for some degree of autonomy. At the time of pubescence, however, the threat of the female sexual role was presented to these children. Their regression followed the classical formula for neurosis. Characterologic and symptomatic compromise formations were along the spectrum of hysterical-obsessive constellations.

In several clinical studies of anorexia nervosa, it has been evident that along with drive regression, there is a concomitant functional regression of the ego in anorexia nervosa.[26,27] In many respects the functional ego regression overshadows the oral mechanisms found in anorexia nervosa. The pressure of ego control and mastery during the anal-muscular stage is augmented in the regression. The ego turns against drive satisfaction. Anorexia becomes a defense against bulimia. Ego pleasure now lies in the control and mastery of the body, bodily movements, and sensations and perceptions of bodily states. The highly analyzed ego functions are most clearly seen in perceptual and cognitive functions. Magical-omnipotent thinking is prominent. In short, cognitive and perceptual control becomes the leitmotiv of these children. They develop a defective representational schema, a cognitive organization built around a diffuse personal identity, taught to them by their parents and perpetuated by their egos style of control and mastery. The ego pleasure of control outweighs that of oral drive gratification.

Thus anorexia nervosa should be viewed as principally a disturbance in separation-individuation, a psychosomatic disorder encountered in pubescent girls, borderline male adolescents, and borderline young female adults. The threat of sexuality initiates an ego and drive regression where an attempt at control and mastery must be made in an effort to attain separation from the mother. In borderline patients, ego defects in the cognitive and perceptual area are readily detectable and make the prognosis less optimistic. No distinctive psychophysiologic dysfunction of appetite regulation is apparent in these patients.

Approach

There is no specific over-all psychotherapeutic approach to anorexia nervosa, just as there is no specific anorexia nervosa entity. Reports of treatment in anorexia nervosa indicate a failure rate of 25 to 50 per cent. The treatments vary from psychoanalytic to psychosurgical, from milieu ("substitution of parents") to behavior therapy. In the United States at least, psychoanalytic psychotherapy is the treatment of choice. Modifications with specific stratagems, however, are indicated in the treatment of these patients. When an anorexia nervosa patient has become cachectic and has lost control of dieting, hospitalization is medically indicated. At the time of admission, the patient should be told that although the illness is not fundamentally caused by lack of appetite and by starvation, she will be expected to restore her nutrition. If she is not able to eat a high-calory diet, then she will be required to drink a high-protein substance, complete therapeutic nutriment (Sustagen) 250 cc. four times a day. She is told that the complete therapeutic nutriment is for her a medicine as well as a food. Otherwise, the subject of appetite and eating is generally ignored by the therapist to enhance a therapeutic alliance. The patient is also informed that a period of two to three months of hospitalization is frequently required for treatment. She is also told that discharge from the hospital is not dependent on how much weight is gained. The therapist adds that both of them will know when she should go home. It is important that the therapist have a close working relationship with the hospital staff in charge of the patient's medical care. If this is not attained, the patient is apt to manipulate any situation involving food and to employ power tactics and strategies in making staff alliances. The nursing staff is instructed that regular meals, with some margin of personal selection, should be given the patient but without cajoling, threatening, pleading, or rewarding. After admission to the hospital, an exploratory relationship period with the patient is useful as a forerunner to future insight in psychotherapy.

Because of the wide quantitative and qualitative variations in the anorexia nervosa syndrome, statements about natural history are difficult to make and even harder to evaluate. There is general agreement that the outcome may involve a short-term single illness or a persistent long-term disorder, eventually resulting in death. A high frequency of relapse and of partial recovery is the experience of many therapists with anorexia nervosa patients. Patients developing anorexia nervosa after the age of eighteen are frequently "atypical" in regard to symptoms, dynamics, and course. In a follow-up study of 35 patients seen over the years at the Columbia-Presbyterian Medical Center, 21 per cent indicated a significant shift back toward health and maintenance weight.[25] About 50 per cent of the patients had married; most of them had children. Another 50 per cent were still students at least partly dependent on their parents for support. Only one-third still reported health problems, none of which appeared to be of any clinical significance. This study also indicated that 3.4 per cent of the original sample of 115 patients had died, while 7.1 per cent of those patients in the follow-up study had also died of complications resulting from anorexia nervosa. From follow-up studies in general, one must conclude that for most facets of this syndrome, each anorexia nervosa patient must be individualized. The age of onset, the dynamic meaning of the symptoms, and the stability of ego functions are critical factors in predicting the natural history of the anorexia nervosa patient's illness.

Summary

Anorexia nervosa has a relatively high mortality and morbidity rate. Clinical studies have suggested criteria for a phenomenologic definition of anorexia nervosa. Primary and secondary signs and symptoms are suggested for the diagnosis of the syndrome. Recent metabolic studies are reviewed, and differential diagnostic aspects are examined. Research on the conceptual and perceptual disturbances in anorexia nervosa demonstrated a variety of disturbances in these patients. Dysfunctions in appetite regulation, primary defects in body image, and enteroceptive perceptual and conceptual disturbances are not uniformly found in anorexia nervosa. It is concluded that although anorexia nervosa is a syndrome with a distinctive phenomenology, there is little clinically to justify its classification as a specific nosologic entity. The anorexia nervosa patient is found in a wide range of psychopathologic complaints. In pubescent children and pubertal girls, anorexia nervosa is usually a neurotic disorder; in older females and in male patients, it is often part of a borderline psychosis. Nevertheless, there are similarities for all anorexia nervosa patients in terms of developmental and interpersonal histories. In particular, a style of ego functional regression is characteristic of patients with anorexia nervosa, but this does not explain individual differences in cognitive and perceptual functions.

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Prevention of radium losses

A special container to prevent radium losses during shipment has been developed at the Public Health Service's National Center for Radiological Health as a means of eliminating a cause of environmental contamination by radiation. This development coincides with a recent rise in radium losses during shipment, the most recent of which occurred last June and involved the loss of 18 radium needles.

J. G. Terrill, Jr., director of the Center, feels that the lost needles can be seriously harmful unless properly used, a single needle often causing radiation burns if held in contact for several hours.

The newly-designed shipping container is, first of all, reusable. It has been designed specifically for medical radium capsules and needles in the commonly used sizes. The container is, in effect, an interlocking of interior and exterior containers. These cannot be closed until one has been made fast to the other, so that there can be no internal movement or accidental opening during shipment.

The interior container is in three sizes, each made to hold a maximum of either 50, 150, or 300 mg. of radium. Each size is fabricated in two parts of threaded hexagon brass stock with bottom portions drilled to receive a limited number of radium capsules or needles of a given size. This is locked into the center of a cylindric, lead-lined shield. This is accomplished by means of a plug-shaped closure in which the interior container is held fast by a spring-loaded device. The plug may be inserted and locked into the shield by a spring-loaded bayonet-type lock, but only if the interior container has been properly positioned in the plug and is of a size suitable for a given shield.

The interlocked interior container and shield are secured in the center of the exterior container by engaging the shield in slotted channels built diagonally in the bottom and top of the container. The upper channels are so aligned that the exterior container may not be closed unless the shield closure is in a fully locked position. The exterior container, an 18-inch cube constructed of $^1/_4$-inch plywood and metal corner mouldings, is sized to meet the dose rate requirements of transportation agencies with a minimum amount of lead shielding.

Some Aspects of Basic Microbiology of Streptococcal Disease

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A REVIEW OF THE BASIC microbiology of streptococci seems a most unlikely topic for presentation in 1967. After all, Rosenbach coined the generic and species name of the medically most significant bacterium in 1884. One year earlier, Fehleisen isolated the same organism from erysipelas. In the interim, much has been written about this group of bacteria, numerous studies have been conducted, and finally after World War II there was almost unanimous agreement that the streptococcal problem had not survived the onslaught of antibiotics, especially of penicillin. This happy state lasted for about a decade, during which the few voices which sermonized about the ingenuity of microorganisms and the basic nature of infectious disease with emphasis on the host's decisive role met with derision if not ridicule. Today, clinicians and scientists alike are confronted once more with the problem of streptococcal disease. The lack of clinical acuity in recognizing its initial stages and the very rudimentary laboratory practices applied to diagnosing streptococci are fortunately offset by the continued susceptibility of the major pathogenic member of the group to penicillin and a host of, but by no means all, other antimicrobial agents. It is even more fortunate that a group of workers have continued to study streptococci as incitors of human disease and thus have provided a better appreciation of the streptococcal and host factors involved in the process. Within the limited time available, this report will attempt to summarize pertinent old and new information.

Isolation and identification

The isolation and identification of streptococci ought not to present a problem to even the inexperienced worker in clinical microbiology. So widespread and fervent is this belief that a goodly number of clinicians, armed with commercially prepared blood agar and makeshift incubators, attempt isolation and identification of these organisms in their offices. The fact that no single, easy to perform test, like the coagulase determination for staphylococci, is available for the instant recognition of important streptococci is ignored just as much as the statement by leading authorities in medical microbiology, that the identification of streptococcal species challenges the ingenuity of the microbial taxonomist.[1] There are, of course, a series of characteristic features and physiologic as well as biochemical activities which combine to permit rapid presumptive recognition of the various streptococcal species. The first cardinal sign of any bacterium is its colonial morphology on a series of agar media. The streptococci are no exception, and with experience as well as allowance for the vagaries of microbial variation, one can recognize streptococcal colonies on sheep blood agar and even obtain a lead as to their possible identity from mitis-salivarius agar (Fig. 1).[2] Viewing colonial morphology with a stereoscopic microscope or a good hand lens is a mandatory practice of the serious student. The degree and kind of hemolysis is noted at this juncture. It would be very pleasant if this statement would suffice. But, as noted before, the hemolytic activity of streptococci has been and still is the most misapplied feature of streptococcal classification.[3] It must be stated categorically

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that not all hemolytic streptococci belong to Lancefield group A, that the overt manifestation of hemolysis of even certain group A streptococci requires special manipulation, that there are a number of clinically significant streptococci which are not so hemolytic under conditions favoring the enzymes of Streptococcus pyogenes, that atmosphere and the mammalian species origin of the blood contribute significantly to the expression of streptococcal hemolyzing capacity, that quantitative and qualitative differences of hemolytic enzyme production exist within the microbial species, and that the diagnostic significance of beta hemolysis must be viewed against a background of several other streptococcal attributes.

Caution must also be used in interpreting streptococcal reaction to the medicated disk (Taxos A). The group A bacteria, Str. pyogenes, are indeed very susceptible to the very low bacitracin content of the medicated disk. But, as with all laboratory tests, certain definite requirements must be met to extract the desired assistance. It is foolhardy to read the results of the disk in a mixed population especially when the hemolytic streptococci constitute a definite minority. Interpretation of results on sparsely populated agar is not possible because it is difficult to discern a true zone of inhibition with certainty. It is preferable to isolate several suspicious colonies and restreak them with medicated disks placed into the area of concentrated application. One must remember that indeed all streptococci belonging to group A display medicated disk susceptibility but that, conversely, not all medicated disk-susceptible streptococci belong to this group.

A series of biochemical tests are very helpful in confirming rather rapidly group identity of the suspected streptococci. Of course, it would be a great help if suspicious colonies were checked for cellular morphology with a gram stain, a much neglected simple practical aid, although too much reliance should not be placed on chain length or individual morphology from agarized substrates. Medicated disk susceptible streptococci might be examined for their ability to ferment the carbohydrates mannitol, raffinose, trehalose, and sorbitol and their reaction toward sodium hippurate, tolerance of 10 and 40 per cent

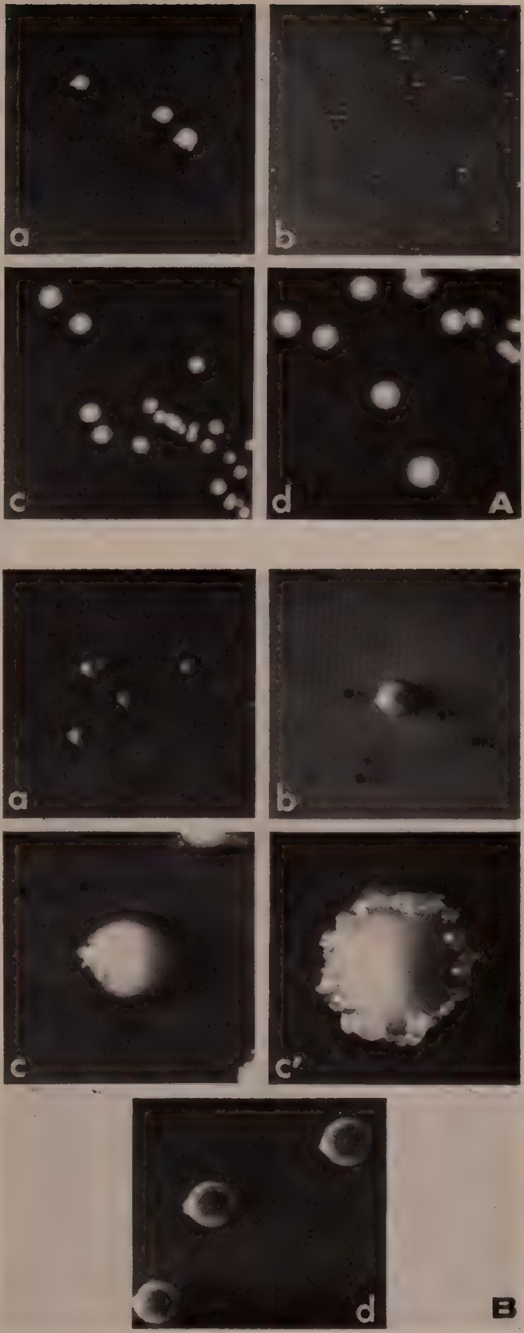

FIGURE 1. Stereoscopic microscope views of streptococcal colonies. (A) Growing on blood agar at 37 C. for eighteen hours. a = Str. pyogenes. b = Str. viridans (Str. mitis). c = Str. viridans (Str. salivarius). d = Enterococcus (Lancefield group D). (B) Growing on mitis-salivarius agar at 37 C. for eighteen hours. a = Str. pyogenes. b = Str. viridans (Str. mitis). c = Str. viridans (Str. salivarius, smooth). c' = Str. viridans (Str. salivarius, rough). d = Enterococcus (Lancefield group D).[2]

TABLE I. Some diagnostic guides for the identification of streptococci*

Group	Mannitol	Raffinose	Trehalose	Sorbitol	Sodium Hippurate	Bile (Per Cent) 10	Bile (Per Cent) 40	Reduction of Methylene Blue Milk
A	−	−	+	−	−	±	−	−
B	−	−	+	−	+	+	+	−
C	−	±	±	±	−	+	−	−
D	+	±	±	±	−	+	+	+
E	+	−	+	+	±	+	±	+
F	−	−	±	−	−	−	−	−
G	−	±	+	−	−	+	±	−
L	−	±	+	±	−	+	+	+
M	−	−	−	−	−	×	×	×
N	±	±	×	−	−	+	+	+
O	−	±	±	−	−	±	−	×

* + = positive; − = negative; ± = some strains positive; and × = inadequate information.

bile, and reduction of methylene blue milk as shown in Table I. It is obvious that these tests, even when coupled with temperature, pH, and salt tolerance as shown in Figure 2, cannot be applied in absolute terms. The most important test for the recognition of the streptococci remains the immunologic identification of the group-specific polysaccharide. It is a comparatively rarely applied procedure, practiced in few routine laboratories, with the undeserved reputation of great complexity. The demonstration of such an antigen in a streptococcus warrants its inclusion in the group even if the hemolytic prowess of the organism is of questionable quality or totally lacking. There are some streptococci with all of the attributes of the nonhemolytic groups which nevertheless have extractable polysaccharides which react with the antisera produced against the group-specific carbohydrates of the hemolytic varieties. Their place in streptococcal taxonomy is as yet uncertain. While these streptococci are unlikely to become suspect in most instances of hemolytic streptococcal disease, they help to underline the inherent difficulties of microbial classification and the several criteria which must be fulfilled before an organism can be designated as a member of a species with any acceptable degree of certainty.

Classification

A very crucial question should be raised at this juncture. A beta hemolytic, medicated disk-susceptible, group A polysaccharide containing streptococcus obviously represents Str. pyogenes. This is the bacterium of undisputed interest to the clinician and could be of great consequence to the patient in view of the associated nonsuppurative sequelae. Why should the laboratory bother to identify any streptococci which do not meet these criteria; why not ignore them as inconsequential and devote greater effort to delineating group A types and selecting those strains which, when grown on maltose and an unidentified component of animal plasma, accumulate a starch (amylose or amylopectin in nature), a characteristic ascribed to the bacteria associated with nephritis and rheumatic fever.[4] The recent literature and the experience of clinical microbiologists reject such a simple solution. Streptococci other than Str. pyogenes are recovered from extrarespiratory infections and constitute about one fifth of the streptococci isolated from throat cultures of normal individuals or those with very mild symptoms. Still, the enterococci, the bacteria belonging to group D, are encountered with appreciable frequency in infections of the urinary tract, complicating surgery, in nosocomially acquired infections in general, and in bacterial endocarditis. Feingold, Stagg, and Kunz[5] report the isolation of streptococci belonging to several groups other than A and D and of established clinical significance from blood cultures, urine cultures, wound cultures, impetiginous lesions, and infected dermatitides. Of especial interest in this report was the frequency of urinary tract infections caused by Streptococcus agalactiae, the group B organism. These occurred primarily in women, an observation directly related to the findings of Hood, Janney, and Dameron[6] of the problems

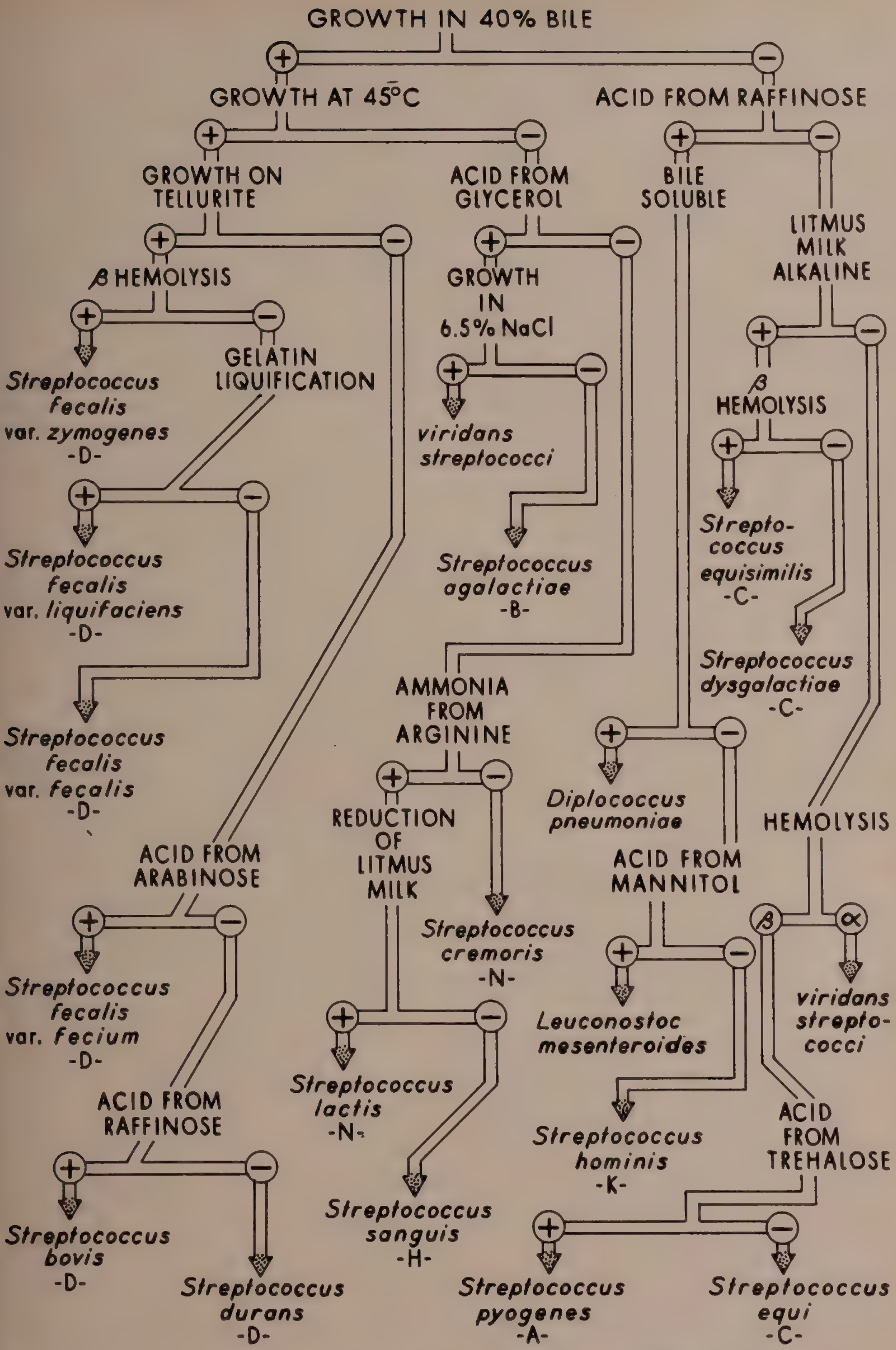
GROWTH IN 40% BILE
+
−
GROWTH AT 45°C
ACID FROM RAFFINOSE
+
−
+
−
GROWTH ON TELLURITE
ACID FROM GLYCEROL
BILE SOLUBLE
LITMUS MILK ALKALINE
+
−
+
−
β HEMOLYSIS
GROWTH IN 6.5% NaCl
+
−
Streptococcus fecalis var. zymogenes -D-
GELATIN LIQUIFICATION
+
−
viridans streptococci
+
−
β HEMOLYSIS
+
−
Streptococcus fecalis var. liquifaciens -D-
Streptococcus agalactiae -B-
Strepto-coccus equisimilis -C-
Streptococcus dysgalactiae -C-
Streptococcus fecalis var. fecalis -D-
AMMONIA FROM ARGININE
+
−
+
−
Diplococcus pneumoniae
HEMOLYSIS
REDUCTION OF LITMUS MILK
ACID FROM ARABINOSE
ACID FROM MANNITOL
+
−
Streptococcus cremoris -N-
β
α
+
−
+
−
Streptococcus fecalis var. fecium -D-
Leuconostoc mesenteroides
viridans strepto-cocci
Streptococcus lactis -N-
ACID FROM RAFFINOSE
Streptococcus hominis -K-
ACID FROM TREHALOSE
+
−
Streptococcus sanguis -H-
+
−
Streptococcus bovis -D-
Streptococcus durans -D-
Streptococcus pyogenes -A-
Streptococcus equi -C-

FIGURE 2. Introductory approximation of streptococcal species based on selected biochemical reactions.[2]

caused by this agent in the neonatal period. Eickhoff *et al.*[7] not only confirmed Hood, Janney, and Dameron's results but also concluded that the group B streptococcus was the most frequent single cause of neonatal sepsis at the Boston City Hospital, accounting for 25 per cent of such infections. This group also reported this particular streptococcus as a significant agent of infection in gangrenous complications of diabetes, of acute pyelonephritis, fever of undetermined origin, and suppurative arthritis. It must be stressed once more that the large majority of patients involved even outside the neonatal period were female. Lancefield group C and G streptococci are difficult to differentiate from group A bacteria by any means other than grouping antisera. These bacteria, some of which are of veterinary significance, are very frequently susceptible to low-content bacitracin disks and display hemolysis and colonial morphology very similar to group A. These microorganisms do not display the virulence of group A streptococci and have been isolated occasionally from normal human throats. There is no doubt, however, that they may cause tonsillitis, endocarditis, and urinary infections in man with a variety of dieases in animals ranging from strangles and other diseases in horses (group C) to otitis media in dogs and pneumonia in monkeys (group G). Group E streptococci have rarely been isolated from human sources and are apparently not involved in human disease, while group F has been found almost exclusively in the human throat, although evidence of involvement in tonsillitis or other respiratory disease is very infrequent. The remaining beta hemolytic streptococci may possess polysaccharide group antigens, and an appreciable number may be categorized, but they are not involved in human disease with any frequency. While members of group H and K may produce bacterial endocarditis, the remainder restrict pathogenic activity to lower animals or are without known pathogenicity.

Thus, it is obvious that Str. pyogenes is by no means the sole purveyor of infectious disease among the beta hemolytic streptococci. But it cannot be denied that the group A streptococcus is endowed with pathogenic attributes which far outdistance those of its relations. This undeniable pathogenicity of group A streptococci has been the subject of many very intensive investigations. A totally adequate explanation of its virulence and pathogenic properties, especially those leading to nonsuppurative complications, is not available. However, these studies have provided a fascinating insight into the means at the disposal of an organism with the pathogenic propensities of Str. pyogenes and stimulated much work, especially in the field of host-parasite relations not only within the confines of streptococcal disease but also infectious disease in general.

In view of the ease with which certain infectious diseases caused by gram-positive bacteria can be explained on the basis of their production of protein exotoxins, this attribute of the group A streptococci has been subjected to exhaustive scrutiny. The considerable number of toxins of streptococcal origin are listed in Table II. All of them possess enzymatic activity and reflect, teleologically speaking, an attempt on the part of the organism to cope with the various host defense systems. The erythrogenic toxin resembles diphtheria toxin in that it is produced only by lysogenized strains.[8] There is some evidence that hyaluronidase production may similarly constitute the action of an attenuated viral particle which has become associated with the streptococcal genetic apparatus. The scarlatinal rash is thus the result of a toxin transported to the target organ by blood and elaborated by streptococci in the throat. The presence of this toxin in blood has been demonstrated.[1] Unfortunately, there is a paucity of information concerning the action of this toxic agent. Still, similar toxins are found in extracts of streptococcal lesions which cause fever, focal necrosis in the heart and liver, and sometimes a rash in persons sensitized by previous infection. They are neutralized by commercial scarlet fever antitoxin.[1] The finding that there are at least 3 immunologically distinct erythrogenic toxins is helpful in the explanation of second attacks of the disease. Group C and G streptococci as well as Staphylococcus aureus produce toxins with symptoms closely related to those of group A scarlet fever.

Of the two hemolysins produced by the streptococci, the S lysin has been regarded

TABLE II. Toxins of Str. pyogenes*[13]

Type	Inhibited by Specific Antibody	Distribution	Comment
Erythrogenic toxin	+	Produced by most strains	At least 3 immunologically distinct toxins
Streptolysin S	−	Produced by most strains	In vitro production enhanced by serum or polyribonucleotides
Streptolysin O	+	Produced by most strains	Active in reduced state only
Diphosphopyridine nucleotidase (nicotinic adenine dinucleotidase)	+	Produced more commonly by certain types	. . .
Streptokinase	+	Produced by most strains	. . .
Deoxyribonuclease A, B, C	+	One or more produced by most strains	Three distinct enzymes which attack the same substrate
Ribonuclease	Unknown	Produced by most strains	. . .
Hyaluronidase	+	Produced by most strains of types 4 and 22; only traces by most other strains	Production enhanced by presence of substrate
Proteinase precursor and proteinase	+	Produced by most strains	Precursor formed only at pH 5.5 to 6.5. Spontaneous activation under reducing conditions
Amylase	Unknown	Variable but produced by many strains	Production enhanced by presence of substrate

* + = positive; − = negative.

as the less important. While it accounts for hemolysis by surface colonies, it does so more slowly than streptolysin O. Streptolysin S is group specific and induces antibody formation only when associated with the streptococcal cell; it is a lipoprotein haptene. Its temperature inactivation at 37 C. for two to four hours cannot be reversed by reducing agents, a characteristic of the O variety. Unlike O, it is very sensitive to heat and acid and resists the action of proteolytic enzyme. It is enhanced by serum and ribonucleic acid fractions. However, the pathologic and pharmacologic effects of streptolysin S other than the lysis of erythrocytes are largely unknown.

The oxygen-labile streptolysin O accounts for hemolysis of deep streptococcal colonies or red cell lysis under anaerobic conditions. This reversible inactivation by air is shared with the hemolysins produced by pneumococci and Clostridium tetani. Streptolysin O is not only elaborated by Str. pyogenes but by group C and G streptococci as well. This streptolysin is protein and antigenic in nature, eliciting an antibody response during convalescence of patients with recent streptococcal infections. It is inhibited by cholesterol. Although not yet available in pure form, studies with this hemolysin have been possible since any symptom produced in the host which may be inhibited by oxygen, cholesterol, or specific antibody may certainly be ascribed to the action of streptolysin O. There is evidence that the leukocidal activity of group A streptococci is associated with this hemolysin. In addition, the action of this enzyme on isolated hearts of rat, rabbit, and guinea pig results in an irreversible loss of myocardial contractility. This cardiotoxic effect is elicited by very small amounts of streptolysin O.[9]

The streptococcal enzyme which inhibits the activity of leukocyte coenzyme I is type specific, that is, not produced by all types of the group A streptococci but synthesized by certain members of group C and G, is antigenic, and antibodies against it can be demonstrated in the serum of convalescent patients. This leukotoxicity is distinct from the leukocidic action of streptolysin O.

Streptokinase activates the normal protease systems in human plasma. Its exact site of action in the complex plasminogen system is not as yet clarified. It is active in extremely small amounts.[10] Streptokinase is an antigenic protein, and its activity is destroyed by trypsin. Antibodies are produced against this enzyme in an appreciable percentage of patients with streptococcal disease. The ability to elaborate streptokinase is universal among the strains of Str. pyogenes, but quantitative differences in synthesis may exist. Group C streptococci are endowed similarly. There is as yet no evidence for the role streptokinase may play in streptococcal disease other than the obvious conclusion by McCarty[11] that this enzyme prevents the formation of an effective fibrin barrier and thus interferes with the localization of the disease process.

Three immunologically distinct desoxyribonucleases (streptodornase) are produced by group A streptococci in culture, although the elaboration of enzymes with this substrate specificity is not restricted to this group. In the patient with streptococcal disease, the incidence of antibody production against these enzymes is low. No pathologic role has been assigned to these enzymes, nor has it been clarified whether they attack the macromolecule at the same or different sites. The enzymes do not act on the nuclear material of living cells and may serve to provide nutritional supplement for the bacteria by attacking the nucleic acids liberated from necrotic host cells.

Ribonuclease has been observed in culture by McCarty.[12] No other information is available at present. Appreciable hyaluronidase production in cultures is restricted to types 4 and 22. Yet in patients with streptococcal disease, specific antibodies against this enzyme are present frequently. Thus, the enigmatic finding of a streptococcal enzyme which is capable of destroying the streptococcal capsule, composed of hyaluronic acid, is further complicated by the divergence between the laboratory and clinical observations. No adequate explanation has been found, although one is tempted to compare the production of enzyme and capsule with the relationship between M protein and proteinases. It is interesting to speculate also that hyaluronidase may fall into the category of enzymes induced by lysogenization and that the laboratory conditions inhibit the expression of the chromosomal alteration. The role of this enzyme, produced also by groups B, C, and G bacteria, in the pathology of streptococcal disease, may be associated with its spreading factor activity.

The streptococcal proteinase and its precursor, formed exclusively by Group A streptococci, is another enigmatic extracellular product. The precursor is produced only at pH 5.5 to 6.5, conditions not optimal for the growth of the bacteria. The precursor is converted to the active enzyme autocatalytically or by trypsin and requires reducing agents for activation. The most interesting aspect of the streptococcal proteinase is its destruction of M protein and probably streptokinase as well as hyaluronidase. The relationship between M protein production, virulence, and the proteinase is indeed contradictory. There exists an inverse relationship between M protein production and increased virulence accomplished by mouse passage. It has also been demonstrated that the M antigen is decreased in streptococci from convalescent individuals, suggesting that the proteinase may play a role in permitting the streptococcus to express its full pathogenic potential. However, proteinase production appears to be of the same order of magnitude in bacteria isolated during the acute and convalescent stages, and the enzyme may be of no consequence to M antigen and streptococcal virulence.[1] Antibody production by patients against the proteinases is minimal. The effect of the enzyme on host tissues related to streptococcal disease is unknown; work is complicated by the requirements of low pH and reducing atmosphere, conditions met with only under circumstances such as abscess formation.[11]

Amylase is produced by many group A streptococci. The enzyme acts like an alpha amylase attacking glycogen and amylopectin in addition to starch. Strains which produce amylase are capable, under different environmental conditions, of synthesizing the amylose or amylopectin, described earlier as a property of organisms involved in the production of kidney and heart lesions.

While all of the exotoxins elaborated by the streptococci result in some host injury primarily by curtailing his defense mechanisms, it is eminently clear that these materials do not explain very adequately the manifested symptoms of streptococcal disease. One must consequently look at the bacterium itself for additional clues.

The earliest streptococcal structure encountered is the sometime capsule, more or less evident in most of the strains at various times in their life cycle. Composed of hyaluronic acid, this outermost layer seems to have some importance in the virulence-associated functions of these bacteria. It is interesting that the presence of the streptococcal capsule prevents infection of streptococcus by virulent bacteriophages, but it is penetrated by attenuated or lysogenic viruses with ease. It represents, thus, a barrier against phages which destroy the organism and selects for those particles which might provide some advantage to the virulent bacterium.

The streptococcal cell wall has received considerable attention for some time, especially when one remembers that it is this structure which contains the various antigenic determinants of group and type specificity. McCarty[13] regards the streptococcal cell wall as a three-layered structure, each layer probably occurring as a distinct band, although some intercalation may exist. The outermost constituent layer of the cell wall is protein in nature. It is here that the type-specific M protein is found in the group A streptococci as well as the T and R protein and, most likely, additional ones not as yet delineated. The proteins react with specific antisera by prompt agglutination. It is still not established whether these proteins form a continuous layer or are distributed in a mosaic of clusters on the cell wall surface to which they are attached through covalent bonds.

M antigens, the type-specific proteins of group A streptococci, are important factors in virulence. They inhibit phagocytosis and bestow protective immunity against the particular type of streptococcus. There are over 40 distinct types of these M proteins among the group A streptococci. M proteins as well as other outer layer proteins may be removed without impairing cell viability. However, the removal or impairment of the expression of M protein results in lack of virulence of the streptococcus. M protein is extracted by heating at pH 2 to 3. The protein is further distinguished from other outer layer proteins, which are unstable to heat at acid pH, by its solubility in alcohol and its rapid digestion by proteolytic enzymes, which spare T antigen while pepsin, but not trypsin, decompose R antigen. M protein is frequently lost on repeated culture passage but may be stimulated by injection into mice. T protein is a constant component in the cell walls of a given strain, present in both matt and glossy variants of this strain as distinct from the M antigen which is represented only in the matt colony variant. R protein, on the other hand, is present in only a few types of group A streptococci and occurs also among group B, C, and G strains.

While the M antigen is distinct for each type, except for types 10 and 12 which produce a serologically identical M protein but different T antigens, the T antigens are only occasionally restricted to a single type. Only one R antigen is known. M antigen while on the cell is moderately effective in inducing antibodies. In solution it is a weak antigen in the rabbit. T and R proteins are good antigens, whether cell fixed or in solution. Most important, however, is the fact that antibodies against M proteins confer type-specific protection, and the presence of M antigen is essential in the virulence of the organism. These two attributes are not shared by T and R antigens. Still, the functions of M antigen are only partially known.[14] It is not primarily toxic for experimental animals. Immunizing injections in human subjects are usually innocuous. A decrease in the M antigen content of streptococci isolated during convalescence of an untreated streptococcal infection seems to occur as compared to the production of the protein in cultures obtained from the same patient during the acute phase; however, individual variation of M protein content in cultures and during mouse passage is fairly common. M protein displays considerable host specificity in its expression of virulence. Streptococci isolated from acute human diseases do not display the same virulence toward the mouse. Human virulent strains, made mouse-virulent by passage, retain their virulence toward man as evidenced by the occasional disease with such strains in laboratory personnel. One must, at this juncture, also inject a note of clinical consequence. It is the M protein which confers type-specific immunity. The failure of a drug in the treatment of group A disease cannot be established unless typing of the original strain and the one isolated during or shortly after treatment is known. Other protein antigens besides M, T, and R are suspected in the outermost layer of the streptococci. Their significance as structural or virulent components is minor.

The cell wall component underneath the protein outer coat is a polysaccharide which is the group-specific antigen. It constitutes 35 to 50 per cent of the streptococcal cell wall dry weight and corresponds to 7 to 10 per cent of the total weight of the cell.[13] The group A specific carbohydrate is composed of rhamnose and N-acetyl glucosamine in 2:1 ratio. Interestingly, in the group C specific carbohydrate, N-acetyl galactosamine is substituted for the glucose derivative. Removal of the amino sugar by enzymes from soil bacteria results in loss of specificity. The importance of the group antigens, which by themselves are quite probably haptenes, is based on their role in classification of streptococci.[15] The possession of the group polysaccharide is a more constant characteristic than is hemolysin production, an observation which must be viewed on the basis of the criteria applied to streptococcal cultures in the clinical laboratories. It is of especial interest in these rare cases when a streptococcus may not produce adequate amounts of hemolysin S to alert the laboratory to the possibility of significant streptococci. There are now several methods available to liberate the polysaccharide. The classical acid method of Lancefield has been supplemented, although by no means superseded, by the formamide method and the application of the Streptomyces albus enzyme.[1] The polysaccharide is located far enough away from the cell surface to play no role in agglutination of streptococci even with the especially prepared antisera used in the usual precipitin reaction. Fluorescent antibody technics are now available; their use in inexperienced hands can be misleading. The group-specific polysaccharides are nontoxic. The third cell-wall component and the one which adjoins the cytoplasmic membrane is described as a mucopeptide structure so closely linked with the group-specific polysaccharide that the two components have frequently been considered as one. The studies of Krause and McCarty[16] indicate that the streptococci share with other bacteria a structural component which imparts rigidity to their cell wall. These investigators using lysozyme, S. albus enzyme, and bacteriophage-associated lysin, demonstrated that cell-wall rigidity among group A streptococci depends on N-acetyl glucosamine, N-acetylmuramic acid (3-O-lactyl-N-acetyl glucosamine), and alanine, glycine, lysine, and glutamic acid, the amino acids being linked via a peptide bond with the carboxyl group of the muramic acid. Recently, teichoic acids (ribitol or glycerol polyphosphates) have also been demonstrated associated with the cell walls of streptococci.[13] These structures may represent a layer between the interstices of the mucopeptide which is thought to be common to all streptococci or perhaps serve to join the mucopeptide skeleton to the cytoplasmic membrane. The cell wall of the streptococci is the organ which insures their survival as parasites.[13] It should not be regarded as a dense armor surrounding the cell; the bacteria release, by as yet unknown mechanisms, a number of macromolecules which are ample evidence that this complex structure can be penetrated.

New technics

Until very recently, no further role for the cell wall in streptococcal disease could be postulated, and the most serious aspects of streptococcal disease remained unexplained. The concept of host hypersensitivity to streptococcal antigens was studied extensively as indicated. The search for antigens or antigen-antibody complexes in human tissues also failed to explain the cause of the nonsuppurative sequelae of streptococcal disease, but it provided an important tool in the form of fluorescent antibody technic.[17] Immunofluorescence enabled several investigators, especially Kaplan and his group[18-21] with heart tissue and Markowitz and Lange[22] with kidneys to detect cross-reacting antigens between the mammalian tissue and streptococci. Using a variety of extractions of bacteria and tissue, they were able to demonstrate that antigenic components of the streptococci blocked antisera against the mammalian structures and vice versa. They could further demonstrate that such antisera, tagged with fluorescent dyes, cross-reacted with each other's substrate. Chemical studies led to the conclusion that a cell wall glycoprotein moiety of streptococci distinct from M protein was the responsible moiety. In the interim, much work had been performed on the production of streptococcal protoplasts, forms of bacteria often induced in the laboratory by antibiotics which inhibit cell wall synthesis and maintained as L-forms or protoplasts in media of increased osmotic pressure. Streptococcal protoplasts, formed by the action of Group C phage-associated lysin, provided the first opportunity to study the role of the cytoplasmic membrane of these organisms. Zabriskie and Freimer, in 1966,[23] succeeded in providing convincing evidence that it is the cytoplasmic membrane of all of the group A streptococci they investigated which contained the heart-related antigen. Other bacteria such as Streptococcus viridans, Staph. aureus, and most other groups of hemolytic streptococci were unable to absorb the heart-reactive antibody produced against group A membranes. Partial absorption by group C and G streptococci was noted. Further treatment of the streptococcal membrane with various enzymes and hot hydrochloric acid at pH 2 resulted in the separation of heart-reacting antigen in the pepsin digest or hydrochloric acid extract. This material was mostly protein as demonstrated by its digestion with trypsin and the lack of effect manifested by treatment with fat solvents prior to extraction. Antibody against the heart-reacting antigen of group A streptococci was absorbed by sarcolemmal sheath preparations of heart tissue. Hydrochloric acid extracts of the sarcolemma blocked this reaction. Treatment of the sheath by collagenase or defatting did not alter the reactivity of the preparation. Zabriskie and Freimer[23] suggest that there may be an antigenic relationship between the streptococcal cell membrane and the sarcolemma, the membrane of the mammalian muscle cell. The findings of Kaplan and his group[18–21] and of Markowitz and Lange[22] may represent contamination of the cell wall preparation with plasma membrane fragments. At any rate, it would appear that the missing link in the apparent relation between group A streptococci and rheumatic fever as well as glomerulonephritis has been found at long last. The pioneer work of all involved in pressing toward a solution of this problem will probably have repercussions in many other areas of medicine. Once such antigenic relationships have been proved conclusively for the group A streptococci, other systems of hypersensitivity states will be scrutinized for a common antigenic denominator. This work may even shed some light on the host-parasite relationship of chronic infectious disease, for implied in these interrelations is the suggestion that microbial pathogenic organisms may indeed follow a life cycle not evident in their laboratory behavior. One is tempted to speculate that intracellular survival of microorganisms as protoplast or L-form might protect such organisms against host defenses, specific or general, as well as against a large number of antimicrobial agents, unable to penetrate host cells, unable to act unless an actively multiplying organism is their subject, and unable to exert their effect because the intracellular persister does not require a cell wall. Finally, the explanation of this phenomenon will open new avenues of approach to the treatment of the dreaded sequelae and justify the great efforts of many investigators who labored in vain to gain this understanding.

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Delayed wound infection

Over a two-year period, 4 patients were treated at an air force base hospital with wound infections occurring more than six months after operation. In 1 of these, the infection became apparent in the surgical scar almost ten years after the original operation. Writing in a recent issue of *Missouri Medicine*, R. C. Haff, M.C., and R. P. Griffin, M.C., speculate on the underlying causes. In 1 of the patients, the infection developed subsequent to the prophylactic use of antibiotics at the time of operation. An abscess developed under the scar of a second patient who had been treated in part with antibiotics. Both of these delayed abscesses yielded coliform organisms. The possibility that the prophylactic use of antibiotics may have only retarded, not eliminated, the growth of resistant organisms was suggested. Infection with indolent organisms at the time of operation is suggested as a possibility and seeding from a distant site of trauma or infection as another, although neither could be traced in the other 2 patients. As for treatment, incision and drainage without antibiotics is recommended. Since antibiotics may possibly have contributed to the delayed infection, the addition of them to the procedure appears contraindicated.

The patients were 3 women and 1 man. The man had had a subtotal gastrectomy in 1955 with a wound infection treated by drainage and antibiotics. This patient experienced a delayed infection three years later; then, in 1965, he was admitted to the hospital with an abscess in the abdominal scar. The other patient, who had been given penicillin, was a girl of eighteen months who had had no immediate wound infection after closure of a colostomy. An abscess developed in the scar eighteen months later. The other 2 patients were female, one seventeen and the other thirty-eight, both with appendectomies and neither treated with antibiotics. These patients developed wound infections fourteen months and three years after operation, respectively.

Cultures from the seventeen-year-old girl failed to show bacteria. The others showed Pseudomonas aeruginosa, Klebsiella, and a gram-negative anaerobic organism not further identified. In 2 cases it was specifically noted that healing of the delayed infection after incision and drainage was uneventful, and there is no comment to the contrary in the other 2 cases.

A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Current Concepts of Burn Injury

Part II

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PART I of this article appeared in the May 15, 1968, issue of the NEW YORK STATE JOURNAL OF MEDICINE. It considered vital statistics; pathologic anatomy, including organs and systems; electrical and chemical burn injuries; pathophysiologic factors; mortality rates in burns; and initial evaluation.

Immediate treatment

Having completed initial evaluation of the burn patient, attention is directed to instituting prompt therapy. The following outlines a general checklist for such care:

A. Airway
    1. Oxygen
    2. Endotracheal tube
    3. Tracheostomy
    4. Assisted ventilation
B. Intravenous route(s)
    1. Cut-down; central venous catheter
    2. Electrolyte solution
    3. Colloid solution
    4. Diuretic(s)
C. Analgesia and/or sedation
    1. Minimal amount
    2. Intravenous route
D. Urinary bladder catheter
E. Flow sheet
    1. Strict hourly intake and output
    2. Vital signs
    3. Mental status
    4. Weight
F. Laboratory analyses
    1. Blood: hematocrit; urea nitrogen; electrolytes; type and cross match
    2. Urine: analysis including specific gravity and hemoglobin determination
    3. X-ray films: chest, and others as dictated by associated injuries
    4. Electrocardiogram
G. Gastrointestinal decompression
    1. Nothing by mouth
    2. Nasogastric tube if dilatation or vomiting
H. Tetanus prophylaxis
I. Antibiotics
J. Vitamins
K. Burn wound care
    1. Cleanse
    2. Debride
    3. Expose
    4. Dress
    5. Splint
    6. Topical

AIRWAY. Primary in the immediate management of the burn patient is the provision of a secure airway. Rapidly progressive respiratory tract edema is capable of producing fatal airway obstruction and at least promoting inability to handle tracheobronchial secretions with attendant atelectasis and fulminating pneumonia. Beecher[118] and Aub, Pittman, and Brues[119] related experiences derived from the Coconut Grove fire in Boston in 1942 and indicted respiratory tract injury as critical to the progress of the burn syndrome. Rapid clearing of the airway, endotracheal intubation with suction, tracheostomy, humidified oxygen, and frequent "chest rounds" were considered essential to recovery. Mallory and Brickley[33] in evaluating the pulmonary pathologic findings among nonsurvivors of this fire detailed the common atelectatic and emphysematous changes and described a range of damage from diffuse membranous bronchitis to intense hemorrhagic tracheobronchitis with pulmonary edema. Schatzki[120] stated that among the 35 survivors of this tragedy, 22 showed abnormal results on chest roentgenograms at least once during their hospital stay, atelectasis and emphysema being the common abnormalities.

Connell[32] considered lower-tract pulmonary burns invariably fatal, but in reviewing 50 cases with more limited damage of the upper air passages, he recommended prompt tracheostomy and diligent tracheal toilet including frequent suction, moisture, and combination aerosols containing enzymes, antibiotics, and saline used in doses of 6 to 10 cc. every two hours. Haynes[1] and Abramson[7] in discussing pediatric airway problems advised caution against placing the tracheostome too low in the neck and using too long a tube with the possibility of producing permanent damage to the carina or partial bronchial obstruction.

Stone *et al.*[35] listed the following measures to be of value in pulmonary burns: (1) tracheostomy with respirator support providing positive pressure ventilation; (2) 100 per cent humidified oxygen; a detergent aerosol (such as Alevaire); and (3) antibiotics based on bacteriologic definition of pathogenic bacteria in instances of pneumonia. This study concluded that steroids were contraindicated in respiratory tract burns, except as a one-shot measure in relieving otherwise intractable bronchospasm, because of the dangers of steroid-increased pulmonary edema and steroid-decreased resistance to infection.

FLUID THERAPY. *Basic concepts of intravenous therapy.* Burn shock has been reviewed in the section on pathophysiology of the burn syndrome. The need for electrolyte-containing fluid support has been clearly established. Sneve in 1905[121] reported his experiences with severely burned patients in St. Paul, Minnesota. His writing was particularly concise, and his conclusions which will be periodically alluded to in other sections of this article are of as remarkable moment now as they were more than sixty years ago. Sneve recommended cold saline by mouth or enema to increase the deficient circulating medium, minimal analgesia, the avoidance of strong antiseptics, and cleansing and exposure of the burn wounds on clean sheets in a warm room. Much scientific study has passed with still no remarkable change in this general concept of burn care, particularly regarding saline fluid support. Fox in 1944[122] recommended the use of chilled oral sodium lactate, one-sixth molar, offered every fifteen minutes in small amounts until a quantity equal to 10 to 15 per cent of the body weight had been imbibed in the first twenty-four hours post burn. Vomiting caused the need for increased amounts of fluid with intravenous supplementation or by slow drip via a nasogastric tube. Fox considered sodium to be the critical therapeutic ingredient in his solution. Moore,[123] Levenson,[3] and Moyer and his associates[55,56] also have considered sodium to be the key to burn shock resuscitation. Levenson[3] further states that he institutes shock therapy in all cases of adult burns of greater than 15 per cent body surface area and in all burns in children of greater than 8 per cent area. Most authors would support this concept.[1,50,124,125]

Cope and Moore[51] reported that the National Research Council in 1942 related the fluid needs of a patient with burns to the per cent of body surface area burned. Harkins is credited by these authors with having called for 1,000 cc. each of plasma and salt solution for each 10 per cent of body surface burned. In 1947, Cope and Moore[51] analyzed plasma volume, using the Evans blue dye dilution technic, and burn blister fluid in 19 burned patients. They concluded: (1) each 1 per cent of body surface area burned demanded 75 cc. of plasma and 75 cc. of isotonic electrolyte fluid during the first twenty-four hours following injury, one half of which is required during the first eight hours because of the rapidity of fluid dislocation post burn; (2) equal amounts of plasma and isotonic electrolyte called for was based on bleb fluid analysis revealing protein present at one half to two thirds of its plasma concentration; (3) during the second day, one half of the first day's calculated fluid needs were indicated; (4) burn wound edema, which accounted for most of the dislocated fluid of the increased interstitial space, occurred in general proportion to per cent of body surface area burn, but the relationship was not entirely linear after 30 per cent; (5) 2,000 cc. of water daily was needed to maintain a good urinary output; (6) urinary output was the key to fluid therapy; and (7) edema was maximal at thirty-six to forty-eight hours post burn and then sharply decreased. They also repeated a recommendation made earlier by Cope and Rhinelander,[126] namely, that lesser quantities of fluid should be administered in instances of pulmonary damage lest pulmonary edema result. To conclude this classic report, the authors noted that in the face of a low urinary output, the differential diagnosis between inadequate fluid therapy and renal failure could be assisted by rapidly infusing 1,500 cc. of fluid. A clear-cut rise in urine flow indicated the need for additional fluid, while no change in flow dictated a reduction in infusion rate and the probability of renal damage.

Evans *et al.*[124] in 1952 in experimental studies on burned dogs next related fluid needs not only to the per cent of the body surface area burned but also to the body weight expressed in kilograms. Their report culminated in the often quoted Evans formula and called for the following intravenous fluids:

> First twenty-four hours—1 cc. saline and 1 cc. plasma per per cent body surface area burn per kilogram body weight, and 2,000 cc. nonelectrolyte-containing fluid to cover insensible water loss and promote adequate urine flow.
>
> Second twenty-four hours—one half of the above saline and plasma amounts, and 2,000 cc. nonelectrolyte-containing fluid.

These investigators stressed that this formula was only a guide and not an infallible rule to fluid therapy. They invoked the "rule of 50" advising caution and concern with overhydration when using the formula to treat patients over fifty years of age or any patient with a greater than 50 per cent body surface area burn. Plasma was deemed a satisfactory colloid, but dextran was also acceptable to Evans, and the use of whole blood as part of the colloid fraction was felt to be indicated in burns of greater than 25 per cent area. In an earlier article, Salzberg and Evans[127] urged the use of whole blood on the basis of burn shock studies made in dogs by measuring red blood cell volumes with radiophosphorous tags. Blocker[54,128] still calls for the early use of whole blood in burn shock resuscitation.

In 1953, one year after publication of the Evans formula, Reiss *et al.*[49] presented the Brooke formula, a modification of Evans's work, calling for more electrolyte solution and less colloid as follows:

> First twenty-four hours—1.5 cc. electrolyte solution and 0.5 cc. colloid per per cent body surface area burn per kilogram body weight, and 2,000 cc. nonelectrolyte-containing fluid.
>
> Second twenty-four hours—one half of the above electrolyte and colloid amounts and 2,000 cc. nonelectrolyte-containing fluid.

Other changes were also evident. The role of sodium was stressed, and its administration in the more physiologic lactated form with electrolyte concentrations similar to those in normal plasma was preferred to plain isotonic (0.9 per cent) saline. Plasma, with its risk of hepatitis, was deferred in favor of dextran, and the use of whole blood in the early phase was de-emphasized. Oral intake of electrolyte solution in the form of Haldane's mixture ($^1/_2$ teaspoon of salt, $^1/_2$ teaspoon of bicarbonate per quart of water) was advised in burns of less than 20 per cent body surface area, and it was noted that no formula could provide a guide to fluid needs after forty-eight hours post burn. At this time, clinical signs and symptoms and the certain need for potassium was declared. No particular attention has been devoted by any authority in the field to a need for potassium in the first forty-eight hours. Artz and Reiss,[1] Artz,[129] and Becker and Artz,[12] have repeated these basic concepts to the present time. Of particular interest, however, is their notation that modification of the Brooke formula is called for in children under two years of age where one half of the calculated electrolyte should be administered as electrolyte-free water.

Haynes[117,130] at the present time continues to use the Evans formula, favoring 6 per cent dextran in saline as the colloid fraction. While stressing its availability, ease of storage, lack of antigenicity, low cost, and absence of risk of hepatitis and also noting its effect on blood typing, a rare case of allergic reaction, and the possibility of a bleeding complication secondary to the larger dextran molecules coating and inactivating the platelets, Haynes has found dextran a satisfactory agent during an extensive fifteen-year trial and in amounts of up to 6,000 cc. in forty-eight hours. His estimates of daily water needs in children, based on age, are also of interest and are as follows: birth to three months, 700 cc.; four to six months, 1,000 cc.; seven to twelve months, 1,200 cc.; and a subsequent gradual climb to the usual adult daily water need of 2,000 cc. at age fourteen years. Also using urinary output as a critical guide to the adequacy of fluid therapy, 10 to 20 cc. per hour has been his general desirable range for urine flow in the pediatric age group. Artz and Reiss[1] have generally called for urine flows in the 30 to 50 cc. per hour range; a consensus would indicate that in children under age one, an 8 to 20 cc. per hour flow is probably adequate; in older children, 20 to 30 cc.; and in adults, 30 to 50 cc. would comprise acceptable limits of satisfactory urine output during burn shock resuscitation. Ellmore[131] has also favored dextran as the colloid fraction in the Evans formula and indicated that his preference for a urine flow of 50 to 100 cc. per hour and a urine specific gravity of 1.010 to 1.015 is consistent with adequate fluid resuscitation.

Burke and Constable[50] indicated a strong preference for plasma therapy during burn shock and although accepting the ultimate need for whole blood in most severe burns have attempted to withhold it during the immediate postburn period. Reflecting the influence of Cope and Moore's[51] earlier studies, they have offered the following guides to intravenous therapy: Adult—125 cc. plasma and 15 cc. saline per per cent body surface area burn and 2,000 of dextrose in water; child—90 cc. plasma and 10 cc. saline per per cent body surface area burn and 1,500 cc. of dextrose in water per square meter total body surface area.

These total amounts are given in the first twenty-four hours after injury with one half of this amount in the first eight hours; during the second twenty-four-hour period, the basic water and one half of calculated plasma and saline is indicated. Burke and Constable[50] completed their report with a particularly satisfactory set of parameters to judge the adequacy of fluid therapy, as follows:

1. Urine output is best single guide and in adult should be 30 to 50 cc. per hour.
2. General condition of patient shows stable vital signs, orientation, and lack of restlessness.
3. Central venous pressure obtained via a catheter, usually in the vena cava, and placed either through the femoral, cephalic, or jugular vein; if not significantly elevated or rapidly rising, then fluid therapy is not considered to be excessive.
4. Hematocrit, if elevated, often dictates need for more fluid.
5. Serum sodium, if increased, indicates need for more water; if decreased, may indicate increased total body water.
6. Evaluate cardiac output studies using cardiogreen dye.

Soroff *et al.*[132] and Roe[61] have particularly referred to the value of serum sodium determination as an index to proper hydration and indicated the need to maintain a low-normal level if dehydration is to be avoided. Bondoc *et al.*[94] have utilized urinary sodium values to gauge sodium replacement, calling for 350 mEq. of sodium daily per square meter of burned body surface with a concomitant urinary excretion level of greater than 40 mEq. of sodium per liter of urine.

Crews[48] has favored stored plasma as the colloid of choice together with lactated Ringer's solution as the electrolyte fluid. After having established a rapid urine flow with the fast infusion of Ringer's solution, Crews then uses a 6:4 mixture of water to lactated Ringer's solution plus plasma during the first twenty-four hours. During the second twenty-four hours, a 7:3 mixture of these same solutions and additional plasma is preferred. Urine output of 50 cc. per hour for adults and 25 cc. per hour for children have been his guides to the adequacy of therapy. After forty-eight hours post burn, lesser amounts of electrolyte solution are offered, adequate water is administered to cover the urinary output, and a progressive soft diet is begun by mouth.

Metcoff *et al.*,[133] reporting on their experiences with severely burned children, have offered detailed tabulations for fluid therapy during the first forty-eight hours. In general their attitude has been that too much fluid is usually given the first day and too little the second day. They favor the use of dextran and/or albumin early in burn shock resuscitation. In general Abramson[7] has gone along with the Boston school, indicating a preference for early colloid, particularly plasma, and in selected cases the early use of whole blood.

Moyer, Margraf, and Monafo[55] have indicated concern for the significance of sodium dislocation in burn shock and departing from the formula concept have successfully employed only lactated Ringer's solution (pH adjusted to 8.2) to treat burn shock. They have claimed no pulmonary edema or abnormal increase in central venous pressure with their regimen. Their regard for sodium and their preference for the use of pure electrolyte solution in their treatment has many proponents at this time. Among these are Wilson and Stirman[134] who in reviewing 430 burn cases treated at Parkland Hospital in Dallas, Texas, also noted better results in the fluid resuscitation of burn shock with a balanced salt solution alone, than when using colloid, including whole blood, and salt solution in combination.

Baxter,[135] also of Parkland Hospital, has recently confirmed this method of resuscitation employing solely lactated Ringer's solution during the early phase of burn shock. He has indicated that the quantity of this fluid necessary in the first forty-eight hours of treatment expressed as per cent of body weight has been as follows: 8 per cent body weight in 20 to 30 per cent body surface area burns; 14 per cent body weight in burns of 30 to 40 per cent area; 19 per cent in 40 to 50 per cent burns; 22 per cent in 50 to 60 per cent burns; and 24 per cent in 60 to 70 per cent burns. It is interesting to note that in retrocalculations, Baxter estimates that the actual amounts administered are only slightly in excess of those calculated on a 2 cc. per kilogram body weight per per cent area burn basis, which is the volume that most formulas prescribe.

The Peru studies of Markley *et al.*[136,137] and Bocanegra *et al.*[138] have contributed significantly to a realistic concept of fluid therapy in burn shock and offer an interesting conclusion to the myriad methods previously documented. In a series of 153 adults treated for burn shock on an alternate-case basis with either saline, 15 per cent body weight in the first forty-eight hours, or plasma per 2.2 per cent body weight, and water per 7.8 per cent body weight, a statistically significant analysis favored saline therapy alone, with no deaths occurring during the first two days, over plasma and water with a 12 per cent mortality rate during this same period.[137] The saline which was given by mouth, where tolerated, consisted of a balanced electrolyte solution similar to lactated Ringer's solution. However, no difference was noted in later mortality figures between the 2 groups. Saline therapy alone was not superior among 165 severely burned children treated on an alternate-case basis with saline alone per 15 per cent body weight in the first forty-eight hours, or plasma per 3.1 per cent body weight, and saline per 11.9 per cent body weight. The plasma plus saline therapy group proved statistically superior in preventing early death, 9 per cent versus 19 per cent in the saline alone therapy group, especially in burns of over 30 per cent body surface area.

Bocanegra *et al.*[138] in a later review of an extended series of 308 adult patients treated for burns on a strict alternate-case basis resulting in 2 comparable study groups, again statistically confirmed that therapy with saline alone (with electrolyte concentrations similar to plasma) was more effective than electrolyte-deficient fluid, was capable of effecting recovery from burn shock, and was as effective as saline plus plasma administered according to the Evans formula, except in burns of greater than 50 per cent in area.

Certain trends must evolve from such a mass of theories, opinions, facts, and experiences. Electrolyte solution, probably best in concentrations similar to those in plasma, such as with Ringer's lactate, appears indicated in the fluid management of burn shock. Realizing the available formulas and guides, it appears reasonable to initiate therapy at a rapid rate until an adequate urine flow is established and then titrate the patient's general condition, vital signs, sensorium, urine flow and specific gravity, central venous pressure, hematocrit, and serum sodium with this same solution. Colloid can be used as a matter of choice and plasma, dextran, albumin, and whole blood all have their proponents claiming satisfactory response. Constant re-evaluation on an hourly basis is necessary for proper fluid resuscitation regardless of the quality of fluid administered. The importance of overhydration especially in the very young, the very elderly, and those with pulmonary damage has been stressed. There is little place for a dogma in this aspect of burn therapy, since the attention, care, understanding, and flexibility with which the electrolyte-containing solution is administered seems to be the overwhelming factor in the ultimate outcome of burn shock. It must also be restated that despite any particular superiority one form of early fluid treatment has over another, all authors agree that the ultimate result in burns, after the shock period has passed, is determined by a new set of problems and treatments, most of which revolve around the need and ability to achieve early closure of the burn wound.

Evaluation of renal function and the use of diuretics. Haynes, DeBakey, and Denman[139] studied renal function patterns in 8 burned patients. They noted an increased glomerular filtration rate by the second postburn day with an increased filtration fraction in association with a normal renal plasma flow. The maximum tubular excretory capacity was reported to be within normal limits in this series. All parameters were normal within two to three weeks following injury. The investigators did not define the significance of their data, appreciated the markedly wide physiologic variations one could encounter after burn trauma, and concluded that a high urine output, 100 cc. per hour, was the best index of adequate fluid therapy.

Sevitt,[29] on the other hand, has stated that an immediate postburn decrease in glomerular filtration rate and consequently in urine output is universal during the first several days following injury. High urine flows can, however, be achieved with adequate intravenous therapy and can also be related to some decrease in renal tubular reabsorption. Within three to six days after burn, with a satisfactory clinical response glomerular filtration rate and urine output values should return to normal levels.

Moore[140] also stressed the prominent role of early postburn kidney function in influencing the prognosis in burn shock. He reported a prompt decrease in glomerular filtration rate after burn theoretically related to change in blood volume and blood pressure, elaboration of adrenal medullary hormones, and fall in renal blood flow. Moore also indicated the significance of aldosterone and antidiuretic hormone in influencing renal function. He considered it essential to break through the activity of these sodium- and water-retaining hormones, promote an increased plasma volume, and encourage a rapid high urine flow. Such an early diuretic maneuver was deemed beneficial because it resulted in large amounts of water flowing from the renal tubular lumens, helping to prevent the precipitation of tubular casts. Moore advised an osmotic diuresis using mannitol, a complex but relatively inert, large molecule carbohydrate, in amounts approximating 50 Gm. intravenously every eight hours as necessary. Mannitol, after being filtered by the glomerulus, holds and effects the excretion of large quantities of water within and through the renal tubules. Moore did not classify dextran as an osmotic diuretic claiming its ability to promote increased urine flow by its adding to plasma volume with an attendant increase in renal plasma flow and glomerular filtration rate. Despite Moore's insistence that urea is an inefficient diuretic because of back-diffusion in the distal tubule, Crews[48] has advocated the urea-induced "kidney flush" every four hours if necessary with 40 Gm. intravenously in the adult and 10 Gm. in the child administered over a thirty-minute period. Ferguson *et al.*[141] have also deemed urea, as well as mannitol, an effective osmotic diuretic of value in preventing acute renal damage after major burns in dogs. Mannitol, however, is still the preferred osmotic diuretic in burn shock among the majority of clinicians.

The possible effect of a primary myocardial deficiency in burn shock with inadequate circulatory perfusion and reduced urine flow on a cardiac basis has been postulated by Fozzard[41] who has discussed the diuretic value of a digitalis preparation.

Vertel and Knochel[30] studied 5 standards in evaluating postburn renal function: (1) azotemia, progressive increase in blood urea nitrogen or nonprotein nitrogen considered as evidence of progressive parenchymal renal failure; (2) urine volume, oliguria was defined as less than 500 cc.

urine output in twenty-four hours; (3) urine to plasma urea nitrogen ratio was normally greater than 20; if less than 10, indicative of renal failure; (4) urine sodium concentration, if greater than 20 mEq. per liter was indicative of renal failure; and (5) renal histopathology, discussed in part I, section on pathologic anatomy, kidney. These authors reported 10 cases of nonoliguric renal failure following burn trauma and considered this syndrome a milder form of kidney failure than the oliguric variety, histologically related it to a lesser quantity of glomerular lesions, and recommended the usual basic careful fluid and electrolyte balanced therapy. Cameron and Miller-Jones[31] confirmed the ease with which the diagnosis of nonoliguric renal failure might be missed and called for hemo- or peritoneal dialysis in cases in which the blood urea nitrogen exceeded 100 mg. per 100 ml. Despite the use of mannitol and dialysis, these investigators considered postburn renal failure invariably fatal. The reader is referred to the general review by Meroney and Herndon[142] of the management of acute renal insufficiency for further discussion of post-traumatic kidney function.

Hormones. The complex role of the adrenal cortex in burn shock has been discussed previously in the section on pathophysiology of the burn syndrome, hormonal factors. It remains, however, ill defined and its therapeutic implications uncertain and contradictory. Cope *et al.* in 1949[52] reported on the effects of adrenal cortical extracts on capillary permeability and the intermediate metabolism of protein, carbohydrate, and electrolytes of burned tissue in the anesthetized dog. Using a standardized hindleg scald burn and measuring lymphatic flow from the burned extremity as well as lymphatic protein content and plasma electrolyte values, they concluded no change in the burn-induced increased lymphatic flow, increased lymph protein concentration, or plasma loss and burn edema associated with the use of adrenal cortical extracts. Their inevitable conclusion was that these agents were of no benefit in burn shock from the standpoint of decreasing capillary permeability or changing the abnormal intermediate metabolism induced by the burn injury. Raker *et al.* in 1951[143] utilized a scald burn model in the hind limb of a dog and small flashburns of the forearm in human volunteers, to conclude that ACTH (adrenocorticotropin hormone) was similarly of no value in reducing the abnormally elevated capillary permeability of burned tissue, the elevated lymph flow from a burned part, the increased lymph protein concentration, and the blister response and rate of edema formation among the human volunteers. Butterfield[144] also used the flash burn in human volunteers to test the value of promethazine hydrochloride, epinephrine (Adrenalin), cortisone, and ACTH in preventing the usual post-injury edema, blister formation, and erythema about the burn wound; he felt that neither ACTH nor cortisone were of any value in this test situation either to protect, by pretreatment, against the effects of the high-intensity light or to treat the burn wound. The only certain effects were generated by epinephrine which appeared to increase the rate of blister formation and promethazine hydrochloride which seemed to decrease the intensity and duration of the surrounding erythematous flare.

Martin, McGarity, and Smith[145] treated 22 severely burned adult patients with cortisone in the following dosage schedule: 300 mg. on day 1, 200 mg. on day 2, 100 mg. per day through day 8, and ACTH thereafter. They reported no harm resulted and probably some early benefit from the use of this steroid regimen. Admitting no effect on the ultimate mortality rate, the authors claimed an improved clinical course marked by lower body temperatures, less delirium, more comfort, improved appetite, easier control of fluid and electrolyte therapy, and no significant sodium retention. Their therapeutic rationale was based on the classical concept of severe burn trauma resulting in a stress reaction with consequent pituitary-adrenal strain, adrenal exhaustion, and ultimately adrenal cortical insufficiency. Feller[74] has reported on the use of hydrocortisone in 7 patients with burns of more than 40 per cent body surface area and evidence of adrenal cortical insufficiency by ACTH stimulation tests and urinary steroid excretion patterns. Four of the patients with burns of 54 to 84 body surface area survived, while the other 3 died. The nonsurvivors, however, were considered to have lived longer than might have been anticipated under conventional circumstances. Feller concluded his report by suggesting that although the corticosteroids suppress the defense system against infection and delay certain forms of wound healing, they may be of value in the treatment of the burn syndrome. Mulholland[146] has stated that ACTH, particularly after the burn shock episode, may possess merit in the chronic burn problem by inducing a feeling of well-being and greater comfort. At this time there seems to be no absolute evidence to support or condemn the use of adrenal steroids in early or late phases of the burn syndrome.

Procaine hydrochloride (*Novocain*): As discussed earlier under nervous factors in burn shock, Vishnevsky, Krakovsky, and Shraiber,[98] consider the role of the central nervous system, particularly pain, to be critical in the pathogenesis of the burn syndrome. On this basis they have described the use of procaine hydrochloride blocks to the perivascular sheaths in the extremities, paranephric regions, and major autonomic nerve trunks. In addition, intravenous 0.1 per cent procaine hydrochloride as a continuous infusion has been recommended, the net effects of these measures being reduced capillary permeability in the burned area, analgesia, decreased fluid losses, and increased survival rates. Ellmore[131] has also referred to the possible sympatholytic value of an intravenous infusion of 1 L. of 0.1 per cent procaine hydrochloride during burn shock. Nikitina[99] has claimed the value of 0.12 and 1 per cent procaine hydrochloride by immediate intravenous drip in fatally burned dogs. Fewer hypoxic changes can be recognized by this investigator in the liver, kidneys, heart, and adrenals of dogs treated with procaine hydrochloride when compared with the saline-resuscitated control group. None of these articles offers details of technic or case material.

Neuroplegics. Still another unusual and interesting approach to the treatment of burn shock and the burn syndrome has evolved from eastern Europe. Dolecek and associates,[96,97] from Czechoslovakia, have favorably reported on the use of "neuroplegic" mixtures together with the more standard measures of burn therapy. Based on the assumption that the organism's central nervous system and adrenal responses to a major burn are excessive, inefficient, exhausting, and ultimately a negative operational force, Dolecek and his group have used a combination of 3 pharmacologic agents to dampen and theoretically rechannel this undesirable stress reaction: (1) dihydroergotoxine methylsulfone, a mixture of ergot alkaloids producing a central depression of the thermoregulatory center, sedation, a decrease in vasomotor tone, and a peripheral sympatholytic and antifibrillatory effect; (2) leucinocaine (Panthesin), a local anesthetic, systemic analgesic, and slight antihistaminic; and (3) thenalidine (Sandostene-calcium), an antihistamine with anticholinergic properties. In a series of 311 burned adults and children, the authors, employing their mixture intramuscularly for approximately one week, have signified definite clinical gains characterized by less than the usual restlessness, anxiety, and nausea and vomiting. Improved appetite, decreased pain, less hyperpyrexia, earlier and more profound diuresis, decreased need for intravenous fluid support, and, significantly, a decrease in the urinary excretion rates of adrenal corticoid metabolites indicating a lessened adrenal response have also been reported. This work has been complemented by extensive experimental data in rats illustrating improved healing in the neuroplegic-treated group as well as decreased adrenal ascorbic acid depletion, decreased liver and muscle glycogen depletion, blockade of the usual postburn rise in blood unesterified fatty acids and glucose, and prevention of the usual rise in alpha-ketoglutarate levels in the serum, liver, and muscle of the treated animals.

In conclusion, it is evident that discussion has been devoted primarily to the problems of airway maintenance and intravenous fluid resuscitation of burn shock. The additional features of diuretics, adrenal cortical hormones, intravenous procaine hydrochloride, and neuroplegic mixtures have been presented. The remaining items on the check list are for the most part self-explanatory and are presented in this form as a guide to later more detailed discussion. This particularly refers to the use of antibiotics to be considered under "Infection in Burns" and gastrointestinal problems under "Nutrition." Care of the burn wound will be described separately in the following section.

Care of the burn wound

Perspective. The achievement of rapid separation of the burned tissue and the provision of viable skin coverage as early after injury as possible appear to be the keys to the successful treatment of a severely burned patient. Despite considerable agreement among numerous investigators as to the aims of local wound care, it will be readily apparent that the technics used to gain these ends vary to a remarkable degree. An attempt will be made in this section to provide a continuous and reasonable discussion on the concept of wound care regardless of the method(s) discussed.

Artz and Reiss[1] and MacMillan[147] among others[3,148,149] have concisely listed the goals of local wound care to be: (1) gentle cleansing of the burn wound; (2) protection against further (deeper) skin destruction; (3) provision of an antiseptic environment and suppression of further bacterial growth; (4) encouragement of separation of the burned (dead) tissue; (5) promotion of free drainage of infected material; (6) immobilization of the injured part in a functional position; (7) reduction of pain to its minimum; (8) reduction of the negative or catabolic effects of the burn wound; and (9) achievement of skin coverage as early as possible.

Definition of the following 3 terms appears indicated at this point: (1) crust, the dry scab-like cover forming on the superficial burn; (2) eschar, the dry, hard, leathery layer of dead tissue developing after deep burn injury; and (3) slough, the moist and separating burn eschar.

Sneve in 1905[121] stressed the need to keep a patient who was burned surgically clean while avoiding strong local antiseptics, comfortably warm while avoiding occlusive dressings, and indicated the desirability of covering granulating burn wounds as early as possible with exposed split-thickness skin grafts. He called for simple exposure of the burn wound in a warm environment, thereby reducing the inevitable trauma of repeated painful dressings, allowing free perspiration, and decreasing the likelihood of toxemia so common with the maceration occurring under bulky dressings. Original gentle cleansing with saline was advised, as was trimming of the blisters and wiping away of any serous exudate until a dry clean crust had formed. Early exercise of the injured part was also encouraged. Sneve stated, "I am confident that occlusive dressings, even over a forty-eight-hour period, can by confining perspiration and promoting maceration of impaired tissue, convert a second degree to a third degree burn." Moyer in 1954[14] while reviewing the treatment of severe thermal injury favorably referred to Sneve's report and recalled the valid dictum, "do no harm," advised caution against embracing any new methods of treatment, and after recalling the antiseptic era of Carron oil, continuous baths in various solutions, silver nitrate, and tannic acid, indicated that the antiseptic idea was about to receive the just interment it had long deserved.

Davidson in 1925[150] stirred the surgical world with the tannic acid method of burn wound care. Based on the theory that toxemia, due to the systemic absorption of toxin(s) released from the burn wound, was the key to the burn syndrome, Davidson concluded that the arrest of burn wound autolysis, the rapid removal of devitalized tissue, and the coagulation of this tissue had to be accomplished if burn treatment was to be successfully concluded. He used tannic acid, a known protein precipitant, in a freshly prepared 2.5 per cent solution, with the hope of precipitating as stable compounds the poisonous burn wound products (probably proteins), thus binding them locally and decreasing their systemic absorption. His method involved immediate application of tannic acid compresses, evaluation of the wound at six hour intervals, and removal of the dressings when a light-brown color on the burn wound had been achieved. The tanned wound was then exposed to air and the patient kept comfortably warm, if necessary, by using heating lamps. Davidson concluded on the basis of 22 personal cases that his patients were comfortable, required less than the usual amount of fluid and blood, were less febrile, and ultimately healed with less scarring, presumably related to the formation of smoother granulation tissue and less infection. The tannic acid method fell into disrepute, ostensibly because of the work of Wells, Humphrey, and Coll[151] and Forbes and Evans[152] who experimentally documented the clinically suspected causal relationship between tannic acid and a specific centrolobular hepatic necrosis. On the other hand, Lee and Rhoads in 1944[153] concluded that tannic acid probably did help the patient with burns, that there was no evidence that it increased the burn mortality rate, and in fact that tannic acid may have produced an over-all decrease in the burn mortality rate despite the occurrence of tanning-specific hepatic lesions. McIndoe stated that the tannic acid method in the treatment of burns had simply been carried too far and that coagulation of burn wounds especially in deep hand and facial injuries was not desirable.[154]

As basic concepts of the burn syndrome changed, so did burn wound care, and with improved bacteriologic methods chemotherapy entered the arena. Aldrich in 1933[155] strongly disapproved of the toxin theory of the burn syndrome and considered streptococcal infection as the prime pathogenetic factor in the deterioration of the patient's condition after extensive burns. After crediting W. M. Firor, of Johns Hopkins University, with introducing gentian violet antistreptococcal topical therapy, Aldrich recorded less burn wound infection, less odor, and a more comfortable patient in cases treated by exposure and a 1 per cent gentian violet spray. This aniline dye was considered nontoxic and specific in its antistreptococcal power.

Cope[156] and Cannon[157] in reviewing the 39 hospitalized cases from the Coconut Grove fire described the administration of sulfa preparations both systemically and topically (as a dusting powder) in combination with gentle wound cleansing, early use of boric acid-petrolatum gauze, bulky dressings changed every several days, and finally use of saline dressings with the advent of the burn slough. Blisters were retained intact under the dressing, no scrubbing was done for fear of injuring any remaining viable epithelium, and ultimately split-thickness skin grafts were applied to complete the burn wound care. Allen in 1951[158] reaffirmed most of these aspects of basic care, including bulky compression dressings over a petrolatum gauze base, splinting, infrequent changes until the presence of burn slough and then regular wet dressings, culminating in split-thickness skin grafts to the granulating wounds. Allen also offered a technic of surgical excision of the eschar, carried out about ten days post burn, which he felt allowed an earlier skin closure.

Wallace in 1951[125,159] published his experiences with the exposure method of burn care. Noting that bacterial growth was aided by a warm, dark, and moist environment, he recommended exposure of the burn wounds to a dry environment, dusting with a penicillin-lactose powder, and penicillin systemically to achieve clean, dry, and cool surfaces. Once crust formation had occurred, which he claimed constituted a biologically "closed" wound, it was planned to progress to healing without the intervening exposure of a raw surface. A crust might be expected to separate in two to three weeks revealing a spontaneously regenerated epithelial surface, but if an eschar formed, Wallace suggested excision and split-thickness skin grafting by trained operating teams within three weeks of the original injury. In a series of 200 cases so treated, no clinical infection with hemolytic Streptococcus, Ps. aeruginosa, and Proteus vulgaris was claimed, and the patients were reported to have experienced less anorexia and weight loss than usual. While noting that it was improper to discuss the adequacy of therapy on the basis of the need for skin grafts, since this was primarily related to the severity of the original injury, Wallace did express the opinion that if treatment did decrease the extent of infection, it might prevent the conversion of a superficial or second-degree injury to a deep or full-thickness skin loss.

Blocker and associates[13,160] reiterated the values of the open-air method of treatment of the burn wound stressing its applicability to all types of burns and noting advantages to be: decreased cost, usefulness in mass casualty disasters, and the concomitant decrease in painful dressings and man-hours of care. They did not preclude the use of dressings later in the course of the burn wound.

Artz and Reiss,[1] Artz,[161] Abramson,[7] Haynes,[117] and Bull and Jackson[162,163] have approved of the exposure method of burn wound care. Exposure has been repeatedly claimed to promote the evaporation of surface exudate and the formation of a dry crust or eschar as a deterrent to bacterial proliferation. Larson *et al.*[164] in particular stressed the following disadvantages of occlusive dressings on extensive burn wounds: (1) dressings were hot, restrictive, and uncomfortable; (2) unrecognized bleeding; (3) need for change of dressing every three to four days; (4) maceration of surrounding skin; (5) if about chest or abdomen, capable of yielding diminished respiratory excursion; (6) with the application of grafts, inability to see and correct graft dislodgement; and (7) inability to expose adjacent donor sites. On the other hand, the authors agreed that with exposure, especially after grafting, thin grafts could be easily disturbed, anterior and posterior burned surfaces could not be grafted simultaneously, and turning of the patient was contraindicated. As a result, Larson and his colleagues presented the modified exposure technic initiated by exposure of the burn wounds during the early phase of care. Later as the eschar cracks and separates, debridement is carried out daily while the patient is in bed. With the development of granulation tissue, a single layer of moistened fine-mesh gauze cut to fit the raw surface is applied. Split-thickness skin grafts to the granulating wounds are held in place by a single layer of coarse-mesh lightly greased gauze sutured to surrounding tissue. Wound exudate is readily and frequently cleansed away. From seven to ten days after grafting, a complete dressing is possible. The advantages of this modified exposure method are considered to be the visibility of the grafts while they are held in place, the light, nonrestrictive nature of the dressing with its usefulness in most anatomic areas, and the elimination of the need to redress the grafts at an early period postoperatively. Larson[148] has recently restated his thoughts on early burn wound closure by adding to his basic tenets in the form of the Hubbard tank, the aerating spray gun to enhance wound hygiene and debridement, and the use of skeletal traction for the burned extremity. The calcaneus and tibial tubercle of the lower limb and the bases of the second and third metacarpals of the upper limb are the preferred sites for pin insertion. Conway[165] has also stressed the value of skeletal traction, particularly in the burned child. Koepke and Feller[166] have graphically reported benefit with the use of appliances providing functional splinting notably of hands, axilla, and neck during the very early phases of burn care.

During the subacute period of burn wound care when eschar is present and its separation desirable, various maneuvers have been employed to hasten burn slough. Artz and Reiss[1] and Artz[161] have offered 3 suggestions: (1) regular and frequent changes of dry sterile dressings; (2) regular and frequent changes of wet dressings; and (3) surgical excision. Larson[148] has stressed hydrotherapy, particularly in the form of the aerating spray gun to hose away slough, and MacMillan[147] has expressed the opinion of most in the field when he disclaimed the value of any of the proposed enzymatic debriding agents in hastening eschar removal. Meade[167] has advised decompression incisions in circumferential eschars to reduce the tourniquet effect of circular, constricting, and leathery tissue. Meade has stated that such longitudinal decompression of an escharified region particularly in an extremity decreases the likelihood of underlying ischemic necrosis, pain, and distal edema but carries with it the risk of hemorrhage, increased fluid loss, and the need for frequent dressings.

Granulation tissue formation follows the phase of eschar separation. This capillary and fibroblast-rich tissue furnishes the bed on which skin grafts will be applied to achieve final wound healing. Eade[168] has reported on his qualitative and quantitative bacteriologic studies of 76 granulating wounds in 34 patients and concluded that granulation tissue is always heavily contaminated, most commonly with hemolytic Staphylococcus, Pseudomonas, and Proteus organisms, that coverage of these wounds with thin autografts or homografts, viable and nonviable, results in a marked and rapid (within two hours) decrease in the number of recoverable bacteria and that a single scrubbing of the wounds with a hexachlorophene soap is as effective as multiple scrubbings in reducing the bacterial counts pregrafting. Eade has also stated that the "take" of the graft is not correlated with bacterial counts or granulation tissue pH (7.1 to 7.4 in this study). His work has confirmed the impression that all granulating wounds are at least contaminated, never sterile,[161] and that the "look"[169] of the granulation tissue such as being deep red,[148] flat, clean and not grossly purulent, and with beginning epithelization at the edges, represents the basis for the proper timing of the application of split-thickness skin grafts (autografts) and the fundamental operative method of achieving burn wound closure. Split-thickness skin grafts can be obtained by using any of the various dermatomes, razors, or free-hand technics.

The skin can be applied in the form of small postage-stamp size pieces or larger sheets, can be sutured or applied in the simple lay-on fashion, can be piecrusted or unpierced, can be stretched with the aid of the mesh dermatome,[170] and can be dressed or exposed. The size and thickness of a skin graft should be directly proportional to the perfection of the wound; therefore, one would favor a smaller, thinner graft on a less ideal granulating surface. Skoog[171] has advocated using larger sheets of thicker skin where possible, basing his conclusions on a follow-up study of the late results of skin grafts in burns. He has deemed the postage-stamp grafting technic to be inferior to even thin sheets and noted that the late contracture of grafted burn wounds is related not to graft contracture but rather to fibrosis of the underlying original granulating bed. Although numerous factors can contribute to poor graft "take," the most frequently recognized negative forces are: (1) poor timing of the grafting procedure such that the grafts are placed on a pale, friable, edematous granulating bed; (2) hematoma formation beneath the graft; (3) failure of immobilization with resultant distraction of graft from the recipient bed; and (4) purulent exudation from the granulating bed secondary to excessive wound contamination. No specific timetable for all of the previously discussed burn wound occurrences can or should be adhered to.

Connelly[172] has advised taking an immediate set of autografts from the burn patient and storing the skin until the time of the first grafting, at which point it is presumed the donor wounds would have healed and be ready to donate a second crop of skin for greater and earlier coverage. Donor areas can be dressed with a simple layer of lightly greased gauze and offered maximum exposure. The formation of a dry encrusted donor wound and the positional protection of the donor area from mechanical trauma usually results in healing within two to three weeks. A particularly significant cause of failure of spontaneous donor wound healing is the taking of too thick a skin graft, thus effecting a deep donor area wound with the consequent risk of subsequent difficulty, such as trauma or infection, resulting in a full-thickness skin loss.

ICE-WATER COOLING AS PRIMARY TREATMENT. There appear sufficient data at present to conclude that immediate cooling of burned tissue is of benefit in reducing the ultimate severity of burn. Ofeigsson[173] has indicated in experimental scald burns in albino male rats that the period of destructive heat exposure is probably greater than the actual time of scalding contact as indicated by skin temperature studies. Several minutes were required after completing the scald for skin temperatures to return to prescald levels. It is logical to reflect that heated wet clothing will still further delay the postburn fall in skin temperature, thereby contributing to a deeper burn injury. Trying various temperature ranges for water cooling, Ofeigsson concluded that profound hypothermia (at 0 C.) particularly in extensive burns resulted in a higher mortality rate than in the control group, but when burned tissue was cooled in water at 25 to 30 C. immediately post burn, the mortality rate was reduced. This author noted benefit in his experimental model even when cooling was delayed until up to forty-five minutes post burn. King and Zimmerman[174] also concluded that immediate postburn cooling constituted a significant first-aid measure and was most valuable when water temperature of from 5 to 17 C. was employed. In metal contact burns in dogs, no benefit was noted when water temperature of less than 3 C. or more than 20 C. was used to cool the burned part. These investigators felt that cooling decreased the burn-induced capillary permeability changes as reflected in the extravasation of Evans blue labeled serum albumin at the burn site. Reynolds, Brown, and Price[175] had earlier arrived at a 10- to 15-C. range for optimal cooling in experimental steam burns in mice, while demonstrating a significant decrease in burn mortality rate among mice immediately cooled after being subjected to hot water burns at 70 C. for ten seconds. This same group was also encouraged by the clinical response to cooling, particularly describing an immediate decrease in pain with the impression of less ultimate destruction and faster healing.

Shulman[176] described the immediate relief of pain with less redness and blistering while employing ice water or ice-cold compresses in 150 burn cases of less than 20 per cent body surface area. Instituting therapy promptly and continuing the cooling in water with temperatures of from 5 to 13 C. for periods of from thirty minutes to five hours or until no pain was appreciated on exposure of the burn wound to room air, constituted the therapeutic keystones. Iung and Wade[177] treated 46 burn victims with immersion of the burned part in ice-cold water and an antibacterial detergent (pHisoHex) within one half hour of injury and similarly noted prompt relief of pain, less edema and wound weeping, less infection, and apparently more expeditious healing. King and Price[178] related the beneficial effects of cooling a burned area to an ultimately lesser amount of local tissue destruction because of rapid decrease in local temperature. The apparent lessening of capillary injury with reduction in abnormal permeability and less edema was considered the fundamental gain derived from prompt postburn cooling.

In burns of lesser surface area seen shortly after injury, hopefully within the hour, it appears proper, simple, and humane to afford prompt relief of pain and prompt reduction in the temperature of the burned part with ultimate decrease in total amount of skin destruction by immersion in, or use of compresses of, ice-cold water at a temperature of from 5 to 15 C.

TOPICAL AGENTS. In 1960 Cason and Lowbury[179] from the Birmingham Accident Hospital, England, reported their experience with N.C.P. cream (neomycin, chlorhexidine, and polymyxin B sulfate), comparing its efficacy with that of simple tulle-gras dressings and with that of penicillin cream. Their positive conclusion, however, regarding the value of N.C.P. cream in controlling burn wound bacterial proliferation was less than enthusiastic. That same year, Gimbel, Threlkeld, and Farris[180] voiced their impressions of royal jelly, a milklike product of worker bees naturally fed to the queen bee, consisting of carbohydrate, fat, protein, vitamins, and sex hormones, injected into experimental burn blisters in human volunteers. Contrasting royal jelly with hyaluronidase, hydrocortisone, thyroid, and pituitary hormone, all of which yielded no effect on healing and streptokinase-streptodornase (Varidase) which resulted in inflammation, the bee product effected a definite enhancement of epithelization by histologic analysis. However, neither the use of N.C.P. cream nor royal jelly, considered by their original users to be effective, has gained in popularity.

SILVER NITRATE. Moyer and his coworkers,[56] at Washington University in St. Louis, visibly moved the surgical world in 1965 with their reintroduction and associated concepts of the use of 0.5 per cent silver nitrate solution in the treatment of large areas of burns in human beings. Employing dressings continuously saturated with 0.5 per cent silver nitrate solution and an overlay of dry fabric to decrease vaporizational heat loss through the burn wound, regular baths in Locke's solution, and long-term systemic penicillin therapy, this group concluded in 15 severely burned patients that silver nitrate most closely approximated the ideal topical antiseptic in the management of the burn wound. Proclaiming the drug nontoxic, with no argyria even after one hundred twenty days of use, and capable of restricting the growth of Ps. aeruginosa, Staph. aureus, beta hemolytic Streptococcus, and E. coli, this agent was considered effective in decreasing insensible water loss, decreasing the hypercatabolism associated with excessive vaporizational heat loss, and significantly reducing wound infection and pain. Brentano *et al.*,[181] from the same institution, detailed the bacteriologic aspects of silver nitrate therapy in the first 26 cases treated by the silver nitrate method. In 13 cases in which treatment was begun within sixteen hours after injury, silver nitrate effectively restricted the growth of Streptococcus pyogenes, Staph. aureus, and proteus organisms, while the Klebsiella, Aerobacter, and Providence groups predominated and Pseudomonas were controlled. In the 13 cases in which therapy was initiated later than forty-eight hours after burn, all wounds were demonstrated to be heavily colonized with Ps. aeruginosa and Staph. aureus at first. After treatment, staphylococcus disappeared promptly and a mixture of Pseudomonas, Klebsiella, and Aerobacter reigned.

The true worth of the silver nitrate method of burn wound care has currently remained controversial. The absoluteness of its reintroduction to the surgical community, as well as the limited number of cases treated, have contributed to the ambivalence of the profession's response.[182] Lentz, Seaton, and MacMillan[183] critically analyzed 4 burn deaths in patients under treatment with the silver nitrate method. Three of the deaths occurred in children under age three and one in an adult. Two of the deaths were attributed to systemic sepsis and stressed the inability of silver nitrate to afford any protection against widespread infection; 2 were proved secondary to electrolyte imbalance (both children), emphasizing the loss of vast quantities of electrolyte across the burn wound by dialysis into the hypotonic sink-like dressing. Other theoretical disadvantages attributed to the silver nitrate technic were narrow therapeutic range; argyria, although of limited magnitude; formation of a nonantiseptic silver proteinate on the wound surface; formation of methemoglobin by the action of surface bacteria on the nitrate fraction; and the relative ineffectiveness of the agent to control already established infection and its incompatibility with other local physical features, such as the presence of grease and dead epidermis. Most significant, however, was the certain profound electrolyte losses into the hypotonic silver nitrate dressings and the marked intolerance to such shifts in burned children. Bader[184] has called attention to the organ deposition of silver noted in 2 fatally burned adults treated with silver nitrate. In each case, wound antisepsis was judged satisfactory, but kidney, muscle, liver, and spleen demonstrated far more than the usually encountered amounts of silver. Constable, Morris, and Burke[185] have experimentally confirmed an appreciable uptake and excretion of silver in the liver and kidneys of guinea pigs with small open wounds treated with 0.5 per cent silver nitrate (silver-111 tracer-labeled). The significance of these findings is not appreciated at this time.

Mafenide hydrochloride (Sulfamylon). Lindberg *et al.*,[186] of the Brooke Army Medical Center, in 1964 reported their results with the prevention of invasive Ps. aeruginosa infection in seeded burned rats by use of mafenide hydrochloride, a topical cream. Employing a rat model with a standard 20 per cent body surface area scald-burn yielding a near-100 per cent mortality rate when inoculated with the Pseudomonas bacteria, the U.S. Army researchers produced a survival rate of 92 per cent when initiating application of the para-aminomethylbenzene sulfonamide as a 10 per cent cream to the seeded burn wound within seventy-two hours of the injury. Delay in the onset of therapy was associated with a decreased survival rate. Systemic effects of this local agent were considered minimal because of small amounts of drug absorption and rapid breakdown by blood amine oxidase culminating in the prompt renal excretion of metabolic end products.

In 1965, Lindberg *et al.*[187] published the results of their early clinical experience with 10 per cent mafenide hydrochloride cream which began in December, 1963. The latest report of this group by Moncrief *et al.*[188] has confirmed and detailed their earlier findings. Declaring infection to be the main cause of burn deaths, and more specifically Ps. aeruginosa as the principal pathogen in burn wound sepsis, mafenide hydrochloride was selected for experimental and clinical trial because of its known effectiveness against Pseudomonas. The result of this experience in 200 severe burn cases has led to the following conclusions: (1) mafenide hydrochloride topical cream therapy applied daily to the burn wound and complemented by a daily bath has markedly reduced the syndrome of invasive burn wound sepsis; (2) bacteriologic studies of such treated burn wounds have demonstrated a profound decrease in the number of recoverable bacteria and with a change in type of organisms, Pseudomonas being significantly decreased with a relative increase in the Aerobacter group; and (3) among the group treated with mafenide hydrochloride the over-all mortality rate in burns of from 30 to 60 per cent body surface area had decreased from 54 to 18 per cent and more specifically in burns of from 40 to 50 per cent body surface area, from 67 to 20 per cent. These investigators also have claimed that many soft waxy-white burns usually considered full-thickness from the start are in fact deep dermal injuries with the potential for spontaneous epithelial regeneration if the deepest viable dermal elements can be preserved. It is their opinion that subsequent infection, in the face of inadequate topical antibacterial therapy, converts such a deep dermal burn to a full-thickness loss requiring skin grafting for final wound coverage. The preservation and protection of these deep dermal elements in cases treated with mafenide hydrochloride is considered based on the drug's ability to furnish a high local antibacterial concentration of sulfonamide at the crust or eschar-viable tissue interface. This prevents invasive burn wound sepsis, the syndrome of Pseudomonas colonization, invasion and finally deep destruction of tissue, septicemia, and death. Undesirable side-effects have included a burning pain on application, an 8 per cent incidence of allergic reaction in the form of a rash, delay in eschar separation related to the hygroscopic nature of the preparation and its reduction in bacterial activity, and most significantly a metabolic acidosis. The acidosis has been attributed primarily to the carbonic anhydrase inhibitory effect of mafenide hydrochloride, the absorption of the hydrochloride fraction of the salt, and formation of acid end-products when metabolically degraded after absorption. This partial incapacitation of the renal buffering mechanism places a significant burden on the pulmonary acid-base compensation mechanism which if compromised, for example by bronchopneumonia, would necessitate, besides treatment of the pneumonia, cessation of mafenide hydrochloride and the administration of a buffer base, usually in the form of sodium bicarbonate. It must also be stressed that systemic sepsis or any infection other than that of the burn wound requires appropriate additional antibiotic therapy since mafenide hydrochloride affords essentially no antibacterial effect apart from that at the site of application. This drug in an acetate form is currently under intensive further evaluation at numerous centers.

Gentamicin sulfate. Stone *et al.*[189] have commented favorably on the use of gentamicin sulfate topically and systemically in the management of Ps. aeruginosa sepsis in burns. They have described their experience with 13 cases of clinically diagnosed Pseudomonas septicemia, 8 of which demonstrated positive blood cultures, the other 5 exhibiting the "green urine syndrome."[190] The latter syndrome is ostensibly related to Pseudomonas toxins producing hemolysis and partial paralysis of the reticuloendothelial system resulting in impaired hemoglobin metabolism and the accumulation and excretion of verdoglobin (green pigment). Gentamicin sulfate was considered effective in 12 of the 13 patients with ultimate survival in 10 of the 13. Toxic effects of the drug on kidney tissue and the vestibular division of the eighth cranial nerve were recorded. Caution was advised in the use of this agent in any patient with a blood urea nitrogen in excess of 20 mg. per 100 ml. Stone[191] has recently reported 84 per cent significant control of Pseudomonas sepsis in 93 major burn cases treated with a combination of topical and intramuscular gentamicin sulfate.

Satisfactory clinical control of burn wound infection has been reported by Georgiade *et al.*[192] by applying a nitrofuran derivative (Furazolium chloride) every twelve hours to the exposed wound. No significant toxicity was reported in 57 cases treated with this drug.

Momentarily concluding the subject of the topical therapy of burns, the work of Krizek, *et al.*[193] deserves particular mention. Employing a rat model with a 20 per cent body surface scald burn and inoculating this burn with Ps. aeruginosa, the results of various topical therapies were evaluated according to effect on the healing process (histologic analysis of biopsy specimens), mortality rate, and bacteriologic data, subescharal samples being obtained for cultures. Drugs tested included 90 per cent dimethylsulfoxide (DMSO) as a spray, 10 per cent mafenide hydrochloride, dimethylsulfoxide in combination with mafenide hydrochloride, 0.5 per cent silver nitrate as a spray, and 0.5 per cent silver nitrate wet dressings. The only topical regimen judged effective against burn wound sepsis was mafenide hydrochloride alone.

Burn wound topical therapy, regardless of one's favorite or chosen agent, appears to have been of significant benefit in the hands of numerous investigators. It must also be appreciated from the preceding discussion that no one drug is accepted by all or is even employed by its strongest proponents without reservation. The development of other topical agents can be expected in the future. The need for controlled studies of topical burn wound therapy in human beings is mandatory.

EARLY EXCISION. It has been established that removal of all burn slough and wound coverage with autologous tissue comprises the essence of ultimately successful treatment of the burn patient. In an attempt to decrease the late mortality rate in cases of extensive deep burns so often related to delayed separation of nonviable tissue, prolonged burn wound sepsis, hypercatabolism and inanition, especially in children, MacMillan[147,194] and MacMillan and Altemeier[195] have studied and effected the early excision of the extensive and critically placed burn. Immediate excision of the burn wound, when therapeutically selected, must be performed prior to day 5 following injury before intense bacterial colonization has occurred and the likelihood of positive blood cultures has begun to rise. The extent of this immediate excision is determined in area by the crude clinical guides of appearance and sensitivity to pinprick, often absent in areas of full-thickness loss. Excision is effected rapidly, widely, into and including some superficially burned or normal areas, and to the level of deep fascia to insure complete removal of all dead tissue. An experienced, 2-team, surgical approach has been necessary to minimize the often massive blood loss encountered and reduce anesthesia time to a minimum in these already severely traumatized individuals. Immediate or delayed (forty-eight hours) autografting or homografting is then carried out. When MacMillan originally reported his courageous endeavor in 1958,[196] 14 patients, ages five to fifty-five years, with massive burns were treated by his technic of early excision, two to five days post burn. The impression conveyed was one of optimism based on a 58 per cent survival rate with decreased morbidity and less sepsis. By 1960 his attitude was tempered by a larger experience demonstrating no significant decrease in over-all mortality rate or septicemia but some lessened morbidity related to the achievement of autologous burn wound coverage in two thirds of the usual time with conservative therapy.[195] The large amounts of blood required to sustain such procedures and the risk of associated profound septicemia were stressed. In 1965 MacMillan[147] restated and clarified his position that massive early excision of the burn wound was not the treatment of choice in burns of more than 15 to 20 per cent body surface area but rather offered more benefit in the instances of small, deep, and well-demarcated electrical and chemical burns and in localized and noncritically placed full-thickness injuries of less than 15 per cent total body area. This position was dramatically validated by a clinical series of 30 cases with early excision of burns of greater than 25 per cent body surface area with a resultant 67 per cent mortality rate, 17 of the 20 deaths being attributed to overwhelming sepsis.[194]

Larson[148] has supported MacMillan's views stressing the need for excision when elected, prior to day 5 post burn, and its value in burns of less than 20 per cent body surface area, notably in children. Tamerin, Garnes, and Simon[197] reported 6 cases of deep burns, each greater than fifty square inches in area, 5 of which were on the lower limbs, and treated by excision delayed beyond the currently favored first five days. These authors stressed the magnitude of blood loss with such procedures and the usual need to delay autografting subsequently for several days after wound excision. Jackson[163] has reported his experiences with 45 cases of burns of 20 to 30 per cent of total body area treated by immediate, on day of burn, massive excisions with simultaneous split-thickness autografts. Despite his conclusions that mean healing time was not significantly reduced related to the inevitable partial loss of skin grafts, that there was no appreciable decrease in the incidence of septicemia, and that mortality rates were unaltered, Jackson still considered as prime indications for this procedure; deep burns of over 30 per cent body surface area; encircling burns of chest, abdomen, and extremities with their attendant tourniquet-like effects; and well-demarcated lesser area deep burn, such as 15 to 20 per cent area, in suitable sites such as buttocks and thighs. With a lack of absolute benefit derived from a high-risk, emergency procedure and with the necessarily advised sacrifice of viable tissue, the trend away from this technic appears rational and widespread.

HOMOGRAFTS AND HETEROGRAFTS. Although autografts comprise the whole of final burn wound coverage in instances of full-thickness skin injury, the value of homografts has been repeatedly demonstrated by various investigators. The reader is referred to the writings of Holden, Hubay, and Powell,[198] Rapaport and Converse,[199] Rogers and Bach,[200] and Murray[201] for considerations of the biochemical and biophysical forces operational in homologous tissue transplantation immunity. Artz *et al.*,[202] Haynes,[117] Larson,[148] Switzer,[203] and Zaroff *et al.*[204] believe there is immense value in the use of viable cutaneous homografts in the burned patient. Stressing the temporary but often lifesaving effects of skin homografts, Zaroff and his coworkers have noted their application of this technic in 75 per cent of 160 major burn admissions annually. Cadaver skin, obtained in the absence of communicable disease, under sterile operating-room conditions, and preserved at 4 C. in a saline solution of penicillin and streptomycin, has been effectively stored and utilized for periods of up to three weeks. Earlier use of the grafts, that is from four to five days after being obtained, has been preferred. It is worth noting at this point that the work of Pomerat[205] on tissue culture technics has concluded that a balanced salt solution rather than "normal" saline is the preferred medium for human cell survival. Regardless, the homografts have been applied in sheets, while the patient is in bed on the ward, without anesthesia, and managed by the exposure technic and frequent inspection, and removed and replaced every three to five days. The latter approach has been based on the desire to use the homograft purely as a biologic dressing, not allowing any significant vascular or fibrous attachment to the recipient bed to occur and thereby avoiding with certainty the homograft-rejection phenomenon which might be anticipated if the grafts were allowed to remain for periods in excess of from seven to ten days. The experience at Brooke Army Medical Center has prompted listing of the following indications for the use of homografts: (1) massive burn excision in children, with immediate postexcisional homografting and autografting delayed until two to four days later; (2) inadequate autograft donor sites at a time when granulating wounds may be receptive to grafting. Homografts have been used to maintain the receptive quality of burn wounds, reduce sepsis, and afford a period of increased appetite, well-being, and improved morale while new donor sites are prepared; (3) tide patient over a complicating intercurrent illness, such as severe pneumonia, congestive heart failure, and gastrointestinal hemorrhage by promoting the same effects as noted under (2) without the need for the additional trauma of autografting at this time; (4) accelerate the healing of partial-thickness burns. Clinically and by histologic analysis, improved healing of second-degree burn wounds has been noted to occur beneath homografts; and (5) testing of the recipient sites prior to autografts, particularly if the certainty of graft "take" is questioned and autograft donor sites limited. If early homograft "take" is noted, immediate removal of homograft and replacement by autograft can be accomplished with greater likelihood of success.

Zaroff *et al.*[204] have also recorded the following over-all benefits of homografting: (1) reduced burn wound infection with definite ability to mechanically and grossly keep wound clean; (2) reduced pain with subsequent increased tolerance for physiotherapy; (3) improved appetite and general sense of well-being; (4) reduced loss of water, electrolyte, and protein at the wound surface; (5) reduced energy requirements secondary to the decrease in burn wound obligatory evaporative water loss; (6) preservation of autograft donor sites until certainty of "take" is insured; and (7) improved psychologic outlook.

Sell, Hyatt, and Gresham[206] have studied the use of freeze-dried skin homografts in 103 severely burned patients and noted a favorable comparison with the results of use of fresh homografts. In addition, the freeze-dried skin is felt to have the theoretical advantage of a reduced antigenicity thereby decreasing the likelihood of sensitizing the recipient and lessening the ultimate homograft-rejection reaction. This nonviable transplant is reconstituted with saline thirty minutes prior to its anticipated application, is left in situ for varying periods, and is not replaced every several days as with viable homografts, while reportedly affording benefits similar to fresh homografts. The ease of storage and shipping and its immediate availability have been particularly desirable features, calling for its continued study and use and hopefully for its increased availability.

Switzer *et al.*[207] while strongly supporting the use of viable cutaneous homografts have also clearly demonstrated the value of viable canine heterografts in human beings. Dog skin has been obtained, stored, and used in a manner similar to that reported by Zaroff *et al.*[204] from the same institution. While noting the cost of maintaining a donor dog colony, the tedious technical demands of obtaining the skin, the lesser amounts of skin available, and the aesthetic displeasure accompanying its use, this group has maintained that in 30 clinical cases the heterografts accomplished temporary wound coverage with reduction in infection and pain, reduced plasma loss, and appreciably improved the granulating bed in preparation for autografting. The questions of delayed sensitivity responses and unusual infections have been raised but not yet documented.

SYNTHETIC SKIN SUBSTITUTES. The dream of a universally and limitlessly available artificial skin, capable of affording the same temporary yet real benefits noted in the discussion of homografts, has occupied numerous investigators. Chardack in 1962[208] reported on his experience with a modified polyvinyl alcohol sponge, $^1/_4$-inch thick, with large pores on the deep surface and tight-compression small pores on the outer surface. After having satisfactorily maintained this prosthetic on a granulating chest wound in a four-year-old boy and having noted an improved clinical course, Chardack gradually removed the sponge in stages successfully replacing it with skin autografts. Dressler,[209] of Tufts University, has related his experimental and clinical results with the use of a 3-layered artificial skin composed of outer and inner layers of a permeable nylon velour and a central shim of impermeable silastic or polyvinyl chloride. Applying this synthetic after excision of a Pseudomonas-inoculated scald burn in the rat, Dressler reported a decrease in mortality rate compared with the control group and tolerance of the material up to eight months. In 3 human beings, failure to accept artificial skin resulted because of infection and poor immobilization. Apparently the device requires application on a very clean recipient bed. The limiting implications of this requirement in the management of burn wounds is obvious.

Wanke and Groezinger,[210] of Heidelberg, West Germany, have recounted their early work in the development of a 3-layered synthetic skin based on the reconstitution of previously treated ox skin. Their technic, which has been under evaluation in the swine, utilized alkaline digestion of ox skin after removal of fatty tissue and extraction of mucopolysaccharides. The resultant viscous collagen-elastin mixture is then relinked to the mucopolysaccharides by means of metallic ionic bands which are then replaced by hydrogen ion using an ion-exchange technic. No significant conclusions can be drawn regarding the value of such a creation in the light of its limited presentation and as yet brief experimental trial.

Prunier,[211] of the French National Institutes of Health, has released information based on his early work with epidermal cell cultures. Employing 2 strains of epidermal cells from guinea pigs and passed through 14 and 16 subcultures, Prunier has claimed the ability to develop in thirty-two days 100 million epidermal cells from an original 5 to 6 million cell donation. The implication of this work has been dramatically stated by this same investigator when he calculated that if 4 fragments of skin, each 2 square centimeters, were taken from a burn victim on the day of injury, one month later after using the technic of repeated passage of this skin through tissue subcultures, 1 square meter of autologous skin would be available for wound closure. One can only hopefully await with interest further developments in tissue culture.

REGIONAL CONSIDERATIONS. Considerable attention has been devoted to defining the over-all aims of and therapeutic possibilities for burn wound care. The concepts behind dressings, exposure, and topical agents have been outlined. However, certain particular anatomic aspects of burn wound management deserve special if brief mention, such as eyes, face, ears, hands, major joints, exposed bone, feet, and perineum.

Eyes. Vail[212] has summarized the treatment of burns of the eyes, which most properly belong within the realm of the ophthalmologist. Much, however, can be accomplished by the physician providing immediate care for the patient with burns. Flame burns rarely directly damage the globe because of lid protection, but if so injured, the cornea is most frequently involved. The use of topical ophthalmic analgesics, mydriatics, steroids, and antibiotics are indicated while mechanical manipulation of global tissue is not primarily indicated. Copious irrigation of the conjunctival sac is strongly urged as the most significant positive measure in the emergency treatment of chemical burns of the eyes.[3,212,213] Lid protection is vital to eye integrity, and tarsorrhaphy of burned lids is often indicated to protect the globe.

Face. The exposure method of local burn care is usually advised in facial burns. Discomfort, the difficulty in maintaining clean dressings and satisfactory regional hygiene, and feeding problems all militate against bulky occlusive facial care. Conservative therapy is critical in the management of face burns since the regenerative capacity of the facial skin is considerable because of the depth and vast number of secondary skin appendages capable of furnishing new epithelial coverage. There is virtually no place for early or radical excision of the facial burn wound. Facial reconstruction is properly within the scope of the plastic surgeon and will not be explored in this article. Suffice it to say that all of the technics of scar revision including excisions, Z-plasties, free grafts, and pedicle flaps must be appreciated before any under-taking in such a critically cosmetic, functional, and public sector.

Ears. The ears are frequently involved in scald and flame burn trauma. Often the depth of auricular injury is either overlooked or not appreciated and on occasion is related to hair obscuring the ear damage or simply preoccupation with the more massive aspects of the insult. Unfortunately, ear skin is thin and underlying auricular cartilage readily exposed and easily destroyed by sepsis. The external auditory canal can be similarly involved especially with scald or chemical burns. Meticulous wound hygiene, conservative separation of slough, thorough incision and drainage if purulent chondritis has developed, and prompt direct autografting appear sound in caring for the burned ear, No definitive attempt at ear reconstruction is indicated in the primary management of the severly burned auricle.

Hands. Peacock[214] has indicated that the single most important factor in rehabilitating the burned hand is the preservation of the functional and anatomic integrity of the proximal interphalangeal joints. Stiffness must be prevented. Peacock has related hand stiffness following burns to the accumulation within the hand of protein-rich edema fluid with its tendency to fibrin coagulation. The fibrin deposited then serves as a template for new, excessive, and abnormally placed collagen formation which ultimately results in the restriction of refined hand motion. His therapeutic concepts demand reducing edema to a minimum, presumably by elevation with activity and early excision and skin grafting. Peacock does, however, concede the need for a more conservative approach in burns of the volar aspect of the hands and in children. Moncrief[213] has also called for early excision and skin grafting especially in certain full-thickness burns of the dorsum of the hand but has conceded that surgical conservatism in general is indicated in all probable superficial and deep second-degree injuries, especially on the flexor surface, and has stressed the need for hand elevation, immediate splinting in the functional position with maintenance of interdigital and thumb-index spaces, and the early institution of active motion in a water medium. Evans[215] has further emphasized and reconfirmed the importance of early hand motion, particularly in water, the significance of proper functional splinting, and where motion is lost because of tendon destruction K-wire fixation of pivotal areas, such as metacarpophalangeal joints.

Miller, Hardy, and Spira[216] have described their results with silicone immersion in the treatment of the severely burned hand. Employing the dimethyl polysiloxane form of silicone, a viscous, relatively inert material capable of circulating about the immersed burned part, these investigators have noted relatively pain-free and earlier eschar separation, improved cooperation of the patient, active exercise of the burned member, and ultimately satisfactory grafting procedures in 8 cases.

Brena, Bocca, and Momo,[217] from Turin, Italy, have offered their results with cervicothoracic sympathetic nerve blocks in 70 of 140 cases of burned hands. Early use of 0.1 per cent tetracaine (Pontocaine) with 1:250,000 epinephrine injected about the brachial plexus, supraclavicular technic, and about the anterior paratracheal sympathetic chain was combined with a repeat of this block twelve hours later in 50 per cent of the cases so treated, and a third block at twenty-four hours after burn in 17 per cent. Comparing the results in the nerve block group with an equal number of cases treated in conventional fashion, the Italian investigators noted prolonged relief of pain in the treated group with consequent improved cooperation and active hand use, more rapid healing time in instances of superficial burn, fewer systemic complications but conceded no appreciable difference in ultimate hand scarring. This therapeutic approach is consistent with that found in several other European centers, as was discussed under "Nervous Factors in Burn Shock," and is based on the theory that the neural blockade of painful, abnormal, and inefficient tissue response is essential to proper burn care.

Major joints. Proper positioning of the extremities is essential to counteract the deleterious physical forces operating in cases of deep burns across major joints. In general, it is best to move the joint into a reasonable functional position toward the weaker muscle group, usually toward the extensor surface, encourage a full range of passive if not active joint motion to maintain ligament and capsular dimensions, and provide skin closure as soon as possible, preferably in the form of larger sheets applied at right angles to the long axis of the extremity involved.[213]

Exposed bone. If the burn has resulted in the destruction of all covering tissue including periosteum, thus exposing cortical bone, it is safe to say that simple application of even thin split-thickness skin grafts will not prove successful. Possible approaches would include: removal of cortical surface until bleeding bone is exposed, then graft or await granulation tissue formation before grafting; drill multiple and closely placed holes through the cortex into the cancellous portion of the bone and await granulation tissue formation; if the area of exposed bone is small, simply treat the rest of the burn wound as usual while maintaining the cleanliness of the exposed cortex; and granulation tissue from the overlying soft tissue may eventually overgrow the exposed bone and provide a suitable bed for simple free autografting. The use of pedicle flap coverage in instances of exposed bone is a major project and must be undertaken, in the rare instance in which it seems indicated, by an experienced surgeon and only after consideration and rejection of the simpler, direct, and less hazardous technics.

Feet. Splinting in the neutral, functional position, maintenance of interdigital webs, conservative management of the eschar, and split-thickness autografts, even on the soles, comprise the bases for proper treatment of burned feet.

Perineum. Burns of the genitoanal area are most often exposed because of the enormous difficulty of maintaining proper wound hygiene by any other method. Regular, gentle soap and water cleansing if the wound is stained with excreta, the use of prone position as tolerated, not diapering infants, and conservative debridement are indicated. Split-thickness skin grafts represent the coverage material of choice, including cases of burns of the penis, where immediate and prolonged catheterization is most critical.

CARE OF THE ELECTRICAL BURN. The mechanism of burn in electrical trauma has been reviewed in the section on pathologic anatomy. Attention will now be directed to several considerations in the care of an electrical burn. Brown[43] has stressed the following fundamentals: (1) separation of patient from electrical contact and care for protection (insulation) of the rescuer; (2) artificial respiration; (3) closed-chest cardiac massage; (4) maintenance of a clean, dry burn wound; and (5) care regarding hemorrhage when burn slough begins to separate. Snyder[42] has reaffirmed these basic maneuvers while adding the need for intravenous support, tetanus prophylaxis, and antibiotics. The fact that electrical burns are usually deep has been repeatedly stressed. Sachatello and Stephenson[44] have commented on the often progressive nature of the destructive process in both depth and area which is probably related to secondary vascular thromboses. Robinson, Masters, and Forrest[45] have offered the following specific anatomic considerations: (1) conservative approach justified in cases of electrical burns of the lips and mouth; (2) skull injury often best managed by a conservative approach allowing several months if necessary for a full-thickness burn of the scalp and skull to separate culminating in skin grafting to exposed dura and granulations; and (3) extremity burns if severe can be handled radically, particularly in the palm of the hand, where early excision and pedicle flap coverage may result in an increased salvage of nerves and tendons.

The over-all care of an electrical burn once cardiopulmonary resuscitation has been achieved does not vary significantly in its basic tenets from the care of any deep burn wound. The frequent occurrence of lip-mouth-intraoral injury, especially in children, and scalp-skull, palmar-hand, and volar-forearm burns, especially among personnel in the power industry, call forth specific anatomic functional and cosmetic considerations; but the fundamentals of burn wound care as previously discussed can be applied in these instances as well as with the more common forms of burn trauma.

Care of chemical burn. The mechanism of chemical injury has been discussed previously in the section on pathologic anatomy. The hallmark of early chemical burn wound care seems unequivocally to be irrigation, immediate, continuous, and prolonged. Steinberg *et al.*[46] have particularly urged long-term hydrotherapy in alkali burns, while Artz and Reiss[1] have more specifically referred to irrigation of caustic burns (lyes) with 5 per cent ammonium chloride, of acid and phosphorus burns with a weak bicarbonate of soda solution, and of phenol burns with ethyl alcohol. Probably none of these solutions should ever be used in eye burns except by a qualified ophthalmologist. Despite any discussion of antidotes, most are not available and, therefore, are of no significance in the practical management of chemical burns. Water, therefore, in copious amounts still comprises the fundamental and sound form of all chemical burn irrigation therapy.

Terry[218] has stressed the value of large vessels of ammonium chloride solution in industrial plants where caustic soda is manufactured. The value of specific therapy among this particular well-informed group is obvious. Later care of the wound beyond first aid will be determined by many of the same features noted in the earlier discussion of burn wound care in general. Again, as with electrical burns, the destruction is usually deep, separation of slough required, and skin grafting obligatory. Conservative wound management as opposed to radical excision is generally preferred, particularly in the facial-scalp regions where assault-lye injuries are most frequent and regenerative powers great.

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Part III will appear in the June 15 issue of the JOURNAL

Thrombo-embolic disease after discontinuing anticoagulant therapy

In a series of 87 patients, involving therapy stoppage on 89 occasions, anticoagulant therapy was stopped abruptly on 47 occasions and reduced gradually over a period of six weeks on 42 occasions. Both groups were followed up for four months after withdrawal of anticoagulant therapy. In the group representing abrupt withdrawal, the relapse rate was 21 per cent as against 17 per cent among those in whom therapy was gradually reduced. L. Michaels, M.D., and R. E. Beamish, M.D., writing in a recent issue of the *American Journal of Cardiology*, conclude that this difference is not statistically significant.

All the patients had been on anticoagulant therapy for at least a month. Each was having therapy electively discontinued during the years 1964 to 1965. The patients were put into 2 groups according to the year of birth, odd or even. The anticoagulant therapy was stopped abruptly in patients who had been born in the odd years and was gradually reduced in those who had been born in the even years. In the "gradual" group, the daily dose of warfarin sodium was reduced each week by $^1/_2$ tablet. When the total dose got down to $^1/_2$ tablet daily, the intake was further reduced by scheduling $^1/_2$ tablet every other day to the end of the six-week period, when it was withdrawn completely. All other treatments were continued as indicated. The patients, who had been briefed on symptoms of acute coronary or cerebrovascular insufficiency, were instructed to report them at once if they appeared. Each group was reassessed at one and four months afte therapy was discontinued. In the "abrupt" group, courses of treatment were terminated twice in 2 cases, bringing the total to 89 for the 87 patients.

During the four months after anticoagulant therapy was competely withdrawn, 9 patients in the "abrupt" group had mild symptoms attributable to coronary or cerebrovascular insufficiency, and in the "gradual" group, 8. In 10 patients in the "abrupt" group, there was evidence of fresh thrombo-embolic disease considered sufficient to warrant resumption of anticoagulant therapy, and 6 in the "gradual" group. By time intervals, thrombo-embolic recurrences after halting therapy were (1) "abrupt" group: "tail-off" period, 0; first month, 7; following three months, 3; (2) "gradual" group: "tail-off" period, 2; first month, 2; following three months, 2. While the differences were not statistically significant, the over-all comparison suggests that vascular disease may have been somewhat less severe in the "gradual" group. Even so, it was concluded that the practical disadvantages of gradual reduction do not appear to be counterbalanced by any significant reduction in thrombo-embolic recurrences.

Clinicopathologic Conference

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Beekman-Downtown Hospital
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July 25, 1967

Conducted by JOHN T. FLYNN, M.D., and
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Discussed by AARON D. SPIELMAN, M.D.

Pleural Effusion, Dyspnea, and Progressive Liver Enlargement

Case History

NORMA OLLER, M.D.: A fifty-six-year-old Puerto Rican male was admitted to the Beekman-Downtown Hospital complaining of shortness of breath, swelling of the legs, backache, and precordial discomfort over five months.

First admission. Eight months previously, the patient had been admitted with severe pain in the right costovertebral angle, dysuria, nausea, and anorexia of one day duration. Diagnoses of peptic ulcer and filariasis were made at another hospital ten years earlier; there was also a past history of allergy to penicillin. One son was said to have had tuberculosis.

Physical examination revealed a blood pressure of 120/80, pulse 100, and temperature 99.8 F. The patient appeared well-developed, well-nourished, and in no acute distress. The physical examination at that time showed normal findings except for tenderness in the epigastrium and in the right costovertebral angle.

The initial urinalysis showed a specific gravity of 1.023 with 4 plus albumin, 3 to 6 white blood cells, and 4 to 7 red blood cells per high-power field. The complete blood count, blood urea nitrogen, fasting blood sugar, uric acid, serum calcium, phosphorus, acid phosphatase and liver, function test results were within normal limits. The alkaline phosphatase was 6.7 units (normal 1 to 4 units). Blood smear showed no microfilaria. One stool specimen gave negative results for ova and parasites. A blood culture was negative. X-ray examinations showed chronic fibrotic changes throughout both lung fields with heart size at the upper limits of normal (Fig. 1). Flat x-ray films of the abdomen, intravenous pyelogram, and gallbladder series showed normal findings. Gastrointestinal series revealed only a small hiatus hernia; an isolated diverticulum in the descending colon was seen on examination by barium enema.

During the second hospital day, the patient's temperature rose to 102.4 F. and gradually returned to normal by the sixth hospital day. The patient's pain subsided quickly, and he remained asymptomatic up to the time of discharge; repeat urinalyses showed 1 plus albuminuria, and negative microscopic examination results.

Shortly after discharge the patient developed pain in the upper back, possibly related to osteoarthritis. He remained fairly well for the next four months but thereafter noted chest pain, progressively lost weight, and had recurrent palpitations associated with the recurrences of anterior chest pain.

From time to time the patient had had pain in the elbows and knees, but he had not been aware of fever or chills. He had smoked one pack of cigarets per day up to one year before admission and consumed one-half to one quart of spirituous liquor daily for the past year.

Second admission (eight months later). The patient was thin, poorly nourished, chronically ill, and dyspneic although not orthopneic. The blood pressure was 108/90, pulse 80, respirations 24 per minute, and temperature 99.4 F. There was engorgement in the neck veins in the sitting position, increased anteroposterior diameter of the chest, and scattered inspiratory rales over the posterior base of the right lung. The cardiac examination revealed negative findings. The liver edge was nontender 2 fingerbreadths below the right costal margin; the spleen and kidneys were not felt. There was moderate pitting edema of both lower extremities.

The urinalysis showed a specific gravity of 1.015 and a 2 plus albumin test. The hemoglobin was 13.6 Gm. per 100 ml., the hematocrit 41 per cent, and the white blood cell count 5,700 with 44 per cent segmented forms, 39 per cent lymphocytes, 2 per cent monocytes, and 15 per cent eosinophils. The sedimentation rate was 36 mm. per hour. The carbon dioxide-combining power, serum potassium, sodium, chlorides, total and direct bilirubin, thymol turbidity, cephalin flocculation, glutamic oxaloacetic transaminase, glutamic pyruvic transaminase, and serum lactic dehydrogenase test results were within normal limits. The total serum cholesterol was 260 mg. per 100 ml. (normal range 150 to 250 mg. per 100 ml.). The alkaline phosphatase was 10.6 units. The total serum protein was 4.7 Gm. (albumin 2.6, globulin 2.1 per 100 ml.). The fasting blood sugar was normal. The blood urea nitrogen was 50 mg., the uric acid 10.4 mg. (normal 4 to 7 mg.), the serum creatinine 1.8 mg. per 100 ml. The protein-bound iodine and erythrocyte triiodothyronine were normal. The VDRL gave negative results. Bleeding time, clotting time, and plasma prothrombin time were normal. The total twenty-four-hour urinary protein was 1,971 mg. (25 to 70 mg. per twenty-four hours); test for Bence Jones protein showed negative results. The phenolsulfonphthalein excretion test (one and two hours) showed normal findings. The urine concentration test showed a maximum specific gravity of 1.020.

X-ray film of the chest revealed a pleural effusion on the right side, with pulmonary congestion and cardiac enlargement (Fig. 2A). The electrocardiogram initially showed low voltage in all leads with numerous extrasystoles and evidence of ischemia or strain (Fig. 2B). The results of gastrointestinal x-ray films and the intravenous pyelogram were within normal limits; the liver shadow appeared enlarged.

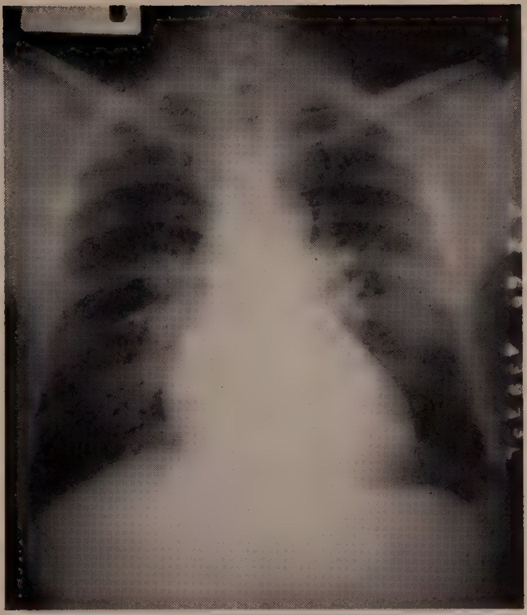
FIGURE 1. Chest x-ray film (first admission) showing pulmonary fibrotic changes and heart at upper limits of normal.

After treatment with diuretics and digitalization, the patient's shortness of breath improved, the edema of the lower extremities gradually subsided, and the pleural effusion diminished. However, he continued to complain of marked weakness. There was continued albuminuria, decreased total serum proteins, and continued elevation of the blood urea nitrogen and uric acid; however, the use of allopurinol 100 mg. three times a day was not followed by any significant improvement. A needle biopsy of the liver revealed no structural alteration of the liver itself, although one portal area showed an artery with thickened wall; histochemical stains were noncontributory. A right thoracentesis produced fluid with a specific gravity of 1.010, 7,800 white blood cells per cubic millimeter, and 1.2 Gm. protein per 100 ml.; cell block revealed isolated clumps of atypical mesothelial cells. Marrow aspiration showed normal cellularity and maturation. Three lupus erythematosus preparations revealed negative results, the direct and indirect Coombs' tests showed negative findings. Oxalated blood smears revealed no microfilaria; the hemaglutination test

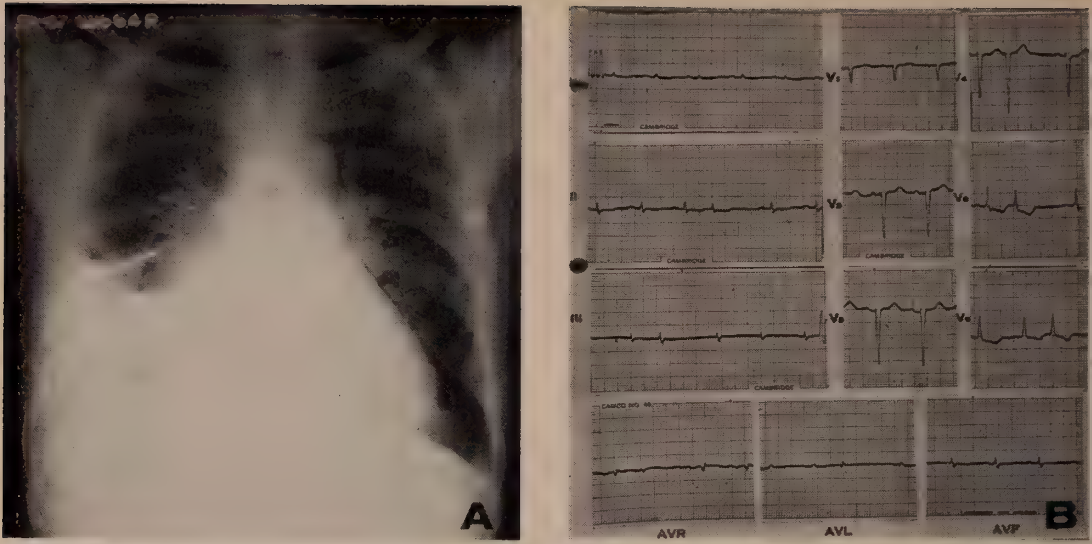

FIGURE 2. (A) Chest x-ray film (second admission) showing pleural effusion, pulmonary congestion, and cardiac enlargement. (B) Electrocardiogram (second admission) with low voltage in limb leads showing S-T and T-wave changes.

for filariasis showed a significantly positive result of 1:400, and the flocculation test gave a positive result of 1:5. Although the blood urea nitrogen remained elevated at 68 mg. per 100 ml., the carbon dioxide-combining power, potassium, sodium, and chlorides showed entirely normal results. The hemoglobin remained at 13.9 Gm.; the differential count showed 250 eosinophils per cubic millimeter. The serum calcium was 9.6 mg., the phosphorus 5.5 mg., total cholesterol 300 mg., and the total serum protein 4.7 Gm. (albumin 3, globulin 1.7) per 100 ml. Liver function test results remained normal, although alkaline phosphatase rose to 17.5 units. The stool guaiac test for blood gave faintly positive results.

Biopsy of rectal wall showed intact mucosa without evidence of parasites, ova, or amyloidosis. Gingival biopsy revealed nonspecific submucosal hyalinization; special stains did not confirm the presence of amyloidosis. Renal biopsy was unsuccessful.

A repeat right thoracentesis produced straw-colored fluid with mesothelial cells; no tumor cells were seen. Pleural biopsy showed only fragments of striated muscle. Three subsequent thoracenteses were performed, the first two showed results which were suggestive of malignant disease by the presence of signet-ring cells, while the third fluid specimen showed large mononuclear cells suggesting marked mesothelial proliferation and the possibility of a mesothelioma. All pleural fluids gave negative results for acid-fast bacilli on smear and culture.

X-ray film of the left leg showed no calcified areas suggestive of parasite infestation. Barium enema examination demonstrated only occasional diverticula. A liver scan with radioactive gold showed normal results. Radioisotope lung scan showed normal findings, except for absence of uptake in the lower lobe of the right lung compatible with pleural effusion. Tomograms of the chest showed slight downward and medial displacement of the main trunk of the right bronchus and suggested narrowing of the middle lobe of the right bronchus. A gallbladder x-ray film series showed negative findings. Internal mammary lymph node biopsy revealed only mild fibrosis and prominence of reticulum cells.

The patient continued to complain of progressive dyspnea, particularly with recurrences of the right pleural effusion; edema and progressive liver enlargement were noted, and the patient had several minor hemoptyses following thoracentesis. Terminally the blood urea nitrogen was 55 to 70 mg.; the uric acid 13.6 mg., serum calcium 8.8 mg., and phosphorus 3.6 mg., per 100 ml. Weight loss continued, and exertional dyspnea became more severe in spite of digoxin, oral diuretics, and spironolactone (Aldactone). The patient was found dead early on the morning of the one hundred thirtieth hospital day.

Discussion

Aaron D. Spielman, M.D.*: I would like to approach this case by considering first, the initial admission; second, the interval after his discharge; third, the second admission; and finally, an analysis of the factors involved in his death.

Certain laboratory findings stand out during his illness and may be a guide to our final diagnoses. This patient presented symptoms of albuminuria which was at times quite heavy with an elevated blood urea nitrogen, a low total serum protein, a diminished serum albumin, and a normal globulin. A markedly elevated uric acid at the time of his second admission continued to rise until his death, reaching 13.6 mg. per 100 ml. The serum cholesterol gradually rose to 300 mg. and is of very great significance, I believe. The alkaline phosphatase was elevated on the very first admission and continued to rise to the time of his death. On one or two occasions his white blood cell count was relatively low with an eosinophilia at one point 855 per cubic millimeter on the differential.

There are certain important considerations in the past history—the filariasis, the peptic ulcer, the recent high alcohol intake, the penicillin allergy, and the family history of tuberculosis.

In reviewing the first admission, we might be influenced to the belief that we are dealing only with a very simple diagnosis of renal calculus. There was sudden onset of severe pain and tenderness in the right costovertebral angle, followed by dysuria, nausea, and anorexia. The urinalysis showed albuminuria; moderate fever was present from the second hospital day. With sulfisoxazole (Gantrisin), the pain subsided, and he became asymptomatic. However, even on the first admission the chest x-ray film showed chronic changes throughout both lung fields with the heart at the upper limits of normal. Dr. Batillas, would you review only the x-ray films taken on this first admission?

John Batillas, M.D.: The initial and follow-up x-ray films demonstrate cardiomegaly, thickening of the hilar regions, and some prominence of the pulmonary vasculature (Fig. 1). These suggest either chronic changes or minimal pulmonary congestion, with Kerley's lines in the costophrenic regions. The initial abdominal x-ray film demonstrated only the enlarged liver.

Dr. Spielman: Even on his first admission there was considerable evidence that this patient was suffering from more than renal calculi. Furthermore the elevated alkaline phosphatase may have indicated that some liver involvement was already present at that time.

In the interval after discharge, the patient developed other symptoms which reinforce my impression that on his first admission he had the beginning of serious systemic disease.

I believe that the chest pain, shortness of breath, and edema can be considered classic for arteriosclerotic disease of the coronary arteries with congestive failure. The back pain suggests the possible presence of a dissecting aortic aneurysm. At the same time, we must still consider the diagnosis of chronic pulmonary disease, the exact nature of which we cannot specify.

Between his two admissions, the patient noted pains in his elbows, knees, and low back. On his second admission the uric acid level of 10.4 mg. raises the question of primary gout. Perhaps his entire illness could be due to gout, including the renal calculi and the cardiac disease, since in the course of gout generalized arterial changes may occur in any organ. Primary gout usually appears as a fulminating arthritis of a peripheral joint, but less commonly it can present symptoms of renal colic with pyelonephritis and renal failure.

However, some of the facts in the history strongly suggest the presence of secondary gout. The mean age of onset in secondary gout is fifty-nine years versus forty years in primary gout; our patient was fifty-five-years old. The mean serum uric acid is higher in secondary gout, 11.7 mg. versus 9.1 mg.; in this patient it reached as high as 13.6 mg. The incidence of spontaneous uric acid calculi is greater in secondary gout, and the acute arthritis is more apt to be atypical in location, as in this case. So I think if gout was present, it was a secondary gout; and in this event we must consider such causative factors as diuretics, particularly chlorthiazide, decreased food intake, alcohol taken without food, renal disease, and uremia. The diseases that are very prone to give high uric acids are those myeloproliferative diseases such as chronic leukemia in which there is an expansion of, and increased turnover within, the nucleic acid pool. In this case there is no evidence to implicate such disease processes.

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On this patient's second admission, we must be impressed with the degree of cardiac involvement with chronic heart failure. Dr. Batillas, would you review the x-ray films taken on the second admission?

Dr. Batillas: The initial chest x-ray film again demonstrates the chronic changes and cardiomegaly; and of course the obvious change is this rather large pleural effusion which is opacifying the inferior half of the right hemithorax (Fig. 2A).

Dr. Spielman: Do we not see a very definite change in the size of the heart?

Dr. Batillas: That impression partly may be due to displacement by the fluid, but I believe there is some further enlargement of the heart.

Dr. Spielman: The electrocardiogram of this patient demonstrates very serious S-T and T-wave abnormalities in many leads indicating myocardial ischemia and/or electrolyte disturbance. Although arteriosclerotic disease can be the prime cause for this patient's acute congestive failure, we must give consideration to other possible causes, which I will mention shortly.

Let us for a moment try to determine whether his progressive renal failure with rising blood urea nitrogen was due to primary renal disease or to prerenal factors. From the beginning, proteinuria was extremely severe with as much as 2 Gm. in twenty-four hours; later there was a fall in serum albumin and a rise in cholesterol, suggesting the presence of a nephrotic syndrome. The proteinuria persisted while total serum proteins remained low and urea nitrogen and uric acid continued to rise, indicating no improvement in renal status in spite of improvement in his cardiac status. On the second admission, he had signs of generalized vascular insufficiency with a blood pressure of 108/90. His heart failure may have been aggravated by extracardiac causes, possibly by terminal renal disease with a nephrotic syndrome and uremia, and/or by chronic pulmonary disease, such as sarcoidosis, Hamman-Rich syndrome, rheumatoid lung, or primary or metastatic neoplasm. In 1 patient out of 5 with sarcoidosis, there is involvement of the heart with replacement of the myocardial fibers resulting in conduction defects, paroxysmal arrhythmias, myocardial failure, and sometimes sudden death. Fever, weight loss, and easy fatigability occur commonly in sarcoidosis; two thirds of such patients have elevated sedimentation rates and one third have elevated serum alkaline phosphatase levels; leukopenia is not uncommon, and eosinophilia occurs occasionally. Despite the rarity of renal failure in sarcoidosis, this condition cannot be ruled out entirely in this case.

However, I feel that a neoplasm is the most likely cause of this patient's last illness, with the primary site in the lungs in view of the x-ray findings, the recurrent pleural effusions, and the cytologic changes in the pleural fluid. The first two such examinations were reported to be strongly suggestive of malignant cells, and the third fluid specimen examined showed large clusters of mononuclear cells suggesting a mesothelioma. Furthermore, the tomogram showed downward and medial displacement of the main trunk of the right bronchus and narrowing of the middle lobe of the right bronchus. The patient's continual complaint of progressively increasing dyspnea, particularly with recurrent right pleural effusions, persistent back pain, progressive liver enlargement, and increasing alkaline phosphatase levels, strongly suggests the presence of carcinoma of the lung with liver metastases. Dr. Batillas, would you review the tomograms please?

Dr. Batillas: The regular chest x-ray film taken at the time of the tomograms again demonstrates the massive pleural effusion on the right side. The tomograms taken with the patient in the anteroposterior view and the supine position show a thick band of increased density along the chest wall which represents the pleural effusion. There is also a cut-off of the middle lobe of the right bronchus and even a suggestion of a mass at the bifurcation of the right main bronchus with some pressure on the lower lobe of the right bronchus. In view of the fluid, the changes in the bronchi, and the suggestion of a mass in this region, one would have to suggest a malignant disease.

Dr. Spielman: All these findings would compel me to say that this patient was suffering from a malignant disease affecting several organ systems, but primarily the lung. It certainly could account for his chronic pulmonary changes and for his heart disease with direct involvement of the myocardium by the malignant process. Before completing my discussion, I would like to mention a number of other possible diagnoses. He had a history of peptic ulcer, but the ten-year interval since the initial diagnosis would tend to rule out gastric carcinoma.

We must mention the past history of filariasis, although the clinical manifestations such a lymphangitis, lymphadenitis, orchitis, epididymitis, lymph varices, and chyluria were absent, and the blood smears showed negative results for microfilariae.

The actual cause of death is not clear although the patient had signs of acute left thrombophlebitis which could easily have caused pulmonary emboli and death. With much evidence of myocardial involvement, death could have been caused by an acute massive myocardial infarction, a ventricular rupture, ventricular fibrillation, or rupture of an aortic aneurysm.

I am impressed with the fact that we are dealing with a single disease involving many organs. This is why I mention sarcoidosis and malignant disease involving the heart. It is of interest to note the patient's allergy to penicillin, which suggests a tendency toward altered immunologic responses. This is why one should not dismiss sarcoidosis and amyloidosis too quickly. However, one cannot overlook the strong evidence against amyloidosis found in several mucosal biopsies. Still the biopsy of the liver interests me very much, particularly the one thick-walled vessel. The diagnosis of vasculitis must be considered nonspecific.

However, my final diagnoses in this patient are carcinoma of the lung with metastases to the liver, secondary gout, chronic renal disease with nephrosis, arteriosclerotic heart disease, generalized nonspecific vasculitis, chronic pulmonary fibrosis, pulmonary emboli, and healed filiariasis.

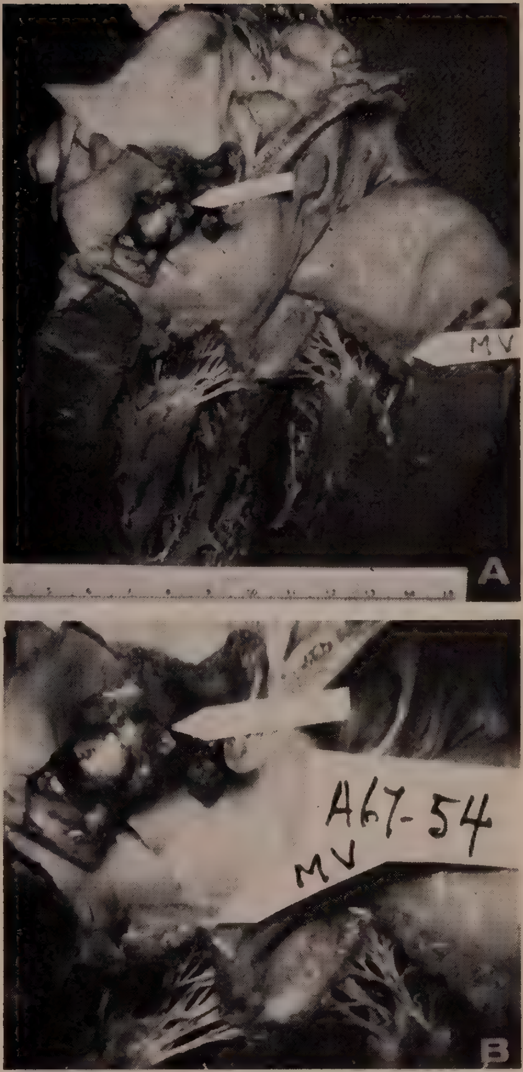

FIGURE 3. (A) View of enlarged heart illustrating atrial thrombi (upper arrow). (B) Higher magnification of (A) showing mitral nonbacterial vegetations (lower arrow MV).

Paula Seiler, M.D.: Dr. Spielman, you mention the clinical picture of nephrosis and then thrombosis in the superficial and perhaps in the deeper veins. Are you implying that the nephrotic picture might be due to thrombosis of the inferior vena cava with eventual blockage of the renal veins?

Dr. Spielman: I did not mention that as the cause of the nephrosis, although of course it remains a possibility.

Lewis Bronstein, M.D.: Back pain and other pain is mentioned in the protocol. How prominent were these symptoms during his hospital course?

Duk-Jhe Shun, M.D.: The patient complained of pains in other areas of the body, but the back pain was not an outstanding feature.

Dr. Bronstein: The combination of renal disease and back pain would make me think of multiple myeloma.

Dr. Shun: The bone marrow did not indicate any evidence of multiple myeloma, and the patient was never anemic.

Yat Ting Moy, M.D.: I was wondering if the patient might have been exposed to asbestos in his occupation, in light of the suggestion of a mesothelioma.[1]

John T. Flynn, M.D.: He worked as a chef, and we have no history suggestive of asbestosis.

Charles M. Karpas, M.D.: One should be cautious in interpreting suspicious cells in the pleural fluid, since mesothelial cells have the propensity to proliferate readily when stimulated and will often present signs of irregular morphologic changes. The fact that the cytologist was suspicious of tumor cells does not necessarily indicate a definitive diagnosis of malignant disease.

Clinical diagnoses

1. *Nephrotic syndrome with progressive renal failure*
2. *Myocardial failure, cause undetermined; ? secondary to secondary neoplastic invasion (? mesothelioma)*
3. *Amyloidosis, suspected*

Dr. Spielman's diagnoses

1. *Carcinoma of lung with metastases to the liver*
2. *Chronic renal disease with nephrosis*
3. *Chronic nonspecific vasculitis*
4. *Healed filariasis*

Pathologic report

Basil Moumgis, M.D.: At postmortem examination, we found a generalized disease which extensively involved the cardiovascular system, the lower respiratory tract, spleen, and kidneys. The heart was grossly enlarged and weighed 670 Gm. There was both right and left ventricular hypertrophy associated with dilatation. The chronicity of the heart disease was reflected by the presence of mural thrombi in the dilated right and left atria (Fig. 3A). In addition, the mitral valve contained small but distinct vegetative growths (Fig. 3B). We were unable to demonstrate ulceration or erosion of the valves. Cultures from the small nonfriable thrombi on the mitral valves did not grow out bacterial colonies. We were singularly impressed by the thickening of all valves in addition to the somewhat "glassy" appearance of the thickened myocardium. Microscopic sections revealed diffuse homogeneous, acellular areas which replaced approximately 75 per cent of the myocardial fibers (Fig. 4A). Employing crystal violet and congo red stains, we were unable to elicit unequivocal changes of amyloidosis; however, the acellular areas showed marked fluorescence to thioflavine stains (Fig. 4B). The markedly positive results obtained with the fluorescent staining technic confirmed the diagnosis of primary senile amyloidosis. The acellular amyloid foci extended into the valves and leaflets, probably contributing to altered blood flow.

The amyloidosis involved medium- and small-sized arteries throughout, including the malpighian bodies in the spleen and the renal arterioles. It is of interest to note also that the glomeruli showed a marked amount of amyloid changes (Fig. 5A). The lungs were markedly congested and were associated with bilateral pleural effusions, 1,000 ml. on the right and 500 ml. on the left. Microscopically there is diffuse and marked thickening of the alveolar walls, intralobular septae, and vessels due to infiltration by acellular homogeneous material which readily fluoresced when stained with thioflavine (Fig. 5B). The amyloidosis was markedly prominent in the subpleural area and was associated with only slight proliferation of mesothelial cells in the pleura. We were unable to demonstrate any definitive process which would account for the marked exfoliation of numerous and atypical mesothelial cells which has been readily seen in the pleural fluid obtained by the various thoracenteses. We did find a cystic structure filled with red blood cells; however, this was in an area of pulmonary fibrosis and could be attributed to hemorrhage in an emphysematous bleb. Because of the generalized amyloidosis, it is difficult to appreciate the emphysema and

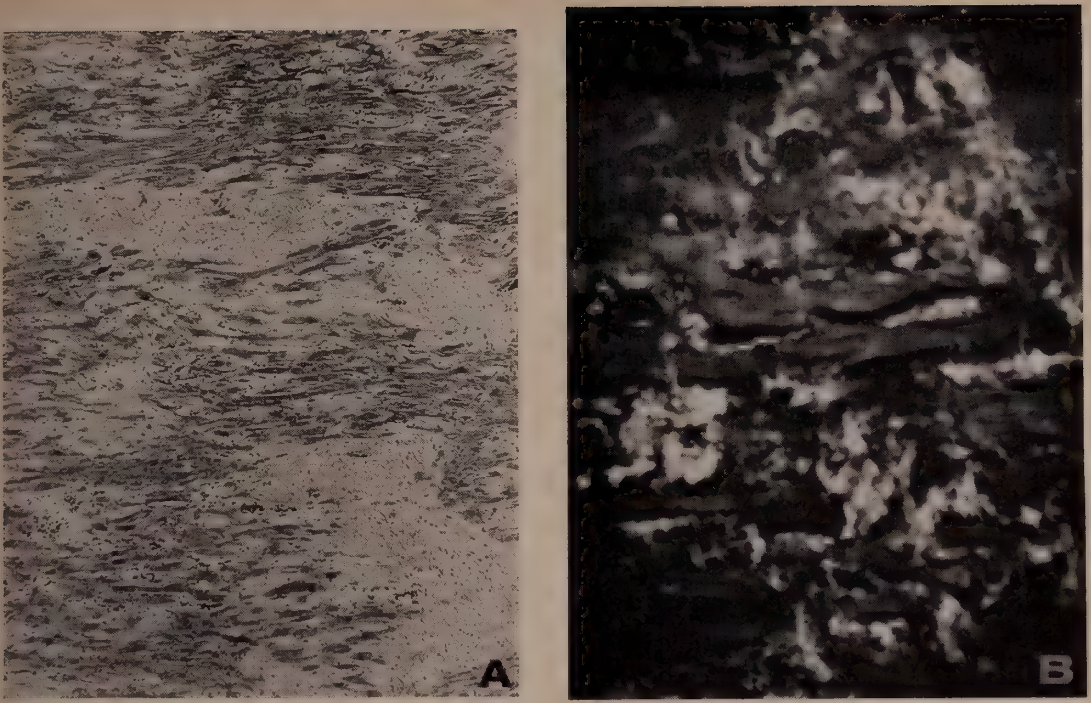

FIGURE 4. (A) Microscopic section of myocardium showing large acellular areas of amyloid (hematoxylin and eosin stain). (B) Microscopic section showing positive thioflavine-T amyloid fluorescence in myocardium. Light areas indicate presence of amyloid (× 335).

extensive passive congestion which were present in the lungs. The numerous hemosiderin-laden macrophages and irregular areas of noninflammatory interstitial fibrosis reflected the marked passive congestion.

In addition to the amyloidosis, both kidneys showed distinct foci of interstitial fibrosis, lymphocytic infiltrate, and dilated tubules containing inspissated protein material. We felt the alteration of architecture and the extent of the inflammatory process were certainly consistent with chronic nephritis.

Dr. Flynn: The depth of the gingival, small-intestinal, and rectal biopsies is important because a very careful study of such biopsies indicates that to ascertain the presence of amyloidosis the specimen must include the submucosa with its arterioles.[2] I am afraid that we were misleading Dr. Spielman to some extent because the biopsies simply did not go deep enough. Incidentally, the area above the second valve of Houston on the anterior wall of the rectum is one of the best and most painless areas from which to secure the biopsy specimen.

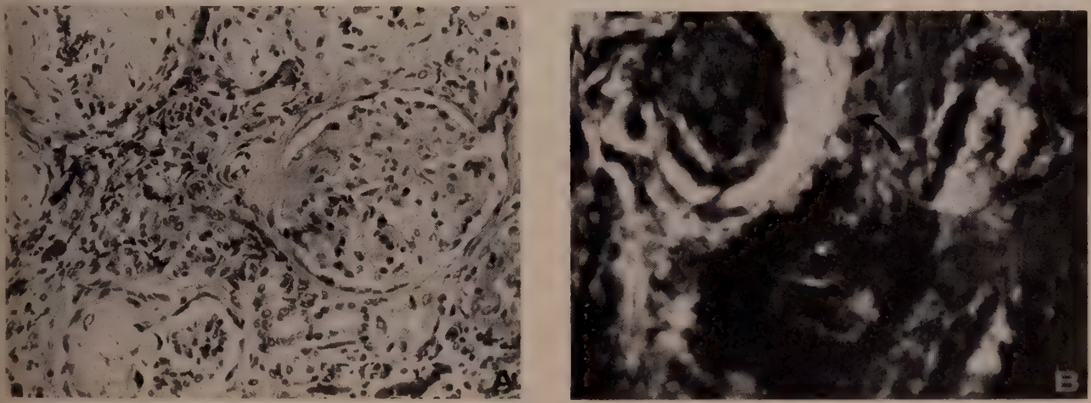

FIGURE 5. (A) Section of kidney illustrating amyloid disease of glomeruli. Arrow indicates amyloid thickening of blood vessel wall (× 110 hematoxylin and eosin stain). (B) Microscopic view of positive amyloid fluorescence (light areas) in pulmonary artery (arrow) (× 245).

On the first aspiration of the liver, the pathologists reported a thickened wall of a small artery as the only suspicious finding.

Dr. Moumgis: In the gastrointestinal tract, we did find the amyloid in the walls of blood vessels without any diffuse stromal involvement. I would suggest that in suspecting primary amyloidosis, the tongue may be a reliable site for a diagnostic biopsy. Incidentally we were unable to demonstrate positive fluorescence using the thioflavine technic on the original gingival biopsy.

Dr. Flynn: Dr. Paganelli, would you bring us up to date on amyloid?

Hugo Paganelli, M.D.: The pathogenesis of amyloid remains a mystery, although it seems to be related to immunologic mechanisms. Amyloid tends to be laid down in the immediate vicinity of reticuloendothelial cells, although not within the cells themselves. Experimentally, injections of casein can produce amyloid disease in mice, suggesting an immunologic relationship. The chemical structure of amyloid is not very well known but appears to be in large part a protein with a small carbohydrate fraction.[3] The protein elements include gamma globulin, beta-1C globulin, fibrinogen, and a serum lipoprotein. Amyloid has a fibrillar structure arranged in a helical pattern similar to deoxyribonucleic acid. From the clinical standpoint, secondary amyloidosis appears to have some relationship to chronic infection and chronic disease. With the better control of chronic infections, we are seeing fewer cases of "secondary" amyloid and many more cases of the so-called primary form.

Dr. Karpas: Most investigators agree that there is some dysfunction of the immune mechanism.[4] I think this would account for the presence of primary amyloidosis in aged individuals and also would explain why amyloidosis can occur in the presence of hypogammaglobulinemia.[5]

Dr. Flynn: In spite of the negative results from the biopsies, Dr. Shun, the resident, was convinced that this patient had amyloidosis because of the long-standing renal disease with the appearance of a nephrotic syndrome, a high serum cholesterol, absence of elevated blood pressure, and very gradual renal failure. The rise in the alpha-2 globulin is nonspecific but is frequently found in this type of amyloid disease together with the general fall in the serum protein.

Final diagnosis

1. *Amyloidosis, "primary" type with involvement of myocardium, valve leaflets, small and medium arterioles in kidneys, lungs, and gastrointestinal tract*
2. *Mural thrombi, both auricles*
3. *Nonbacterial valvular vegetations*
4. *Bilateral emphysema; hemorrhagic cyst of upper lobe of right lung*

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Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Fluid Replacement During and After Prolonged Surgery

Marked shifts in body fluids occur during major surgical procedures associated with hemorrhage and/or extensive tissue trauma. Effective body fluid loss can amount to from 750 to 1,000 ml. per hour of surgical manipulation.[1,2] The site of sequestration is not established, but it is probable that the fluid moves into the traumatized tissue.[3] Large amounts of balanced salt solution may be required to maintain an adequate fluid balance and sustain tissue perfusion.[1,2,4,5] The following case report illustrates well-managed fluid replacement during and after prolonged surgery.

Case report

A fifty-one-year-old man who had undergone loop colostomy and incision and drainage of a pelvic abscess secondary to perforation of an adenocarcinoma of the rectosigmoid one month previously was scheduled for hemicolectomy. He was in good general health; blood pressure was 159/90 mm. Hg, pulse 88, hematocrit 42, and hemoglobin 13.6 Gm. per 100 ml. Chest radiogram, electrocardiogram, serum electrolytes, liver function tests, and urine analysis showed findings which were within normal limits.

Preoperative medication consisted of 150 mg. of pentobarbital, intramuscularly one and one-half hours preoperatively. Vital signs immediately before induction of anesthesia were: blood pressure 160/100 mm. Hg, pulse 110, respiration 22, and central venous pressure 8 cm. water. The patient was anesthetized with nitrous oxide-oxygen-halothane in a semiclosed circle system via an endotracheal tube, and muscle relaxation was provided with intermittent doses of d-tubocurarine; respirations were controlled with an Engstrom ventilator. Electrocardiogram, central venous pressure, urinary output, and blood loss were monitored, in addition to the routine check of blood pressure and pulse rate throughout the thirteen hours and ten minutes of anesthesia.

During this period, the patient received 4,000 ml. of Ringer's lactate, 2,000 ml. of Ringer's lactate with 5 per cent dextrose, and 2,000 ml. of whole blood. His blood pressure ranged between 160/120 and 100/80 mm. Hg with the pulse rate varying between 80 to 120 per minute. Total urinary output during anesthesia was 3,600 ml., and the measured blood loss approximated 2,000 ml. The breath sounds, which were checked frequently by auscultation, remained unchanged.

At the end of operation, his blood pressure was 180/120 mm. Hg and pulse 124. Concern was expressed by the surgical team as to development of circulatory overload. However, central venous pressure was 4 cm. water, urine specific gravity 1,030, and hematocrit 55. A diagnosis of decreased circulating plasma volume was made. The hypertension and tachycardia were attributed to pain and anxiety and responded to meperidine hydrochloride 25 mg.

Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, October 23, 1967. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

During the first twelve hours following surgery, an additional 1,500 ml. of Ringer's lactate, 1,000 ml. of 5 per cent dextrose in water, and 500 ml. of whole blood were administered. Central venous pressure did not rise above 5 cm. water; urinary output totaled 1,550 ml. with specific gravity of 1,018. Blood pressure remained at 160/100 mm. Hg and the pulse rate below 100. For the next twenty-four hours, fluid intake was set at 4,000 ml., half Ringer's lactate and half 5 per cent dextrose in water. The patient's vital signs remained stable, his urinary output was 2,500 ml. on the second postoperative day, and he made an uneventful recovery.

Comment

The acute changes in extracellular fluid incident to major surgical procedures have been studied with isotope technics, and a pattern of increasing functional loss with increasing degrees of operative trauma was established. To estimate the total fluids lost, the volume of fluid removed by gastric and intestinal drainage tubes, the degree of abdominal distention, and the urinary output must also be taken into account. The composition of the corrective fluid should approach that of extracellular fluid, such as lactated Ringer's solution, a balanced salt solution, so as to expand the entire extracellular compartment and move freely between the intravascular and interstitial extracellular compartments at the capillary level. For elective intra-abdominal operative procedures, infusion at a rate of from 7 to 10 ml. per kilogram body weight per hour has been recommended.[6] Central venous pressure, electrocardiogram, urine output, and specific gravity determinations are excellent guides. Central venous pressure should be maintained between 6 and 15 cm. water in the anesthetized patient. If the electrocardiogram shows normal findings, adequate cardiac perfusion is implied. Urinary output indicates reasonable renal circulation.[3] If the output falls below 50 ml. per hour, it is questionable whether or not fluid needs are being met.[6]

A special problem exists in the administration of fluids to patients in compensated or uncompensated heart failure. The increased extracellular fluid accompanying congestive failure is not freely available to the plasma volume and does not compensate for extracellular volume deficits occurring during major surgery. Thus, losses due to translocation should be corrected. However, the margin between a therapeutic load and an overload is narrow. Again, central venous pressure and urinary output should be carefully monitored. In overt congestive failure, the patient must be digitalized. In the compensated state, there are adequate indications for the judicious use of balanced salt solutions during major surgery.[6]

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Number one hundred seventy-seven in a series of Clinical Anesthesia Conferences

Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

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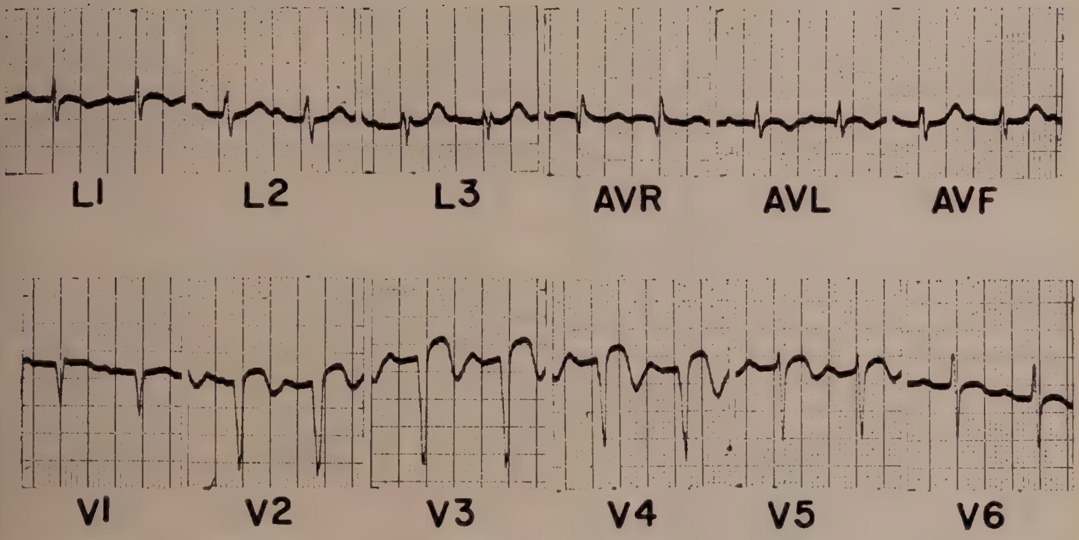
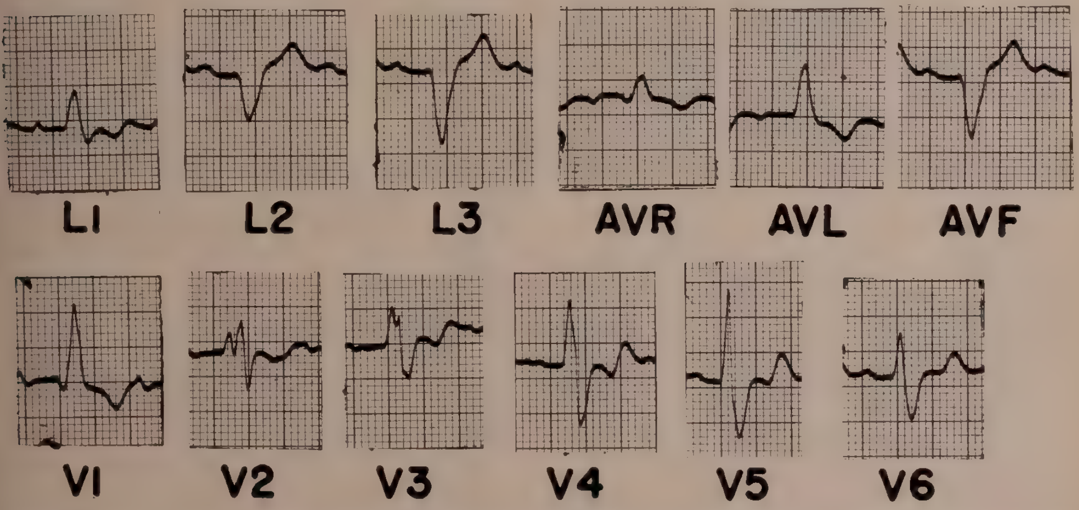


QUESTION 21. A seventy-four-year-old man entered the hospital with acute urinary retention secondary to prostatic hypertrophy. His electrocardiogram is shown. What is the interpretation? What further steps should be taken prior to prostatic surgery?



QUESTION 22. An electrocardiogram was obtained on a fifty-three-year-old man with chronic congestive heart failure. There was no antecedent history of heart disease. What is the interpretation?

Electrocardiograms of Month

ELUCIDATION

QUESTION 21. The rate is approximately 100 beats per minute, the P-R interval is 0.22 second, and the QRS is of normal duration. The S-T segment in leads I, aVl, and V_5 is slightly elevated and the T wave inverted. There is a QS complex with elevated S-T segment and late inversion of the T wave in V_2 to V_4.

These electrocardiographic changes are compatible with an anteroseptal infarction; the age cannot be determined from a single tracing. There was no clinical or laboratory evidence of recent damage. Review of previous records revealed that the elevated S-T segments and late inversion of the T wave had been present for six months. Persistent S-T segment elevations associated with abnormal Q waves may represent a ventricular aneurysm. The diagnosis of acute myocardial infarction cannot be made by a single tracing. Only serial changes establish the electrocardiographic diagnosis of acute infarction.

If previous electrocardiographic records are not available, serial tracings, as well as laboratory tests, must be taken prior to surgery to make certain that the pattern is stable.

QUESTION 22. The P-R duration is 0.23 second, the QRS duration is 0.16. There are no Q waves in leads I and aVl, and the R wave is delayed to 0.07 second in aVl, a late onset of intrinsicoid deflection. In the precordial leads, lead V_1 shows a small QR pattern with an $R_sR'S'$ pattern in V_2. There is a broad late S wave in leads I and V_6.

Leads I and aVl resemble the pattern of left bundle branch block. Leads V_1 and V_6 resemble right bundle branch block. This pattern has been termed bilateral bundle branch block. It occurs most often in patients with anteroseptal infarction. However, postmortem examination of this patient revealed idiopathic myocardial hypertrophy, which also often involves the conduction system.

Unique medical art center planned by Philadelphia museum

The establishment at the Philadelphia Museum of Art of an international medical art center of prints and related illustrative material with an accompanying research reference center was announced recently by Dr. E. H. Turner, Director of the Museum.

The complex, to be known as the Ars Medica Center, was made possible through a major grant from the Smith Kline & French Foundation in Philadelphia.

Development plans include the expansion of the Museum's collection of prints and drawings relating to the medical sciences and the creation of a center for pictorial research in subjects pertaining to the history of medicine and allied professions. Through an informational retrieval system, both the original and some nonoriginal visual material such as photographic archives, slides, and so on, will be readily accessible for reference, study, exhibition, and loan.

The original collection grew to comprise 132 prints, each chosen for its esthetic value and for its portrayal of the essential aspects of medical iconography, as they have been reflected in graphic art through the ages. Many great artists included Schongauer, Dürer, Rembrandt, Goya, Bellows, Kollwitz, and some leading contemporary American artists.

The high quality of this collection, the nucleus of the proposed program, is such that it is now regarded as one of the finest medical print collections in the U.S.

Case Report

Hyperlipoproteinemia

Status After One Year of Treatment

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Elevated levels of cholesterol, triglycerides, and phospholipids are found in the blood in a number of conditions both hereditary and acquired.[1] Usually the observation of extremely milky or lactescent serum is the initial suggestive clue of hyperlipoproteinemia.[2,3] The lactescence of serum is usually due to increased low-density lipids, especially triglycerides.[4] The diagnosis can be confirmed by laboratory chemical examination for total lipids and lipid components. Lipoprotein electrophoresis and ultracentrifugation will further delineate the four major lipoprotein bands and segregate lipoproteins according to their densities, such as high-density lipoproteins (density greater than 1.063) and low-density lipoproteins (density less than 1.063).[5,6]

Five types of familial hyperlipoproteinemia may be distinguished by the lipoprotein patterns present in postabsorptive plasma while the patient is on a regular diet.[5] Type I, fat-induced hyperchylomicronemia, is caused by defective removal of dietary fat in chylomicrons from the blood. Bürger and Grütz[7] described the first example of this disease in 1932, and the earliest report of a definite familial example was that of Holt, Aylward, and Timbres in 1939.[8]

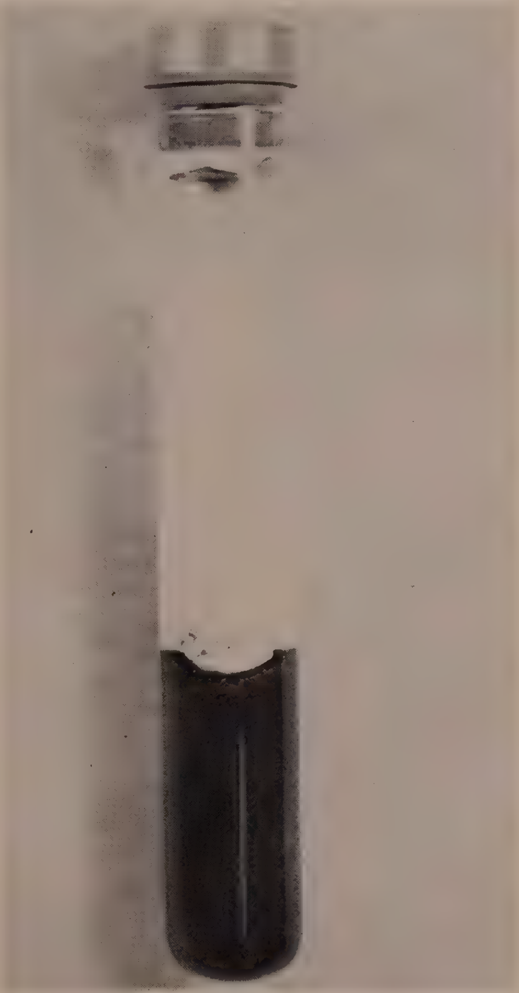

FIGURE 1. Lactescence of blood serum on admission, May 4, 1966.

The most severe degree of disease is seen in patients who are apparently homozygous for a rare mutant gene regulating the activity of the clearing enzyme or enzymes.[8] The enzyme lipoprotein lipase is responsible for the breakdown of triglycerides to free fatty acids. This enzyme has to be activated in vivo.[9] Heparin may also participate in this action, acting as a cofactor for the enzyme.[4] There are cases in which abnormal chylomicronemia occurs in association with other forms of hyperlipoproteinemia. Sometimes it is difficult to determine whether the hyperlipoproteinemia or the associated disease is the underlying abnormality. Some of these conditions are pancreatitis, diabetes mellitus, and alcoholism. Whether hyperchylomicronemia secondary to the quoted diseases exactly mimics the type I pattern seen in familial lipase deficiency is uncertain.[10]

Case report

We reported on the use of pancreatic lipotropic factor in the "Management of Secondary Hyperlipemia by Pancreatic Extract."[11] The patient was a forty-two-year-old white male, married, and employed as an industrial worker. In May, 1966, he was admitted to Mount View Hospital with complaints of emesis and nausea. On admission the liver was enlarged and palpable 4 fingerbreadths below the right costal margin. There were no other physical abnormalities. The patient cited in his history the drinking of 6 to 8 bottles of beer per day for approximately the past fifteen years and smoking two packages of cigarets per day. A tentative diagnosis of cirrhosis of the liver was made. A blood sample taken at this time revealed lactescence of the blood serum (Fig. 1). A clinical diagnosis of hyperlipemia secondary to cirrhosis of the liver was then made. His total lipids were 11,395 mg., cholesterol 1,165 mg., phospholipids 1,865 mg., and triglycerides 7,840 mg. per 100 ml. In hyperchylomicronemia the glyceride will exceed the cholesterol in a ratio of about 8:1 or higher. We did not measure his plasma postheparin lipolytic activity. However, two hours after injection of 100 mg. of heparin, the total lipids were 8,640 mg., cholesterol 1,985 mg., phospholipids 1,625 mg., and triglycerides 5,400 mg. per 100 ml. A sulfobromophthalein sodium test showed 17 per cent dye retention at forty-five minutes. Serum lipase was 1.7 Cherry-Crandall units while serum amylase was 176 amyloclastic units. Both these values are slightly above normal. A serum glutamic oxalopyruvic transaminase was 480 units and serum glutamic pyruvic transaminase 240 units, both these values being grossly elevated. The hemoglobin was 17.6 Gm. per 100 ml. The white blood count was normal as was a fasting blood sugar. Serum protein electrophoretic pattern was normal as also were blood urea nitrogen and alkaline phosphatase.

FIGURE 2. Liver biopsy, May 7, 1966, showing changes of periportal (interstitial) hepatitis with excessive vacuolization of liver cells apparently caused by marked fatty changes.

A liver biopsy was performed, using a Menghini needle. The histologic report showed changes of periportal (interstitial hepatitis) with excessive vacuolization of the liver cells because of marked fatty changes (Fig. 2).

A rheumatoid arthritis latex agglutination test showed a strongly positive qualitative result but on quantitative testing showed no reaction. X-ray film of chest gave negative findings as well as electrocardiogram, gastrointestinal, and gallbladder series.

An oral glucose tolerance test showed a normal fasting glucose of 95 mg. per 100 ml. with a rise to 166 mg. per 100 ml. at one hour and a mild decline to 148 mg. per 100 ml. at two hours. A trace of reducing substance was found in the urine accompanying the one-hour blood specimen. Protein-bound iodine and butanol-extractable iodine serum were in the low normal range.

A diagnosis of deficiency hepatitis with chronic alcoholism and early or progressive

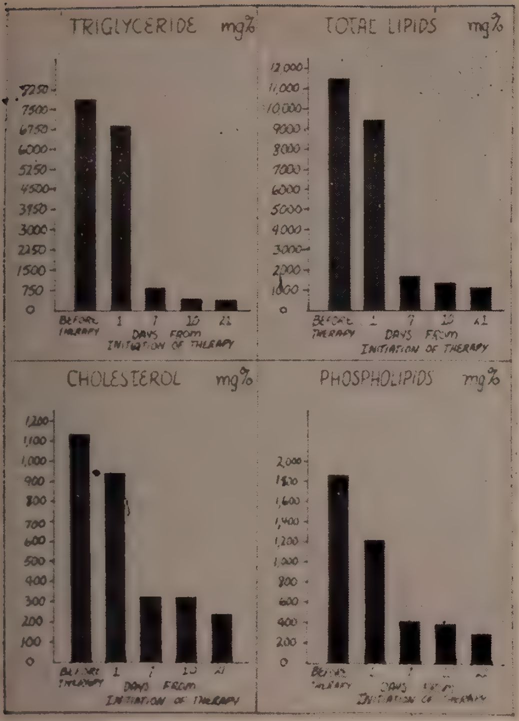

FIGURE 3. Comparative regression of lipids covering twenty-one-day period, 1966.

liver cirrhosis was made. Pancreatic lipotropic factor (Lipo-K),* 2 cc. (2.4 mg.) was given intramuscularly twice daily.[12-14] The blood serum which had been extremely lactescent was now clear and straw-colored. After the second day, the pancreatic lipotropic factor was given orally, 3 capsules (3.6 mg.) four times daily. Tolbutamide (Orinase) 0.5 Gm. daily was added, and in addition the patient received multiple vitamins. A low-fat diet was prescribed plus 300 mg. nicotinic acid four times daily.

After four weeks the patient's condition was greatly improved. Total lipids, cholesterol, and phospholipids were reduced to normal values. The triglyceride levels were reduced from 7,840 mg. to 389 mg. per 100 ml. (normal values 30 to 135 mg. per 100 ml.) (Fig. 3).

The patient was discharged from the hospital and under the care of his physician continued taking pancreatic lipotropic factor 1.2 mg. four times daily until three months prior to this latest hospital admission when the pancreatic lipotropic factor 1.2 mg. was reduced to three times daily. In addition, the patient was on a low-fat diet. His cholesterol level was maintained between 260 mg. and 300 mg. per 100 ml. The patient's health was good.

On readmission for investigation and check-up in April, 1967, eleven months from the time of his previous discharge from the hospital, the patient voiced no complaints. There was no enlargement of the liver or any abnormalities. The first three days pancreatic lipotropic factor was discontinued, and the patient was on a regular diet. A blood sample drawn on admission showed clear straw-color serum. Chest x-ray film, electrocardiogram, and gallbladder series gave negative results. A gastrointestinal series showed duodenitis. The hemoglobin was 14.4 Gm. per 100 ml. with a normal hematocrit and white blood count. Sedimentation rate was 16 mm. per hour. The serum glutamic oxalopyruvic transaminase, serum glutamic pyruvic transaminase, blood urea nitrogen, uric acid, lipase electrolytes, total protein, amylase, and alkaline phosphatase were all normal. Prothrombin time and bilirubin values were normal. Glucose tolerance was within normal limits with no trace of reducing substances in the urine. Repeated blood glucose values, 10 in all, were normal. Total protein electrophoretic value was normal, except for a slight increase in alpha globulin. The sulfobromophthalein sodium test showed 4 per cent dye retention at forty-five minutes. Protein-bound iodine was normal, but the thyroxine by column, T_4, was slightly below normal. The total lipids were 1,259 mg., cholesterol 355 mg., phospholipids 365 mg., and triglycerides 379 mg. per 100 ml.

During the patient's hospitalization, the fasting blood cholesterol was taken daily. The patient was on a regular diet, and the cholesterol level was maintained between 300 and 378 mg. per 100 ml. The cholesterol esters were 75 to 80 per cent of the total cholesterol on these daily samples.

Lipoprotein electrophoresis on three separate analyses showed a small increase of beta lipoprotein. In this group most of the "normal" age-associated increases in cholesterol and phospholipids occur.[6]

The groups of lipoproteins of importance in clinical evaluation are alpha or high density; beta or low density; pre-beta, very low density; and chylomicrons. In man, beta lipoproteins are the major cholesterol-bearing lipoproteins. Alpha lipoproteins compared with beta lipoproteins contain relatively more esterified cholesterol and phospholipids.[6]

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* Furnished by Marcen Laboratories, Inc., New Rochelle, New York.

The patient received pancreatic lipotropic factor 3.6 mg. daily in three divided doses. One week prior to discharge, the pancreatic lipotropic factor was increased to 1.2 mg. four times daily.

Twenty days after admission, during which time the patient remained on a regular diet plus pancreatic lipotropic factor (with the exception of the first three days of hospitalization), normal cholesterol values were maintained. The total cholesterol was 325 mg., phospholipids 310 mg., triglycerides 210 mg., and total lipids 992 mg. per 100 ml.

A repeat liver biopsy was performed using a Menghini needle. The histologic report was "essentially normal tissue" (Fig. 4).

Cholesterol determination and observation for lactescence in serum was also performed on the patient's father and sister. Both showed normal cholesterol values and no lactescence. The patient's sister stated that her mother had had "milky" serum reported quite a few years ago. The patient's son who lives in another city had cholesterol, phospholipids, triglycerides, and total lipid examination. These gave normal findings.

Comment

According to Fredrickson,[15] the few well-studied examples of type I hyperlipoproteinemia suggest the inheritable defect in all has been a deficiency of lipoprotein lipase. Lipoprotein lipase deficiency is the only biochemical defect currently recognized in type I hyperlipoproteinemia, but all familial type I hyperlipoproteinemia may not be thus represented. Familial hyperlipoproteinemia need not be inheritable if it is caused by a pattern of excess in diet or alcohol intake that has been acquired by close relatives. Furthermore, primary hyperlipoproteinemia can be either familial or sporadic. An intermittent pattern can show a typical type I pattern on one occasion and a completely normal pattern some weeks later.

The relatively small number of involved siblings in reported cases supports the assumption that a double dose of an abnormal gene accounts for severe type I phenotype and that a single dose of the gene may produce little or no detectable abnormality.

FIGURE 4. Liver biopsy, March 30, 1967. Essentially normal histologic findings.

From the time of his prior admission in May, 1966, at which time the liver was palpable 4 fingerbreadths, the liver biopsy revealed "marked fatty changes" (Fig. 2), and the sulfobromophthalein sodium value was 17 mg. per 100 ml. at forty-five minutes to the present, eleven months later, we find reversal changes to normal values. The liver is no longer palpable, and liver biopsy and sulfobromophthalein sodium examination give normal findings.

Nausea and emesis are not common in hyperlipoproteinemia, while frequent episodic abdominal pains may occur.[6] Fatty changes in the liver as a result of dietary aberrations of the chronic alcoholic patient may result in either a slightly enlarged or enormously enlarged liver. Cirrhosis can also occur in patients who consume no alcohol but because of economic or other factors have grossly inadequate diets.[16] Fredrickson[6] found liver function tests to give repeatedly normal results in type I hyperlipoproteinemia. Our patient had "fatty changes" in his initial liver biopsy with the subsequent liver biopsy ten months later showing essentially normal tissue. The sulfobromophthalein sodium test showed 17 per cent dye retention on first admission with a subsequent return to normal which parallels the histologic changes. Alcoholism could be a factor in the elevation of the sulfobromophthalein sodium. But the marked elevation of cholesterol, phospholipids, triglycerides, and total lipids indicate the possible alcoholism as only a secondary factor in the diagnosis of this patient. The use of heparin failed to diminish the total lipids. Fredrickson[15] observed all patients to have some rise in fatty acids in response to heparin injection, and they feel that the drug will promote some intravascular lipolysis. The small amount of lipolysis is not enough to clear the plasma, however, and therefore the use of heparin in type I hyperlipoproteinemia is without good rationale. The continued elevation of triglycerides even after treatment points more to a type I hyperlipoproteinemia than to a transitory effect due to alcohol. The declining lipoprotein and disturbances in the metabolism of the liver with the removal of chylomicrons resulted in a normal liver function cycle.[1,17] It is our opinion that excessive fatty deposits due to hyperlipoproteinemia were transported in a continuous cycle to the liver and that this accumulation was not cleared because of defective clearing mechanism and thus caused the liver enlargement.

Conclusion

The use of the pancreatic lipotropic factor evidently overcame or supplied enough lipotropic factor to correct a probable deficiency of lipoprotein lipase, therefore assisting in the removal of fat from the liver. The reduction of total lipids, cholesterol, triglycerides, and phospholipids was minimal following heparin injection which is a characteristic found in type I hyperlipoproteinemia. Examination of the patient's family did not conclusively prove a familial hyperlipoproteinemia to be present.

The pancreatic lipotropic factor did succeed in long-term (eleven months) regulation of the fat mechanism in the liver. It is entirely possible that reduction of the total lipids could have been accomplished by strict diet alone. The patient could be classified as having type I hyperlipoproteinemia caused either by genetic factors or by association patterns acquired through contact with close relatives.

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Medical Arts and Letters

Sir Hans Sloane, M.D., F.R.C.P., F.R.S. (1660–1753) and the British Museum

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To AMASS A LARGE and worth-while collection of anything one needs a long purse and a long life. Sir Hans Sloane was blessed with both, and his well-developed acquisitive instinct coupled with his desire to perpetuate himself were the catalyst which brought into being the British Museum. Without Sloane as the prime mover there might have been no place to house the marbles Lord Elgin swiped from Athens, no cabinets to house the Grecian urn which inspired Keats, no King's Library accessible to the scholarly public, no manuscript room, no reading room to serve scholars from all the world, nor even a general collection, as we are told in recent cinematic history, for Mr. Memory to leave his brain to. No one who has ever had the privilege of working in that spacious, well-ordered, almost all-inclusive library can recall it without some deeply felt personal emotion. As one crosses the cobbled courtyard between the two vast side wings to enter the massive building through its neoclassic façade, one may feel the nervous insecurity of an unprepared schoolboy about to be asked to construe the daily lesson. Of the museum as it exists today Sloane could have predicted but little; his will, drawn shortly before his death, served merely to force the government's hand to make the first move.

Life

Hans Sloane was born in 1660, the year the monarchy was restored, at Killileagh in Northern Ireland. His father, originally a Scotsman, was Receiver-General of Taxes for the Earl of Clanbrassill, and Hans was his seventh son. There could not have been much money to educate his numerous progeny when he died young in 1666, but thanks to the Clanbrassill connection Hans and his surviving older brothers were given a start in life. Much of Sloane's early history is unknown, but he received his education locally at Killileagh and then, at the age of sixteen, developed an illness characterized by recurrent hemoptysis. His early biographers tell us that he was kept to his room for three years and recovered, but that he had occasional episodes of hemoptysis from time to time throughout his long life. The nature of this illness is obscure. If, as was suspected at the time, it was tuberculosis, it must be one of the longest cases on record, for Sloane survived his initial attack by seventy-seven years. We are told that Sloane was so scared by the hemoptysis that he developed habits of moderation and temperance in respect to food and drink to which he attributed his later good health and vigor. Certainly in an age when many of his brilliant contemporaries were drinking and whoring themselves into premature graves, one must give some credence to his claim. In some ways Sloane's confinement to quarters from the age of sixteen to nineteen may have been, to paraphrase Auden, the angel of a broken leg which taught him the right precautions to avoid a fall. From the chrysalis of the sickroom emerged a young man of purpose, a talent which readily commended itself to the best minds in London, a resolute character ready to take his place on the world's stage. We are told Sloane's interest in natural history dated from childhood; but whether this illness during adolescence directed his attention to the study of medicine is not clear.

In 1679 Sloane went to London and studied medicine at Apothecaries' Hall. Through his Clanbrassill connection he made the acquaintance of Robert Boyle, then one of the leaders of the Royal Society, and he became friendly with John Ray, the father of English botany. In 1673, a few years previously, the Apothecaries' Society had leased $3^1/_2$ acres of land from Lord Cheyne in Chelsea and established there the Physic Garden. Through the influence of Ray and the availability of such an institution as the Physic Garden, Sloane's interest in natural history was channeled into botany. He was a benefactor of the Physic Garden all his life, and his statue by Rysbrack stands there today, not far from the manor house in which he housed his enormous collections and spent his last decades. It was not just intellectual curiosity for its own sake which stimulated Sloane's interest in botany. Materia medica was passing from the stage of the medieval herbals to the early systematic pharmacopeias; the first English pharmacopeia had been published by the College of Physicians in 1618. Then, even as today, there was a continuing quest for plants of medicinal value, and it must be clear that the medications available in the late seventeenth century were not very effective. In 1683 Sloane rounded off his medical education by a year of study at Paris and Montpellier, taking his degree late that year at the University of Orange in the south of France. (As a Protestant he was debarred from taking a degree at Paris or Montpellier, but Orange was a small principality in southern France, the source of origin of the house of Orange-Nassau. The head of that house in 1683 was Prince William, Stadholder of Holland, soon to become William III of England.) Sloane returned to London in 1684, a qualified physician ready to begin practice.

Sweet were the advantages of patronage, especially for a capable, hard-working young man of the upper middle class who was in tune with the temper of his times. Sloane attracted the attention of Sydenham, went to live in his house, accompanied that great bedside clinician on his rounds, and made house calls for him when he was unable to get around because of gout. Thanks to the influence of Ray and Boyle, with whom he had maintained correspondence while abroad, he was elected to the Royal Society in 1685, and thanks to Sydenham's influence was elected a fellow of the College of Physicians in 1687 under the new, liberalized charter of James II. His career as both amateur botanist and physician received new impetus when, later in 1687, he accompanied the Duke of Albermarle, newly appointed governor-general, to the island of Jamaica. Although still in his thirties, the duke was in poor health and required a personal medical attendant. He died after only fifteen months in Jamaica, but not before Sloane had taken the opportunity to collect and preserve many exotic botanical specimens and to record numerous observations about the health and mores of the natives.

Sloane returned with the duchess, landing in England in May, 1689, with over 800 specimens for the Physic Garden. The "Glorious Revolution" had been fought and won; William III was safely on the throne and the Whigs were triumphant. Sydenham died later that year. Sloane opened his practice in Bloomsbury Square, but made his living quarters with the Duchess of Albermarle who soon married Ralph Montagu, then earl and later duke of Montagu. It was largely through the Albermarle-Montagu connection that Sloane rapidly built up a lucrative practice among the gentry and nobility. By a strange coincidence, it was Montagu House, built by Ralph Montagu in 1680, which became the first home of the British Museum after Sloane's death.

To catalogue a man's virtues turns him into a statue or at least a plaster saint, and to enumerate achievements and positions held turns an essay into an entry from a biographical dictionary. One would be hard put to claim for Sloane any great credit as an original medical thinker or as anything more than an ardent amateur of botany. Yet his practical talents served many useful ends in the society in which he lived. In 1693 he was elected secretary of the Royal Society, a post he filled until 1712. One of his first acts was to reinstitute the publication of the *Philosophical Transactions*, dormant for six years since Oldenburg's death. Over the years he presented many papers before the Society, generally describing some curiosity of botanical interest. In 1694 he was appointed physician in charge of Christ's Hospital; he served it faithfully until 1730, making regular visits and consulting freely on all manner of patients; he chose not to retain his honorarium for this service but returned it each year to the hospital as a gift. Sloane was active in the College of Physicians, one of the original subscribers to its dispensary plan and a supporter of Samuel Garth; he was a censor of the College in 1705, 1709, and 1715, and its president from 1719 to 1735. He served the royal family well, was one of Queen Anne's physicians, attending her in her last illness. He attended George I who made him a baronet in 1716, the second physician to be so ennobled, and who appointed him physician-general to the army in 1722. He was first physician to George II from 1727 on. Throughout his life he was a generous benefactor of many charitable and benevolent causes. Possibly the highest honor paid him was his election as president of the Royal Society to succeed Sir Isaac Newton in 1727; he continued to serve as president until 1741, when, having moved to Chelsea at the age of eighty-one, he found it difficult to attend meetings regularly. Thus from 1727 he was president of both the College of Physicians and the Royal Society, the grand sachem of the medical Establishment.

Sloane maintained an active correspondence with foreign scientists and was a member of the French Academy of Sciences, the Imperial Academy at St. Petersburg, the Royal Academy of Madrid, the Royal Prussian Academy of Sciences, and the Academy of Sciences at Göttingen. His home was open to traveling scientists from all parts of Europe, and he opened many London doors for such visitors. Ever generous, he gave a weekly dinner for his colleagues of the Royal Society and the College of Physicians; abstemious and temperate himself, he was a genial host and did his guests very well indeed. Despite rank and honors he remained accessible to his friends. There is no doubt that he was well pleased with himself, but there is no reason to believe that success went to his head. The portrait bust by Rysbrack from which the statue in the Physic Garden at Chelsea was developed, shows Sloane circa 1733 (Fig. 1). It suggests a man of strength and determination, a man of dignity and reserve, aware of his position in the world, with a hint of pomp and ceremony, the depiction in stone of the firm but genial presiding officer. One must supply the gavel and the agenda in one's own imagination. Above all it is the image of a practical man, one accustomed to making decisions and having them prove correct. One of his most characteristic acts was, when elected president of the Royal Society in 1727, to invest its capital in real estate at Acton, land which proved to be a source of revenue adequate to support the Society's meager exchequer. Much of Sloane's success as a fashionable physician as well as a public figure was due to sound judgment rather than flair.

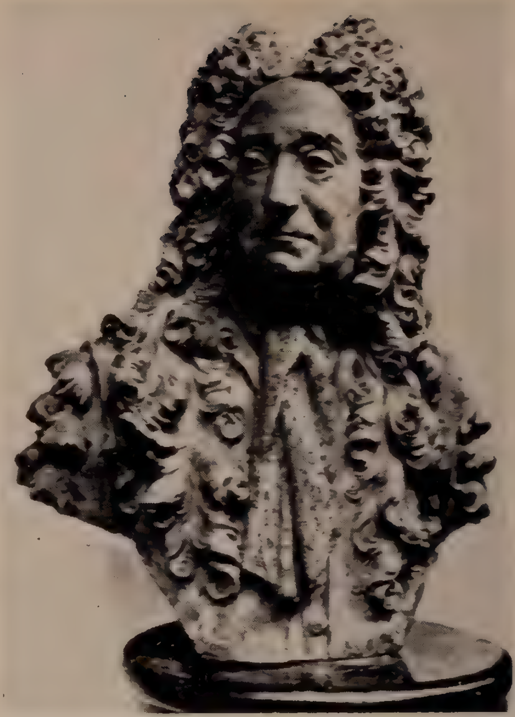


FIGURE 1. Portrait bust of Sir Hans Sloane by J. M. Rysbrack for statue in Physic Garden at Chelsea.

Writings

Despite his lack of a real university education and the handicap of a turgid style, Sloane was a voluminous writer, albeit chiefly of letters to physicians, scientists, family, and friends. He was conscious of his obligation as a scientist to publish. Over and above his communications to the Royal Society preserved in the *Philosophical Transactions*, he published his observations on the flora and fauna of Jamaica, albeit at a somewhat leisurely pace, for his busy practice and duties to learned societies left him little time for literary composition. The year 1696 saw the publication of his *Catalogus Plantarum quae in Insula Jamaica sponte proveniunt aut vulgo coluntur*, still valued by botanists as the first reasonably systematic handbook of the flora of that island. His magnum opus, *A Voyage to the Islands of Madera, Barbadoes, Nieves, St. Christopher's, and Jamaica, wlth the Natural History of the last* appeared in two large folio volumes, the first in 1707 dedicated to Queen Anne, the second in 1725 dedicated to George I. They greatly enhanced his reputation as a scientist at the time and represent the practical application of the role of scientific observers in promoting the governmental policy of colonization. Some estimate of his clinical acumen may be gained from examining the introduction to the first volume. Sloane related that he was told before setting out for Jamaica that the diseases he might encounter were different from those seen in Europe and must be treated differently. He was somewhat uneasy on this score, "lest by ignorance I should kill instead of curing"; but when he found that by using the methods and medications he was familiar with his treatments proved successful, he concluded there was no truth in what he had been told: "I never saw a disease in Jamaica which I had not met with in Europe."

Yet for all his medical naïveté, he made some accurate inferences. He concluded that seasickness was caused by the motion of the ship, not by sea air. He had a keen eye for the dietary habits of the native Jamaicans and a sensible insight into their psychology. Not the least important feature of his *Natural History* is the series of drawings of Jamaican flora by Michael van der Gucht, presumably based on the 800 specimens Sloane had brought back. One of the most famous is that of a branch of the logwood tree, the source of hematoxylin and other dyes.

Were it not for a posthumous publication in the *Philosophical Transactions* we might never have known about Sloane's role in promoting inoculation as a prophylactic for smallpox. The value of inoculation was long a subject of controversy even despite the proselytizing of Lady Mary Wortley Montagu who had brought the idea back from Turkey in the 1720's and the preliminary observations and writings of a few London physicians before her. Although he was over sixty, Sloane was not unreceptive to new ideas, especially when they were supported by adequate evidence. Having the confidence of the royal family, he advised the Princess of Wales (Caroline, the wife of George II) to have her children inoculated. Inoculation had been tried experimentally on criminals and charity children with successful immunization. Sloane's account of his counsel to Princess Caroline was published in 1756 after they were both dead:

> Upon these tryals, and several other in private families, the late queen, then princess of Wales, . . . sent for me to ask my opinion of the inoculation of the princesses. I told her royal highness, that by what appeared in the several essays, it seemed to be a method to secure people from the great dangers attending that distemper in the natural way . . . but that not being certain of the consequences, which might happen, I would not persuade nor advise the making trials upon patients of such importance to the public. The princess then asked me, if I would dissuade her from it: to which I made answer, that I would not, in a matter so likely to be of such advantage. Her reply was, that she was then resolved that it should be done . . .

It is instructive to observe that Sloane took care to protect himself lest anything should go wrong, for he made no firm positive recommendation. In effect he maneuvered the princess into requesting his consent. Needless to say, when it became known that the royal children had been inoculated, the method was generally accepted, much as was the use of chloroform for childbirth after Queen Victoria's personal endorsement. Until Jenner discovered vaccination, inoculation remained the method of choice to prevent smallpox.

Sloane's only medical publication appeared in 1745 when he was eighty-five years old, a slender volume of 17 pages titled *An Account of a Most Efficacious Medicine for Soreness, Weakness, and Several Other Distempers of the Eyes.* Many years previously he had obtained under pledge of secrecy the receipt for an eye salve. In the preface Sloane writes that he had seen this salve used by the late Dr. Luke Rugeley with good results and that after Rugeley's death he had tried to find out the ingredients "but all in vain 'till at length a Person, whom I believe he had employed in making his Medicine, came to me, and for a Pecuniary Reward, joined to a Promise of not divulging it to his Prejudice, delivered me up the genuine Receipt, in the Doctor's own Hand-writing." However, the formula for the eye salve was not original with Luke Rugeley. Farther on in his text Sloane informs us that

> Several years after I had been in possession of this Secret, in turning over some Manuscripts of Sir Theodore Mayerne, I found he had known the same Ointment, or Liniment, and had entered it in his Pharmacopoiea, under his own name: though I afterwards discovered, that it was not originally his, but had been communicated to him by Sir Matthew Lister...who had performed a Cure with it on Lady Savile...And 'tis very probable, that he afterwards communicated it to Dr. Thomas Rugeley, Father of Dr. Luke Rugeley...

The famous salve was made up as follows:

> Take of prepared Tutty, one Ounce; of *Lapis Haematites* prepared, two Scruples; of the best Aloes prepared, twelve Grains; of prepared Pearl, four Grains. Put them into a Porphyry, or Marble Mortar, and rub them with a Pestle of the same Stone very carefully with a sufficient Quantity of Viper's Grease, or Fat, to make a Liniment; to be used daily, Morning or Evening, or both, according to the Conveniency of the Patient: as hereafter directed.

Tutty was the name then given for an argillaceous earth rich in zinc oxide. Lapis Haematites was an iron ore, rich in ferric oxides. Some writers have been critical of Sloane for purchasing and using in his practice a secret remedy, and others have not been slow to point out that he only divulged it when he had retired from practice and could not profit from it. Little is to be gained by judging Sloane from the ethics of a later day; what he did was common practice among reputable physicians of his day. In fact few physicians were as outspoken against frauds, quacks, and other unqualified practitioners; part of Sloane's duties as a censor and then president of the College of Physicians was to prosecute those engaging in fraudulent practices. Then as now, successful physicians had a well-developed business sense. It was never considered to Sloane's discredit that during his visit to Jamaica he made a sizable capital investment in cinchona bark, even then known for its value in certain fevers. Many physicians of the day dispensed their own medications, sometimes with the collaboration of an apothecary, and Sloane was able to use his large supply of cinchona for many years for his patients' benefit and his own profit.

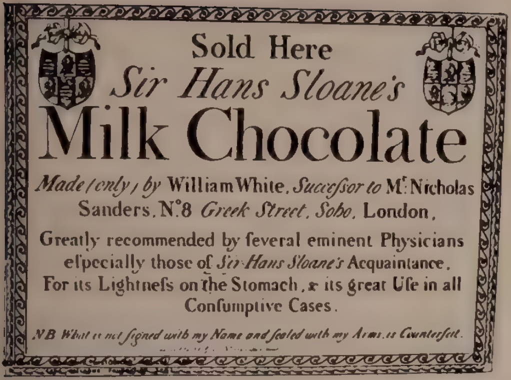
Another one of Sloane's receipts was one for making milk chocolate. He had tried chocolate in Jamaica, found it palatable but indigestible in its raw state. He tried mixing it with milk which proved successful:

> Take a pinte new milke in a pinte water, & when boyle putt in 2 ounces Chocolate & 3 ounces sugar, & mill it on ye fyer as aboue & when it is readdye to boyle upp take it of ye fyer & mix it with two new layd eggs, but let yor eggs be broke with ye mill in a spoonfull of cold water in a pint pott, then mix it all to gather & lett it be a little coole, as you may drink it.

This receipt was found in Sloane's papers, but it is probably not in his own handwriting. The mixture was manufactured and sold by Nicholas Sanders, then by William White of Greek Street, Soho, under the name "Sir Hans Sloane's Milk Chocolate" (Fig. 2). A similar receipt was used by Cadbury Brothers well into the nineteenth century.

Properties

In 1712 Sloane purchased the Manor House at Chelsea and with it the freehold of the Physic Garden of the Apothecaries. The garden was not being well maintained because the Society of Apothecaries was chronically short of funds. They had not even been able to raise £400 to purchase the freehold for the garden itself from Lord Cheyne. Sloane was determined that the Physic Garden be arranged and maintained for proper scientific botanical studies. Accordingly, he contributed to its upkeep, and in 1722 made over the rights to the garden to the Apothecaries on condition that for the next forty years they send the Royal Society an annual gift of 50 dried,



Sold Here
Sir Hans Sloane's
Milk Chocolate
Made (only) by William White, *Succeſsor to* M^{r}. Nicholas
Sanders, N°.8 *Greek Street, Soho*, London.
Greatly recommended by ſeveral eminent Physicians
eſpecially those of *Sir Hans Sloane's* Acquaintance.
For its Lightneſs on the Stomach, & its great Uſe in all
Conſumptive Cases.
NB What is not ſigned with my Name and ſealed with my Arms is Counterfeit.

FIGURE 2. Label from package of milk chocolate manufactured according to Sir Hans Sloane's receipt.

mounted, and classified specimens of plants grown therein. Failing this, title was to revert to the College of Physicians. Given this firm push in the right direction, the Society of Apothecaries appointed Philip Miller as curator. It was Miller who presented a packet of cotton seeds to the colony of Georgia (another worthy cause of which Sloane was a promoter and benefactor) which laid the foundation for the American cotton plantations. Linnaeus visited Sloane and the Physic Garden in 1736; even though he had difficulty conversing with Sloane, since Linnaeus spoke in Latin but not in English and Sloane was not proficient in the learned tongue, the great botanist had unreserved praise for the Physic Garden. Following this visit, Miller laid out the beds of the garden in accordance with Linnaeus' new system of biologic nomenclature even though he had been somewhat discomfited by the younger man's assertions of correctness. In the twentieth century a bronze bust of Linnaeus was presented to the Physic Garden by the University of Uppsala in honor of this famous visit.

In 1737 Sloane purchased Beaufort House, the "greatest house in Chelsea." Originally built by Sir Thomas More in 1520, it had long stood unoccupied. Restoration was not feasible, and Sloane had the house pulled down, incurring some public criticism thereby. The gates of Beaufort House designed by Inigo Jones were given, or sold, to the Earl of Burlington and incorporated into the new gateway to his manor then being built at Chiswick with the aid of William Kent, the architect. The land surrounding Beaufort House was divided into building lots, thereby adding to Sloane's investment in real estate. Half of Sloane's estate passed to his younger daughter who had married the Earl of Cadogan, and when one looks at the map of London today one sees Sloane Street, Sloane Square, Hans Place, Cadogan Square, and so on in the area of Knightsbridge and Chelsea, reminding us that the leading medical practitioner of his day was an uncommonly shrewd judge of real estate.

Collections

Without a well-developed sense of property and acquisitiveness, Sloane would never have amassed the collections which were to ensure his fame importance for posterity. The collection began with the 800 botanical specimens from Jamaica in 1687–1689 and continued to grow until Sloane's death in 1753. It encompassed almost 80,000 individual items, and Sloane's final valuation of it was £80,000. Its volume was gradually swelled by gifts from many of the scientists he corresponded with as well as by outright purchase of smaller, specialized collections. The Sloane Herbarium which fills 337 volumes in the Department of Botany in the British Museum (now at South Kensington) includes the collection of Chinese plants made by James Cuninghame in 1698–1703, plants collected by Kamel in the Philippines and sent by him to James Petiver in 1701, and the herbarium of Leonard Plukenet, the Queen's Botanist, who died in 1706. Sloane purchased Plukenet's collection in 1710. Petiver's collection was added in 1718. Smaller collections were also added including plants from America and Africa.

The most numerous item in Sloane's collection was books, some 50,000 volumes: a large general library with emphasis on medicine, botany, and science. Sloane originally housed his collections at his home in Great Russell Street (now 3 Bloomsbury Place). Soon he had to purchase the adjacent house for additional space. When he finally moved to Chelsea, transportation took several months and innumerable trips. In addition to the books and plants there were about 32,000 coins and medals; 5,800 shells; and 12,000 zoological items, including starfish, crustaceans, fish, reptiles, birds, mammals, and over 5,000 insects. Precious and semiprecious stones, some of them handsomely carved, minerals, ores, fossils, flints, and stones accounted for about 11,000 items. It was a collection of considerable breadth and depth, possibly the largest and most inclusive the world had known to that time.

Although Sloane was not known as a collector of fine arts, he had a few items of more than passing interest, notably the drawings by Dürer showing the design and proportions of the human body, a number of prints and drawings by Wenzel Hollar, and Holbein's drawing of Sir Thomas More. Needless to say, any collection so large is bound to have items of dubious merit or authenticity, much like "the nugget Uncle Nate sent home from Nome;" however, there was nothing in it to justify the various satires on its contents. Even Edward Young slyly suggested about Sloane that

> He shows, on holidays, a sacred pin
> That touched the ruff that touched Queen
> Bess's chin.

Nor did the collection include such delightful fancies as those described by Thomas Hearne in another satire:

> A snake skin which you may believe
> The serpent cast that tempted Eve,
> A fig-leaf apron, 'tis the same
> Which Adam wore to hide his shame,
> But now wants darning. I've beside
> The jaw by which poor Abel dy'd.

Not the least important feature of Sloane's collection was that it was well arranged insofar as space and light would permit, and that he was a well-informed, willing, and hospitable guide. No visit by a man of learning to London was complete without a call on Sloane and a guided tour of the museum. Any number of diaries preserved from the period testify to the spontaneous pleasure of the visitors, the stimulus of the museum to their curiosity, and to Sloane's unfailing generosity with his time and information.

Benefactions

As the years went on Sloane made numerous benefactions during his lifetime: sums of money to many of the London hospitals, his duplicate medical books to the College of Physicians' library, his duplicate nonmedical books to the Bodleian, and a portrait by Jonathan Richardson painted at his own expense to the University of Oxford which had incorporated him Doctor of Medicine in 1701. This fine painting now hangs in the Examination Schools building. But the disposition of his museum as a prize for posterity gave him concern. To bequeath it to his family would have insured its ultimate dispersal in a generation or two and its loss to scholars. The Royal Society was not a suitable recipient for anything but the items of natural history; it could not legally receive the books, manuscripts, coins, medals, and antiquities. Other institutions such as the Ashmolean Museum at Oxford were short of funds and not well maintained. Sloane was prepared to give his museum to the public, but he could not reduce the inheritance of his two daughters to provide funds for its installation and upkeep. Sloane's first will, dated 1739, expresses the wish that his collections "may remain together and not be separated, and that chiefly in and about the city of London where I have acquired most of my estates, and where they may by the great confluence of people be of most use." In codicils dating from 1749 and 1751 he appointed trustees to offer it to the King for the nation with the intention that "the same may be from time to time visited and seen by all persons desirous of seeing and viewing . . . that the same may be rendered as useful as possible, as well towards satisfying the desire of the curious as for the improvement of knowledge and information of all purposes." Although he valued his collections at £80,000, he provided that it be given to the public if the sum of £20,000 be given his two daughters, Lady Cadogan and Mrs. Stanley. He further provided that if the £20,000 were not forthcoming the collection be offered at the same price successively to the Royal Society, the University of Oxford, the College of Physicians of Edinburgh, the Academy of Sciences in Paris, the one in St. Petersburg, the one in Berlin, the one in Madrid, in that order; if none of these institutions accepted the terms, then the collection was to be sold at auction.

Sloane died on January 10, 1753, and George II soon replied that he didn't think there was £20,000 in the Treasury. However, the trustees appointed by Sloane had a staunch and far-sighted ally in Arthur Onslow, then speaker of the House of Commons. Onslow was a man of considerable intellectual attainments. He recognized that London alone among the major cities of Europe did not have a large general library and museum. The Vatican Library had been founded and developed in the fifteenth and sixteenth centuries. Francis I of France had laid the foundation of the Bibliothèque Nationale with his library at Blois. The Biblioteca Mediceo-Laurenziana was an ornament to the world of learning at Florence; it had been open to the public since 1571. Johann Jakob Fugger, the financier, had founded the Court Library of Bavaria at Munich in 1561. The library at Vienna had been created by the emperors Maximilian I and Ferdinand I in the first two-thirds of the sixteenth century. Philip II had opened the Escorial library in 1576. All the major universities of Europe had their collections of books and manuscripts; Oxford's library had been founded by Sir Thomas Bodley in 1603. Yet in 1753, London, the seat of a growing empire, had nothing beyond a few private libraries, the collections of a few specialized societies, and the King's Library, which was not available to the public. Arthur Onslow and his adherents had their eyes on a much wider scheme than the Sloane collection alone.

British Museum

There were two other notable collections of books and manuscripts in England. Sir Robert Cotton, a statesman and scholar of the Elizabethan and Jacobean eras, had collected many of the precious manuscripts and books available after the dissolution of the monasteries. Although it numbered less than a thousand items, it contained many rarities, notably the *Lindisfarne Gospels*, the *Anglo-Saxon Chronicle*, and the *Magna Carta*. The Cotton collection had remained in the possession of his family from his death in 1631 to 1700 when it was purchased for the nation by Act of Parliament. Almost no provision had been made for its maintenance; it was housed first in Essex House, then in Ashburnham House, where a fire destroyed almost one fourth of its holdings in 1731. Had it not been for the prompt and courageous action of its keeper at the time, the redoubtable Richard Bentley, the Cotton collection might have been destroyed entirely.

Also available were the manuscripts from the Harley collection, begun by Robert, the first Earl of Oxford, an intimate of Swift and Pope as well as Lord Chancellor under Queen Anne, continued and enriched by his son Edward, the second Earl. Their librarian, adviser, and chief purchasing agent had been Humfrey Wanley, the leading English librarian of his day. By 1753 the books of the Harleian collection had been sold by the widow of the second Earl and by her daughter, the Duchess of Portland; however, the manuscripts remained intact, some 8,000 in number.

By March 19, 1753, Onslow had formulated his plan and introduced it into Parliament, where it passed by a large majority. The Act was signed by the King in June; it provided for a public lottery to raise £100,000 and created a board of trustees headed by the Archbishop of Canterbury. Despite a minor scandal about the sale of fraudulent lottery tickets, the sum was raised. The King signed the Act in June of that year. The £20,000 was paid to Sloane's daughters; the Countess of Oxford and the Duchess of Portland graciously consented to accept £10,000 for the Harleian manuscripts, although as the Duchess wrote, "Though I am told the expense of collecting them was immense, and that, if they were dispersed, they would probably sell for a great deal of money, yet, as a sum of money has been named, and as I know it was my Father's and is my Mother's intention that they should be kept together, I will not bargain with the Publick." Out of the funds raised by the lottery, £30,000 was set aside as an endowment to provide income for current expenses. The trustees purchased Montagu House for £10,250; the home of Sloane's former patron had stood unoccupied for several years; it cost £12,873 to repair it and restore the garden to order (Fig. 3). In 1757 George II made the amende honorable by presenting the British Museum with the Old Royal Library, the books and manuscripts collected by his predecessors from Edward IV on down and notable for the *Codex Alexandrinus*, then thought to be the oldest surviving Greek biblical text. Also included in the Old Royal Library was the collection of Henry, Prince of Wales, the oldest son of James I, who was a sound student and had purchased Lord Lumley's library early in the seventeenth century. The Sloane collection, the Cotton manuscripts, and the Harleian manuscripts are known as the Foundation Libraries, but the Old Royal Library was a welcome early addition. The Museum was opened to the public in 1759.

Montagu House served as the principal library building, albeit there were additions and renovations, until 1845 when it was demolished as part of the long-term reconstruction from 1826–1852 with Robert Smirke as architect. The façade we see today is Smirke's design, as are most of the main exhibition rooms in the east and west wings. However, the iron library and the glass-domed Reading Room were designed by Anthony Panizzi, principal librarian from 1851–1866. Sloane's collections remained in the museum until the 1880's when the natural history portions were removed to South Kensington when that museum was built. Despite the loss by attrition over two centuries, many of its important items are still preserved.

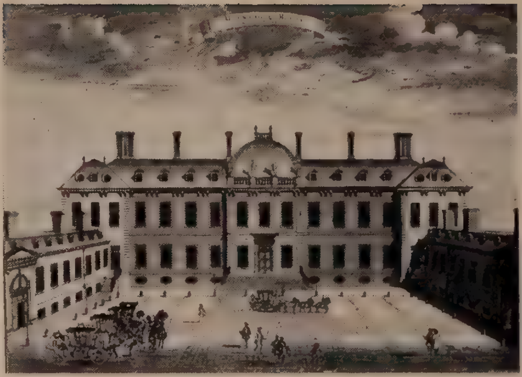


FIGURE 3. Montagu House in Great Russell Street as it appeared during first half of eighteenth century, later first home of British Museum.

It is unlikely that Sir Hans Sloane could have imagined the shape and form which the future would give to his splendid nucleus of a general museum and library; the British Museum is today what his personal collection was in its day—unrivalled.

Office treatment of traumatic perforations of ear drum

Almost 80 per cent of the traumatic perforations of the ear drum heal spontaneously within one month after the injury occurs. If at the end of that time, the perforation has not become progressively smaller, spontaneous closure probably will not occur because the epithelium of the ear drum edges has grown around the raw edges of the wound, thus forming a skin-lined fistula that will not heal.

R. P. Oppenheimer, M.D., writing in a recent issue of *GP*, feels that cautery of the rim of the perforation freshens the edges by destruction of the epithelium. When the patient is brought in for treatment after the perforation occurs, the ear canal is so full of blood that adequate inspection is impossible. The procedure at this time should be the removal of any foreign object. Any attempt at swabbing or aspiration will only serve to intensify the bleeding and add to the fragmentation of the torn edges of the ear drum. Instead, dry sterile cotton is placed in the ear canal and changed as necessary. The ear must be kept dry until the perforation is closed.

In the cautery procedure, an applicator is tightly wound with cotton moistened with trichloracetic acid. Using an otoscope, the operator touches only the edges of the perforation with the cotton tip. To avoid the formation of adhesions and adhesive otitis, great care is exercised not to cauterize the middle ear mucosa. No dressing is required, and the ear may be left open. Water in the ear must be strictly avoided.

This should be repeated each week as long as the perforation shows signs of closing. If, after eight treatments, this does not happen, myringoplasty is indicated. Sometimes the ear may be irritated by the cauterization and start to drain. If this happens, the cautery treatment is interrupted, and antibiotic-cortisone ear drops are given for a week. When the discharge stops, the cautery treatment can be resumed. If an intercurrent infection occurs before or during treatment, it should be managed by culture and antibiotic therapy, just as in any acute purulent otitis media.

Audiology: Yesterday, Today, and Tomorrow

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AUDIOLOGY EMBRACES so many diversified activities that the meaning of the term in the present discussion is limited to that facet of the "science of hearing" which is concerned with the measurement and evaluation of the auditory function in the diseased ear.

Yesterday

It appears that Hieronymus Capivacci of Padua, Italy, should be regarded as the patron saint of audiology since he probably devised the earliest valid diagnostic hearing test in 1589.[1] His instrumentation consisted of a stringed musical instrument, the zither, and an iron rod. One end of the rod was placed on the lower end of a string of the instrument and the other end in contact with the patient's teeth. If the patient heard the sound of the vibrating string through the rod and teeth, the physician concluded that the cause of the deafness was a disease of the ear drum; if no sound was heard, he assumed the deafness originated in a disease of the labyrinth.

Very little was known about hearing by bone-conducted sound at the time. Ingrassia, who discovered the stapes in 1546, had mentioned the conductivity of sound through the teeth.[1] Cardanos reported in 1560 that sound could be heard through the bones of the skull.[1] But Capivacci appears to be the first to have utilized the diagnostic value of bone-conducted sound. This achievement was noteworthy, especially in relation to the meager and imperfect knowledge about the ear and hearing at the time.

During this era it was generally believed that the ear drum was an extension of the hearing nerve. Discharge from the ear was thought to be an excrement from the brain. It was assumed that the hearing organ contained only air and not liquid, from the time of Aristotle until this "aer ingenitus" or "aer implantatus" theory was disproved by Cortugno in 1760.[1] The semicircular canals were regarded as a part of the hearing mechanism until Flourens in 1824[2] proved that the canals were associated with posture and equilibrium. Incidentally, Flourens also was the first to suggest that the acoustic nerve consists of two parts: a cochlear division concerned with hearing and a vestibular part associated with equilibrium.

Treatment of ear disease during the sixteenth century was based largely on mysticism and superstition. Many remedies appear imaginative and bizarre when evaluated by modern criteria: for earache, the sperm of a wild boar or a mixture of mice excrement and honey were recommended; against "earworms," the urine of children, saliva of a fasting man, and dove dung dissolved in vinegar were prescribed.[1]

Since the diagnostic implications of Capivacci's test have stood the test of time, it appears that audiology was founded earlier on a more accurate foundation than anatomy of the ear, physiology of hearing, or the treatment of ear disease. Unfortunately, this test did not attract the serious attention it deserved. Bone-conduction tests did not command wide consideration by otologists until over two-hundred fifty years later.

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* *By invitation.*

Although the tuning fork was invented in 1711 by John Shore, a trumpet player in Queen Anne's band, it did not become an instrument of science until about the middle of the nineteenth century.[3] The three principal bone-conduction tests with forks still in use today were described by Weber in 1834,[4] Rinne in 1855,[5] and Schwabach in 1885.[6] It is interesting to note that Politzer,[7] in his *Textbook of the Diseases of the Ear,* stated that "to test the acuteness of hearing for simple tones the watch has until very recently been used for the production of sound." Tests by means of the human voice also received considerable attention during the latter part of the nineteenth century.

During this pre-electronic period, several instruments were introduced into the test armamentarium: for determining the upper-frequency limit of perception, Galton's whistle (1883), Koenig's rods or cylinders, and Struychen's monochord (1911) were used. Incidentally, the use of the monochord was closely related to Capivacci's procedure, since the monochord had a string which was activated with a bow. The monochord also was used to ascertain the upper-frequency limit for bone-conducted sound; the Gellé (1885) and Bing (1891)[8] tests were employed to detect stapes fixation.

The Barany "alarm apparatus" was used to mask the non-test ear while testing patients with marked unilateral impairments. The Lombard and Stenger[9] tests were recommended for the detection of auditory malingering. The diplacusis phenomenon had been observed and was evaluated qualitatively, usually by means of the tuning fork. This list of instruments and test procedures indicates the importance which otologists of the time attached to tests of the hearing function in the diseased ear.

Audiology today

The foregoing brief history of the "yesteryear" of audiology indicates the direction in which the specialty was oriented. The "today" is a structure of procedures erected on the foundation of the past. Undoubtedly the most significant link between the past and the present is the quantification and standardization of the qualitative tests of yesterday. This occurrence was accelerated principally by the rapid advances in electronics of the twentieth century. The introduction of electronics into audiology dates from around 1920. This development has been responsible for many new instruments and test procedures which have supplanted the old. This date is sufficiently close to the present to make it reasonable to designate it as the demarcation between the "yesterday" and the "today" of audiology.

The importance of the invention of the pure-tone audiometer around 1920 and of the speech audiometer several years later cannot be overestimated.[10] These instruments, for the first time, facilitated a precision of measurement, plus a standardization of test procedure and of data recording that were lacking with the older qualitative tests. The later development of the artificial ear for the calibration of air-conduction receivers and of the artificial mastoid for the calibration of bone-conduction vibrators increased the accuracy of measurements with these transducers. The introduction of the decibel notation into audiometry and auditory research also was a significant contribution to the present and future progress of audiology.

Psychogalvanic skin resistance and electroencephalogic audiometry followed the availability of suitable instrumentation. These two technics are especially useful in tests on young children and in the detection of psychogenic aberrations. The validity and accuracy of electroencephalographic measurements are enhanced significantly by analysis of the data by means of the computer.

Not surprisingly, the availability of suitable electronic equipment facilitated the development of new auditory tests and procedures. Pohlman and Kranz,[11] while investigating certain aspects of auditory sensitivity with a continuously variable audio-frequency oscillator in 1924, noted the phenomenon which is now known as recruitment. Fowler in 1937[12] coined the phrase "recruitment of loudness with intensity" and concluded that recruitment was pathognomonic of nerve deafness. This diagnostic implication was generally accepted until Dix, Hallpike, and Hood in 1948[13] reported that patients with Meniere's disease experienced recruitment whereas those with hearing impairments associated with acoustic neurinomas did not. This finding immediately increased the value and significance of recruitment tests. Such tests had not been necessary for differentiation between middle ear and neural abnormal conditions. But a test that made possible the localization of an abnormal condition either in the cochlea or in more medial neural tracts was highly desirable.

Over a dozen different recruitment tests are described in the literature. It is possible that the phenomenon is associated with two or more dissimilar abnormal conditions, each having different causes and diagnostic significance. The concept requires additional sophisticated study.

Another technic which is of value in the differentiation between cochlear and neural abnormal conditions is the test for TTD (temporary threshold drift). This test is variously known as the threshold decay, threshold fatigue, tone decay, or abnormal adaptation test. Reger and Kos[10] encountered this phenomenon in 1952 while testing the threshold sensitivity by means of a Bekesy[14] audiometer of a patient with a unilateral acoustic neurinoma. The stimulus was a steady tone (uninterrupted fixed frequency). The patient showed a normal reaction in the uninvolved control ear but exhibited a significant decrease in sensitivity in the affected ear over two- and three-minute testing intervals.

Considerable accumulated clinical data and experience by several investigators indicates that the test is not infallible but is definitive in about 75 per cent of cases with acoustic neurinomas. The site and size of the lesion appear to be significant factors. I have observed the TTD reaction also in patients with hearing impairments associated with atrophy of the eighth nerve, multiple sclerosis, pinealomas, and certain brain stem lesions.

Tests for the measurement of middle ear impedance are receiving serious attention. Impedance measurements are useful in the detection of malingering and psychogenic deafness, recruitment, otosclerosis, increased intralabyrinthine fluid pressure, intratympanic muscle action, and ossicular chain discontinuity. Impedance measurements enable the quantification of alterations in the efficiency of the middle ear conducting mechanism which had been noted subjectively and qualitatively by means of the Gellé and the Bing tests.

Electronic technics have facilitated the production of various types of masking noises, including narrow band noise, all under accurate control of the examiner. By means of the tape recorder, a superior test for malingering and psychogenic deafness is available by utilization of delayed speech, also known as sidetone. The Stenger test is a much more effective procedure when administered by means of the twin channel pure-tone audiometer. Frequency counting devices which enable accurate measurement of frequency in a second or less are available for studies of diplacusis and pitch perception.

Various new tests for the detection of central deafness are being employed. The difficulty of speech discrimination is varied as desired by means of filters, mixing different types and proportions of masking noise with the speech, periodic interruption or pulsing of the speech signal, the simultaneous presentation of two different speech signals bilaterally, and by the simultaneous introduction of low-frequency speech sounds in one ear and high-frequency speech sounds in the other from the same speech signal by means of appropriate filters. Localization of sound in relation to median plane also is under investigation.

It is this complexity of tests, equipment, and testing time requirements that gave birth to audiology. The genesis was accelerated by two principal factors: one was the demand for trained personnel to assist in aural rehabilitation of military casualties in the armed services aural rehabilitation hospitals during World War II; the other was the demand of rehabilitative ear surgery—specifically, fenestration, stapes mobilization, stapedioplasty, and tympanoplasty—to assist in the selection of suitable cases and the assessment of postsurgical hearing results. The otologist simply did not have sufficient time to perform the hearing tests nor did his office nurse have the requisite training to administer them.

Frequently an otologist with a limited private practice, who does his own testing, asks an interesting but pertinent question about instrumentation and test interpretation. He possesses a pure-tone and speech audiometer and a set of tuning forks with which he makes the usual conventional tests. Then he asks: "Should I spend the time and the money to get the equipment to make tests for recruitment, TTD, delayed speech feed-back, psychogalvanic skin resistance, diplacusis and pitch discrimination, middle ear impedance, and the various complicated speech tests for the detection of brain-stem and central lesions?" The reply may not be completely satisfactory, but is something like this: "Not if you make the most of what you have. An excellent TTD test and a clinically useful measurement of recruitment can be made with your clinical audiometer. Now if you had the equipment necessary to perform all these additional tests, a certain amount of time would be required to administer them. Expend this extra time bonus in obtaining the most complete ear, nose, and throat history and making the most thorough physical examination of the ear, nose, and throat of which you are capable. Nearly always the results of the hearing tests have to be evaluated in relation to the history and physical examination before their diagnostic implications can be assessed. Furthermore, more often than not, an adequate history and physical examination reveal the correct diagnosis anyway."

Audiology tomorrow

We have just passed through a rather busy "day," extending from around 1920 to 1967. The present does not necessarily bear a comparable relationship to the future that characterized the connection between the past and the present. The sophistication of test equipment and quantification of measurement available today leave little to be desired. Any preferred combination of pure tone, noise, and transient or speech signals can be presented to one or both ears, serially, alternately, or simultaneously in earphones, bone-conduction vibrators, or loud-speakers by means of appropriate electronic signal generators, amplifiers, phase shifters, switches, filters, mixers, and attenuators. All types of stimuli can be interrupted or pulsed, with control of the durations of "On and Off" intervals and rise and decay times.

Modification and standardization of essential tests to increase reliability and decrease administration time can be anticipated. Automated and self-recording features will be added to many tests. Many needs of the immediate future can be expected. Among these are a satisfactory bone-conduction vibrator with wide frequency and intensity level outputs, equipped with a constant optimum pressure headband; automatic pure tone and speech audiometers, which do not require the constant presence of professional personnel and which print out clinically useful audiograms and data in the reception room or office; more reliable tests for the detection of brain-stem and central lesions in the auditory tracts; more reliable tests of the auditory capabilities of infants and young children; and a computerized communication system between otologists' offices for the rapid dissemination of audiologic and other pertinent data of patients when they move about the country.[15]

Tomorrow contains an unknown number of imponderable possibilities. Of this we can be certain: The future will smile most benignly on those with the training, imagination, and energy to satisfy their curiosity about the physiology and psychology of the normal and the abnormal ear.

IOWA CITY, IOWA 52241

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Necrology

Laszlo Bauer, M.D., of Jackson Heights, died on March 16 at the age of fifty-eight. Dr. Bauer received his medical degree from the University of Padova in 1934. He was an attending physician at Madison Avenue Hospital. Dr. Bauer was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Hugo Berberich, M.D., of Richmond Hill, died on March 24 at the age of eighty. Dr. Berberich received his medical degree from the University of Freiburg in 1911. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Donato Joseph Bracco, M.D., of New York City, died on April 9 at the age of sixty-nine. Dr. Bracco graduated in 1924 from University and Bellevue Hospital Medical College. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harry Domenic Bucalo, M.D., of Sayville, died on April 15 at the age of seventy-six. Dr. Bucalo graduated in 1915 from the Medical College of Virginia. He was a consulting ear, nose, and throat physician at St. Catherine's (Port Jefferson) and the Good Samaritan (West Islip) Hospitals and an honorary member of the ear, nose, and throat staff at Evangelical Deaconess Hospital (Brooklyn). Dr. Bucalo was a Diplomate of the American Board of Otolaryngology and a member of the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

L. Beverley Chaney, M.D., of Jackson Heights, died on March 12 at the age of seventy-seven. Dr. Chaney graduated in 1918 from the Medical College of Virginia. A retired clinical professor of neurology at Columbia University College of Physicians and Surgeons, he was a consulting neurologist at Presbyterian Hospital. Dr. Chaney was a Diplomate of the American Board of Psychiatry and Neurology and a member of the Association for Research in Nervous and Mental Disease, the New York Neurological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Francis Leo Denzer, M.D., of Woodhaven, died on March 23 at the age of sixty. Dr. Denzer graduated in 1934 from Georgetown University School of Medicine. He was an assistant attending physician at St. Mary's (Brooklyn) and Mary Immaculate Hospitals and an adjunct physician in general practice at Lutheran Hospital. Dr. Denzer was a Fellow of the American College of Allergists and a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

John L. Edwards, M.D., of Hudson, died on March 6 at the age of eighty-two. Dr. Edwards graduated in 1912 from Albany Medical College. At the time of his death he was a consulting surgeon at the North Dutchess Health Service Center (Rhinebeck) and emeritus chief of the medical staff at Columbia Memorial Hospital. Dr. Edwards was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the Columbia County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Frank Fisher, M.D., of Brooklyn, died on April 4 at the age of eighty-six. Dr. Fisher graduated in 1906 from Columbia University College of Physicians and Surgeons. He was a consulting pediatrician at Unity Hospital. Dr. Fisher was a Fellow of the American College of Physicians and a member of the American Academy of Pediatrics, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Regina Veronica Gilroy, M.D., of Hempstead, died on April 6 at the age of fifty-one. Dr. Gilroy graduated in 1941 from Long Island College of Medicine. She was an assistant attending ophthalmologist at Mercy Hospital and an attending ophthalmologist at Hempstead General Hospital. Dr. Gilroy was a Diplomate of the American Board of Ophthalmology, a Fellow of the American College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology, the Nassau Academy of Medicine, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Oakley Hill, M.D., of Buffalo, retired, died on March 16 at the age of seventy-five. Dr. Hill graduated in 1915 from the University of Buffalo School of Medicine. He was a consulting surgeon at Millard Fillmore Hospital and an emeritus surgeon at Deaconess Hospital. Dr. Hill was a Fellow of the International College of Surgeons and a member of the Academy of Psychosomatic Medicine, the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George Francis Hogan, M.D., of Brooklyn, died on February 9 at the age of seventy-five. Dr. Hogan graduated in 1916 from Long Island College Hospital. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

William Warner Johnson, M.D., of Plattsburgh, died on March 2 at the age of sixty-seven. Dr. Johnson graduated in 1929 from McGill University Faculty of Medicine. He was a consulting surgeon at Physicians and Champlain Valley Hospitals. Dr. Johnson was a Fellow of the American College of Surgeons and a member of the New York Academy of Medicine, the Clinton County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Augusta Clara Kritz, M.D., of New York City, died on March 15 at the age of seventy-eight. Dr. Kritz graduated in 1917 from New York Medical College and Hospital for Women.

Joseph P. Lasko, M.D., of Troy, died on April 5 at the age of seventy. Dr. Lasko graduated in 1921 from Albany Medical College. He was an attending surgeon and past president of the medical board at Cohoes Memorial Hospital. Dr. Lasko was a member of the Rensselaer County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

David Pecker, M.D., of The Bronx, died on February 15 at the age of sixty-three. Dr. Pecker graduated in 1931 from the University of Edinburgh Faculty of Medicine. He was a clinical assistant attending physician at Bronx-Lebanon Hospital Center. Dr. Pecker was a member of the American Academy of General Practice, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ferdinand Piazza, M.D., of New York City, died on April 21 at the age of sixty-five. Dr. Piazza graduated in 1929 from George Washington University School of Medicine. He was administrator at Metropolitan Hospital and an assistant clinical professor of preventive medicine at New York Medical College.

Hunter Huidekoper Romaine, M.D., of New York City and Tarrytown, died on April 20 at at the age of fifty-seven. Dr. Romaine graduated in 1939 from the University of Virginia School of Medicine. He was executive surgeon in ophthalmology, an associate attending plastic surgeon, and a consulting physician in motor anomalies at the New York Eye and Ear Infirmary and a consulting ophthalmologist at New York Polyclinic Hospital. Dr. Romaine was a Diplomate of the American Board of Ophthalmology, a Fellow of the American College of Surgeons, and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Bruno Rosenhain, M.D., of Forest Hills, died on February 29 at the age of seventy-seven. Dr. Rosenhain received his medical degree from the University of Berlin in 1914. Retired, he was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Chrisman George Scherf, M.D., of Forest Hills, died on March 4 at the age of seventy-six. Dr. Scherf graduated in 1919 from St. Louis University School of Medicine. Retired, he had served as administrator at Goldwater Memorial Hospital and was the first medical superintendent there when it opened in 1939 as Welfare Hospital.

Richard Howard Stitt, M.D., of Brooklyn, died on March 6 at the age of seventy-nine. Dr. Stitt graduated in 1917 from Howard University College of Medicine. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Jonas J. Unger, M.D., of New York City, died on April 14 at the age of seventy-six. Dr. Unger graduated in 1915 from Columbia University College of Physicians and Surgeons. He was a senior associate attending physician at the Blood Bank at St. Clare's Hospital. Dr. Unger was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Leo Zimtbaum, M.D., of Brooklyn, died on March 22 at the age of seventy-one. Dr. Zimtbaum graduated in 1917 from Long Island College Hospital. He was an assistant attending orthopedist at Jewish Hospital of Brooklyn. Dr. Zimtbaum was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

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Books Reviewed

Deep Thrombophlebitis; Pathophysiology and Treatment. By J. Alex Haller, Jr., M.D. **Major Problems in Clinical Surgery—Volume VI.** Quarto of 130 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $8.75.

The author appears well qualified to present this subject from a personal as well as collaborative point of view. The subject is not often presented in as concise a way as to be understood readily by the hospital resident and general practitioner, as well as workers in the peripheral vascular field. The monograph is well separated into entities—such as the incidence and clinical significance of deep thrombophlebitis. The clinical syndrome of phlebitis, venography and treatment; pathophysiology of extensive deep thrombophlebitis. The serious complications encountered and treated; and finally the surgical treatment suggested for extensive deep thrombophlebitis, phlegmasia alba dolens, and phlegmasia cerulen dolens.

Very rarely are these various facets presented in a composite compendium as this author has presented in his field. A better understanding of the subject is, therefore, made readily accessible to all in this little understood or discussed but highly important field of medicine.—HUGH L. MURPHY, M.D.

Differential Diagnosis of Internal Diseases. By Julius Bauer, M.D. Third revised and enlarged edition. Octavo of 1,071 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $29.50.

This excellent book is under the single authorship of a great clinician and teacher. He has culled a multitude of facts into a volume that is fantastic. Practically all the known diseases of mankind are included. Many significant figures, photographs, and x-rays complete the picture of most of the diseases encountered by humans. Many of his old case records are still valuable. Summaries at the end of the chapter give a quick glance at data that allow further explanation in the text. For details of syndromes and diseases, his references of a full lifetime will unfold the requirements of the busy or learned physician.—BERNARD SELIGMAN, M.D.

Modern Management of the Rh Problem. By John T. Queenan, M.D. Quarto of 303 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Cloth, $12.50.

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continued from page 1438

Since the discovery of the Rh factor by Landsteiner and Wiener in 1937, and the subsequent demonstration by Levine and his coworkers that erythroblastosis fetalis resulted from maternal isosensitization to the Rh factor, voluminous literature on the subject has developed. This book attempts to bring into focus the aspects of the accumulated research data that have immediate clinical application and to outline a unified approach to the management of the sensitized patient and her affected fetus. To this end there are discussions of the historical landmarks of the disease, etiology and pathophysiology, interpretation of laboratory findings, clinical management of the immunized patient, the role of amniocentesis in the management of the patient, technics of amniotic fluid analysis, amniography, intrauterine transfusions, choice of time and route of delivery, treatment of the newborn erythroblastotic infant with exchange transfusion, and finally the prevention of sensitization with the use of specific hyperimmune antibody concentrates. Of all the pages comprising this book, 186 are devoted to amniocentesis, amniotic fluid analysis, amniography, and intrauterine transfusion. Much of this latter material is reasonably new and yet has not found a place in standard texts. The remainder of the material has been standard fare for at least a decade or more.

Whether intrauterine transfusion, amniotic fluid analysis, and amniography all deserve this kind of emphasis is doubtful. The early enthusiasm for these procedures lately is being tempered by sobering experience. One wonders about the desirability of equipping one's self with the skills and materials needed to carry them out, particularly in view of the likelihood that erythroblastosis fetalis due to Rh incompatibility can be prevented completely, or at least have its incidence reduced to the vanishing point within the next five years.

The style of the writing is lucid and, except for the use of the CDE notations, is scientifically accurate. The illustrations are clear and the tables and figures carefully conceived and well laid out. The author has clearly accomplished his immediate aim. However, it is not impossible that within a few years the bulk of the material found in this book will be of historical interest only.—IRVING B. WEXLER, M.D.

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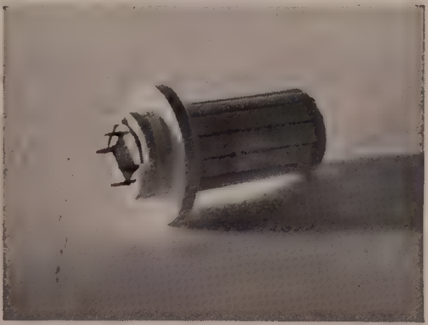

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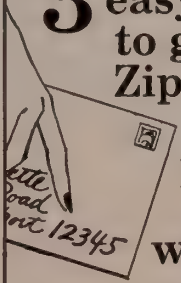

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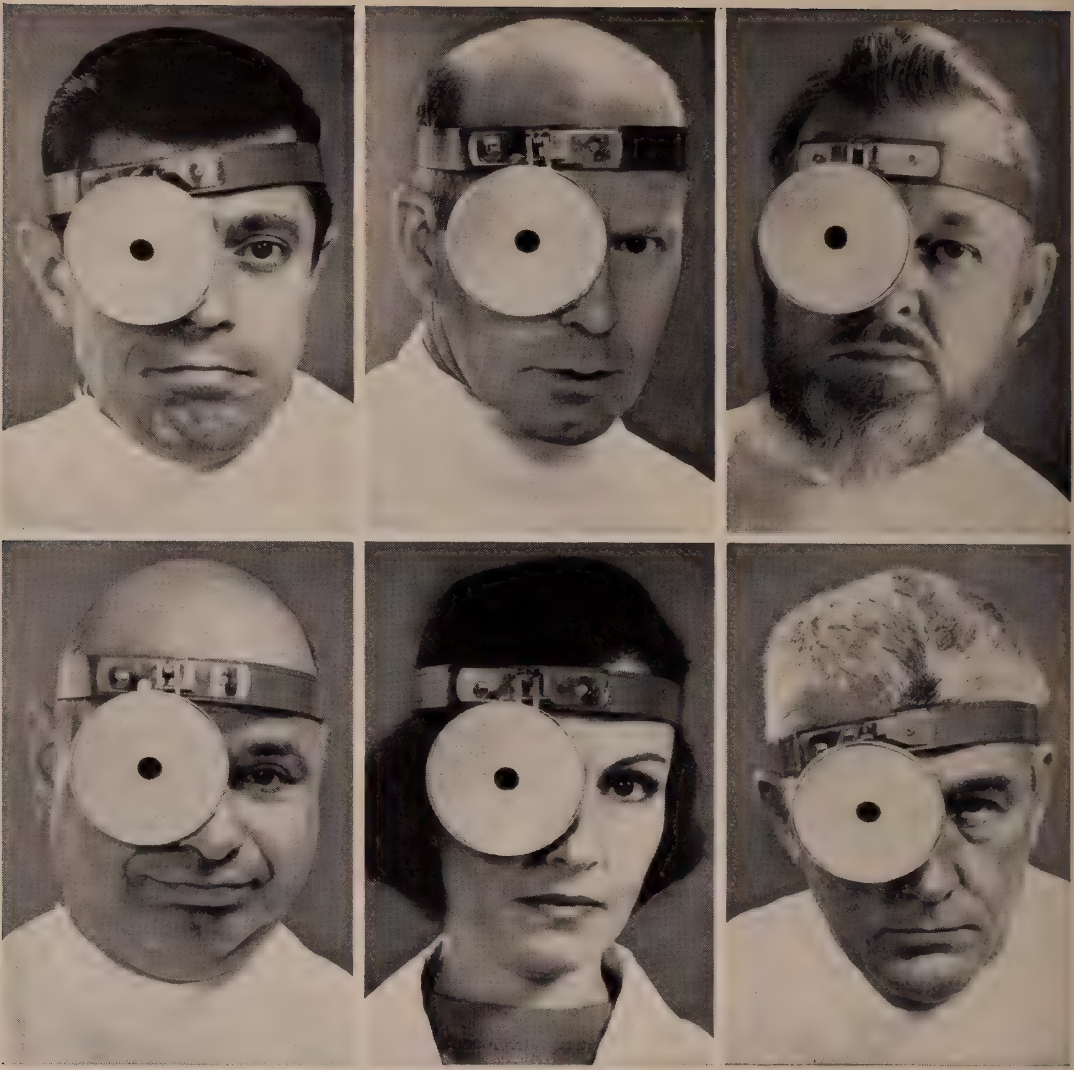

"All Otolaryngologists are Alike"

Just look at them and you can see how much they have in common. Besides, they all go through pretty much the same training, and pass the same kinds of tests, and measure up to the same sort of standards. Therefore, all otolaryngologists are alike. Right?

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You might also say that all otolaryngologists aren't alike, either.

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Medical Society of the State of New York

Minutes of the 1968 House of Delegates

The Americana, New York City
February 11 to 15, 1968

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MEDICAL SOCIETY OF THE
STATE OF NEW YORK

House of Delegates

Minutes of the Annual Meeting*

FEBRUARY 11 through 15, 1968

The 162nd Annual Meeting of the House of Delegates of the Medical Society of the State of New York convened at The Americana, Seventh Avenue and 52nd Street, New York City, on Sunday, February 11, 1968, at 2:10 p.m.; on Tuesday, February 13, 1968, at 2:00 p.m., on Wednesday, February 14, 1968, at 9:00 a.m. and at 2:00 p.m., and on Thursday, February 15, 1968, at 9:00 a.m., George Himler, M.D., Speaker; John H. Carter, M.D., Vice-Speaker; Walter T. Heldmann, M.D., Secretary; Carl Goldmark, Jr., M.D., Assistant Secretary.

Opening Proceedings

Invocation and National Anthem

...Speaker Himler introduced the Very Reverend Monsignor Christopher G. Kane, Director, Division of Health and Hospitals, Catholic Charities, New York City, who gave the invocation. This was followed by the National Anthem...

Report of Reference Committee on Credentials

...C. Joseph Delaney, M.D., chairman of the Committee on Credentials, reported that 220 delegates were registered; Secretary Heldmann reported that a quorum was present. Speaker Himler then declared the 162nd session of the House of Delegates open for the transaction of business...

Memorial Tribute

...Speaker Himler read the names of the deceased members of the House of Delegates, as follows:

Albany County: Frederick H. Hesser, delegate of Section on Neurology and Psychiatry 1962;

Clinton County: Lyman G. Barton, Jr., councillor 1928, vice-president 1930;

Dutchess County: James Alexander Robertson, county delegate 1967;

Essex County: Alexander Gersen, county delegate 1965;

Kings County: Charles Henry Loughran, county delegate 1945, 1946, 1948, 1949, 1952 to 1957, 1959 to 1963, 1965;

Monroe County: Merle D. Evans, county delegate 1958, 1960 to 1964;

Montgomery County: Walter Dreyfuss, county delegate 1951 to 1955;

Nassau County: Stephen F. Gerde, county delegate 1951, 1953 to 1956;

New York County: Walter Palmer Anderton, county delegate 1936 to 1943, 1960, secretary 1945 to 1959; Edward Livingston Hunt, assistant secretary 1919, secretary 1920 to 1925, ex-secretary 1927 and 1928; David Ulmar, delegate of Section on Chest Diseases, 1953;

Oneida County: Bradford F. Golly, county delegate 1954;

Onondaga County: Richard D. Wiseman, delegate of Section on Allergy 1962;

Ontario County: M. Edgerton Deuel, county delegate 1953;

Oswego County: Olin J. Mowry, county delegate 1938, 1939, 1947 to 1956, district branch delegate 1958;

Queens County: Benjamin F. Glasser, county delegate 1948 to 1951, 1953 to 1955; Jerome L. Leon, county delegate 1957 to 1967;

Schenectady County: Ralph E. Isabella, county delegate 1951, 1953, 1966, 1967;

Steuben County: William J. Tracy, county delegate 1940, 1943, 1945 to 1954;

Washington County: Walter S. Bennett, county delegate 1948, 1949, 1951 to 1963.

...The House of Delegates rose and stood for a moment of silence in memory of their departed confreres...

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*A verbatim copy of the Proceedings of the House of Delegates is on file at the Headquarters Office of the Medical Society of the State of New York, 750 Third Avenue, New York, New York 10017.

Introduction of New Delegates

. . .Speaker Himler introduced the following new delegates who were applauded by the House:

County Delegates

John J. Phelan, Jr., Albany
Sterling W. Boyd, Broome
George L. Collins, Jr., Erie
James H. Cosgriff, Erie
Robert A. Henderson, Franklin
Philip Cantor, Kings
Max B. Milberg, Kings
Louis A. Avallone, Lewis
Gerald L. Glaser, Monroe
John P. Glaubitz, Nassau
Marjorie H. Greene, Nassau
Clarence W. Hogans, New York
Robert B. Wallace, Oneida
Daniel Davis, Ontario
Irving Weiner, Orange
Kenneth J. Clark, Orleans
Milton W. Kogan, Oswego
Lester J. Candela, Queens
Norton M. Luger, Queens
Maurice J. Elder, St. Lawrence
Robert P. Coolidge, Schenectady
Stuart L. Scheiner, Suffolk
Stephen Blatchly, Tompkins
Paul A. Burgeson, Wyoming
Vincas Sirmenis, Yates

District Branch Delegates

Orville L. Henderson, Third
Francis X. Dever, Fourth

Section Delegates

Robert B. Beede, Oneida, Allergy
Robert E. Sandroni, New York, Industrial Medicine and Surgery
Marvin L. Bloom, Erie, Internal Medicine
Irvin Klein, New York, Medical-Legal and Workmen's Compensation Matters
Robert C. Hays, Onondaga, Obstetrics and Gynecology
Philip H. Landers, Broome, Ophthalmology
E. Hoyt DeKleine, Erie, Plastic and Reconstructive Surgery
Robert E. Rothermel, New York, Preventive Medicine and Public Health
H. Easton McMahon, New York, Space Medicine
John H. Morton, Monroe, Surgery

Approval of Minutes of 1967 Meeting

. . .The minutes of the February, 1967, session were approved as published in the June 1, 1967, issue of the NEW YORK STATE JOURNAL OF MEDICINE. . .

Reference Committees

. . .Speaker Himler announced that the reference committees for the 1968 House of Delegates were as follows:

Credentials

C. Joseph Delaney, New York, *Chairman*
Milton W. Kogan, Oswego
Russell Peacock, Saratoga
Julia V. Lichtenstein, New York
Joseph F. Shanaphy, Richmond

Reports of Officers

PRESIDENT
PRESIDENT-ELECT
SECRETARY
TREASURER
EXECUTIVE VICE-PRESIDENT
BOARD OF TRUSTEES
  WAR MEMORIAL
  INVESTMENT
BUDGET AND FINANCE
BUILDING

Herbert A. Laughlin, Chautauqua, *Chairman*
W. Graham Knox, New York
Herbert E. Joyce, Erie
Harold T. Golden, Herkimer
Philip M. Standish, Ontario

Medical Services

COMMISSION ON MEDICAL SERVICES
ECONOMICS
LIAISON WITH VETERANS ADMINISTRATION
MEDICAL CARE INSURANCE
WORKMEN'S COMPENSATION
INDUSTRIAL HEALTH
LABOR HEALTH FACILITIES
AD HOC, OEO CLINICS
PROPOSED HEALTH INSURANCE LAW

Lawrence Essenson, New York, *Chairman*
Herbert J. Wright, Jr., Schenectady
Clement J. Boccalini, Nassau
William B. Forsyth, Monroe
Vincent J. Tesoriero, Kings

Standards of Medical Care

COMMISSION ON STANDARDS OF MEDICAL CARE
ETHICS
HOSPITAL AND PROFESSIONAL RELATIONS
HOSPITAL-BASED PHYSICIANS
MEDIATION AND INSURANCE CLAIMS REVIEW
MEDICAL REVIEW
NURSING
PUBLIC MEDICAL CARE
UTILIZATION REVIEW

George McCauley, Tompkins, *Chairman*
Gerald B. Austin, Albany
Ralph M. Schwartz, Kings
Reid R. Heffner, Westchester
Bernard J. Hartnett, Cayuga

Medicare (Title 18) and Medicaid (Title 19)

TECHNICAL ADVISORY COMMITTEE ON MEDICAL CARE

John L. Clowe, Schenectady, *Chairman*
Felix Ottaviano, Madison
Charles D. Sherman, Jr., Monroe
Milton Gordon, Suffolk
Albert B. Accettola, Richmond

Public Health and Education

COMMISSION ON PUBLIC HEALTH AND EDUCATION
ACCIDENT AND INJURY PREVENTION

Aging and Nursing Homes
Alcoholism and Drug Abuse
Audio-Visual Aids
Cancer
Cardiovascular Disease
Chronic Pulmonary Diseases
Continuing (Postgraduate) Education
Data Processing in Medicine
Diseases of the Eye
Environmental Health
Forensic Medicine
General Practice and School Health
Hard of Hearing and the Deaf
Health Aspects of Ionizing Radiation
Health Manpower
Maternal and Child Welfare
Mental Hygiene
Metabolic Diseases
Physical Medicine and Rehabilitation
Preventive Medicine
Rural Medical Service
Quackery
Ad Hoc Joint Committee with Bar Association on Alcoholism and Drug Abuse
Medical Aspects of Sports

Paul M. De Luca, Broome, *Chairman*
George E. Leone, Suffolk
Saul Zucker, Bronx
Louis J. Wagner, Rockland
George M. Saypol, New York

Scientific Activities and Publications

What Goes On
Publication
Archives and History
Prize Essays
Convention
Physicians' Placement
To Explore All Aspects of District Branches
District Branches
Disaster Medical Care
NASA, Liaison with

Edgar P. Berry, New York, *Chairman*
John L. Finnegan, Queens
Richard D. Eberle, Onondaga
Kenneth H. Eckhert, Erie
Robert E. Healy, Westchester

Public and Professional Affairs

Commission on Public and Professional Affairs
Federal Legislation
State Legislation
Public Relations
To Study Revision of Education Law
Medicine and Religion
Advisory to New York State Medical Assistants Association

George T. C. Way, Dutchess, *Chairman*
Francis J. Loperfido, Bronx
John A. Lawler, New York
John T. Donovan, Jr., Niagara
Charles M. Smith, Seneca, Seventh District Branch

Organization, Policies, and Legal Matters

Malpractice Insurance and Defense
Legal Counsel
Judicial Council
On Osteopathy
Constitution and Bylaws
New York Delegation to AMA
Research and Planning

John H. Wadsworth, Schoharie, *Chairman*
Stanley Stark, Kings
Abraham W. Freireich, Nassau
Eugene J. Hanavan, Jr., Erie
Lester R. Tuchman, Queens

Sergeants-at-Arms

Armand J. D'Errico, Fulton, *Chairman*
Wallace M. Sheridan, Westchester
Leo J. Swirsky, Kings
Lester J. Candela, Queens
Francis J. Loperfido, Bronx

Tellers

John N. Dill, Westchester, *Chairman*
William J. McAuliffe, Cortland
Thomas S. Bumbalo, Erie
James A. Moore, Albany
Mary Spalding, New York

Referral of Reports and Supplementary Reports

...On motion of Secretary Heldmann, the reports and supplementary reports of officers, trustees, commissions, committees, legal counsel, special committees, ad hoc committees, and district branches, both published and distributed, were referred to the appropriate reference committees without reading...

Introduction of Past Presidents

...Speaker Himler introduced past presidents, who were applauded by the House, as follows:

1934–1935:	Arthur J. Bedell, Albany
1950–1951:	Carlton E. Wertz, Erie
1955–1956:	Renato J. Azzari, Bronx
1959–1960:	Henry I. Fineberg, Queens
1960–1961:	Norman S. Moore, Tompkins
1961–1962:	John M. Galbraith, Nassau
1963–1964:	William L. Wheeler, Jr., New York
1964–1965:	George A. Burgin, Herkimer
1965–1966:	Waring Willis, Westchester
1966–1967:	James M. Blake, Schenectady

Addresses to the House

President of American Medical Association*

...Speaker Himler introduced Gerald D. Dorman, M.D., New York, trustee of the American Medical Association, who presented Milford O. Rouse, M.D., president of the American Medical Association. Dr. Rouse addressed the House as follows:

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* Dr. Rouse addressed the House at the Tuesday afternoon session.

Mr. Speaker, members and officers on the dais, friends of the Medical Society of the State of New York, and distinguished members of the House of Delegates, I count it as a distinct privilege to be with you this afternoon. One of my benefits as president is to be with friends of former years, with whom I worked on various levels.

New York State is one of our greatest states. You have produced presidents of the AMA, and if I read the future correctly, there are other presidents to come in other years.

You are truly the largest state in number of physicians, and I appreciate the fact that you have the largest universal membership in the AMA of all the states. If you also consider my great state of Texas, you are among the great states. Please pardon my lack of modesty.

I have been stimulated and inspired by the tremendous addresses you have had on Sunday from Dr. Wurzbach and Dr. Hughes. Dr. Hughes, particularly, has correctly diagnosed many of our challenges. I just wish I had the time to emphasize some of the things in his talk. I know you are going to read about this on several occasions.

We do have that challenge to recognize the changes that have taken place in the order of our day, and just as Dr. Appel, two years ago, and Dr. Hudson, last year, emphasized the importance of us, as physicians, taking the lead and meeting the new needs of today, I have tried to pursue the same approach. And again, if you pardon my seeming lack of modesty, I hope you take the time to read this week's issue of the *A.M.A. News* because there is an article in there by your president that is right along the lines that you talked about on Sunday.

A great deal is being said by a great many different people about the rising cost of health care. There is no arguing with the facts that are presented. Nor is there any question about the importance of the subject.

Health care is part of the total expenditures of virtually every family in this nation. And with health programs available to millions of people through their companies, their unions, or their government, health care also is a part of the total expenditures of just about every employer, every labor union, and every level of government.

The greatest need in discussing these facts, however, is to put them in context, rather than treating them as symptoms of an isolated instance unmatched anywhere in our economy and unjustified by any extenuating factors.

Let us consider first the justifications. It is my feeling that, to a large degree, we of the medical profession—and our allies—have been entirely too defensive about medical care costs. Of course health and medical care cost more today than they did in the past. The cost of personnel to provide it has gone up. The cost of equipment they use has gone up. The cost of living has gone up because of over-all national inflation.

But look at it from another standpoint. Look at what health care can do today. I would invite those economists and politicians who wring their hands over an increase in the cost of health care to compare that with the cost of illness. As an outstanding example, consider a forty-year-old man with severe, advanced coronary artery disease and crippling angina. Earlier than ten years ago, such a man would have become an invalid for the rest of his life. Today, a myocardial revascularization will have him back on his job in two months.

Damaged heart valves that formerly crippled or made an invalid of people can now be repaired or replaced, restoring people to productive life. Almost all rheumatic fever can now be prevented. Many patients with rheumatoid arthritis can receive continuing therapy and live useful lives. The newly introduced mumps vaccine will prevent this disease not only in children, but in adult males where it has always been particularly dangerous. Children can now be protected not only against tetanus and typhoid, but against measles, polio, and mumps. Which is more expensive, a shot to prevent the disease, or treatment for a child who has one of them—or all of them—one after another?

In each case, I invite economists to compare the cost of the necessary health care with the cost of illness or disability. Many more examples of the same thing could be given, including therapy with tranquilizers instead of institutionalization in the case of certain mental conditions. Which is more expensive in terms of money and a family's emotional and spiritual security? I submit that the cost of health care is negligible when compared with the much greater cost of illness.

Having pointed out the other side of the argument, however, I do not wish to dismiss the cost of health care as a matter of no concern. Because it is something in which all of us are—and should be—interested. There are many factors involved, many of them beyond control by those directly involved in health care. I want to touch on the most important ones without trying to list them in order of importance.

During the ten years from 1957 through 1966, health care costs as a whole went up 34 per cent. As elements of the total, physicians' fees went up 33 per cent, drugs and prescriptions only 1 per cent, and the daily service charge for hospitals went up 78 per cent. For the same ten-year period ending in 1966, the price of all goods increased 11 per cent and the cost of all services went up 26 per cent. Tobacco products in that period went up 30 per cent, public transportation up 31 per cent, food up 17 per cent, and housing, the largest item in most families' financial life, up 13 per cent.

One of the severest critics of the rise in health care costs is our Federal government. But let us consider a few facts about its own financial operations. From 1960 to 1966, general revenue receipts of the Federal government went up 36 per cent. During the same period, while its tax income rose substantially, the government's public debt went up 11 per cent and social welfare expenditures went up 68 per cent.

I note that our government has no hesitancy at raising its prices. In January of this year, the U.S. postal service raised the price of a first-class stamp 20 per cent. The cost of sending a letter by airmail went up 25 per cent. Social Security taxes and benefits are higher this year. An employe who makes $7,800 or more in 1968 will pay 18 per cent more Social Security tax than he paid in 1967. Next year, he will pay even more, for a total increase of 28 per cent in just two years. The self-employed person this year will pay 18 per cent more than he paid in 1967. Under the present schedule, by 1973 the self-employed person will pay 41 per cent more Social Security tax than he paid in 1967. The employed person will have an increase of 51 per cent in his Social Security taxes in those six years.

Returning to the cost of health care, total expenditures for that purpose, which are now approaching $50 billion a year, have climbed in this country to a point where Americans are spending 12 times as much for health care as they spent forty years ago. It is interesting to note, however, that in 1950 the private physician's share of the health cost dollar was 29 cents. In 1965 his share was 28 cents.

Much of the total spending for health care can be attributed to the Federal government, through Medicaid, Medicare, and the health aspects of the Federal programs—increased care for servicemen in Vietnam, increased care for military personnel and their dependents, and the cost of research, public health services, and Federal support for the construction of health facilities.

The primary reason for increases in the cost of health care is the simple law of supply and demand that works in every aspect of our economy. Government programs, along with the greater over-all affluence of most people and more demand for health care beause of its greater effectiveness, have pumped billions of new dollars into the health care field, where the amount of facilities and number of personnel can be increased only very slowly. The result has been inflation. The cost of health care has gone up, will stay up, and perhaps will go higher unless ways are found to help relieve some of the pressure.

Our predictions about Medicare have proved to be true. The program has increased the utilization of health facilities and personnel—and has cost a great deal more money than its supporters admitted when the proposal was being considered. Both of these factors have increased the pressure on health care costs.

Another effect of the increased demands for health care by persons eligible for Medicare has been to reduce somewhat the available facilities and personnel for the younger taxpayers who are paying the bill for their own care and for the government programs.

Demands for more care, for all of the reasons I have cited, have created shortages of health facilities and personnel in spite of the fact that there are more facilities, more physicians, more health professionals of other types, and more health personnel than there ever have been before. And it is a fact of economic life that if people are going to continue to demand more care—and demand the very latest and best in every instance—they must pay for the sophisticated equipment and the highly skilled personnel to provide it. They can pay directly, or they can pay through taxes for government programs. The citizens themselves are ultimately going to have to decide which of those methods is more economical.

Hospitals are particularly hard hit. There are demands for higher pay by nurses, technicians, and hospital workers of all categories. Hospital payrolls have grown larger also because more people with more training are needed to give patients the kind of care they need and which we, as physicians, insist that they get.

The American Hospital Association says that in the past twenty years, the number of hospital employes per hundred patients has nearly doubled. That would have raised their expenses substantially even if they were paying their skilled employes the same amount they were paying twenty years ago—which obviously is impossible. While salaries account for 60 per cent or more of the cost of running a hospital, everything else has gone up too, including supplies and newer and better equipment. The increase in operating expenses can only be passed on to the patient in higher charges, just as all higher costs of doing business are passed on to customers by industry, and higher costs of government are passed on to the taxpayers.

Up to now, I probably have sounded as though these problems are insurmountable. I don't believe they are. I now want to discuss some of the possible solutions as the AMA sees them.

One of the important needs is for careful community planning, with cooperation among all elements of the community and its health professionals and administrators to see that facilities are provided in the light of total community need. There are instances, for example, where hospitals in a community duplicate special equipment and services and realize less than optimum utilization of beds and personnel. Conditions vary and no hard and fast rules can be laid down on a national basis, but it is unlikely that many communities would need more than one specially equipped and staffed emergency care unit for cardiac arrest—or more than one cobalt radiation machine.

Another factor that can be utilized is to continue the growth and effectiveness of voluntary health insurance and prepayment plans. The Health Insurance Institute reported that during 1967, Americans received a record $11 billion in private health insurance benefits, and at the end of the year 163 million people had private coverage for hospitalization. That figure includes half of those who are eligible for Medicare.

The Federal government can play a tremendously important part in helping relieve the pressure on the health care field by not passing additional major health legislation until existing programs are fully operational and have been completely evaluated to eliminate duplication and waste.

No one reasonably questions the government's legitimate interest in the health of the nation's people. Nor can anyone deny that government's direct involvement in health is as old as the nation itself. In recent years, however, that interest has grown significantly and the involvement has expanded tremendously. At the present time, according to a study made by the AMA Legislative Department, 175 Federal departments or agencies operate programs of a medical or health nature—with some having five or six different programs.

The 89th Congress, which adjourned in 1966, was the most health-oriented one that ever sat. Sixteen hundred bills were introduced that affected health or medicine. Forty-three of them were enacted, including the Appalachian Regional Development Act, the Mental Retardation Facilities and Community Mental Health Centers Construction Act Amendments, Medicare and Medicaid, the Heart Disease, Cancer, and Stroke Amendments, the Military Medical Benefits Act, the Economic Opportunity Amendments, and the Comprehensive Health Planning and Public Health Services Amendments.

Over 1,000 health and medical bills were introduced in the first session of the 90th Congress. Only 14 were enacted. Of greatest significance among them were the Partnership for Health Act, the Social Security Amendments, the Air Quality Act, and the Economic Opportunity Amendments.

The AMA sincerely believes that the public interest would be served by a moratorium on such programs, at least for the near future.

Another vital part of relieving the pressure on health care costs is to increase the number of health personnel, particularly of physicians. The biggest part of discharging this responsibility is the education of more physicians. We have come a long way in this respect. The medical schools of today are graduating 50 per cent more physicians every year than the existing schools graduated in 1946, although the total population in the period has risen only 28 per cent. By the middle of the 1970's, 103 medical schools will be graduating 10,000 physicians a year—twice the number that graduated in 1964.

However, it must be understood by the public and others who are interested in this matter that while the AMA accredits medical schools, in conjunction with the Association of American Medical Colleges, it neither operates nor controls medical schools or the universities with which most of them are affiliated. We are limited to an advisory capacity.

Our Association has made a number of recommendations, including the adoption of eleven-month school years in order to graduate physicians in three years instead of four. We have also pointed out that medical schools could increase their enrollments through better utilization of existing laboratory and classroom facilities and expansion of their hospital affiliations for clinical training.

In this time of health personnel need, the AMA calls on all communications media, interested organizations, and public-spirited citizens to insist to state legislatures and to foundations or religious groups that help maintain medical schools that they develop more schools and enlarge present enrollments.

One thing this will entail is holding research in medical schools to reasonable limits, particularly in the expenditure of money. A certain amount of research is necessary and desirable. But the primary function of a medical school and its faculty members must be to educate and train physicians. That is what should be emphasized in the years ahead.

This need was eloquently summarized in a Board of Trustees report on manpower accepted by the AMA House of Delegates at the 1967 annual meeting. The conclusion of that report was as follows: "Our resolve should always be, as it is now: To use the best tested and most forward-looking measures to provide excellent health care for all of our citizens through an ample number of able, educated, and highly skilled physicians."

At its clinical meeting last year, the AMA House adopted 11 purposes and responsibilities of the American Medical Association. Three of them related directly to recruiting and educating physicians and others in the health care field. These principles have been printed in attractive form suitable for framing and display in every physician's office. A copy is available on request to the AMA. If any of you have not yet read them, they appeared in the January 29 issue of the *Journal of the AMA*.

The attraction of more people into the health care field is an absolute necessity if the growing demands are to be met. Already the health field is the third largest employer in the United States. By the middle of the 1970's, it should become number one.

In coming years, people will be spending more than before on health care—either directly or through the government—and unless successful steps are taken, the cost of services will continue to rise. The nation's physicians will continue doing everything possible to keep that increase from happening—or from getting out of bounds. At last year's annual meeting, the House of Delegates adopted the philosophy that every physician has the responsibility of helping his patient get the most out of his every health care dollar.

Every decision made by a physician has a price tag. Medication, diagnostic tests, treatment, hospitalization, surgery, and other services of physicians all mean money costs to the patient. And the doctor's consideration of what he will do professionally must be considered in the light of cost as well as effectiveness and necessity—with the patient's ultimate health remaining always the first objective.

Here again, we'd like to emphasize what Dr. Hughes said on Sunday. It is a matter of pride to us what the AMA has been doing on medical care. I am pleased to announce that Dr. Charles L. Hudson is now full-time director of health services for the AMA and he is now laying out some plans to help us on that.

These are difficult days for the physician. In years past, it was relatively easy to define the scope of his interest and responsibilities. He knew what the public expected of him, and what to expect of himself. The idealism that led him into this profession, his education, his training, his experience, and his relationships with colleagues all combined to focus his attention on the science and art of medicine.

But now, as part of a changing society, he finds that his responsibilities have tripled. It is no longer enough that he be an effective physician-scientist or, if you will, physician-artist. To that has been added the obligation to consider the economics of medicine as well as the science. He must look at his services as a financial factor as well as a health factor in the lives of his patients.

Still further, there has been added the responsibility of interest and participation in the areas of citizenship and politics, which, in most of their aspects, are identical. The physician must identify himself as an important member of society, not just as a specialist within it, because the medical profession no longer is alone in its concern with health and medical care. It now shares that concern with all of society.

Every physician was a citizen before he was a doctor. Today, along with being a physician, he must discharge the responsibilities of citizenship and accept the very special obligations that accrue to him because of his education, his abilities, and his potential leadership. To carry his fair share, he must become active in the chamber of commerce, a noonday service club, the church of his choice, and otherwise enter into the responsible activities not of the average citizen, but of the outstanding citizen to whom the rest of the community can look for leadership.

This is particularly true in the area of politics. That word has a great many connotations, but fundamentally it is nothing but helping to select the people who make the laws at the level of the city, the county, and especially of the state and nation. Laws are made at the community level, because that is the level at which people are chosen who ultimately make the statutes. Every citizen's opportunity to express his philosophy in the laws of his nation lies in choosing the people who will make those laws, and then working for their election.

As an individual citizen, not as a member of a profession, each physician has the privilege and the responsibility of informing himself on the philosophy of political parties and especially of individual candidates. He has the further privilege and responsibility of expressing his preference and lending his support to those whose ideas are nearest his own.

And just as other informed citizens with a community of interest pool their efforts in behalf of candidates whose views agree with theirs, so physicians count it a privilege to engage collectively in politics—not through their scientific medical associations, but through political action groups at the county level in many locations and at every state level. This pooling of interests is focused at the national level through AMPAC, whose counterpart here is EMPAC.

New York has 41 congressmen. That is nearly 10 per cent of the lawmakers in the House of Representatives. What a tremendous opportunity and responsibility it is for physicians here to play a vital part in sending to Congress from this great State men and women whose philosophy embraces the traditions that made our country strong. Particularly with the difficulties you have seen in this State with Medicaid, it is important to give EMPAC in New York your wholehearted support, because it is the most effective way to let your voice be heard and to make your views count in your State Legislature and in our national Congress.

Physicians here, as in every state, have everything to gain by individual, county, state, and national participation in local political action groups and in the national AMPAC. I wear this little pin of AMPAC as an interested member of that organization. I also hope that you all have received this copy of "Physician's Careers." It is a fine booklet and a portion is devoted to community relations and community responsibilities. Write for your copy if you don't have it.

The effectiveness of organized political activity was demonstrated in the congressional elections of 1966, when the electorate of this country demonstrated their dissatisfaction with the prevailing philosophy of the 89th Congress. At least 48 new members, sent there by a dissatisfied electorate, had much to do with the more moderate output of the first year of the 90th Congress. There is a great opportunity in November of 1968 for the voters to make other meaningful changes. I urge each member of the medical community to take advantage of this opportunity—as an individual citizen.

These are, indeed, significant days for physicians. They are days that call for the fullest, most sincere collaboration among all elements of the medical profession and its allies, as well as productive cooperation with all other segments and organizations of society. You have in this State a Woman's Auxiliary, and yet I have heard that many doctors don't encourage their wives to be active in its affairs. We also have the Medical Assistants Association, another wonderful group of allies. We should give them all possible support and encouragement.

The American medical profession has demonstrated its willingness to work for mutual health goals with all interested parties and groups, including government—particularly at the Federal level. However, we would be naive if we did not recognize the fairly overt intention of some members of government and of the liberal sector of society to promote prepaid group medical practice and eventual fixed-fee schedules. It is just common sense for us to be aware of this and to use our intelligence and our courage to thwart its development.

The social planners may "dream up" and legislate into existence one Federal health program after another, but they cannot legislate the success of any of them. That depends on support and collaboration of the medical profession, which will be won by consideration for the profession's principles and its concern for the quality of the health care it delivers to those whom it serves.

Now is an ideal time for every physician to make a sincere diagnostic study of the accomplishments and needs of society in this country, and then proceed to set the personal example of integrity, skillful and sympathetic professional service, and real willingness to render his part of civic service in his own community.

Physicians have influence among all groups of society and can do a superb job of building and holding the esteem of their fellow citizens. I am confident they will, and early in 1968 is the time to enlarge our vision and our field of service. The way will not be easy. At times, even those we seek to help might seem to resist most successfully. We can only hope that increasingly they will understand and accept our sincere efforts to help them.

I pray that we may exhibit continued understanding, wisdom, and patience.

Report on Physicians' Home*

. . .Speaker Himler introduced Waring Willis, M.D., president of Physicians' Home, who addressed the House as follows:

This opportunity to talk to you again about the Physicians' Home is greatly appreciated. At the time that I was elected to serve on the board of directors of the Physicians' Home, I had only a very inadequate knowledge of its organization, management, and aims. Since it is quite possible that many of you in this House may be no more knowledgeable, I will use the allotted time to give you, in capsule form, the history and operation of the Home.

The Physicians' Home was incorporated in 1919 as a membership corporation to provide beneficial aid to those members of the medical profession rendered indigent from illness, exhaustion of savings, or because they had outlived their planning. Aid from the Physicians' Home is limited to physicians who have practiced in the State of New York and who have been members of the Medical Society of the State of New York for ten consecutive years. Aid is extended to the physicians themselves, their wives, widows, and needy minor children. It was a basic concept of the founders that the beneficiaries should be treated as guests and that aid should be in the nature of an honorarium in recognition of past services to the public and to the profession. The identity and the circumstances of the beneficiaries are treated strictly confidentially and their identity and circumstances are known only to the directors, the administrator, and local investigative personnel, if any. During the early years a few guests were maintained in a home—thus the title "Physicians' Home." However, experience soon convinced the corporation that the guests were more content living in their own homes or at least among their family, friends, and former patients.

Application for aid is made by the applicant directly to the Physicians' Home. After financial investigation has been made by the staff, the application is presented to the executive committee and the board of directors for ratification. Aid is based on the current budgetary requirements of the applicant.

A word about the staff. For many years it has consisted of one devoted paid employe who performs any duty and answers to any designation required. Legal, financial, and accounting advice are purchased on a fee basis.

Income necessary to cover the cost of beneficial aid was provided originally by voluntary membership contributions from a limited number of prominent physicians. On April 15, 1936, the certificate of incorporation, constitution, and rules and regulations were changed to broaden the membership. Since 1940, the component county medical societies have collected for the corporation the voluntary assessment of $2.00 added to the annual dues statement of the State Medical Society. In addition, the corporation has, for many years, enjoyed the full endorsement of the Woman's Auxiliary of the State Society and of component county societies. Since 1954, the corporation has solicited the entire membership of the State Society for an annual membership contribution of $10.00 or more. This membership carries voting privileges and has strongly improved of late both as to total funds provided and respecting the number of contributing physicians. This has enabled considerable expansion of the activities and benevolences of the institution.

By numerous bequests from the wills of physicians and others, the endowment fund has reached the point where its income now adds a substantial annual contribution to the corporation's beneficial aid.

The members of the corporation consist of those individuals who make contributions. The general management of its affairs is conducted by a board of 27 directors, each of whom is elected for a three-year term at the annual meeting of members. A board of five trustees is responsible for the care, custody, and management of the property of the corporation. Each of the trustees is elected for a staggered term of five years at the annual meeting of members. Your distinguished Speaker is at present one of the trustees. Between meetings, an executive committee composed of the officers and several members of the board conduct the affairs. All officers and trustees serve without pay and without expenses.

The rising inflationary trend continues to place an increasing demand on the finances of the Physicians' Home, as more and more disabled and retired physicians on fixed incomes become needy.

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* Dr. Willis addressed the House at the Sunday afternoon session.

The deficit so created has in the past and will, of course, in the future, be met by the use of income from the corporation's invested funds. However, since the trend will undoubtedly continue for some time, it will become necessary to increase contributions to prevent erosion of the endowment fund.

Although the endeavor has been in existence for almost forty-nine years, and although its aims, compassion, and generosity are unequaled, no more than 20 per cent of the membership of the Medical Society of the State of New York have contributed in any given year.

It is hoped that this year each of the members of this House of Delegates will serve as an ambassador for the Home in his local community and that you will be willing to speak and sponsor the corporation to your confreres.

Unfortunately, time does not permit the quotation of excerpts from letters received by the Home from families and friends of recipients. Enough to quote from a brochure prepared for the fortieth anniversary of the Home, "Guests have included individuals prominent in the profession with high posts of responsibility on hospital staffs, in medical colleges, in national specialty societies, and in the affairs of the Medical Society of the State of New York. All have served their communities and the profession well and with distinction. Guests as a whole represent a splendid cross section of the highest personal qualities of the profession, individuals indoctrinated with professional pride, earnest and deeply grateful, whose reliance on indefinite continuation of the aid is in most cases absolute."

To quote from Wordsworth:

> The monumental pomp of age
> Was with this goodly personage
> A stature undepressed in size
> Unbent which rather seemed to rise.

President of Woman's Auxiliary*

. . .Speaker Himler introduced the president of the Woman's Auxiliary to the Medical Society of the State of New York, Mrs. James A. Moore, Albany, who addressed the House as follows:

In looking over the notes of last year's convention, I found that each president of the State Auxiliary must submit four different annual reports. One to her own board, one to the Auxiliary's house of delegates, a board report, and last but certainly not least, a report to the Medical Society of the State of New York.

Needless to say, it is this report to you that gives each president the greatest concern, for although individually we love our husbands dearly, collectively you are a formidable group, and as a former nurse of a slightly bygone era, I have a healthy respect for the doctor and the medical profession.

Report to you I must, however, and in doing so I pondered what message I could bring to you that hasn't already been said by my 31 predecessors. Not much, truly, but perhaps I can best reach an understanding with you by taking a glimpse back through history to our beginning nearly thirty-two years ago.

It was on March 11, 1936, that the birth of the Woman's Auxiliary to the Medical Society of the State of New York took place at the Waldorf-Astoria Hotel here in New York City. Dr. Arthur J. Bedell of Albany, who was then president of the State Society, suggested to Mrs. John Bauer, president of the Kings County Auxiliary, that she be the first organizing chairman. Six counties were present at that first meeting, and one month later the first State Auxiliary convention was held with 34 delegates and four alternates in attendance representing 600 paid members.

The enthusiasm of these early founders permeated down through the years and our Auxiliary continued to grow. By 1960, we had 50 organized counties and a membership of over 5,000 physicians' wives. At this number, however, our membership stalemated, and in recent years signs became apparent that some of the enthusiasm of our early founders was beginning to wane. Today our organized counties have slipped to 44 and our membership is clocked at 4,874. In all fairness, however, let me be quick to point out that our group is not unique in this situation, for similar organizations are facing the same inertia. Obviously it is partly the shifting American scene, for we are living in an era of changes and upheaval with much overorganization and overlapping in many of the voluntary health fields.

Yet this past year as president of the State Auxiliary has truly been an enigma to me. I cannot believe that any group of women, so dedicated to furthering the interests of the medical profession, can fail to gain the support and enthusiastic backing of their county, state, or national medical societies. Surely in these uncertain times, the medical profession needs the strength and support of all its components, and its Auxiliary is one of its strongest supporters as well as its greatest ally.

I will not take your time to enumerate the achievements of your Auxiliary in its many fields of health service, recruitment endeavors, legislation, and fund raising for support of your medical schools. You have heard all this before. Our records are on file for anyone to examine. Rather, I am concerned with this apparent apathy within our organization, and I am actively seeking new means of renewing interest in our endeavors. Here I feel two points stand out: (1) Increased membership, and (2) increased dues.

It has been said we never stand still in this world. We either move forward and grow, move backward and lag, or we become extinct. This same axiom applies to your State Auxiliary. We need your help and support in encouraging your wives to join our organization, to support its activities, and to participate in its programs.

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* Mrs. Moore addressed the House at the Sunday afternoon session.

This year, in order to increase our numbers, a new status of membership was added to our bylaws, namely "members-at-large." This means any physician's wife residing in a county where there is no organized auxiliary and whose husband is a member in good standing in his county medical society, may apply for member-at-large status, by paying the State and national Auxiliary dues. Please make this type of membership known in your county society, if your county does not have an auxiliary.

And last, our financial situation. Are you aware that your State Auxiliary has been operating for the past ten years on the miniscule amount of $2.00 dues per member per year? Honestly, in this day of the inflated dollar, doesn't this seem an anachronism? At this convention, I am sure that our board will recommend to the house of delegates an increase in dues to at least $4.00, yet some are fearful that this increase will precipitate a loss in membership. As a parting plea from me, will you please stake your wife to this $2.00 increase, so that she will be free from the fear that membership in our organization has just gone too high.

Thank you for listening to my report. Please don't underestimate the woman power you have at your disposal. We doctors' wives are powerful ambassadors, either for good or bad, for the medical profession. Let it all be for the good. Give us your wholehearted support and backing and let us put our State Medical Auxiliary back where it rightfully belongs, first in the nation. We are your team.

Don't count us out.

President of New York State Medical Assistants Association*

. . .Speaker Himler introduced the president of the New York State Medical Assistants Association, Mrs. Ivy Reade, who addressed the House as follows:

Thank you for the honor you have given the New York State Medical Assistants Association by asking me, as their president, to address this House.

I am happy to have this opportunity to report to you on the progress of the Association, which the State Medical Society has so wholeheartedly supported since our inception in 1959. We are now approaching our ninth birthday. It has taken a while to set the wheels of a State-wide organization in smooth working order, but now we feel that we are on a solid foundation.

This year has been devoted to the setting up of the first State-wide educational program. Up to now, the educational programs of the State were on a hit-or-miss basis covering only small areas of the State. This year, concentrating on the major bugaboo in almost all physicians' offices, we are endeavoring to bring to the medical assistants of New York State the know-how necessary to properly process health insurance claim forms.

The first seminar, titled "Patients, Patience, and Paperwork," was held in Garden City for the Nassau and Suffolk medical assistants. In New York City, in cooperation with the Departments of Health and Social Services, seminars have been put on in Manhattan, The Bronx, and on Staten Island. Next week, the seminar will move to Queens and the following week to Brooklyn. The subjects covered are: Medicaid, Medicare, CHAMPUS, and Workmen's Compensation. Each form is discussed by an expert and gone over line by line, so that the medical assistant attending the seminar will know just what is necessary and important.

A guideline on how to put on this seminar has just been sent out to each of our component societies, so that they may arrange a similar seminar to fit the needs of their area. In those parts of the State where there is no component society, the State Association will be glad to arrange a program if the local medical society feels that it would be helpful. The program is flexible and can be adapted to local needs. Please contact me, if your local society would be interested in such a program.

Our biggest problem is lack of membership. We certainly would be delighted to have a membership of 4,000. In a State with such a large physician population, our Association should be many times its present strength of 650 members.

You, the physicians of our State, can do much to help this Association. Won't you please encourage your medical assistant to join, if she is not already a member? Won't you please encourage your colleagues to make the same request?

The New York State Medical Assistants Association is a professional organization which has, as one of its goals, the improvement of its members.

If your medical assistant is constantly striving to improve, surely you can see how you, the physician, will benefit.

The encouragement and support given to our Association by the officers and staff of the State Medical Society is appreciated by us. We are deeply indebted to our advisers, Drs. Irving M. Pallin, C. Stewart Wallace, and Walter F. Harrison, Jr., for their interest in our Association and for their valuable counsel. The Communications Division of the State Medical Society, headed by Guy Beaumont, has done much to help us.

We are most grateful to him and to the regional representatives. The problem of keeping in touch with our 19 chapters has been made much easier by the cooperation and help of Charles Struzinski and his staff in the mail room. To all of these people, a heartfelt "thank you."

To you, the officers and delegates of the Medical Society of the State of New York, we of the State Medical Assistants Association pledge our continuing support and hope that you will continue to aid us as we strive to grow and improve.

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* Mrs. Reade addressed the House at the Sunday afternoon session.

Introduction of Guests*

. . .Speaker Himler introduced the following guests from neighboring state medical societies, who addressed the House and were applauded:

PAUL S. HILL, JR., M.D., president, Maine Medical Association (Samuel Z. Freedman, M.D., host);

LOUIS K. COLLINS, M.D., president, Medical Society of New Jersey (Norman S. Moore, M.D., host);

STANLEY D. DAVIES, M.D., president, Rhode Island Medical Society (Walter S. Walls, M.D., host);

E. TREMAIN BRADLEY, M.D., president, Connecticut State Medical Society (Henry I. Fineberg, M.D., host);

JOHN W. NORCROSS, M.D., president-elect, Massachusetts Medical Society (Gerald D. Dorman, M.D., host);

J. DUNBAR SHIELDS, JR., M.D., president, New Hampshire Medical Society (Ralph S. Emerson, M.D., host);

WALTER W. BUTTRICK, JR., M.D., president, Vermont State Medical Society (Renato J. Azzari, M.D., host).

. . .At the Tuesday afternoon session, Speaker Himler introduced Edward O'Rourke, M.D., Commissioner of Health of the City of New York, and Joseph V. Terenzio, Commissioner of Hospitals of the City of New York, who were applauded by the House. . .

Award Presentations†

. . .Speaker Himler introduced President Wurzbach who made the following award presentations:

President's Citations for Distinguished Community Service

PRESIDENT WURZBACH: It is a great pleasure for me to present *Scott B. Schleiermacher, M.D.*, of Orange County, to this House.

As you know, this award was brought into existence quite a few years ago, and it was in recognition for prolonged and distinguished service to the community, in addition and unrelated to his professional practice. This young man here has been quite active in his community, as well as being a general practitioner and consulting physician at Cornwall Hospital. In 1952, Newburgh, New York, was singled out for an award as the "All-American City." He was serving as a councilman that year. He has served in the volunteer fire department for a good many years. He has been the coroner, city health officer, draft board examiner, and for twenty years has been on the Board of Education of Newburgh. It was during these years that he received the credit for building new buildings and carrying on a most progressive elementary school program. He was a charter member of the West End Businessmen's Association. He has been honored as an alumnus of Albany Medical College and by the Board of Education of Newburgh. He has been honored as a pioneer organizer by the Cornwall Hospital. Yet, with all this civic-minded activity, he has maintained an active general practice for over fifty-six years and is thought of by his patients as the best in the tradition of the family doctor. It's wonderful when his practice still considers that he is a "real" doctor. Your colleagues in the Orange County Medical Society unanimously presented your name to the President for this citation, which reads: "Presented to Scott B. Schleiermacher, M.D., in recognition of prolonged and distinguished service to the community, in addition and unrelated to his professional practice."

. . .The House rose and applauded Dr. Schleiermacher. . .

PRESIDENT WURZBACH: The next citation is presented to *Carl G. Whitbeck, M.D.*, of Columbia County. Besides being a practitioner and a Fellow of the American College of Surgeons, he has served as president of the Hudson Board of Education and was instrumental in founding a public library for the citizens of Hudson, and in providing a much-needed elementary school. He took active leadership in consolidating his school district in 1965 and today is chairman of the citizens advisory committee of the Hudson School District. He is past president of the Columbia County Board of Health, past president of the Hudson Rotary, past director of the Hudson Community Chest, and on the board of directors of the Hudson River Trust Office of the National Commercial Bank and Trust Company. He is a retired colonel of the New York State National Guard and a member of the board of directors of Blue Shield of Northeastern New York. To the youth of Hudson, he has been an inspiration for his work in organizing and promoting sports activities.

It is my very great pleasure, sir, to present to you this President's Citation for the work that you have done in your community.

. . .The House rose and applauded Dr. Whitbeck. . .

Vice-Presidents' Medals*

. . .President Wurzbach presented silver medals to past vice-presidents of the Medical

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* Drs. Hill and Collins were presented at the Sunday afternoon session of the House; Drs. Davies, Bradley, and Norcross at the Wednesday morning session; Dr. Buttrick at the Wednesday afternoon session; Dr. Shields at the Thursday morning session.

† The President's Citations for Distinguished Community Service, the Vice-Presidents' Medals, the Redway Award, the JOURNAL Distinguished Service Awards, the Industrial Health Award, and the Certificate of Appreciation were presented at the Sunday afternoon session; the Scientific Exhibit Awards were announced at the Wednesday morning session; the Fifty-Year Awards were announced at the Thursday morning session.

* Asterisks indicate those past vice-presidents who were present to receive their medals.

Society of the State of New York, in recognition of their outstanding service to the Medical Society. Speaker Himler read the list of names and those present came to the podium to receive their medals and were applauded . . .

1928–1929: Edward R. Weber, Westchester
1933–1934: Ralph R. Fitch, Northeast Harbor, Maine
1938–1939: Walter W. Mott, Westchester
1939–1940: Aaron Sobel, Dutchess
1942–1943: Peter J. DiNatale, Genesee
1943–1944: Norman S. Moore, Tompkins*
1948–1949: Theodore J. Curphey, Los Angeles, California
1952–1953: John L. Edwards, Columbia*
1954–1955: Charles A. Prudhon, Jefferson
1955–1956: Herbert Berger, Richmond*
1956–1957: Thomas M. Watkins, St. Lawrence
1957–1958: A. H. Aaron, Erie
1958–1959: Harry Golembe, Sullivan*
1959–1960: John L. Sengstack, Suffolk
1960–1961: W. Walter Street, Onondaga
1961–1962: Reid R. Heffner, Westchester*
1962–1963: John F. Kelley, Oneida*
1963–1964: Maurice J. Dattelbaum, Kings*
1964–1965: John C. Brady, Erie*
1965–1966: Sol Axelrad, Queens*
1966–1967: Arthur F. Gaffney, Clinton*
1967–1968: A. W. Martin Marino, Sr., Kings*

Redway Award

President Wurzbach: The seventh annual Laurance D. Redway Medal and Award for excellence in medical writing in the New York State Journal of Medicine during the year 1967 is made to *Stanley I. Fishman, M.D.*, for his article that appeared in the October 1, 1967, issue of the Journal, entitled, "Pulmonary Emphysema—A Clinical Problem."

This well-reasoned article, only ten pages in length, put the clinician squarely in the center of the emphysema problem. The protean nature of the etiology of this condition and its physiologic and pathologic results led logically into a consideration in depth of the clinical picture. The article concluded with a close look at all the various therapies proposed to date and put them in proper perspective. All the information provided was soundly based scientifically. In addition, there was not a word wasted and there was not a word that could be removed without loss.

This is high competence in medical writing and the Journal is privileged to recognize it.

Therefore, sir, may I present to you this Laurance D. Redway Award and gold medal for 1967. With this goes an honorarium of $500. We are very happy that you have given us this opportunity to present an award of value.

Dr. Fishman: Thank you, sir. I am very grateful to all of you for this single honor. Thank you very much.

. . . The House applauded as Dr. Fishman left the podium . . .

Journal Distinguished Service Awards

President wurzbach: I will ask Miss Alvina Rich Lewis to come to the dais.

This award for Distinguished Service to the New York State Journal of Medicine is made for the first time to one who does not hold a degree in medicine.

Miss Lewis has rightly won for herself an honored position in the family of medicine. For twenty years, she has served the Journal, first as technical editor, then as assistant to the editor, and currently as managing editor. Miss Lewis has had complete responsibility for day-to-day working out of the immense number of details of editorial production required to meet semimonthly publication deadlines. She has done this calmly and efficiently and has brought to this work a solid home-grown integrity, a gift for organization, and unparalleled grasp of detail.

She is a friend to all, as many can attest. Her talents, while primarily at the service of the Journal, have been shared by her fellow craftsmen in the American Medical Writers' Association, where she has held high office and received many honors.

The Medical Society of the State of New York is fortunate that they will continue to have the benefit of Miss Lewis's service after her retirement from the Journal later this year. She will be retained as research assistant in the Division of Research and Planning.

The Journal is grateful to Miss Lewis for these years of untiring and unselfish service. If the Journal were to make but one award for many years of distinguished service, it would go to none other than Miss Lewis.

Miss Lewis, with a great deal of personal satisfaction, I present this award to you.

. . . The House rose and applauded . . .

President Wurzbach: The next Distinguished Service Award goes to George Himler, M.D.

Recent action of the Council has changed the manner of liaison between the Council and the New York State Journal of Medicine. This function, formerly performed by the Publication Committee, will now be taken over by an individual councillor.

It is fitting that the last chairman of the Publication Committee be honored by this award for distinguished service to the Journal.

Dr. Himler became chairman of the Publication Committee in 1963. This was a time of serious economic difficulty for the Journal and for medical journalism generally. The chairman served also on the Ad Hoc Committee to Study the Journal from 1963 to the present, since the ad hoc committee has not at this time been dismissed.

By active participation as a member of that committee and simultaneous leadership of the Publication Committee, Dr. Himler steered a calm and reasoned course through difficult times.

Due in part to Dr. Himler's efforts, the Journal was enabled to survive a lean period in its existence and to maintain its steady advance toward excellence.

It is a personal pleasure for me to present to you this Distinguished Service Award from the NEW YORK STATE JOURNAL OF MEDICINE in recognition of your work.

. . . The House rose and applauded . . .

Industrial Health Award

. . . Speaker Himler introduced Walter S. Walls, M.D., Erie, chairman of the Commission on Medical Services, to present the Industrial Health Award . . .

DR. WALLS: The Council Committee on Industrial Health is very interested in promoting industrial safety and is giving this award to the Consolidated Edison Company for their efforts in that direction. The award reads: "The Medical Society of the State of New York awards to the Health Department of the Consolidated Edison Company of New York, Inc., this citation in recognition of its contributions and achievements in furthering the objectives of industrial safety."

. . . The award was accepted, on behalf of the Medical Department of the Consolidated Edison Company, by S. Charles Franco, M.D., assistant vice-president, and Thomas J. Doyle, M.D., executive medical director, who were applauded by the House . . .

Certificate of Appreciation

PRESIDENT WURZBACH: The final award is the presentation of a Certificate of Appreciation to Robert W. Baird, M.D.

He is the chairman and founder of HAVEN, which stands for Help Addicts Voluntarily End Narcotics, a rehabilitation center in Harlem that he operates as a free, private medical clinic, and he has done this for six years, without vacation. It seems almost impossible that this gentleman is there at least five nights a week, from ten o'clock at night until four in the morning. During the interval when he is not at the clinic, he has given literally thousands of talks before college students, young people, medical and law schools, on radio and television, anywhere he is invited to alert the public and the professions to the menace of drug abuse. His testimony before congressional and health agency groups has resulted in legislation.

Other nations have become interested in his unique self-chosen task. He has addressed the Canadian Medical Association and was recently invited to present a paper to the United Nations authorities. Here in New York State, his plans have been incorporated in the master blueprint of the State program of narcotics control. Significantly, HAVEN in all its manifestations was accomplished without outside help. It was done by determination and hard work.

As a mark that his colleagues have taken note and inspiration from these extraordinary efforts, the Medical Society of the State of New York is proud to present Dr. Baird with this Certificate of Appreciation. The certificate reads as follows: "The Medical Society of the State of New York presents this Certificate of Appreciation to Robert W. Baird, M.D., for bringing hope to many hopeless, light to the shadows most avoid, giving care when others could not give; for practicing mankind's endless pursuit, Love thy neighbor as thyself."

Dr. Baird, I present this to you in heartfelt appreciation for what you have done for people.

. . . The House applauded . . .

Scientific Exhibit Awards

. . . Speaker Himler introduced James Q. Haralambie, M.D., chairman, Subcommittee on Scientific Exhibit Awards, who presented the following report:

The awards are given in two categories: Group I awards are made for exhibits of individual investigation which are judged on the basis of originality and excellence of presentation. Group II awards are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of presentation and correlation of data.

The awards in Group I, Scientific Research are:

First: "Cryosurgery in Treatment of Primary Bone Tumors and Metastatic Carcinoma to Bone," Ralph C. Marcove, M.D., Theodore R. Miller, M.D., and William G. Cahan, M.D., Memorial Hospital for Cancer and Allied Diseases, New York City.

Second: "Method for Managing Tenosynovitis and Other Hand Infections: Irrigation with Antibiotic-Enzyme Solution Through Polyethylene Catheter," Sylvester J. Carter, M.D., Walter L. Mersheimer, M.D., and Sheldon O. Berman, M.D., New York Medical College, Flower and Fifth Avenue Hospitals, New York City.

Honorable Mention: "Stricture of the Bile Duct: A Suggested Technic of Repair," George M. Saypol, M.D., and George Kurian, M.D., The Long Island Jewish Hospital-Queens Hospital Center, Jamaica.

The awards in Group II, Clinical Research, are as follows:

First: "Endocrine and Metabolic Manifestations in Bronchogenic Carcinoma," Harry L. Katz, M.D., John T. Kaemmerlen, M.D., and James H. Cullen, M.D., Veterans Administration Hospital, Albany.

Second: "Newer Anesthetics: A Ten-Year Survey," Allen B. Dobkin, M.D., and Associates, Department of Anesthesiology, State University of New York Upstate Medical Center, Syracuse.

Honorable Mention: "Birth Defects and Adaptations," Arthur A. Michele, M.D., and Joel H. Eisenberg, M.D., New York Medical College, New York City.

For the third time, the Mead-Johnson Company has awarded an Aesculapius Scroll and a check for $200 for an outstanding scientific exhibit. This award goes to "The Child with Spina Bifida: Comprehensive Care," Chester A. Swinyard, M.D., Joseph Ransohoff, M.D., and Leon Greenspan, M.D., New York University Medical Center, New York City.

Fifty-Year Citations

. . . President Wurzbach announced that citations in recognition of fifty years devoted to the service of the public in the practice of medicine will be mailed today to the following:

Albany
Joseph A. C. Gabriels

Bronx
Frank Appel
Forris Ensor Chick
Morris Cohen
Hiland Lee Flowers
Arnold Isaac Gotoff
Emil Klein
Benjamin J. Margolius
Adolph Neustadt
Herman Paul Posner
Charles Spencer Rogers
Walter Max Rosenmeyer
Hyman D. Silver
Max Weiss
Morris Worton

Chautauqua
John Frederick Foss

Dutchess
John Y. Notkin

Erie
Katherine F. Carnivale
Mary J. Kazmierczak
Everett T. Mercer
Morris E. Newman

Kings
Louis Berger
Maxwell Berkowitz
Harry S. Bikoff
Isidor Cohn
John Hamilton Crawford
Clifton Louis Dance
Benjamin Madison Eis
Louis Freimark
Charles Edward Hamilton
Joseph Jacaruso
Harold Thomas Joyce
Frank Moskowitz
Benjamin Press
Julian Rose
Maximilian Rosenberg
Isadore Harris Sackadorf
Emil C. Sauchelli
Samuel Schwadron
John A. Shaw
Jacob L. Stein
Ottokar Tenopyr
Morris Montrose Weiner
Sol Weiner
G. Marjorie Williams
Samuel A. Wolfe

Madison
Chancellor Hill Whiting

Monroe
Elroy James Avery
Paul W. Beaven
Joseph P. Garen
Anthony James Guzzetta
Morris Lazerson
W. J. Merle Scott
McNaughton Wilkinson

New York
Albert Herman Aldridge
George Clinton Andrews
Emanuel Appelbaum
Julius Arnowich
Heinz Arons
Irvin Balensweig
Jerry Sheridan Bell
Milton Lionel Berliner
Alan Frederick Bierhoff
Walter S. Boernstein
Ludmilla Freifeld Brown
Linn John Boyd
Erich Buechler
Leonidas Beverly Chaney
Lloyd Freeman Craver
John Horton Daniels
Louis Reis Davidson
Anita de Leomos
Emanuel Irving Diamond
Morris Dinnerstein
Vera B. Dolgopol
Joseph Eidelsberg
Aladar Farkas
Pauline Feldmann
G. Frankley
Samuel Z. Freedman
Clarence Cory Fuller
Rudolph Victor Gorsch
Paul Gross
Robert Gutierrez
Leo Joseph Hahn
Albert Salisbury Hyman
Samuel Irgang
James C. Joyner
Ernest F. Kerby
Leila Charlton Knox
Emil Kronheim
Herman Lande
Peter Lavalle
Henry Lax
Charles Willard Lester
Joseph Bruce Logue
Lorenzo Lonigro
Lillian Sarason Lusskin
William Frank MacFee
Jacob Mandel
Sigmund Manheim
Samuel Mausner
Victor Carl McCuaig
Harriet Carswell McIntosh
Russel Hugo Patterson
Frank G. Pettengill
Richard Norris Pierson
Nathan Portnoy
Israel Rappaport
Willard Cole Rappleye
Ferdinand Theodore Reid
J. Sydney Ritter
John Elden Sawhill
Ernest Shomberg
Richard Singer
Abraham Morris Spindler
George Stein
Bianca Steinhardt
Clifford Sharp Trimmer

William H. Von Lackum
Milton J. Wilson
Charlotte Wolpe Ziegler

Niagara
William Bender

Oneida
Charles Greene
Lynn Merton McConnell

Onondaga
George Bouton Andrews
William Elmer Ayling
L. Agnes Buck-Rook
Leon Harnden Griggs
Maynard Edward Holmes
Clark John Laus
Philip Rosenberg
Glenn Aldrich Wood

Queens
Erna D. Ball
Abraham Braunstein
Chester Logan Davidson
William Joseph Flanagan
William Joseph Godfrey
Erich Hecht
Gustav Rudolph Petz
Albert T. Schur
Paul Leon Weil
Selma Wertheimer
Faith Shelford Wohnus

Richmond
Joseph C. Klauber
Peter Joseph Timpone

Schenectady
Charles Willard Green

Steuben
Glee Warner Cheesman

Suffolk
Emma Louise Bellows
Milton Blaine Bergmann
Hallock Luce
David Lawrence MacDonell, Sr.

Ulster
Fred Voss

Warren
Patrick H. Huntington
James Burnett Shields

Westchester
Gerald R. Jameison
Harry Klapper
William John Keefe
John Michael Nicklas
Frederick Ferdinand Prausnitz
Morton Ryder
Irving S. Weinstein
Augustus Wolf

Tributes

...Speaker Himler announced that resolutions 68–57 and 68–61 would be presented to the House without referral to a reference committee. Both resolutions were adopted by acclamation...

The resolutions are as follows:

68–57. Peter Marshall Murray, M.D.

Introduced by Medical Society of the County of New York

WHEREAS, Peter Marshall Murray, M.D., for the past two years has been seriously ill; and

WHEREAS, Dr. Murray has had a long and distinguished career as a practicing physician and an equally distinguished career within the organization of medicine, for example: thirty-five years of service to the Medical Society of the County of New York, including the office of president; twenty-two years as a member of the House of Delegates of the Medical Society of the State of New York; twelve years as a delegate to the American Medical Association from the Medical Society of the State of New York; and

WHEREAS, In each instance Dr. Murray was the first member of his race to achieve such honors that acknowledged his devotion and service to the profession of medicine; now therefore be it

Resolved, That the House of Delegates of the Medical Society of the State of New York in this year 1968 extend to Peter Marshall Murray, M.D., congratulations for his lifetime dedication to medicine and to his patients; and be it further

Resolved, That a copy of this resolution be transmitted forthwith to Peter Marshall Murray, M.D., over the signature of the Speaker of this House of Delegates.

68–61. Termination of Term of Office of Gerald D. Dorman, M.D., as Chairman of Board of Trustees of Medical Society of the State of New York

Introduced by Medical Society of the County of New York

WHEREAS, Gerald D. Dorman, M.D., has served this House with distinction for many years; and

WHEREAS, He has served with equal distinction as a member of the Board of Trustees of the Medical Society of the State of New York for five years and latterly as chairman of that body; and

WHEREAS, This year he terminates his tour of duty as chairman of said Board of Trustees; now therefore be it

Resolved, That this House of Delegates go on record as acclaiming the long term of service to this body by Gerald D. Dorman, M.D., and extending the grateful thanks of the House.

House Committee on Constitution and Bylaws

...Carl Goldmark, Jr., M.D., chairman, reported as follows:

The House Committee on Constitution and Bylaws consists of the following members:

Carl Goldmark, Jr., M.D., *Chairman*	New York
Irving L. Ershler, M.D.	Onondaga
Swen L. Larson, M.D.	Chemung
Jason K. Moyer, M.D.	Broome
Isidore Sternlieb, M.D.	Bronx
George Himler, M.D., *ex officio*	New York
John H. Carter, M.D., *ex officio*	Albany
William F. Martin, Esq. *ex officio*	New York

At the February, 1967, meeting of the House of Delegates five resolutions seeking to amend the Constitution and/or Bylaws and one resolution to amend the Principles of Professional Conduct were referred to the House Committee on Constitution and Bylaws for review and recommendation.

On May 24, 1967, the committee, with the exception of Jason K. Moyer, M.D., excused, met and reached the conclusions set forth hereafter.

Also present at this meeting were Joseph G. Zimring, M.D., chairman of the Council Committee on Ethics; J. Richard Burns, Esq., assistant executive vice-president; Miss Mary Singer, supervisor, membership department, and Samuel Pakula, recorder.

The chairman outlined the duties and responsibilities of the committee and in general terms stated the subject matter of the resolutions to be reviewed.

The committee then considered the resolutions in numerical order and reached the conclusions and recommendations indicated.

Resolution 67-7—Amendment to Constitution to Include District Branch Presidents on Council, introduced by Medical Society of the County of Erie

> Whereas, Under the Constitution and Bylaws no provision is made as such for district branch representation on the Council; and
>
> Whereas, Provision for such representation on the Council would do much to overcome the dissatisfaction that exists regarding the composition of the Council; now therefore be it hereby
>
> *Resolved*, That Article IV of the Constitution entitled "Council" be amended by striking out the words "and twelve other members elected by the House of Delegates" and in place thereof substituting the words: "Six members elected by the House of Delegates and the presidents of the district branches"; so that as amended Article IV will read: "There shall be a Council composed of the president, the president-elect, the vice-president, the immediate past president, the secretary, the assistant secretary, the treasurer, the assistant treasurer, the speaker, the vice-speaker, the chairman of the Board of Trustees, six members elected by the House of Delegates, and the presidents of the district branches."

The committee noted that this proposal would add an additional three members to the Council and could see no apparent need for adding to the present number. It observed also that the term for district branch presidents is for a maximum of two years and that the proposed amendment would give them automatic membership on the Council while in office, although the Bylaws provide for a three-year term for members of the Council.

The committee unanimously *recommends disapproval of resolution 67–7.*

The House, after discussion, voted to adopt the recommendation of the committee, disapproving resolution 67–7.

Resolution 67-15—Amendments to Bylaws to Change Date for Payment of State Society Dues, introduced by Nassau and Suffolk County Medical Societies

> Whereas, In the past county medical societies have had to forward State and AMA membership dues to the Medical Society of the State of New York by March 1 in order for a member to continue to be in good standing; and
>
> Whereas, The collection, processing, and forwarding of these dues incurs a disproportionate hardship on the part of each county society to forward dues at that time of the year; and
>
> Whereas, Deferment of the remission of State dues until May 1 would permit county medical societies greater leeway and time for processing; now therefore be it hereby
>
> *Resolved*, That the Bylaws of the Medical Society of the State of New York be amended as follows:
>
> 1. Amend Section 2(b) of Chapter 1 of the Bylaws to change the date "March 1" to "May 1."
> 2. Amend Section 1(b) of Chapter II of the Bylaws to change the date "April 1" to "May 1."
> 3. Amend Section 2, paragraph 3, of Chapter XIV of the Bylaws to change the dates "March 1 and December 31" to "May 1 and December 31," and "January 1 and March 1" to "January 1 and May 1."
> 4. Amend Section 5 of Chapter XIV of the Bylaws to change the words "the first day of April" to "the first day of May."
> 5. Amend Section 9, second paragraph, of Chapter VII of the Bylaws to change the words "the first day of April" to "the first day of May."

Similar resolutions having the same effect were adopted by the 1967 House (resolutions 66–78 and 66–75). The committee therefore feels that *no action* on this resolution is necessary.

The House voted to adopt the recommendation of the committee, thereby taking no action on resolution 67–15.

Resolution 67-56—Amendment to Bylaws to Rescind Compulsory Membership in the American Medical Association, introduced by the Medical Society of the County of Montgomery

> Whereas, The recent increase in dues by the American Medical Association represents an additional financial burden on member physicians; and
>
> Whereas, Some members of the Medical Society of the County of Montgomery do not feel that the American Medical Association properly represents their position in political and economic matters; now therefore be it hereby
>
> *Resolved,* That the House of Delegates of the Medical Society of the State of New York rescind the requirement of compulsory membership in the American Medical Association for members of the Medical Society of the State of New York by amending the Bylaws as follows:
>
> 1. Chapter I, Section 1, second sentence, delete the words "and the American Medical Association," so that the sentence will then read: "The active and junior members shall be all active and junior members in good standing of the component county medical societies";
> 2. Section 2(c), delete the second paragraph;
> 3. Section 3, first sentence, delete the words "or the American Medical Association" and change the word "their" to "its" so that the sentence will then read: "A member expelled from his component county society or suspended from its rights and privileges shall likewise be expelled or suspended for the same period from this Society."

The committee noted that similar resolutions are proposed and defeated year after year, that the whole issue of compulsory AMA membership was thoroughly discussed at the 1967 House, and that the House voted overwhelmingly to retain mandatory membership.

The committee *recommends disapproval* of this resolution.

The House voted to adopt the recommendation of the committee, disapproving resolution 67–56.

Resolution 67-59—Amendment to Principles of Professional Conduct, introduced by Joseph G. Zimring, M.D., Nassau, Councillor

> *Resolved,* That the Principles of Professional Conduct of the Medical Society of the State of New York, Chapter I, Section 6, be amended by adding, after the fourth sentence, the following new language:
>
> "An ethical doctor of medicine shall not have a financial interest in, own, or operate a pharmacy unless it is established to the satisfaction of the county medical society of the county in which the pharmacy is located or is to be located that there is no pharmacy to serve the public within reasonable distance of the patient's home. An ethical doctor of medicine shall not dispense medicines unless such dispensing is in the best interest of the patient nor shall he own or operate an optical dispensing shop unless it has been established to the satisfaction of the county medical society of the county in which the shop is to be located that there is no commercial optical dispensing shop within a reasonable distance of the patient's home."

The committee reviewed the entire question of physicians having a financial interest in the dispensing of drugs and optical supplies. It voted to recommend that the resolution be referred to the Council Committee on Ethics with the notation that the intent of the resolution is already covered by the Principles of Professional Conduct of the Medical Society of the State of New York and that this be called to the attention of the general membership.

The committee *recommends disapproval* of this resolution with the above stated notation.

The House voted to adopt the recommendation of the committee, disapproving resolution 67–59 and recommending its referral to the Committee on Ethics with the above notation.

Resolution 67-69—Amendments to the Bylaws to Delete the Word "Principal" and Clarify Membership Requirements, introduced by the Medical Society of the County of Queens

> Whereas, In accordance with modern medical practice and as a result of the prevailing shortage of practicing physicians, many members of the Medical Society of the State of New York maintain offices in more than one locality; and
>
> Whereas, Conflicts have arisen in the definition of the term "principal office," and because there is no uniform rule regarding eligibility for county society membership throughout the State; now therefore be it hereby
>
> *Resolved,* That the Bylaws of the Medical Society of the State of New York be amended as follows:
>
> 1. Amend Chapter I, Section 4, 6th line, by deleting the words "principal office" and substituting the word "practices" so that Chapter I, Section 4, first sentence, will then read: "A member of one county society shall not be permitted to transfer to membership in another county society until he has paid the current annual dues and assessments to the former county society and he has established a legal residence or practices in the county to which he desires transfer, except as provided in Chapter XIV, Section 1, of the Bylaws."
> 2. Amend Chapter I, Section 4, second sentence, by deleting the words "principal office" and substituting the words "locus of practice," so that Chapter I, Section 4, second sentence, will then read: "The

question of legal residence or locus of practice shall be verified by the county medical society to which the member desires transfer."

3. Amend Chapter XIV, Section 1, second sentence, last line, by deleting the words "or has his principal office" and inserting the words "practice or," so that Chapter XIV, Section 1, second sentence, will then read: "Except by approval of the Council of the Medical Society of the State of New York, no physician shall be an active or junior member in a county medical society other than that of the county in which he practices or maintains legal residence."

4. Amend Chapter XIV, Section 2, first paragraph, next to last line by deleting the words "or principal office," and inserting the words "practice or," so that Chapter XIV, Section 2, last sentence, will then read: "No member, *however*, shall be an active or junior member of more than one component county society, nor shall any component county society accept as a member a physician who does not practice or have a residence in that county in any other way than in accordance with the law governing transfers."

The purpose of this resolution is to establish a uniform rule throughout the State regarding eligibility for membership in county medical societies and to eliminate conflicts regarding the meaning of the term "principal office."

The committee feels that this resolution is of value and *recommends approval* of this resolution *with the deletion of the word "however"* in the last sentence, which it feels is superfluous.

The House voted to adopt the recommendation of the committee, approving resolution 67-69 with the deletion of one word in the last sentence.

Resolution 67-74—Amendment to Bylaws to Provide for Election of Nominating Committee, introduced by Seventh and Eighth District Branches

Whereas, Generally accepted parliamentary rules provide that the nominating committee of an established organization, such as this House of Delegates, be elected by the organization, or by its executive board; and

Whereas, Such a rule increases popular representation and tends to broaden the viewpoints of elected officials; now therefore be it hereby

Resolved, That the Bylaws of the Medical Society of the State of New York be amended as follows:

1. Amend Chapter XI, Section 4, first sentence, by deleting the words "appointed by the president in conformity with Chapter VII, Section 1," and substituting therefor the words "elected by the House of Delegates at its annual session"; and in the second sentence by deleting the words "It shall consist of eleven members," and substituting therefor the words "Eleven members shall be elected," so that Chapter XI, Section 4, first and second sentences, will then read:

"The Nominating Committee shall be elected by the House of Delegates at its annual session. Eleven members shall be elected, one from each district branch and two members at large."

2. Amend Chapter VII, Section 1, second sentence, by adding the words "except the Nominating Committee," so that Chapter VII, Section 1, second sentence will then read: "He shall be an ex officio member of all committees except the Nominating Committee."

The committee noted that the purpose of this resolution was to change the present procedure by which members of the nominating committee are appointed by the president with the approval of the Council to one whereby the members of the nominating committee would be elected by the House of Delegates. It was pointed out that for some time each of the county medical societies and district branches were actively solicited by the president to submit names of candidates for the nominating committee and that each of the district branches, pursuant to the Bylaws, is represented on the committee. In addition, the Council, which is the executive and administrative body of the Society while the House is not in session, must approve all appointments to the nominating committee.

The committee *recommends disapproval* of this resolution.

The House, after discussion, voted to approve the recommendation of the committee, disapproving resolution 67–74.

Other Matters Referred to the Committee.

Remuneration of President and President-Elect. The committee noted that the House at its 1967 meeting voted to increase the per diem paid to the president and the president-elect and that the Board of Trustees on recommendation of the Council at its March, 1967, meeting voted to increase the per diem to $150 and $100 per day, respectively, when engaged on official business. It noted also that the Council had referred the question of an annual salary for these officers to the committee for study and recommendation.

After extensive discussion, the committee *recommends* that a truly representative salary be decided on for the president and the president-elect, plus travel expenses in the performance of their duties, and that they be entitled to all other fringe benefits.

The House, after discussion, took no action on the recommendation of the committee. The committee's recommendation was referred to the Council for study.

Proposal for a Detailed Study of the Entire Constitution. The committee observed that a recent upgrading was done on grammar, English, and logical sequence of subject matter but that there was a general feeling that the Constitution and Bylaws should be updated, since a good portion of it goes back a hundred years or more. It felt that there was a need for a close examination of the various resolutions presented over the years to amend the Constitution and Bylaws in order to pinpoint those areas requiring possible change and to ascertain why similar resolutions come up so often. The committee recognized that the study necessary would be a tremendously time-consuming affair and difficult to accomplish, especially if undertaken by a committee of practicing physicians.

The committee *voted to defer action* on these proposals, especially since a new edition of the Constitution and Bylaws was due to be issued shortly.

The committee has not had another meeting since that of May 24, 1967, but since at the time of the writing of this report there has been established, within the organizational framework of the Society, a Division of Research and Planning, it is the recommendation of your chairman that this entire problem be referred to that division for an in-depth study with the advice and assistance of the executive vice-president and legal counsel.

The House, after discussion, voted to adopt the recommendation of the committee and the recommendation of the chairman that the subject be referred to the Division of Research and Planning for study.

The House voted to adopt the report of the committee as a whole.

Reports of Officers

President (Annual)

To the House of Delegates, Gentlemen:

This has been an active year. Many problems have been met, some have been solved, and several new and valuable activities will be presented in this report.

During the months of April, May, and June your president was incapacitated and unable to attend meetings and conferences. This does not mean that he lost track of Society activities, for all correspondence was photostated and sent to him, and he was in daily contact with the headquarters office, more especially Henry I. Fineberg, M.D., our executive vice-president. I wish to thank the officers of the Society and commission and committee chairmen who represented me at many places. Edward C. Hughes, M.D., our president-elect, and Dr. Fineberg gave much more of their time than duty required. Again my sincere thanks for this showing of friendship and good will.

This past year the Society has gained in stature and now has the respect it deserves. We have honestly stated our purposes and have held to the belief that we cannot compromise on essentials.

My statement to the House of Delegates as president-elect was, "Probably the greatest task we must tackle is that of making Medicare and Medicaid work." This is still true. The Medicare program is workable and is accepted by the physicians of this State.

The Medicaid program is still an unacceptable and unworkable mess. Despite the offers of the Society to help and personal letters to Governor Nelson Rockefeller asking that a negotiating committee be appointed with power to act, our efforts have been unavailing.

We now have the added confusion of a project for total, universal, or compulsory health insurance. An ad hoc committee under the chairmanship of Ralph S. Emerson, M.D., Nassau, has been working since March getting the facts of the thinking of the Society membership. A report will soon be ready for Council action. This report will go to the State Legislation Committee as the policy of the Society. We ask for no promises. We want an honest and satisfactory bill. The actual bill will probably not be available until after the Legislature convenes in January, 1968.

Public Health and Education. The Commission on Public Health and Education under the chairmanship of Irving L. Ershler, M.D., with Norman S. Moore, M.D., director of the Division of Scientific Activities, has done a magnificent job. The 48-page report of the annual conference with the State Health Department is a document that every doctor should read. The advances of medicine and the programs presented cannot but make all of us proud of the physicians of this State. This report is proof that advances in the health of the people of the State of New York come through the efforts of the doctors of the State of New York. My thanks go to all chairmen and members of these committees for their excellent and creative work. It seems somewhat unfair to pick individual committees in this great effort, but the reports of the following committees stand out: Accident Prevention, Aging and Nursing Homes, Continuing Education, Alcohol and Drug Abuse, Forensic Medicine, Health Manpower, and Rural Medicine.

CHAMPUS. The military dependent medicare program has been upset by the ruling of the Defense Department that a state medical society has a vested interest and therefore may not implement. There are changes going on in the department and we hope that this ruling will be reversed.

Publications. The NEW YORK STATE JOURNAL OF MEDICINE is numbered in the top few state journals as regards format and scientific content. Under the control of William Hammond, M.D., and Miss Alvina Rich Lewis it can only become better in all ways. It is worthy of notice that in the first nine months of this year the advertising sales have gone up

$58,153.84 over the comparable period of 1966. This is a tribute to the JOURNAL.

The *Directory* has had a sales income of over $70,000, much greater than in past editions.

Commission on Standards of Medical Care. The many committees that compose this commission have been very active. None of the reports are spectacular or make the front pages of the papers, but I hold that the work in this department is the most important for the individual physician. The findings of the Committees on Medical Review and on Hospital-Based Physicians will long have an influence on the practice of medicine.

Public Relations. Under the chairmanship of C. Stewart Wallace, M.D., and Guy D. Beaumont, director, Division of Communications, this department has not rested one day. There are so many activities that it is difficult even to enumerate all of them.

The publication, *News of New York*, continues its high standards and is proving invaluable in staying in contact with the membership. The new "hot line" letters in their distinctive envelope are really reaching out and making direct contact with the rank and file members. A questionnaire sent to members not in any official capacity in State or county showed 84 to 6 in asking that the "hot line" be continued. Another new venture is the putting up in hospitals of Ad Rem bulletin boards where frequent short bulletins from headquarters are posted. There are now 26 boards in operation and 50 additional will be activated by the end of 1967. The ultimate aim is to have 425 boards.

In place of the regional conferences previously held, the Public Relations Committee has had nine area conferences scattered throughout the State; all but one has been a real success. Attendance has been from 60 to over 100. We believe that these conferences have done such a good job of "communication" that plans are now being formulated for 14 area conferences in 1968. This is a hard-working department that does not work by the clock. The director, Guy D. Beaumont, is assisted by Martin Tracey, coordinator of legislation activities, and the three field representatives, Harry Dexter, Gerald Sullivan, and Coleman Fineberg.

Ad Hoc Committee on Revision of Education Law. Walter T. Heldmann, M.D., and his committee have done an arduous and time-consuming study of this problem. There have been three proposed bills and on each occasion the committee has studied them and Dr. Heldmann has appeared at open hearings and presented the policy of the MSSNY, especially on objections to parts of the bills. The most controversial area is that of "mental sickness" where, if adopted as presently written, any physician committed either by court order or voluntarily would lose his license to practice. Practically, this means that very few M.D.'s would try to get adequate psychiatric treatment for a curable condition. The Society will continue to fight for its expressed policy.

District Branches. There is an Ad Hoc Committee with a representative from each of the nine district branches studying the entire format of district branches. There seems to be a greater interest, especially upstate. I was an invited guest at the Fifth and Sixth District Branches meeting at Shawnee-on-the-Delaware and again at the Seventh and Eighth District Branches meeting at White Face Inn, Lake Placid. Both of these affairs were attended by over 250 members and their wives. The caucuses were of great positive value in shaping policy and the scientific sessions were excellent. Some of the other district branches are not so active. Financially, the ad hoc committee is studying what would be reasonable assistance on the part of the State Society.

Malpractice Insurance and Defense. Here is an area of medical practice life that is nearing, if not already in, a danger stage. Again there must be a large premium increase to be able to continue the coverage. It is a well-known fact that no insurance carrier is happy with this type of coverage even with increased fees, and yet we certainly cannot practice without this protection. It is time that insurance companies, medical societies, the legal fraternity, and the public get together for an in-depth study and present recommendations for unified action. The time is short.

New Advances.

1. *Medical Aspects of Sports.* On February 10, 1968, the Saturday before the MSSNY annual convention opens, a committee under the chairmanship of Dr. Emerson will present a full-day program at The Americana. This is a comprehensive presentation and deserves national recognition.

2. *Cancer Program.* The Society for the Promotion of Hospital Cancer Programs and the Cancer Committee of the Medical Society of the State of New York have united and adopted a constitution and bylaws (accepted by the Council) to further this worthy objective.

3. *Electron Microscopy Center.* The Medical Society of the State of New York and the Medical Center Hospital in Albany have cooperated in setting up an electron microscopy center that will service a large portion of the State.

4. *Relative Value Scale.* The Economics Committee of the Commission on Medical Services under Robert E. Westlake, M.D., and the Technical Advisory Committee on Medical Care under George Himler, M.D., joined forces and requested that, under the supervision of the Empire State Medical, Scientific and Educational Foundation, a contract be signed with the Syracuse University Research Corporation for a study of the Relative Value Scale. The cost was to be $30,154 exclusive of publication costs of the findings. The Council and the Board of Trustees have approved.

5. *New Building.* The Ad Hoc Committee on Our Own Building presented, after five years' study, a request that the Society purchase a plot of land of 3.9 acres in Lake Success,

Nassau County, at a cost of $4.44 per square foot. The Board of Trustees approved, and the Medical Society of the State of New York now owns this property. The committee is now studying the problems of building—architects, specifications, contractors, and many others. It is hoped that ground breaking and cornerstone laying will be in 1968 and the building dedicated in July, 1969, when the AMA convention will be in New York City This is the beginning of the end of a dream.

6. *Department of Information.* This department in public relations is staffed by Mrs. Helen Hickey and will be very valuable as time and "knowhow" accumulate.

7. *Committee on Research and Planning.* This committee is composed of John M. Galbraith, M.D., chairman, and Drs. Joseph J. Kaufman, Robert E. Westlake, William L. Wheeler, Jr., Waring Willis, Renato J. Azzari, and James M. Blake. The committee had its first meeting on September 14, 1967, at which time the founder and present director of research of the California Medical Association, Murray Klutch, was present and explained the activities of the California committee.

Conclusion. The president is deeply appreciative of the honor bestowed on him when you elected him president and hopes that he has been a worthy successor to the long line of presidents of the Medical Society of the State of New York.

I thank the entire headquarters staff from the executive vice-president, Dr. Fineberg, to the last clerk hired, for their help, encouragement, and stimulation. Without their help I could not have functioned properly.

In conclusion may I say—the Medical Society of the State of New York is not static. It is dynamic, creative, and doing an excellent job of advancing the health potential of New York State.

Respectfully submitted,

FREDERICK A. WURZBACH, JR., M.D., *President*

President (Supplementary)

To the House of Delegates, Gentlemen:

One year ago I stood before you and presented a plan of action. Now it is time to report on the year's activities. I have already given a report, which you will find in your handbook, that covers much of the year's work.

This past year has had your president on the disabled list for over three months, and I would like, again, to thank all the members of the committees, the chairmen of the committees and commissions, and the members of the Council for the many personal appearances on my behalf. Two of the officers, Edward C. Hughes, M.D., president-elect, and Henry I. Fineberg, M.D., executive vice-president, did a great deal more than was their duty. For all of the unselfish help and assistance, I will always be grateful.

Medicare. The Medicare program is doing well and is generally accepted by the profession. Minor details of administration are being corrected.

Medicaid. Almost all of the changes in the Medicaid law and the State's attitude had been recommended by the medical profession even before the implementation of the program began. We are doing our part in trying to make Medicaid work. No little part of the credit for any better understanding between the physicians and the lawmakers must go to George Himler, M.D., and his committee, who have given many days of hard-core effort. I refer you to Dr. Himler's supplementary report for a more complete exposition of this subject. I believe that within a year Medicaid will be accepted and be an integral part of the health care of the people of the State of New York.

Health Insurance. Universal or comprehensive health insurance is now before the State Legislature. We have stated at various hearings that the medical profession is against any compulsory plan. We have also stated the provisions of the law that must be in the bill before we are ready to give a full answer. We will not act until the actual bill is presented for our study.

CHAMPUS. I am pleased to report that the Department of Defense has had a change of mind. Brigadier General Norman E. Peatfield, executive director of CHAMPUS, in a letter to your president dated December 23, 1967, accepted the Medical Society of the State of New York in its present status and is ready to sign a new contract. This is a vindication of the stand taken by your Society.

Woman's Auxiliary. Under the presidency of Mrs. James A. Moore, of Albany, the Woman's Auxiliary has given its usual invaluable aid to the State Medical Society's activities. It is true that the Auxiliary's membership is too small considering the size of the State, and this is the fault of the doctors. Every member of the State Medical Society should enroll his wife as a member of the Auxiliary. Such an increase in membership certainly would give the Auxiliary much greater power to help the medical profession.

Revision of the Education Law. This revision is now before the Legislature. Our committee has done a great deal of hard work, has presented masterful reports, and continues to watch the progress on this very important legislation.

Budget. The increase of $25 in the State Medical Society's dues became effective January 1, 1968, and will afford a real expansion of necessary activities, such as salary increases, improved retirement plan, central filing system, study of the Relative Value Scale, expansion of the Department of Information, and the activation of the Division of Research and Planning.

The president still believes that the per diem method of payment to the president-elect and the president is not adequate. These positions take so much time not covered by the per diem rate that an adequate salary is needed.

Communications. This year we have come closer to our goal of continuous and direct communication with every member of the Society. The publications, the "hot line" letters, the Ad Rem bulletin boards, the interest and dedication of Guy Beaumont and his staff at headquarters, and the continuous and excellent presentation by the three field representatives have, in a fine cooperative effort, furthered our objective of total communication.

New Building. The Committee on Our Own Building, an ad hoc committee, and the Board of Trustees are busy with the many details of building, such as choosing an architect (building and supervisory), planning of space utilization, and specifications. It is a big job and we hope to be ready by July, 1969.

Tax Problems. The tax situation at the new building site appears to be in good condition. The problem of taxation of "unrelated business income," as presented by the Internal Revenue Service, could be serious for the continuation of many of the activities of the Society. At present we hope for favorable action by the courts and Congress.

The Staff. I would be remiss if I did not personally thank the headquarters staff: J. Richard Burns, Esquire, for his legal help and handling of the Business Division; George W. Forrest, Jr., for his multiplicity of activities; Norman S. Moore, M.D., director of the Division of Scientific Activities, who has had a difficult year; Robert Katz, M.D., for his quiet and efficient work as director of the Division of Industrial Medicine and Workmen's Compensation; George P. Farrell, director of the Division of Medical Care Insurance, without whose efforts we would not be handling CHAMPUS at the present time; Samuel Z. Freedman, M.D., director of the Division of Standards of Medical Care, an exacting and difficult assignment; and William Hammond, M.D., director of the Division of Scientific Publications and editor of the JOURNAL, and Guy Beaumont, director of the Division of Communications, whom I have previously mentioned. To all of these gentlemen, my thanks for a job well done. To all other staff members, in all departments, my sincere thanks, for it is your good work that reflects the standards of the Medical Society of the State of New York.

Comments. Inasmuch as this is my last formal statement to this House I would like to share with you my philosophy of the future of the physician in the practice of medicine.

I am disturbed about the change in the "doctor's image." We are told that the doctor as an individual, or more specifically as the private physician, is a fine man and a respected and desirable citizen. We are also told that, as a group, doctors are considered to be callous, without regard for the people of their communities, and to think only of monetary income. I know that the overwhelming majority of physicians are dedicated men. How can these divergent opinions both be true?

I believe the answer is that during the last fifty years, and increasingly more during the last ten years, the members of the medical profession have not understood or even been interested in the socioeconomic changes in the community taking place during this time. They have not properly evaluated the gradual change from individual to group practice of medicine; they have not realized the implications of the increased interest of labor groups and the increased participation of municipal, State, and Federal governments in medical life. The medical profession has been opposed to many of these changes and has failed to provide direction and leadership when these qualities were most needed.

At the present time the medical profession is being pressured from two directions, first by the demands of the public and second by the actions of the legislative bodies. Of course both of these groups are willing and able to work together to control and regulate the practice of medicine without regard for physician cooperation. The impossibilities of 1900 are the laws of today.

It is time that organized medicine realizes what is happening and tries to understand the forces involved. We must be attentive to the demands of the public and we must be more interested in the legislative process.

I do not mean that we must accept the government control of medicine as inevitable. I do not mean that we cannot attempt to direct the course of these forces. I do mean that the medical profession must show the way. I do mean that the medical profession must lead the way.

Respectfully submitted,

FREDERICK A. WURZBACH, JR., M.D., *President*

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

The reports of Frederick A. Wurzbach, Jr., M.D., were reviewed in their entirety. They present an excellent summary of the many problems confronting the Society in the past year. We take note of the fact that he has had a difficult year and has been faced with many grave problems which he has handled in a masterful and statesmanlike manner. We also note that in spite of his physical difficulties, he has managed to participate actively in State Society affairs and has attended meetings most faithfully. He has indeed been an aggressive president of whom we can justly be proud and is knowledgeable in all aspects of State Society interests. For this the Society owes Dr. Wurzbach an eternal debt of gratitude.

Your committee has very little comment on these reports, but wishes to recommend that the Council and the Board of Trustees continue to study the matter of payment of an adequate salary to the president and the president-elect.

The committee also commends to you, for your study, the concluding page of Dr. Wurzbach's supplementary report on his philosophy of the future of the physician in the practice of medicine.

The House voted to adopt this portion of the reference committee report.

President-Elect

To the House of Delegates, Gentlemen:

As the Medical Society of the State of New York begins its 162nd year, it is indeed an honor and a privilege to be asked to serve as its president. As I take my place beside my illustrious predecessors, I assume the responsibility of this office with solemn humility, with utmost sincerity, and energetic enthusiasm, ever mindful of its mantle of responsibility. I am conscious of the increasing importance of the State Society, not only in the world of medicine today, but in the world in which we live and practice. I am aware of the great economic, educational, and social changes in our country. We live in a world crowded with technologic innovations, but seeking and concerned with stronger human relationships.

Not long ago the nation celebrated a major milestone in history. The Census Bureau recorded the entrance into this world of the 200 millionth individual. It took this country some three hundred years, from the landing of the Pilgrims, to reach the first 100 million population; fifty-two years to acquire the second 100 million, and it is predicted by the demographers that the next 100 million is foreseen in thirty to thirty-five years. During the past fifty years, life and death have become inversely proportional to one another. The death rate is 9.4 per 1,000, and the infant mortality rate is 22 per 1,000 live births—both the lowest in the history of our country. The birth rate has varied from 28 to 21 per 1,000 population. The marriage rate has increased, and the spinsterhood rate has been reduced 50 per cent. The population has changed from a male majority to a female one. We have increased our longevity and have cured or arrested many diseases. We have made it possible for man to outlive many illnesses only to succumb from old age and new diseases. We have distributed our population from a rural majority to an urban or suburban one. We have even changed our political majority from Republican to Democrat.

We have changed from home rental to home ownership. We have become a people, searching for relaxation and recreation, working less time, and having easier jobs. The normal working hour has changed from 60 hours to 39 hours per week. The average man spends at least seven times more money on recreation than previously. Eight million Americans have pleasure boats. More than one-half million have swimming pools, and another million own their own summer homes. There are 94 million cars in this country now in contrast to 2 to 3 million in 1915; 97.7 million have telephones, more than half the world's supply.

With all of these luxuries, people are seeking more education, and are practicing what they have preached to their children and streaming back to the classroom. They are striving to understand our modern world, keep abreast of the times, and many are seeking the status of the cap and gown.

Similar educational desires are developing in our younger generation. In 1915, only 19 per cent between the ages of twenty-five and twenty-nine graduated from high school. It is estimated that today 69 per cent between these ages are so educated. The college enrollment has multiplied 12 per cent during this time. It is startling that the American people have taken these changes for granted, never appreciating or realizing that they have occurred in a world in which 2 out of 5 people are illiterate, can neither read nor write. Yet a tremendous gap remains between affluence and abject poverty, even within our own country.

Seeing this progress, but not always experiencing it, and informed by modern methods of communication, our people are seeking medical care of high quality. They want better health, demand more service, expect more definitive diagnosis, and are looking for the most modern therapy to obtain cure and comfort. They are also asking for health guidance, security against illness. Last year the American consumer spent 845 billion dollars for goods and services; 6.6 cents out of every dollar was spent on total medical care. Yes, the public is health minded.

Amid this philosophy of life, government has gone into the health field and has established health as an industry. It is becoming the largest in the nation, and between 3 and 4 million people are now engaged in this field. The physicians, the key figures in providing health care, comprise only one tenth of the workers. It is predicted that health service and education, as an industry, will become the nation's largest employer by the year 1970.

Government has also passed health legislation which will affect not only our generation, but generations to come. Especially, it is going to alter the world of medicine. President Johnson has called this "creative federalism." Many important health bills have been passed and put into action by the government. The most important are: the Hill-Burton bill which has provided funds for over 8,000 areas to rebuild clinics and hospitals; the Regional Medical Program which has been developed to deal with heart, cancer, and stroke, diseases which account for 70 per cent of the deaths in our country; the Medicare bill which was passed, and the first year 3 million medical bills and nearly 9 million hospital bills have been paid by the Federal government.

Title 19, or Medicaid, has been implemented by the State of New York. This program has been active for two years, and in spite of their discontent with the program, 72 per cent of the physicians and 62 per cent of the dentists participated in the program. In nineteen months, the total cost of Medicaid was 776 million dollars; 460 million was paid to the hospitals, 97 million to nursing homes (12.5 per cent), 62 million (8 per cent) to public housing infirmaries, 47 million (6.1 per cent) to the dentists, 45 million (5.8 per cent) to physicians, and 26 million (3.5 per cent) for drugs. Although we read in the press that physicians have abused the program, charging excessively, a recent survey of this program, conducted by an independent research corporation (Peat, Warwick and Mitchell & Co.), hired by New York State, indicates that this is not true (20 out of 8,100 cases). Our Society, however, cannot tolerate any nefarious practice. Whenever such abuse occurs, mechanisms to investigate each case should be developed.

As a result of this program, there is a 6 million dollar deficit in the State budget. The Governor is insisting on a critical review of Title 19. It is hoped a sensible ratio of eligibility will be worked out, and the desirable features of the program maintained and improved and the unrealistic removed.

In 1966, Public Law 749, otherwise known as Comprehensive Health Planning, was signed by the President. This law, wide in scope, is an attempt by the government to correlate and bring into focus all factors involved in health. It is the first time that physicians and their medical society have, by necessity, become the important cornerstone on which a program must be built. Our Medical Society is prepared to take an active part in this program.

The history of medicine, one of the oldest professions in the world, reveals that medicine has survived similar vast social changes which have occurred at periodic intervals in the evolution of the world. Medicine has not only survived such changes, but each time it has progressed to greater and finer achievements. It has survived, because throughout the development of civilization, medicine has sponsored free thought, free conscience; it has recognized the solidarity of man, and the needs of self-discipline in every individual. It has progressed because medicine is a science, based on the concept that the cause and cure of all disease is primarily established on scientific facts. The science of medicine is not only related to the function of the human body, but also encloses all sciences related to the environment in which we live. It encloses such sciences as physics, biochemistry, electronics, biomedical, political, behavioral, and social sciences, engineering, and law. As we think of the science of medicine, we are aware of the great advances in science, technology of medicine, that have exploded with hydrogen bomb intensity, as follows:

New discoveries in allergy and anesthesia,
New applications of vaccines and serum,
Organ transplants of all varieties,
Better understanding of the chemistry of kidney diseases,
Installation of pacemakers and heart valves,
New hormones to increase or decrease fertility,
Better understanding of the role of viruses in infection and cancer,
Prevention of the Rh sensitization by injection of anti-Rh immune globulin into the high risk Rh negative mother,
Intrauterine transfusions for the prevention of erythroblastosis of the fetus,
Discovery of human inherited diseases listing 837 dominant and 531 recessive and 119 sex-linked disorders,
Medical electronics,
Modern electronic laboratory analysis,
And even the unravelling of the synthesis of DNA, the fundamental basis of life itself.

These are only a few of the advances brought to us by our physicians and our allied scientific investigators. Besides these, probably the most striking advance is the perfection and the introduction of computers into the field of medicine.

All these remarkable and astounding happenings have occurred in our time. They have been given to us, for our use, for better and more scientific care of our patients. Proof that they have been used by our profession rests with the fact that many medical achievements have been accomplished as far as the patients are concerned. Life has been prolonged fifteen years, recovery from disease has been shortened, complications of disease have been minimized, early diagnosis has been made possible, the complete elimination of some diseases has been accomplished, and life in general has been made happier and healthier. Even though certain elements of our society, without bona fide authority or facts, decry our profession, American medicine has kept pace with the times, and is the best medical care in the world today.

Amid these amazing changes on the State and national scene, this is where we stand this hour, this day, February 11, 1968, living and practicing in a contemporary world, a day of great discoveries, a day of mass education, knowledge and economic abundance, a day of great scientific advances, a day of facts, a day of changing medical practice to meet the challenge of a contemporary world. Yes, we are living in a land which is a paradox, the land of bountiful plenty, yet hearing the screams of the ghettos, poverty, and the lack of medical care.

These facts and events have been inscribed on the pages of the history of our country during the past relatively few years. Laws have been put into action, probably never to be rescinded or altered. The demand for modern medical care is certain to increase year by year. The scientific and technologic discoveries will become ever more effective. There will be more individuals in our land to care for, with the increasing population. This, in reality, is a modern Renaissance. As we study this spectrum of achievement, I am sure we all wonder just where we are going, and how the practice of medicine will fit into this fast-moving, progressive world.

However, in attempting to plot a course, there are certain directions that seem rather clear and definite. I am sure that our first thoughts are that we must assure high quality medical care to all. Care that is so modern, so complete and effective that the citizens of this country will not accept anything in its place. It appears that scientific and technologic care has supplanted the "little black bag" philosophy. Although it has been a symbol of personal medical care through the years, and although some of the public and even some physicians may prefer the horse-and-buggy approach, these newer and more effective methods have proved their worth, and will continue to supplant the older philosophy. Our philosophy must be to furnish modern medical care, but still keep the personal and friendly touch, always remembering that the patient is still an individual, just as sensitive, worried, and concerned as ever. We must continue to change our thinking consonant with the times, broaden our horizons, and act on the belief that health involves all phases of human life, and it is the cure that counts.

Education and better distribution of physicians are the two greatest problems of medicine today. Although the medical profession seeks more continuous education than any other profession or business, it must continue with modern training as a part of life. Science promises to bring forth fantastic information concerning many basic functions, causes, and cures of disease—

Cancer will be cured by other means than the knife and clamp,
More accurate methods of diagnosis will find the cure for obscure diseases,
More tolerable materials will be found to replace the worn out vessels and organs,
Newer endocrine and enzyme substances will control the resistant metabolic diseases, and there will be
Many new discoveries.

To keep abreast of these discoveries, the life of a physician must become, in a large measure, a scientific and intellectual one, providing a scientific discipline with the desire to give warm and personal service. Unfortunately there is a wide gap between the rising public demand for his services and the learning of a physician. Herein lies a decisive incompatibility. The resolution of this incompatibility is the most serious issue of our profession. We must narrow this chasm before mandatory continuing education is proposed or made into law.

Manpower. Almost day by day a manpower shortage is developing all over the State. In a study of upstate New York, conducted by the Community Medical Service, the research arm of the Rural Medical Service Committee of this Society, we found that 75 or more areas are screaming for medical coverage. Most of the smaller upstate cities have not had a physician enter practice there in the past ten years. Besides this, a more serious problem is the increasing age of the physicians themselves. In a sample of physicians in northern New York, it was found that 57.1 per cent were over the age of fifty years, while only 14.9 per cent were younger than forty years. In relation to the population, we will need at least 4 to 5 thousand physicians in the next ten years in this portion of the State.

Our study revealed also that distribution of physicians is unequal throughout the State. For instance, there are 33,187 physicians in the Empire State with a population of 16,782,304. In Greater New York there are 18,622 physicians taking care of 7,781,984 individuals. In upstate New York there are only 14,565 physicians for a population of over 9 million. At least 20 per cent of these physicians are not actually practicing medicine. In New York City there are approximately 6 thousand physicians without hospital appointments, a situation which should be remedied. In one county there are 835 physicians with a total population of 432,028. The city in the center of the area has 726 physicians with a population of 216,038. There were only 109 physicians serving the remaining 206,990 inhabitants in this county. Such findings of maldistribution are common in many areas.

There is also a changing pattern in medical care, instituted not only in the larger cities, but also in the smaller communities. I refer to the development of the emergency room in the hospital. Originally, these rooms were designed to take care of the serious accidents that occurred outside of the hospital. However, now these units are taking the place of the physician's office, particularly at night. Patients are rushed to the hospital for all problems. Hospitals have found it necessary to employ full-time physicians to care for the hordes of patients that come there for care. Although, as a Society, we have stated that we are against the hospital practicing medicine, our profession is really responsible for the development of these emergency units. This type of service, I am sure, is going to expand in scope.

The Rural Medical Service Committee of the Society has just finished a pilot study in three areas, composed of 30,000 people who are without a physician. The committee is considering organizing medical centers in areas of the State where there is no physician, to be situated in an appropriate place, decided by the travel patterns of the population. Each center will be designated as the "Cross-Road Medical Center." It would be staffed by doctors from the surrounding areas on a part-time basis, until permanent physicians can be obtained. The communities themselves are willing to provide a well-equipped facility, with a modern laboratory and staffed with trained personnel. The type of medical personnel will depend on the relative age potential of each area. Inasmuch as the survey indicates that 78.7 per cent of the medical care in these areas has been given in physicians' offices out of the area, and only 4 per cent was given by way of house calls, this type of center will serve as the health center for the area. These centers would be related to the hospitals and centers in nearby cities, the physicians having staff appointments on these hospital staffs.

Health as a Community Affair. Medicine as a whole must become interested in the broader aspects of medical care, namely the health of the community. A concept has arisen across the land that "health is a community affair," and the control of medicine is slowly passing out of the hands of the physician and medical societies. Social workers and welfare departments are playing an ever-controlling part in the health field. Well-intentioned lay people, imbued with the spirit of doing something to improve the health of their colleagues, have become authorities in the health field. Health departments are becoming ever stronger in their interest in all branches of medicine. Although I am not condemning the activity of these interested people or agencies, it seems as though everybody is in the act of planning health. The least active are the physicians themselves, who apparently are content to sit on their not-too-often-sat-on rear ends, and allow the take-over. The time has come that this cannot be, if we are to maintain the proper control of medicine and guide it in the right direction.

Investigating the medical care in 400 communities throughout upstate New York, in association with Professor Bert Ellenbogen, at that time professor of rural sociology at Cornell University, we found that the future planning of health care must be at the community level, and that a crash medical program at a nationwide level or even State-wide level can only be successful if the results reach each and every community. We have found that the physicians themselves and their county medical societies must become stronger forces in community activities. Medical societies must be interested in all phases of health, and if blighted areas are found with poor medical coverage, the medical societies, working together with the community leaders, should provide adequate medical care.

As I said earlier, medicine as a science encloses many other sciences involved in the health of the community and the science of living. In this broad sense, we must look at health in the light of our modern way of life as it affects the health of the people. This means unification of efforts of physicians and scientists, related to the total health. It means:

Correlation of all phases of health,
Reduction of duplication in planning,
Centralization of health services,
Evaluation of the influence of air and water pollution, housing and transportation on our health,
Consideration of ways and means of coping with the injury and death on the highway, where more people have been lost or crippled than from all wars put together,
Study and planning for better distribution of medical care of the State,
A sensible plan for modernization of hospitals to care for various phases of illness such as the acute extended care, the aged, the mentally ill,
The scientific planning of a centrally placed laboratory service, serving all hospitals and all physicians of the community,
Calling on our electronic experts so that such laboratories can be set up in the light of modern electronic technology using the computer as the basis of technology,
Emphasis on preventive aspects of medicine and the continuing education of all people in all phases of health,
Emphasis placed on the introduction of courses related to the science of medicine in our colleges and universities,
A sincere and strong effort for the recruitment of all personnel associated with all phases of health, starting in high school and continuing through the college years.

This program needs a coordinated effort between the physicians of the community, the providers of care, and the citizens, the consumers. They are our friends, if we would only include them for this purpose. These are only a few suggestions which might be called comprehensive health planning.

In Public Law 749, Comprehensive Health Planning, it appears that the physicians and their medical societies have been given the opportunity, for the first time, to take the leadership in such planning. We have been asked by those in charge of the program to take an active part in the State-wide planning. This program will not alter the patient-physician relationship, nor the function or practice of medicine, nor will it change the function of any existing health agency. Already I have appointed a committee to study the proposition, and proposals which have been made to the New York Commission on Comprehensive Health Planning. Considerable research will be necessary to determine what services are available in the community and what will be needed for planning on a comprehensive basis. Our Society is prepared to conduct such research.

Programs have already been started in Broome, Onondaga, and Rensselaer Counties. Meetings have been called with health leaders and organizations. The program is already being put into action. It was gratifying to know that some county medical societies, for once, have taken the leadership. I hope that every county medical society will follow these examples and take the leadership in this important program. You will be hearing more about our program soon. It is a golden opportunity for us to direct medical care in the proper direction. I plead with you—let us not fail.

Research. Perhaps the most significant advance in science, which will affect all phases of medicine, is the perfection of the computer and the physicians' understanding of its capabilities. This instrument will change the practice of medicine in many ways. It is necessary that our profession be prepared to integrate the computer capability with the practice of medicine. In some areas, medical histories are being recorded and diagnoses are being made by this instrument. Even the radiation effect on tumors and their surrounding structures is being calibrated by the computer, situated many miles from the patient. In some cities complete diagnostic laboratory procedures are being completed by this instrument. With the entrance of the computer in our lives, the practice of medicine will become more factual, but before comparable statistical cure rates can be meaningful, standardization of definitions of all medical terms and diseases must be completed. The American College of Obstetricians and Gynecologists is in the process of standardizing all obstetric and gynecologic terms. Not until all definitions, all methods of data processing, and all forms in record keeping are standardized, can anyone honestly, or safely, compare death or cure rates, from hospital to hospital, from state to state, or particularly from nation to nation. Such standardization will substantiate whether or not the accusations made by various individuals in our country concerning high mortality rates, as compared with other countries, are valid or accurate.

Yes, we live in a contemporary world, one of constant education, economic and scientific growth. We have a lot to do in order to stay in the ball game. The time is here when we must get on with the work, take the leadership and prepare for the future.

The Medical Society of the State of New York. The Medical Society of the State of New York must assume the leadership in all phases of medicine. It must become the custodian of medical care and service for the State. It must be continually investigating the medical needs of the State. It must establish and maintain standards of medical practice. It must provide graduate medical education to its members. The Society has been preparing to accomplish some of these things. Several years ago, it established the Empire State Medical, Scientific and Educational Foundation. The purpose of the Foundation is to seek funds, and I quote from the Constitution—"To develop, supervise and administer educational and scientific projects in the field of medicine and extend professional and educational programs in the health field to physicians throughout New York State." The officers and board of directors serve without recompense.

The projects supported by this Foundation are:

Maternal Health and Perinatal Mortality Study (Region 8),
Effectiveness of Medical Audits,
Maternal Health and Perinatal Mortality Study (State-wide),
Medical Review of Obstetric and Neonatal Care in Hospitals,
Comprehensive Programs for Study and Solution of Physician Shortage in Rural New York State,
New York State Proctosigmoidoscope Demonstration Teaching Project,
Continuing Medical Education for Physicians.

The Medical Society of the State of New York must establish a liaison between the district branches and the county medical societies so that better communication can be established. In an attempt to increase this communication, I have changed the committee structure of the Society. Almost every standing committee will be put on a three-level basis (State, district branch, and county). Before arriving at this decision, I wrote the State Society chairman of every committee, and discussed this with the officers and executive committee and other members of the Society for their opinions. They have all given me support in this matter. Also, the chairmen of the various committees have sent me a list of names for possible appointments to these committees, and I have chosen the roster of each committee from these lists. It will be my responsibility to appoint the members of the State and district branch committees, while the members of the county society committees will be appointed by the presidents of the county medical societies. It is hoped that continuity of thinking, to-and-fro communication, and added participation of more members will result from this committee arrangement.

Health Department. The State Health Department, our friend of the past, surely plays a prominent part in the care of our people. It is hoped that we will work closely together in the future for improvement of the patient-physician relationship and the extension of comprehensive health planning to all in our State.

Medical Colleges. I would like to hope that the medical colleges of our State will also become stronger members in our modern medical team. These institutions, the fountainhead of scientific and experimental knowledge, can give us strong support in helping to develop scientific medical procedures.

The Physician. Perhaps the most important of all are the physicians here today and those at home. Unanimity of support from you, the doctors of this Society, is the most essential. The officers and the Council cannot complete the gigantic tasks which are ahead of us alone. Sir Winston Churchill once said that "wars are not won by the generals." Let us unite so that we have maximum strength to influence the changes which are imminent. Let us prepare for creative changes.

Woman's Auxiliary. Last, but certainly not least, the unanimity of thinking and the support of the women of our Auxiliary is needed. I was surprised to hear that there are only 4,874 members of the Woman's Auxiliary. There are 26,000 physicians who are members of our Society. In Hawaii, our new State, there is 100 per cent membership in the Woman's Auxiliary. Need I say anything more on this point.

Conclusion. If I were to give a title to this dissertation this afternoon, I would like to call it "Unanimitas"—unanimity of thinking, unanimity of action, unanimity of effort—of the strong forces of medicine which can and will shape our destiny. The Medical Society of the State of New York, the medical colleges, the New York State Health Department, the Woman's Auxiliary, and particularly you, the physicians of our State, the providers of health care, working together for the goal of better health.

Today I have tried to present to you the medicine of today and of tomorrow, with some possible suggestions for the future. By working together, we have a powerhouse of thinking and action. Our nation and our government need our strong effective guidance concerning the medical care of its people. It needs the thinking and cooperation of every physician, of every county, state, and national medical society. It needs your cooperation, your interest and your active participation in local and state medical societies. These organizations are the bulwarks of medicine. Let us have faith in them. Prepare for an era of high quality medical care. Quality medical care are strong words for medical protection and negotiation. Let us take the thoughts from that old song entitled, "Prepare for a Beautiful Tomorrow, Because Tomorrow is Only a Day Away."

Respectfully submitted,

EDWARD C. HUGHES, M.D., *President-Elect*

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your committee wishes to commend our president-elect for an excellent erudite summary of the historical background leading up to the current problems facing our Medical Society. We call to your attention his comments on the Medicaid program, which is an excellent summary of the expenditures under this program, showing the percentage paid to physicians in its proper perspective in relation to all other vendors of service. We further hope that during Dr. Hughes's term of office a return to fiscal responsibility will be forthcoming from the Legislature in line with the recommendations made by this Society at the inception of the Medicaid program.

We note with interest his philosophy concerning the changes in modern medical practice, but he wishes to emphasize that in spite of the technologic advances, the final decision in patient care rests on the shoulders of the physician, since medical decisions can be made only by the physician and not by technical machinery.

The problem of manpower shortage and the distribution of physicians is a field to which he has devoted many hours of study. Your reference committee feels that solutions to these problems are among the most urgent of the many problems facing the Medical Society. We further urge that the Council of the Medical Society of the State of New York seek to redouble its efforts to this end. The additional subjects covered by Dr. Hughes were reviewed without further comment.

Your reference committee is looking forward to another year of advancement in the Society's efforts, under Dr. Hughes's able guidance, to render high quality health care to the citizens of New York State.

The House voted to adopt this portion of the reference committee report.

Secretary (Annual)

To the House of Delegates, Gentlemen:

The Secretary has the following to report for the year 1967–1968.

House of Delegates. At the March, 1967, Council meeting the Secretary presented a list of actions taken by the 1967 House of Delegates and requested that the Council act on them. Instructions of the Council regarding the House of Delegates' actions were transmitted to the officers or committee chairmen involved. These dispositions are reported in detail in the "Résumé of Instructions of the 1967 House of Delegates and Actions Thereon by the Council, Board of Trustees, and Officers." Actions taken by officers and committees in compliance with these instructions of the Council and reported before November 1, 1967, are included in the résumé.

As required by the Bylaws, the Secretary has kept minutes of the House of Delegates proceedings. An edited version of the minutes, prepared from the stenotype record, appeared in the June 1, 1967, issue of the NEW YORK STATE JOURNAL OF MEDICINE.

The procurement of names, certificates of election, and credentials of the delegates to the 1968 meeting has been undertaken by the Speaker of the House of Delegates.

Council, Executive Committee, Judicial Council, and Board of Trustees. The Secretary has kept minutes of meetings of the Council, the Executive Committee, the Board of Trustees, and the Judicial Council and has secured their approval. He has sent notices of these meetings. As required by the Bylaws, he has reported to the Council actions taken by the Executive Committee.

Membership. Dues remission requests from county medical societies have been presented to the Council and to the Executive Committee. Changes in the Bylaws relating to membership and dues which were adopted by the House in 1967 have been implemented.

Life Members—To date, the following life members have been elected by the Council, through September 28, in accordance with Chapter I, Section 6, of the Bylaws as amended by the House of Delegates in February, 1967.

Adolph A. Adams, New York City
Siegfried Alexander, The Bronx
Alexander Altschul, New York City
Kerson Wyckliffe Barney, Brooklyn
Georges Bean, Garden City
William Jacob Bearman, The Bronx
Arthur Bier, Waquoit, Massachusetts
Morris Gerschon Blutstein, The Bronx
Raymond Joseph Bowen, Binghamton
John Foster Burden, Oswego
Nicholas Carabba, Brooklyn
Domenick Caravetta, Elmira
Jeanne Carbonnier, New York City
Roland Benedict Carr, Clarence
Angel Bienvenido Carrasco, New York City
Julius John Carucci, The Bronx
Michael Edward Cavallo, New York City
Simeon O. Chlenoff, New York City
Seymour Garland Clark, Brooklyn
Leslie Frederick Clary, Kings Park
John Isaac Cotter, Poughkeepsie
Jose E. Crespo, New York City
Guiseppe Amos William D'Andrea, Whitesboro
Gerard Charles deGrandpre, Plattsburgh
Harold Comonfort Denman, Brooklyn
Dora Diamand, The Bronx
Dimitry Simon Dibich, New York City

Barnett Dobrow, New York City
Walter Michael Dresel, Marathon

David Farber, Brooklyn
Patrick Joseph Fitzgibbons, Amsterdam
James Gwynne Fowler, Buffalo
Samuel Barnett Frischberg, Brooklyn

James Francis Gallo, Herkimer
Vincent Anthony Gallo, Hampton Bays
Marthe Loyson Gassmann, New York City
Meyer Ginsburg, Brooklyn

Isaac F. Gittleman, Brooklyn
Morris Goldberg, Brooklyn
Louis Goldfarb, Brooklyn
Joseph Golomb, The Bronx
Milton J. Goodfriend, The Bronx
Herman Goodman, New York City
Arthur William Grace, New York City
Edward Stanley Graff, Delmar
Anthony Joseph Graffeo, Rochester
David Granger, New York City
Dorothy Grey, Evanston, Illinois
Walter Farkas Gruber, Haifa, Israel
Maynard William Gurnsey, Corning
Robert Gutierrez, New York City

Robert Bernard Hagen, Liverpool
Debora Halberstam, The Bronx
Margaret Carolyn Halley, Olean
David Abraham Harrison, Utica
William Hayn, Jackson Heights
Darwin Hecht, Brooklyn
Aaron Hechtman, Brooklyn
Joseph Herzstein, New York City
August Gerhard Hinrichs, Queens Village
Samuel Hochman, Katonah
Leo House, Ridgewood

Joseph Imich, New York City

Kent Wood Jarvis, Oswego
Herbert Bolster Johnson, Boca Raton, Florida

Anatole Kaminsky, New York City
Else Kaufmann, The Bronx
John Charles Kilroe, New York City
Nicholas M. Kiraly, Woodside
Carl Cornelius Koester, Batavia

James Bernard Lawler, Vernon
William Levine, Brooklyn
Joseph Bernard Loder, Rochester
Leo Loewe, New York City
Henry Walter Louria, Sr., Santa Ana, California
Mark Lynton, New York City

Charles Mandel, The Bronx
Alexander Reid Martin, New York City
Schuyler McCulloch Martin, North Troy
John Baptist Mauro, Forest Hills
James Bernard McGrath, The Bronx
Elmer Thomas McGroder, Buffalo
Alexander Minor, New York City
Donald Emerson Moore, Syracuse
Milnor Bowden Morrison, Pawling
Lester Solano Mullin, Brooklyn

Emanuel Alfred Neuren, Jericho
Joseph Irwin Nevins, Brooklyn
Charles Francis Nicol, Brooklyn

Girard Franklin Oberrender, New York City
William Joseph Orr, Buffalo

Arnold Palm, The Bronx
Joseph Peter Paolillo, Massapequa
E. Clifford Place, Brooklyn
Richard Pollak, Forest Hills
Nathan Portnoy, New York City

Ferdinand Theodore Reid, New York City
Emanuel Revici, New York City
Max Erwin Rifken, Syracuse
Bartholomew Hernad Ring, Lake Placid
Sarah E. Worob Rossien, Huntington Station
Charles Sollie Rubenstein, Brooklyn

Sidney Scheinman, New York City
Oscar Julius Schwoerer, Katonah
Samuel F. Scuderi, Brooklyn
Morton Seldowitz, Brooklyn
Morris E. L. Shapiro, Brooklyn
Edmund Lester Shlevin, Brooklyn
Albert Charles Joseph Simard, New York City
Emil Smith, Brooklyn
Philip Winfield Smith, Syracuse
Aaron Sobel, Poughkeepsie
Salvatore Francis Sorgi, Woodhaven
Clarence Armstrong Spence, Amsterdam
Jacob L. Stein, Brooklyn
Nobe Ely Stein, New York City
Einar Andrew Sunde, Brooklyn
Victor Royce Syracuse, New York City

Ida Tannenwald, New York City
Edward Tolstoi, New York City
Clifford Sharp Trimmer, Montclair, New Jersey
Isidore Morris Turner, Flushing

Earle Winfred Voorhees, Poughkeepsie

Harry Weaver, The Bronx
Samuel Weiskopf, The Bronx
Faith Shelford Wohnus, Hollis

The names of life members who may be elected at the November and January meetings of the Council will be included in a supplementary report.

Membership totals are omitted here. These, too, will be the subject of a supplementary report of the Secretary so that the House may be provided with information for all of 1967.

Physicians' Placement Bureau. Following the resignation of Mrs. Beatrice Moosa, in December, 1966, the work of the Physicians' Placement Bureau was transferred to Mrs. Evelyn Clark of the Division of Scientific Activities. Information regarding the year's work of the Bureau will be found in its report.

Meetings. As required by the Bylaws the Secretary has attended meetings of the Council, the Board of Trustees, the Executive Committee, the Judicial Council, the Malpractice Insurance and Defense Board, and the American Medical Association's House of Delegates. As directed by the House of Delegates, he plans to attend the meeting of the Nominating Committee, and he has attended a number of other committee meetings. His activities as chairman of the Ad Hoc Committee to Study the Revision of the Education Law and of the Ad Hoc Committee on OEO Clinics are reported elsewhere.

Routine Matters. The Secretary has had the seal of the Society affixed to all documents requiring it, including applications signed by him for transfer of membership or for licensure outside New York State. Records other than those relating to the offices of the treasurer and of legal counsel are kept by him.

Acknowledgments. Your Secretary wishes to express his appreciation for the friendship and cooperation of his fellow officers, members of the Council, and trustees. He wishes to express his thanks to all the committee chairmen whose meetings he was privileged to attend for their courtesies and consideration.

Particular acknowledgment is made of the untiring efforts of our executive vice-president, Henry I. Fineberg, M.D. In addition to assuming many of the routine tasks of this office, such as carrying out the instructions of the House of Delegates, the Council, and the Board of Trustees, he has never been too busy, when called on, to give advice and assistance.

So many members of our efficient headquarters staff have been helpful and cooperative in the past year that the Secretary finds it impossible to name them all in this report. He wishes to express his sincere thanks and appreciation to all of them for their help.

A very special tribute is given to a most beloved and faithful servant of the Medical Society of the State of New York. Miss Doris K. Dougherty has retired during the past year. Her devotion and efficient service over a period of thirty years will not be forgotten by the members, officers, and fellow workers who were privileged to know and to work with her.

The Secretary is most fortunate to have Miss Gretchen Wunsch appointed to serve as executive assistant. She has been an efficient and loyal member of the staff for many years, having recently served with Norman S. Moore, M.D., as assistant director, Division of Scientific Activities. A cordial welcome is extended to her. Dr. Moore's loss is our gain.

Respectfully submitted,
WALTER T. HELDMANN, M.D., *Secretary*

Secretary (Supplementary)

To the House of Delegates, Gentlemen:

The following life members were elected at the November, 1967, and January, 1968, meetings of the Council:

Milton Henry Alexander, The Bronx
William Aronson, The Bronx
Renato J. Azzari, The Bronx

Frank Lusk Babbott, New York City
Charles William Bankert, Williamsville
Paul H. Bernstein, The Bronx
Stanio Bistreff, New York City
George Frederic Bock, Chaumont
George Loveridge Bowen, Huntington
Simon Brody, Brooklyn

Harold E. A. Cavanagh, Buffalo
Franklin Turner Clark, Niagara Falls
James William Colella, Binghamton
Jonathan R. C. Cook, Brooklyn
Joseph Edward Corr, Bronxville
Michael Jay Crino, Rochester

Harold Bertram Davidson, New York City
Aaron Davis, Plattsburgh
Joseph Henry Diamond, Staten Island
William Dressler, New York City

Ward LeRoy Ekas, Rochester
Stanley Howard Erlenback, Rochester

Joseph Faltitschek, New York City
Laurence Bruce Felmus, Tucson, Arizona
Jacob S. Fisher, Bronxville
Ann Emily Frances Florsheim, Cassadaga
Harold Foster, Jackson Heights
Ernest Freeman, New York City
Sidney Harold Freilich, The Bronx
Albert Frohman, Queens Village
Walter Gerhard Fuchs, Monticello
Ernest Martin Fuss, Kew Gardens

Santino Paul Geraci, Buffalo
Jack R. Getzlek, New Hartford
Bertran Wesley Gifford, Saugerties
Harry Golembe, Liberty
Roland Israel Grausman, New York City
Thomas Murray Grodin, Forest Hills
Alexander David Gross, Queens Village

Clyde Alexander Heatly, Rochester
John Henry Heldt, Sarasota
James William Hinton, New York City
Philip Hirsch, Elmhurst
Werner Hochstetter, New York City
Gordon Alfred Holden, Utica
Franklin Karl Holzwarth, Rochester
Marjorie Ross Hopper, Nyack
Patrick Henry Huntington, Warrensburg

Henry Earl Illick, Queens Village

Alfred Wilmot Jacobsen, Buffalo
Emma Irene Jacoby, Massapequa
William John Jameson, Sr., Schenectady
Herman Herbert Janes, The Bronx
Raymond Fleming Johnson, Auburn

Mark Grabois Kantor, Whitestone
Jetti Katz, New York City
Myron Lewis Kenler, North Miami Beach, Florida
Israel Kibel, The Bronx
Louis T. Kirschenbaum, The Bronx
Abraham Kopp, Brooklyn

Frank LaGattuta, The Bronx
Joseph Paul Lasko, Troy
Edward Lehman, New York City
Abel Levitt, Buffalo
Thurber LeWin, Buffalo
C. Otto E. Lindbeck, Jamestown
Edward Henry Linnehan, Pittsfield, Massachusetts
Joseph Lintz, New York City
John Loesch, Hurley
Frederick Luttinger, The Bronx
Michael Gerald Lynch, Webster

Laurence Smith MacMillan, Rome
Frank John Maniscalco, Baldwin
Edward Franklin Mantel, Forest Hills
Harold Edwin Marden, Sr., Elsmere

Arthur M. Master, New York City
Giuseppe Cono Matera, Brooklyn
Carl Foster Meekins, Highland
Isadore Messinger, Rochester
Julius Miltz, New York City
Isidor Moldawsky, New York City
Raphael Moller, New York City
Louis Jerome Morse, Kew Gardens
Eduard Muehsam, New York City

George Seipel Nellis, Watertown
Kamil Jaromir Neuman, Schenectady
Louis Israel Newman, Laurelton
Samuel Sym Newman, New York City
Walter Niemann, Garden City

Robert Emmett O'Connor, Buffalo

Isidor Palais, The Bronx
Herbert Joseph Palmer, New York City
Anthony Panzone, Utica
Abel Everett Peck, Vestal
Arthur Q. Penta, Schenectady
Joseph John Pisa, Buffalo
Bruce Bushong Preas, Rockville Centre

Frank Stanley Randles, Albany
Hugo Reifenberg, Jackson Heights
Hyman William Rosen, Brooklyn
Leonard Rosett, New York City
Jack Rubin, Woodbourne
Edwin Philip Russell, Sr., Rome

Gamliel Saland, The Bronx
Siegfried Salomon, Staten Island
Lester Edwin Sanford, Port Ewen
Marvin Sarles, Buffalo
David Schiff, Long Beach
Louis Schneider, Mount Vernon
Adolph Schorr, The Bronx
Erno Sebok, The Bronx
Bernard Shermer, Richmond Hill
Charles Shiffman, Brooklyn
Joseph M. Siegel, New York City
Isaac Skir, Brooklyn
Beverly Chew Smith, New York City
Lawrence Weld Smith, Huntington
Shirley Robinson Snow, Jr., Rochester
Manfred Stern, New York City
Jacob Sugarman, The Bronx
Joseph A. E. Syracuse, Buffalo

Henry Alexander Troy, Oceanside
Richard A. Tuch, New York City

Nicholas Joseph Viggiano, Nyack

Abraham Wainston, Flushing
Harry Abraham Warwick, Neponsit
Charles Reed Weeth, Brooklyn
Alfred S. Weigert, Kerhonkson
Berthold Weingarten, The Bronx
Alexander Leon Weller, White Plains
Jacques Wellman, Flushing
Erich Wiesen, Bethpage
Jacob J. Wineburgh, Utica
Samuel Sydney Winter, Long Beach
Thornton H. Wood, New York City
Frederick Alfred Wurzbach, Jr., The Bronx
Kenneth Thwing Young, Rockville Centre

Comprehensive Membership Figures for 1967:

1966	Membership	26,127	
1967	New members	1,182	
1967	Reinstated members	569	27,878
1967	Deaths	350	
1967	Resignations	253	603
			27,275
1967	Delinquent members		218
1967	Total membership		27,057

Honor counties, those having no 1967 delinquents are: Chemung, Columbia, Essex, Greene, Jefferson, Lewis, Orange, Orleans, Oswego, Otsego, Schuyler, Seneca, Tioga, and Yates.

Comparative totals of membership since 1956 follow:

1956	24,031	1962	25,401
1957	24,182	1963	25,528
1958	24,370	1964	25,630
1959	24,689	1965	25,915
1960	25,250	1966	26,127
1961	25,351	1967	27,057

Remission of 1967 dues was voted for 349 members as follows:

Illness	120
Financial Hardship	35
Temporary Service in the Armed Forces or United States Public Health Service	194
	349

Respectfully submitted,
Walter T. Heldmann, M.D., *Secretary*

Report of Reference Committee on Reports of Officers: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your committee next reviewed the reports of the secretary, Walter T. Heldmann, M.D., and wishes to commend him for another fine job in reporting the affairs of his office. We note with interest the steadily rising membership and trust that more and more of the physicians of this State will be induced to become active members in the Society.

We wish to quote in its entirety the following paragraph from Dr. Heldmann's report: "A very special tribute is given to a most beloved and faithful servant of the Medical Society of the State of New York. Miss Doris K. Dougherty has retired during the past year. Her devotion and efficient service over a period of thirty years will not be forgotten by the members, officers, and fellow workers who were privileged to know and to work with her."

In conclusion, we feel that the secretary has been most fortunate to have Miss Gretchen Wunsch appointed to serve as his executive assistant.

The House voted to adopt this portion of the reference committee report.

Treasurer

To the House of Delegates, Gentlemen:

The report of the Treasurer, as is customary because of the timing of the annual convention, must be an abbreviated one, covering the fiscal activities for the nine-month period ending September 30, 1967. A financial report covering operations for the full fiscal year 1967 will be distributed to you during the annual convention.

Table I summarizes the income and expenditures through September 30 and compares these actual operations to the revised estimated budget for the year 1967.

Table I indicates that all areas of operations are within budgetary allocations and in fact, in many instances, savings will accrue. The reasons for these savings have been explained in the report of the Budget and Finance Committee. In that report, it was pointed out that inability to fill job vacancies, unfulfilled projects, and lessened activities of certain committees contributed heavily to lower expenditures than had originally been anticipated. Although these monies were not spent, the budgetary appropriations were left intact for reasons explained in that report. In addition to these savings, we were fortunate in 1967 to have received income previously not anticipated. Our JOURNAL advertising income was up sharply and we anticipate receipt of approximately $90,000 more than originally projected. Of course, this trend could reverse itself tomorrow, especially in view of the new Internal Revenue Service regulation on taxation of "unrelated business income." Although the new IRS ruling is not completely clear at this time, we must be prepared for the possible taxation of income received by the Society, from annual meeting exhibit rentals as well as the advertising income of our various publications. Additional monies have also been received as a result of *Medical Directory* sales and interest earnings on our short term invest-

TABLE I. Estimated budget for 1967 after nine months of operations ended September 30, 1967

Income	*Revised Estimated Budget at September 30, 1967*	*Received to September 30, 1967*
Dues	$1,071,000	$ 803,250
JOURNAL advertising	325,000	259,246
JOURNAL circulation	6,000	3,766
JOURNAL reprints	20,000	16,483
What Goes On advertising	80,000	60,075
News of New York advertising	40,000	29,990
Medical Directory advertising	8,000	–0–
Medical Directory sales	11,146	11,146
Annual convention exhibit rentals	53,763	53,763
Interest on investments	11,593	11,593
Champus	50,000	27,478
Dues collection from AMA	17,000	12,750
Relative Value Study	488	488
Miscellaneous income	57	57
TOTAL INCOME	$1,694,047	$1,290,085
Expenditures	*Revised Estimated Budget at September 30, 1967*	*Expended to September 30, 1967*
Administration	$ 140,445	$ 89,108
Standards of Medical Care Division	32,449	21,359
Research and Planning Division	10,000	409
Business Division	431,362	260,990
Communications Division	207,810	137,065
Industrial Health Division	34,716	24,833
Medical Care Division	107,695	56,895
Scientific Activities Division	137,722	84,092
Scientific Publications Division	338,641	251,270
Annual Convention	44,795	44,795
Legal Counsel	52,000	39,000
Legislative Counsel	15,000	11,250
Officers, Board, AMA Delegation	74,600	35,077
House of Delegates (special committees)	4,500	3,044
Council committees	34,600	15,138
Nondivisional	215,335	161,576
TOTAL EXPENDITURES	$1,881,670	$1,235,901
Excess of Income over Expenditures	−187,623	54,184

ments in the general fund. The Investment Committee of the Board of Trustees should be commended for their acumen in making the latter investments.

All of the above factors contributed greatly to a stronger and more favorable financial picture than had been projected in the Fall of 1966. Unless unforeseen circumstances occur again in 1968, our actual operations should be closer to budgetary projections.

We feel that our present financial structure is sound and we trust that in the future this condition will continue. This sound foundation will endure if we continue our prudent and realistic financial policies. You can be assured that with the judicious fiscal management provided by your Board of Trustees, your State Society will be able to continue to provide the services vital to the medical profession and to the public.

Your Treasurer would like to commend the dedicated work of Henry I. Fineberg, M.D., executive vice-president, J. Richard Burns, Esq., assistant executive vice-president, and Eugene S. Dombrowski, comptroller. Their complete cooperation and diligent efforts have aided me immeasurably in carrying out my duties.

Respectfully submitted,
THOMAS F. MCCARTHY, M.D., *Treasurer*

Board of Trustees (Supplementary)

To the House of Delegates, Gentlemen:

Attached is the Certified Public Accountants audited financial report for the year ended December 31, 1967 (See pages 1482 to 1486). The statements represent our financial position at December 31, 1967, as well as the results of our operations for the year then ended.

Respectfully submitted,
GERALD D. DORMAN, M.D., *Chairman*

Certified Public Accountants

To the Board of Trustees, Medical Society of the State of New York:

We have examined the balance sheet of the Medical Society of the State of New York as of December 31, 1967, and the related statements of operating income and expenses and general and other funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We did not confirm the amounts due from the U.S. Government under the CHAMPUS Program, but with respect thereto we satisfied ourselves by other auditing procedures.

In our opinion, the accompanying balance sheet and statements of operating income and expenses and general and other funds present fairly the financial position of the Medical Society of the State of New York as of December 31, 1967, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Patterson & Ridgway
Certified Public Accountants

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your reference committee next reviewed the annual report of the Treasurer, including the report of the Operating Income and Expenses of the General Fund for the year ending December 31, 1967, as appears in the report of the auditor. We feel that Dr. McCarthy has done an excellent job in guiding the financial responsibilities of the Society and we commend him along with the Executive Vice-President and the Board of Trustees for enabling us to end in the "black" in the presence of a large projected budget deficit for 1967.

The House voted to adopt this portion of the reference committee report.

Executive Vice-President (Annual)

To the House of Delegates, Gentlemen:

Contrary to our usual procedure, we will attempt to streamline this annual report, which covers the nine-month period since the last meeting of the House of Delegates. We will confine ourselves to essentials and avoid duplication of the material contained in the presentations of the various committees. Of course, there will be instances where repetition is indicated in order to highlight certain important situations.

The past year has been a very busy one. Some time ago we pointed out that today the summer is hectic and no different from the other seasons. There are no longer true vacation periods. We find that, no matter how we prepare for what we believe to be the inevitable, emergencies arise continuously, and, too often, we are compelled to solve our enigmas by "crises." This is not always a very desirable state of affairs, but in our type of endeavor it is unavoidable.

The problems that face our profession today are serious ones and demand clear thinking without emotion. Naturally, in this type of atmosphere, misapprehensions appear on the horizon, and these result in hasty judgments without reasonable data to support them. However, we must say that, as our people learn the facts, they become more understanding and realize that there are no easy solutions.

I must repeat what I have stressed in the past—that your executive vice-president does not determine policy. This is left to the House of Delegates and/or the Council. On the other hand, we are ever ready to implement what is determined by the governing bodies. Also, your executive vice-president reserves the right—granted to him when he assumed his position—to "talk up" when the proper occasion arises.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Balance Sheet

December 31, 1967

ASSETS

General Fund			
CURRENT ASSETS			
Cash in banks and on hand	168,096.58		
Less: Due American Medical Association	7,401.08	160,695.50	
Investments at cost		75,000.00	
Accounts receivable (after reserves)		52,934.66	
Due from other funds		77,875.92	
Inventories		31,391.25	
TOTAL CURRENT ASSETS			397,897.33
PREPAID EXPENSES			
Sundry expenses and deposits			17,906.36
FURNITURE AND FIXTURES			
At nominal value			2.00
ADVANCES			
Employees cash funds			4,286.04
Total General Fund			420,091.73
Investment Fund			
Cash in banks		39,978.63	
Investments at cost (market value $159,400)		165,125.02	
Accrued interest		1,383.84	
Total Investment Fund			206,487.49
Building Fund			
Cash in banks		47,764.15	
Land and building at cost		759,259.40	
Investments at cost (market value $923,530) of which $60,000 is placed in escrow as a pledge under the CHAMPUS contract		928,314.80	
Accrued interest		8,069.17	
Total Building Fund			1,743,407.52
Employees Beneficiary Fund			
Investments at cost (market value $15,200)		20,046.51	
Accrued interest		85.41	
Total Employees Beneficiary Fund			20,131.92
Repair and Replacement Fund			
Investment at cost (market value $34,480)		37,727.73	
Accrued interest		462.21	
Due from other funds		6,862.82	
Total Repair and Replacement Fund			45,052.76
Endowment Funds			
Cash in banks		20,858.38	
Less: Due to other funds		700.00	
Total Endowment Funds			20,158.38
Pension Fund			
Cash in banks		1,071.02	
Due from other funds		9,475.39	
Total Pension Fund			10,546.41
War Memorial Fund			
Cash in bank		11,333.51	
Investments at cost (market value $65,960)		69,000.00	
Accrued interest		622.30	
Total War Memorial Fund			80,955.81
TOTAL ASSETS			2,546,832.02

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Balance Sheet

December 31, 1967

LIABILITIES AND FUNDS

General Fund		
CURRENT LIABILITIES		
Taxes payable (including withholding)	8,623.51	
Accounts payable and accruals	147,003.82	
TOTAL CURRENT LIABILITIES		155,627.33
DEFERRED CREDITS		
Membership dues 1968	109,021.00	
Annual meeting 1968	33,471.50	
Sundry	14,670.17	
TOTAL DEFERRED CREDITS		157,162.67
GENERAL FUND BALANCE		107,301.73
Total General Fund		420,091.73
Investment Fund		
Due to other funds	7,937.18	
Balance	198,550.31	
Total Investment Fund		206,487.49
Building Fund		
Due to other funds	61,235.72	
Balance	1,682,171.80	
Total Building Fund		1,743,407.52
Employees Beneficiary Fund		
Due to other funds	16,395.84	
Balance	3,736.08	
Total Employees Beneficiary Fund		20,131.92
Repair and Replacement Fund	45,052.76	
Total Repair and Replacement Fund		45,052.76
Endowment Funds		
Lucien Howe Prize Fund	8,555.26	
Merit H. Cash Fund	2,658.98	
A. Walter Suiter Lectureship Fund	8,944.14	
Total Endowment Funds		20,158.38
Pension Fund	10,546.41	
Total Pension Fund		10,546.41
War Memorial Fund		
Due to other funds	7,945.39	
Balance	73,010.42	
Total War Memorial Fund		80,955.81
TOTAL LIABILITIES AND FUNDS		2,546,832.02

NOTE: The Society has a revolving fund of $195,000 from the U.S. Army (CHAMPUS Program) not included in this exhibit. It has claims, either paid or approved for payment, amounting to $288,990.02 that have not been reimbursed by the Government. The Society has placed $60,000 par value U.S. Treasury Bonds in escrow with a depositary agent of the U.S. Government as a pledge under the CHAMPUS contract.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

December 31, 1967

Cash in Banks and on Hand

General Fund	168,096.58*
Investment Fund	39,978.63
Building Fund	47,764.15
Pension Fund	1,071.02
Total	256,910.38

* Includes $7,401.08 due to American Medical Association.

Endowment Funds	
Lucien Howe Prize Fund	8,755.26
Merit H. Cash Prize Fund	2,858.98
A. Walter Suiter Lectureship Fund	9,244.14
Total (Union Dime Savings Bank)	20,858.38
War Memorial Fund	
On deposit	11,333.51

Investments

The investments of the Society are summarized as follows:

	COST	MARKET
Investment Fund		
Corporate bonds	122,320.00	114,620.00
Common stocks	42,805.02	44,780.00
Total	165,125.02	159,400.00
Building Fund		
U.S. Government securities	224,791.21	208,210.00
Corporate and other bonds	600,352.99	483,740.00
Common stocks	103,170.60	231,580.00
Total	928,314.80	923,530.00
Employees Beneficiary Fund		
Corporate bonds	20,046.51	15,200.00
Repairs and Replacement Fund		
Corporate bonds	31,997.41	25,170.00
Common stock	5,730.32	9,310.00
Total	37,727.73	34,480.00
War Memorial Fund		
U.S. Government bonds	69,000.00	65,960.00

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Statement of General and Other Funds

For the Year Ended December 31, 1967

	GENERAL FUND	INVESTMENT FUND	BUILDING FUND	EMPLOYEES BENEFICIARY FUND	REPAIR AND REPLACEMENT FUND	PENSION FUND	WAR MEMORIAL FUND	LUCIEN HOWE PRIZE FUND	MERIT H. CASH PRIZE FUND	A. W. SUITER LECTURESHIP FUND
Balance at January 1, 1967	300,579.35	193,203.25	1,183.873.13	7,682.58	43,369.62	2,087.93	75,025.42	8,130.86	2,520.41	8,496.04
Additions										
Excess of income over expenses	6,722.38	...	...	...	...	...	...	...	...	...
Interest on bank balances	...	941.59	1,722.13	...	...	51.78	...	424.40	138.57	448.10
Income from securities	...	7,105.47	55,671.19	653.51	1,683.14	...	2,385.00	...	...	...
Profit on sale of securities	...	...	240,905.35	...	...	...	...	...	...	...
Assessments and contributions received	...	...	...	...	...	8,406.70	...	...	...	...
Transfers from other funds	...	...	200,000.00	...	...	...	...	...	...	...
Total Additions	6,722.38	8,047.06	498,298.67	653.51	1,683.14	8,458.48	2,385.00	424.40	138.57	448.10
Deductions										
Custodian and investment service fees	...	2,700.00	...	...	...	...	...	...	...	...
Benefits disbursed	...	...	...	4,600.41	...	...	4,400.00	...	...	...
Transfers to other funds	200,000.00	...	...	...	...	...	...	...	...	...
Total Deductions	200,000.00	2,700.00	...	4,600.01	...	...	4,400.00	...	...	...
Total Increase or Decrease	_193,277.62*_	5,347.06	498,298.67	_3,946.50*_	1,683.14	8,458.48	_2,015.00*_	424.40	138.57	448.10
Balance, December 31, 1967	107,301.73	198,550.31	1,682,171.80	3,736.08	45,052.76	10,546.41	73,010.42	8,555.26	2,658.98	8,944.14

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* Italics denote figures in red.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Operating Income and Expenses—General Fund

For the Year Ended December 31, 1967

Operating Income		
Dues income	1,082,675.00	
Less: Allocated to JOURNAL circulation and *News of New York*	144,000.00	
		938,675.00
JOURNAL circulation	127,145.47	
News of New York, allocation from dues income	24,000.00	
Advertising income	482,506.42	
Reprint income, JOURNAL	16,504.69	
Directory circulation	11,973.30	
Annual Meeting, booth rentals	53,763.50	
CHAMPUS reimbursements for overhead expenses	50,846.62	
Dues collection income from AMA	16,473.13	
Interest	19,762.29	
Miscellaneous	1,651.75	
		804,627.17
Total Operating Income		1,743,302.17
Operating Expenses		
Administration	120,016.22	
Business Division	402,565.01	
Communications Division	185,950.68	
Legal Division	55,377.34	
Industrial Health Division	33,329.64	
Medical Care Division	97,268.61	
Scientific Activities Division	122,169.75	
Scientific Publications Division	340,570.20	
Legislative Counsel	15,000.00	
Annual Meeting	44,642.45	
Officers, Board of Trustees and AMA Delegation	59,861.70	
Council Committees	22,427.08	
Research and Planning Division	701.99	
Standards of Medical Care Division	28,816.57	
House of Delegates (special committee)	59.59	
Nondivisional	207,822.96	
Total Operating Expenses		1,736,579.79
NET INCOME		6,722.38

Progress. In our report to the House of Delegates last February, we discussed our plans for a better medical society. We pointed out the need for additional funds if we were to realize some of our goals. Fortunately, the House saw fit to go along with an increase in dues in a unanimous decision. Of course, the increment will become effective on January 1. Most of the 1967 deficit—and it appears that there will be one, although not so great as we thought we would have—will be covered by the 1966 surplus.

You will remember that we declared that the "new money" would be used primarily to establish or "build up" the following: (*a*) the Commission on Standards of Medical Care; (*b*) a Division of Research and Planning, which we first brought to your attention a few years ago; (*c*) better communications; (*d*) a Department of Information; (*e*) an improved filing system; (*f*) a more efficient Special Services Department (a "pool" of the staff and a stenotypist); (*g*) salary increases; (*h*) a finer employes' benefits program. Also, we stated that more money would be needed because of higher costs of operation—publishing the *Directory*, printing the JOURNAL, the annual convention, travel, the the regional conferences, the legislative newsletter, meetings of the Council and Board of Trustees, the AMA delegation, legal affairs, and so on. This rise in expenditures is a continuing process and due to factors beyond our control.

Now we are happy to report that during the year the "new look" was started.

In order to effectuate some of our plans it was necessary to alter our physical facilities. May we give you one example of what happened. Because of new provisions adopted by Congress and approved by the President, the workload of the program of Medical Care for Dependents of Military Service Men went up astronomically. (The name of this agency has been changed to the Civilian Health and Medical Program of the Uniformed Services—CHAMPUS.) We were compelled to take on additional personnel and create new space. Of course, the Government is reimbursing us for this greater activity. (CHAMPUS will be discussed later in this report.)

The Division of Standards of Medical Care is well on its way. The various committees of this commission are meeting, and they show the dedication which we expected, in areas of utmost importance. Truly, here there is no self-aggrandizement of the physician.

Research and Planning. There have been advances in the development of a Division of Research and Planning. We have been in touch with the "experts," and we have talked to knowledgeable persons about the directorship of this very important enterprise.

On September 14, the Committee on Research and Planning, appointed by the president, met at our headquarters. We were fortunate to have with us Murray Klutch, director of research of the California Medical Association. Mr. Klutch described in detail what has been going on in his state—truly a fascinating story of the origin and growth of a great department. The physicians in California started with a modest budget, and in the space of six to seven years they have come up with a staff of 12 or 13 and an annual allotment of $140,000. Also, they have been able to convince the Federal government that they should have financial assistance to carry on their work.

The committee was impressed greatly with Mr. Klutch's story. We are determined more than ever that our enterprise will be a success. We are beginning with a modest budget. We are in the process of searching for a well-qualified director. We cannot afford to make any mistakes in this direction, because the success of the Division of Research and Planning will be determined by the man who "makes it tick." Finding such an individual is not an easy task; the director must have a broad background, not only in the field of medicine but perhaps more importantly in the social and behavioral sciences; he must have an understanding and interest in current social problems, be interested in psychology, economics, and sociology—a statistician—and also a flexible person with good organizational ability. Finding one who has all these qualities may be well nigh impossible, but we will do the best we can.

In the meantime, even without a director, we have started the Division of Research and Planning by establishing the position of research assistant, under the supervision of your executive vice-president. Alvina Rich Lewis, who has been managing editor of our JOURNAL for many years, will leave this position on March 31, and, on the first of April, she will become a research assistant. She will develop and work on certain projects which we have had in mind for some time. Among many tasks, she will have the following work assigned to her: the preparation of a history of actions of the MSSNY from 1906 to the present time, by subject (too often, we lose track of the many actions taken in the House of Delegates and Council); the preparation of a handbook for delegates; a procedures manual for the House of Delegates; a handbook concerned with the functions of the various committees of our Society, their responsibilities and relationships to commissions, how to write reports for the Council and House of Delegates, and so on; the history of the MSSNY, which we should have in our archives (the MSSNY will be one hundred seventy-five years old in 1982); and editing of the minutes of the House of Delegates.

Communications. Communications to physicians throughout the State have improved, as shown by letters and telephone calls of approbation which we have received. However, we are not completely satisfied. We will continue to strive for better reporting to all the people who should know what is going on.

The "hot line" letters will go out whenever necessary. The Budget Committee has seen fit to appropriate the funds needed to take care of this project. As a matter of fact, the whole Division of Communications will be "stepped up" considerably.

A Department of Information was established during the year. In charge is a dedicated lady, who has become acquainted with voluntary health agencies, medical schools, hospitals, and other similar groups in our State. In this way important pertinent data are transmitted to those who come to us for help and ask questions.

Evidently our Department of Information has gone far and is beginning to show results. Following is a clipping from a Westchester County newspaper. Indeed, we are getting some recognition.

> Q. I would appreciate it if you could advise me as to where to seek information on electroencephalography. In particular, I am interested in where courses of instruction and textbooks are available.—J.Q.
>
> A. Write to Mrs. Helen Hickey, Medical Society of the State of New York, 750 3rd Ave., New York 10017 and ask for the pamphlet, "Horizons Unlimited." We believe you will find the information you want in this booklet.

The area conferences, which will be described more fully in the report of the Committee on Public Relations, with one or two exceptions have been great successes. The Division of Communications is to be congratulated for arranging these splendid meetings. We know that there will be many more during the years that lie ahead.

We have consulted a number of well-informed people in the field of letter and records filing. It appears that the establishment of a central filing system requires much more money than we would like to spend at this time, and additional space, which is not available. Therefore we have postponed action in this area until we have our own building.

The Special Services Department has been improved. A competent stenotypist has been employed, and he has been of inestimable value to us and to many of our committees.

We will discuss our job reanalysis and salary increases later.

Our employes' benefit program has been in effect since January 1, 1966. It requires continual study and refinement as we go along.

We often have said that we are not satisfied with the *Directory*, and this opinion of ours persists. In the not-too-distant future, we will concentrate on drastic changes and modernization of the "blue book." Only in this way can it be an effective up-to-date compilation of the men in medicine. Production costs have risen, but so has our revenue from the sales of this reference book to other than medical agencies.

The Building. On October 23 we transmitted to the members of our Society a "hot line" letter concerned with our own headquarters building. This communication described in detail the events leading up to the present time. We do not believe that it requires repetition.

May we just say again that the MSSNY is the landowner of 3.9 acres of land in Lake Success in Nassau County, which is just outside the City of New York, with all the advantages of a rural area.

At a meeting of the Ad Hoc Committee for Our Own Building on October 5, it was decided that the next step is to obtain the services of an architect. This search is now in progress.

A new building committee was appointed, because it was felt that trustees should not be members. The Board of Trustees is in charge of our finances and should be in a position to adjudicate problems with an "unjaundiced eye."

CHAMPUS (Civilian Health and Medical Program of the Uniformed Services).* On August 17, we transmitted to the officers, councillors, and Board of Trustees a memorandum concerning new developments in the CHAMPUS program. This communication contained a report from the Deputy Assistant Secretary of the Department of Defense in Washington to the effect that there would be a termination of contracts with state medical associations serving as fiscal agents for the CHAMPUS program. We believe that the following letter, written to our president by Brigadier General Norman E. Peatfield, executive director of CHAMPUS, should be made known to you:

> We have recently received a communication from the Assistant Secretary of Defense (Manpower), Washington, D.C., that it is his desire, and I quote, that:
>
> "1. In those states where no contracts exist with state medical societies the 'usual, customary, and reasonable' fee concept developed by the Social Security Administration in implementing the Social Security Amendments of 1965 should be followed.
>
> "2. In each state where a contract exists with a state medical society prescribing local schedules of allowances, the policy specified in Item 1 should be implemented effective upon termination of the present contract."
>
> As you may know, in implementing the Social Security concept, the carriers in their contracts with the Social Security Administration are required to determine reasonable charges with respect to services to any eligible beneficiary. Also, in determining the reasonable charge for such services, the carrier is required to take into consideration the customary charges for similar services generally made by the physician furnishing such services, as well as the prevailing charges in the locality for similar services. In addition, the carrier must take such actions as may be necessary to assure that such charges are not higher than the charges applicable for comparable services furnished policyholders and subscribers of the carrier under similar circumstances. Further, in carrying out these duties, the carrier is required to the extent that it is practical: (1) consult with, and take into consideration, the advice of state and local organizations of physicians and as appropriate, other organizations in the health field, and (2) utilize such societies and/or associations or other groups to provide advice and assistance in cases where eligible individuals, physicians, or other persons furnishing services disagree with the carrier's determinations.
>
> As the medical societies and/or associations are not involved in selling health insurance or making payments to policyholders or subscribers and in order to avoid any possible question of conflict of interest, since such organizations do have a significant part in the prescribing of local schedules of fees, we have been further advised that all arrangements involving the use of state medical societies and/or associations as fiscal agents for the payment of physicians bills be discontinued upon the termination of the present contracts with such organizations.
>
> As you are aware it is in keeping with the desires of most state medical societies and/or associations and the American Medical Association that all physicians be paid customary and reasonable fees. It is anticipated this will be the result when the Social Security concept is fully implemented, rather than being restricted to a Schedule of Maximum Allowances such as that which was negotiated between our respective office and which has been in effect for a number of years. I trust that you will appreciate that to implement this concept and confirming recent discussions of this matter between my contracting officer, Colonel William H. Hayes, and representatives of your organization, it will be necessary to make arrangement with another fiscal agent upon the termination of our present contract. We would certainly welcome your comments and suggestions in this regard.
>
> In the absence of subsequent mutually agreed upon arrangements this letter may be considered as formal notice to terminate the contract as contemplated in Article 13 of the schedule to the contract.
>
> Please know this decision in no way reflects upon the efficient, effective, and very capable manner in which your medical society has and is carrying out its responsibilities.
>
> Further, please be assured that it is our hope to continue the same close and cordial relations with your society that we have enjoyed in the past. We believe that informal noncontractual arrangements are of distinct benefit to your society and the government. Certainly the stability, understanding, and comparatively smooth operation of our program has been a result, in large part, of the interest and cooperation of your medical society and the physicians of New York.

This announcement caused a furor in those states which are involved in the CHAMPUS program. Meetings were held and the entire situation was discussed. It was decided definitely that we would protest the action of CHAMPUS, and we did. A letter was addressed to General Peatfield. Among other things, we stressed the fact that there has been the greatest cooperation between our office and the CHAMPUS administration, and we questioned very seriously that this fine cooperation could be maintained in any other way. We asked that the proposal of CHAMPUS be reviewed and that the Medical Society of the State of New

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* Formerly known as Medical Care for Dependents of Military Service Men.

York continue to act as the administrative agency for our over 26,000 members to insure that the present successful program be continued to the mutual advantage of the patients, the physicians, and the Federal government.

We contacted the four New York members of the House of Representatives who are on the Armed Services Committee—Congressmen Pike, Stratton, Pirnie, and King. We are happy to report that the latter three did get in touch with the Department of Defense and did in some way intercede in our behalf.

A brief containing the following statement was also submitted:

> We believe the following reasons are valid for continuing the present plan and arrangement in New York State with the Department of Defense and the Medical Society of the State of New York:
>
> 1. The present contract in effect with the Office for Dependents' Medical Care, Office of the Surgeon General, does provide for payment of physicians' services on the "usual and customary" fee concept. This was mutually agreed upon by Brigadier General Norman E. Peatfield, executive director of the Program, and Carl R. Ackerman, M.D., chairman of the Economics Committee of the Medical Society of the State of New York.
>
> 2. It was understood that no Schedule of Allowances would be published to the membership and that the guidelines for maximum payments would be determined by the 1965 Relative Value Scale adopted by the House of Delegates of the Medical Society of the State of New York on February 17, 1965, by applying a $5.00 conversion factor.
>
> 3. The present carriers in the State of New York, under Title 18, Part B, using the "usual, customary, and reasonable" fee concept, use similar guidelines for maximum payments.
>
> 4. There is no conflict of interest between the Medical Society of the State of New York and the carriers under Title 18, Part B, because the Relative Value Scale adopted in 1965 specifically states, "The Relative Value Scale in no way sets anyone's fees or anyone's schedule of fees until a conversion factor is applied."
>
> 5. The Medical Society of the State of New York was asked to act as Fiscal Agent in 1956 in lieu of seven Blue Shield Plans in the State of New York.
>
> 6. Of the 26,000 members of the Medical Society of the State of New York, there have been 12,500 doctors who have participated in the Program and have voiced no complaint. Over a period of eleven years claims which require review, either for overcharges or special procedures, are reviewed by a "Physicians' Review Committee." These represent hundreds of claims and savings of many thousands of dollars to the Office for Dependents' Medical Care.
>
> Since the Medical Society of the State of New York has operated the Program for a period of eleven years and received full cooperation from its members and the Office for Dependents' Medical Care, it should be permitted to continue the Plan because we believe our present agreement complies with the May 10, 1967, directive of Thomas D. Morris, and therefore request your serious consideration.

Fortunately, the pressure that was brought to bear on the Department of Defense has had some effect. The Department of Defense has postponed any definite action. There is still hope. The Department's decision will be announced soon.

We might add that Shirley Fisk, M.D., has resigned from the position of Deputy Assistant Secretary of Defense (Health and Medical) to become associate dean of Columbia University's College of Physicians and Surgeons. Perhaps when the new appointment is made official, there will be a "change of heart."

Job Analysis. Diedrich K. Willers, and his staff, of Cornell University, at our request and with the approval of the Council, has conducted a job analysis (the last one was done some time ago). With Mr. Willers' report as a guide, we have reviewed the entire staff, made certain adjustments in job nomenclature, and reviewed our salary scale.

In order to compete in the labor market in the area in which we are located, we find it necessary to rearrange salary classifications. The older employes, in terms of service, remain with us, but it is extremely difficult to attract and hold on to the "newcomers." The turnover has been greater than we would like to see it. It is our hope that in the future, with better fringe benefits and with a more realistic look at salary levels, we will be able to do better.

We have instituted the practice of paying employment agency fees, after the staff member has been in service for over six months. This is in keeping with the routines throughout industry.

Medicare and Chiropractic. During July we were informed by the American Medical Association of the "probability" of the inclusion of chiropractic under Medicare being approved by the Ways and Means Committee of the House of Representatives. We immediately contacted the county medical societies by telegram, requesting that they get in touch with the members of Congress in their areas—and the chairman of the Ways and Means Committee—and protest strongly against this provision. A number of county societies responded nobly.

The president of our Society also sent protests to Representative Wilbur D. Mills, chairman of the House Ways and Means Committee, and to the two Congressmen from New York State on that committee—Hon. Barber B. Conable, Jr., of Rochester, and Hon. Jacob J. Gilbert, of The Bronx.

Your executive vice-president personally contacted Representative Gilbert and was given the usual "brush off." Ever since this gentleman was a member of the Senate of New York, he openly has been "anti-doctor of medicine." Being in the House of Representatives has not changed his views. He informed us that he will definitely vote to include chiropractic under Medicare.

The response from Congressman Conable was satisfactory. He pointed out that, on occasion, when he was in the New York Legislature, he voted against the licensure of chiropractors.

As of this time, the inclusion of chiropractors under Medicare has not been approved. The AMA is very active in this field.

Osteopathy and the "Unearned" M.D. Degree. The New York State Supreme Court has vindicated and upheld the position of the State Medical Society that it is against public policy to permit osteopaths, who received an unearned M.D. degree from the California College of Medicine upon application and payment of a fee therefor, to hold themselves out as M.D.'s in New York.

You will recall that this whole controversy grew out of the action of the New York Board of Regents and State Education Department's listing in the New York State register for medical doctors certain individuals, who originally held New York physician's and surgeon's licenses with a D.O. inscription. They had obtained an M.D. degree from the California College of Medicine (formerly the College of Osteopathic Physicians and Surgeons), following a 1961 contract and 1962 legislation regarding the merger of the osteopathic and nonosteopathic branches of the medical profession in California. Each of the individuals involved received his preliminary and professional education and training only in osteopathic medicine.

The Court, by Mr. Justice Cooke, sitting at special term in Albany in an Article 78 proceeding brought by the New York State Osteopathic Society, in which the Medical Society of the State of New York intervened as *amicus curiae*, pointed out that throughout the Education Law the distinction between osteopaths and medical doctors, who subscribe to different principles and employ different systems of therapy, is recognized and implemented and the differing licenses serve to apprise the public of the differing training of the licensee.

You may recall that in our letter to the Board of Regents on January 8, 1964, protesting their action, we said essentially the same thing: "It is clear from both the statutory requirements of the Education Law and the Commissioner's Regulations that the degree of M.D. and the degree of D.O. are separate and distinct recognitions of separate and distinct educational and professional disciplines requiring attendance at separate and distinct professional schools."

Also, we said: "We are sure that you are aware that a lay person places great reliance on the educational background of those entrusted with their physical well-being. They are entitled to rely on the official licensing document issued by their State as representing a true and accurate indication of their physician's training and education."

The Court placed great reliance on our previous victory in the case of *Matter of Kurk v. Medical Society of the County of Queens*, wherein the county society's refusal to admit to membership a D.O. who obtained an unearned M.D. degree from the California College of Medicine upon application and payment of a fee was upheld upon appeal all the way to our highest State court. It made the following observation concerning the Kurk case: "The Appellate Division bluntly stated: 'The petitioner is an osteopath, who is a graduate of a school of osteopathy. He has received therefore, a D.O. license *which is all that he is entitled to.*' " (Emphasis supplied by the Court.)

The Court went on to dismiss the Board of Regents and Education Department's contention that it was compelled to give full faith and credit to the action of the California authorities in granting the M.D. degree by virtue of the requirements of the Constitution of the United States. The Court ruled that "the full faith and credit clause does not require one state to substitute for its own statute, applicable to persons and events within it, the conflicting statute of another state, even though that statute is of controlling force in the courts of the state of its enactment with respect to the same persons and events" in the absence of Congressional prescription of the extrastate effect of such a statute.

The decision has directed the Board of Regents and State Education Department to "cancel, revoke, and rescind" the M.D. inscription granted to the D.O.'s involved and to remove such references from the official register of New York licensed physicians and surgeons; it ordered the D.O.'s to remit their New York licenses and registration certificates so that the M.D. inscription can be deleted and new licenses and registration certificates issued without the M.D. inscription.

Undoubtedly, this landmark decision will be appealed by the Board of Regents and State Education Department, but we feel strongly that justice and probity is on the side of the Medical Society of the State of New York. Ultimately, our statement of principle that "the primary concern of the Medical Society of the State of New York is not that these osteopathic physicians are improperly licensed to practice 'medicine and surgery' in New York, but that the public will be misled and deceived by the addition of the unearned degree of M.D. on their licenses when these men have never studied or attended a medical school," will be upheld.

Miscellaneous.

AMA-ERF. On May 25, our president presented checks, representing AMA-ERF allocations, to the following medical schools in our State: Columbia University College of Physicians and Surgeons, Cornell University Medical College, New York University School of Medicine, State University of New York Downstate Medical Center, Albert Einstein College of Medicine, New York Medical College, Albany Medical College, State University of New York at Buffalo School of Medicine, State University of New York Upstate Medical Center in Syracuse, Mount Sinai School of Medicine, and University of Rochester School of Medicine and Dentistry.

Contributions making this allocation possible came, in 1966, from physicians throughout the United States and its possessions. The amount distributed to all medical schools was $1,051,933.11.

Advertising Sales. The results reported by our advertising staff are encouraging. We are sure that the following statistics will be of interest to you.

Year	*October*	*10 months*
1967	$35,074.22	$294,320.15
1966	$33,363.21	$234,455.50
Increase	$ 1,711.01	$ 59,864.65

As yet, the explanation for this upward trend has not been determined. We must await further developments.

Also, as of November 1, the revenue received from the sale of the 1966 *Directory* amounted to $73,929. This is beyond our expectations and represents the results of a campaign inaugurated some time ago.

Convention. The attendance at the 1967 convention was lower than that of a year ago. As far as the doctors of medicine were concerned, the decrease was around 7 per cent. The revenue from technical exhibits dropped from $58,135 to $54,131. In 1968, the exhibits will open on Sunday. This should enable many local physicians to visit the exhibits and sessions without giving up a day's practice. The technical and scientific exhibits will be located in the same area.

Change in Table of Organization. There is one change in the Table of Organization. In the future, the Special Services Department will be under the jurisdiction of the Personnel Department of the Division of Administration (formerly it was in the Business Division).

We maintain that one of the important functions of this department is to make available a "pool" from which we can designate replacements for members of the staff who are unable to appear for duty—for unforeseen reasons. We have notified the division heads that we should be able to fill emergency vacancies as they arise. It is not intended that the Special Services Department provide persons to take on "regular or permanent" assignments.

There will be further changes in the T.O., which will be reported to you in our supplementary report.

Staff Handbook. The Staff Handbook has been in existence for a number of years. It has been of value. Two issues have been published. However, as times change and new practices come into vogue, we must review our procedures and practices. With this in mind, a committee is now working on the third edition.

New Appointment. We are happy to announce that on June 1 Gretchen Wunsch became the new executive assistant. She replaced Doris Dougherty, our very dear friend who served our Society faithfully and well for many years. A formal dinner in her honor was held on June 28. It is nice to report that she is enjoying her retirement. She keeps in touch with us.

Obituary. It is with great sadness that we announce the death of our esteemed friend Walter P. Anderton, M.D., who labored in our behalf for many years. He was a fine physician and a credit to our profession.

Woman's Auxiliary. In accordance with the wishes of the House of Delegates, we have continued to serve as adviser to the Woman's Auxiliary to the Medical Society of the State of New York. On many occasions we have been in contact with Mrs. James A. Moore, the president, and we have attempted to assist them in every way possible. We will continue to work with them in the future.

Meetings. Since our last report to the House of Delegates, in addition to routine conferences your executive vice-president attended or participated in the following events:

1. A meeting with Governor Rockefeller in Albany on February 6. The State Society's legislative program, Medicaid, and revision of the Education Law were discussed. Of course, all our problems were not resolved, but there was some hope that better days lie ahead.
2. A meeting of the Queens County Bankers Association in Flushing on February 9. Your executive vice-president discussed Medicaid, Medicare, and the municipal hospitals situation in the City of New York.
3. The 1967 National Medicolegal Symposium, sponsored by the American Bar Association and the American Medical Association in Miami Beach, March 9 to 11.
4. A meeting of the New York State Hospital Review and Planning Council in New York City on March 16.
5. A meeting on legislation in Albany on March 17.
6. The 67th annual dinner of the Legislative Correspondents Association in Albany on March 18. The government officials were lampooned, without mercy.
7. The annual legislative reception and buffet of the New York State Association of Professions in Albany on March 20.
8. A meeting with Joseph Jaspan, special counsel to the State Joint Legislative Committee on Medicare and Public Health, in Garden City on March 27. Members of Nassau and Suffolk County Medical Societies also attended. In an informal way, we discussed at length the issues of the day—"compulsory" health insurance, and others.
9. A regional meeting (northeast region) of the American Association of Medical Society Executives in New York City on March 31. Your executive vice-president was master of ceremonies at the luncheon.
10. The annual banquet of the New York State Academy of General Practice in New York City on April 5.
11. Careers Day in Medicine, conducted by the Medical Society of the County of New York, at New York University, New York City, April 8. The presentations were received enthusiastically by a group of high school and college students.
12. A meeting with the secretary and a past president of the Dental Society of the State of New York in New York City on April 10. Dr. Himler also was present. We talked about matters of mutual interest.
13. On April 14 we travelled to Ithaca to attend a very fine luncheon in honor of Norman S. Moore, M.D., for his twenty-seven years of service to Cornell University. This was a grand party, conducted with dignity and in a manner

befitting men of culture. The president of Cornell University, other officials, and a host of professors and alumni were present. Dr. Moore received the Cornell medal, which has been awarded to very few people—an honor well deserved.

14. A meeting of the Technical Advisory Committee on Medical Care in New York City on April 20.

15. A conference with Edward O'Rourke, M.D., Commissioner of Health of the City of New York, in New York City on April 24. Officers of the five county medical societies involved and others were present. Of course, the subject for discussion was the implementation of Medicaid in the City of New York and the qualifications of physicians.

16. The annual meeting of the Connecticut State Medical Society in Hartford, April 25 to 27. We addressed the House of Delegates, and later attended scientific and business sessions and the annual banquet. As has been the case for many years, we were treated superbly by our next-door neighbors.

17. Representing the American Medical Association, we presented checks to representatives of the National Broadcasting Company and the *Wall Street Journal*, who had been declared winners of the 1966 American Medical Association Medical Journalism Awards. This ceremony took place at our headquarters on April 28.

18. The 87th annual meeting of the Louisiana State Medical Society in New Orleans April 30 to May 3. This was our second visit to Louisiana, and we cannot praise too highly the hospitality of the folks down south. It was grand!

Your executive vice-president was a guest of honor at the past presidents dinner, where he was granted the privilege of the floor. He addressed the House of Delegates on two occasions. He delivered the "Annual Oration." This talk was concerned mainly with the "town and gown syndrome" and full-time staffs in hospitals. Also, he spoke at the annual dinner, appeared on television and radio and at press conferences.

The Mayor of the City of New Orleans presented us with the key to the city, and we were made an honorary citizen. We mention these items merely to point out the type of hearty welcome which awaits guests of Louisiana.

19. A meeting of the AMA Committee on Quackery in Chicago on May 5.

20. The stated meeting of the Medical Society of the County of Kings in Brooklyn on the evening of May 16. We presented citations to members in practice for fifty years.

21. The funeral services for Walter P. Anderton, M.D., at the St. James Episcopal Church in New York City on May 19. (Walter passed away on the 16th of the month.)

22. The twentieth anniversary dinner of the Queens Pediatric Society at the JFK airport on May 20.

23. A dinner tendered by Dr. and Mrs. Hollis S. Ingraham, as part of the ceremonies of the 63rd Annual Health Conference, in Buffalo on May 22.

24. The first general session of the Annual Health Conference in Buffalo on the morning of May 23. The speakers were Commissioner Ingraham and the Hon. Alton H. Marshall, secretary to the Governor.

25. The annual luncheon of the New York State Public Health Council in Buffalo on May 23.

26. A dinner of the officers of the Medical Society of the County of Erie in Buffalo on the evening of May 23.

27. The annual meeting of the Medical Society of the County of Erie on May 23. Dr. Himler and your executive vice-president discussed Medicaid.

28. The annual meeting of the board of directors of the National Tuberculosis Association in Pittsburgh on May 27.

29. A luncheon-meeting with Charles Gillett, executive vice-president of the New York Convention and Visitors Bureau, and Eugene C. Hosmer, Jr., the Bureau's director of sales, in New York City on May 29. We talked about the AMA meeting in Atlantic City and discussed the program of the AMA in New York City in 1969.

30. An MSSNY area conference in East Meadow, Long Island, on May 31. The program included talks on Medicaid by George Himler, M.D., and I. Jay Brightman, M.D., deputy commissioner of health. The attendance was poor.

31. The Medallion Ball of the Nassau County Medical Society in Garden City on June 3. Actually this is the annual dinner-dance which honors the president, who this year was Frank M. Green, M.D.

32. This item has nothing whatsoever to do with the Medical Society, but I attended the fortieth reunion of my Yale medical school class, in New Haven during the weekend of June 10.

33. The formal dedication of the Central New York Academy of Medicine's new building on June 11. We flew up and back the same day. This building has been beautifully designed and without a doubt will serve the doctors in the community well.

34. Your executive vice-president was the guest speaker at the fortieth annual dinner meeting of the Queensboro Tuberculosis and Health Association at the Holiday Inn at LaGuardia on June 12. The subject of his talk was "The Menace of Quackery."

35. We addressed the Rotary Club in Rockaway Beach at a luncheon on June 14. Again the subject was medical quackery.

36. A meeting of the New York State Hospital Review and Planning Council in New York City on June 15. As all of you know, the chairman of this group is Norman Moore.

37. The AMA annual convention in Atlantic City, June 16 to 21. What took place here has been described in our report of the delegation.

38. A seminar conducted by the New York Telephone Company in New York City on June 23. Recent advances in the areas of communication were described thoroughly. This was a

very fine program.

39. A conference in the office of the State Attorney General in New York City on June 26. We met with the Hon. Samuel Hirshowitz, first assistant attorney general, and other members of the Attorney General's staff. Waring Willis, M.D., Norman S. Blackman, M.D., William F. Martin, Esq., Samuel Z. Freedman, M.D., and J. Richard Burns, Esq., also were present. We discussed the practice of medicine by hospitals. No definite conclusions were reached.

40. A meeting with the president and president-elect of the Woman's Auxiliary, at our headquarters on June 28. We talked about future programs.

41. A testimonial dinner for Doris Dougherty, who retired after thirty years of service with the MSSNY. This very fine tribute to a grand lady was held at the Yale Club in New York City on the evening of June 28. We hear from her every once in a while, and she is doing well.

42. A meeting of the New York State Joint Council on Regional Medical Programs in New York City on June 29. The program coordinators from Buffalo, New York City, Syracuse, Rochester, and Albany reported on the developments in the regional medical programs. There has been great progress in these areas.

43. Mr. Burns and I met with James Heimbaugh, Jr., of the Loew's Hotel organization, in order to review the commitments of the Summit Hotel to members of the Council, in New York City on July 11. Definite rules were re-established, and we hope that our people will be taken care of adequately in the future.

44. The four-county (Oneida, Herkimer, Madison, and Chenango) outing meeting at the Twin Ponds Country Club in New York Mills on July 13. This is an annual affair which we have attended for many years. The president of our Society and your executive vice-president were the guest speakers.

45. A conference with Brainard E. Prescott, counsel to the Joint Legislative Committee to Revise and Simplify the Education Law, in Albany on July 18. Walter Heldmann, M.D., and Mr. Burns also attended. We discussed the revisions of the Education Law.

46. A special meeting of the State Hospital Review and Planning Council, on the morning of July 27. This meeting was called to evaluate the recent ruling of the Department of Health, Education, and Welfare concerning the new Federal requirements for payment for hospital inpatient services.

47. A meeting of the Commission on Public Health and Education and representatives of the New York State Department of Health, in Albany on August 3. As we have stated previously, this is one of the finest and most important meetings of the year. It is here that the chairmen of the various committees concerned with health get together and discuss their programs and what they hope to accomplish in the future.

It is gratifying to learn what these dedicated people are doing in the field of health. Here we see constructive thinking and wise planning in action. It is our hope that more conferences of this type will prevail in the years that lie ahead.

48. A meeting with Hollis S. Ingraham, M.D., commissioner of health, and George W. Foy, legislative counsel, in Albany on August 24.

49. A meeting of all those concerned with the signing of the final papers for the acquisition of land in Lake Success, in Hempstead on August 28.

50. A visit to "our land" in Lake Success and a conference with certain important people in the Levitt organization, on September 5.

51. The marriage ceremony of Fred Wurzbach and his new bride, in The Bronx at noon on September 7. Your executive vice-president was afforded the high privilege and honor of being the best man. As we have stated on several occasions, this is probably the only time that a "Fineberg" has been the best man at a Baptist ceremony.

52. The sixth combined annual meeting of the Fifth and Sixth District Branches of the Medical Society of the State of New York, at Shawnee-on-the-Delaware, Pennsylvania, September 8, 9, and 10. A "good time was had by all."

53. The formal dedication of the Suffolk Academy of Medicine, in Hauppauge, Long Island, on the afternoon of September 10. This very lovely installation will house not only the Academy but also the offices of the Suffolk County Medical Society.

Addresses were delivered by John P. Ruppe, Jr., M.D., president of the Suffolk County Medical Society; John S. Toll, Ph.D., president of the State University of New York at Stony Brook; Edmund Pellegrini, M.D., director of Health Sciences Center of the State University of New York at Stony Brook; James R. Kimmey, M.D., regional health officer of the United States Public Health Services; Hollis S. Ingraham, M.D., commissioner of health of the State of New York, and Milton Gordon, M.D., president of the Suffolk Academy of Medicine.

54. A regularly stated meeting of the Coordinating Council, the executive committee of the First District Branch of the Medical Society of the State of New York, in New York City on September 12.

55. A meeting with Diedrich Willers of Cornell concerning the job analysis program, in New York City on September 13.

56. A meeting of the Committee on Research and Planning at our headquarters on September 14.

57. A meeting of the AMA Committee on Quackery in Chicago on September 15.

58. A visit to the Michigan State Medical Society on September 18 and the Pennsylvania Medical Society on September 19, to review their facilities.

59. An area conference of county medical societies in Plattsburgh on September 21. We submitted a "report from headquarters."

60. The fall conference of the Woman's Auxiliary to the Medical Society of the State of New York, in Schenectady on September 24 and

25. We talked about the "state" of the MSSNY.

61. The presidents dinner of the Medical Society of the County of New York on September 28.

62. A meeting of the New York State Hospital Review and Planning Council in New York City on September 29.

63. A meeting with Charles Gillett and Eugene Hosmer, of the Convention Bureau, in New York City on October 6. The agenda included a discussion of AMA conventions.

64. A symposium of the Postgraduate Institute of Osteopathic Medicine and Surgery in New York City on October 7. The program was "Clinical and Physiologic Aspects of Osteopathic Medicine."

65. A luncheon, sponsored by the New York State Department of Health and the Water Pollution Control Federation, in New York City on October 11.

66. An area conference at the Central New York Academy of Medicine in Clinton on October 12. Again we discussed the activities of the MSSNY.

67. A dinner and the inaugural meeting of the Medical Society of the County of Kings, in Brooklyn on October 17. Robert Moore, M.D., delivered his inaugural address, "This I Believe."

68. A luncheon meeting of the New York Society of Association Executives in New York City on October 18.

69. Another area conference, in Olean on October 19. We represented our president at this meeting.

70. A conference with State Senator Jeremiah Bloom in New York City on October 23. We talked about a cardiovascular program.

71. A meeting of the Medical Society of the County of New York on October 23. C. Joseph Delaney, M.D., delivered his inaugural address.

72. A meeting with an Americana Hotel official in New York City on October 27 to discuss our 1968 convention.

73. The presidents' dinner-dance, Medical Society of the County of Kings, in Brooklyn on October 28.

74. The presidents' dinner-dance, Richmond County Medical Society, in Staten Island on November 4.

75. Dedication ceremony of the Medical Research Library of Brooklyn (Downstate Medical Center and the Academy of Medicine of Brooklyn) on November 7.

76. Meeting of the board of trustees of the Milton Helpern Library of Legal Medicine in New York City on November 8.

77. Dinner-dance of the Association of Private Hospitals in New York City November 10.

78. Dinner in honor of Francis J. Loperfido, M.D., president of Bronx County Medical Society, in The Bronx on November 11.

Acknowledgments. Again we express our great gratitude to the many men and women who have rendered dedicated service to the MSSNY—the officers, councillors, trustees, chairmen and members of committees, physicians throughout the State, the staff, the members of the Woman's Auxiliary. Without their help in every field, very little would have been accomplished.

Our visits throughout various parts of the State have been rewarding. We wish we had the time to get around more frequently; the hospitality we have been exposed to has been superb everywhere.

We will submit a supplementary report to you in February.

Respectfully submitted,
HENRY I. FINEBERG, M.D.
Executive Vice-President

Executive Vice-President (Supplementary)

To the House of Delegates, Gentlemen:

Selective Service System. During the past six months, a number of county medical societies consulted us about the Selective Service System, as it applies to the physicians in our State. Among the problems which they presented were the medical needs of communities, the essentiality of physicians, deferments, and other matters of this nature.

The Executive Committee of the Council requested that we write to Lt. General Lewis B. Hershey, director of the Selective Service System, and seek his advice and guidance—which we did. Soon afterwards, we received a communication from Kenneth S. Goodrich, Captain, USNR, and chief of the Manpower Division. This is what he had to say:

> For some time the law has provided for the establishment and maintenance of the National Advisory Committee. This committee advises the Selective Service System with respect to the selection of physicians, among other medical specialists. There have been established in each state local medical advisory committees, the work of which the National Committee coordinates.
>
> We believe that it would be of more help to you if we asked Dr. James C. Cain, the chairman of the National Advisory Committee, to advise you as to the workings of his group. We are sure you will be hearing from him soon in this regard.
>
> As to procedures that can be taken once a doctor has been called for induction, we would suggest that the individual submit complete information to the State Director of Selective Service in whose state his local board is located, with a copy of that information being sent to the local board. The individual should also submit any supporting information, such as corroborative statements from the hospital, patients, medical societies, and the like, which would help to show the need for the man's continued activities in the area.
>
> We appreciate very much your interest in this matter. It is an area which needs the continued cooperation and the assistance of all health personnel.

Later, we also heard from Helga A. Lura, administrative assistant of the Selective Service System in Washington:

> Your letter. . .addressed to General Hershey, has been forwarded to this office for further reply. We are sending the entire correspondence to Dr. Cain in Rochester and you may hear from him.

> Abraham H. Aaron, M.D., of 50 High Street, Buffalo, New York, is our chairman of that State. He has served us in an outstanding manner for several years and has subcommittee members to advise him as to special community problems regarding physicians and allied specialists. We feel that Dr. Aaron is very well qualified to answer your questions but appreciate your writing to national headquarters so that we may try to be of help to you.
>
> It appears that General Hershey's office has answered your questions very well regarding the handling of special registrants, procedures to be taken, etc., once a doctor has been called for induction. We would suggest that, if possible, the State chairman and/or this office be forewarned if it seems a very valuable man is vulnerable to the draft. Our summer draft will be in the neighborhood of 1,200 with 50 doctors of osteopathy also being called. Any problem submitted to us should best be called to Dr. Aaron's attention first as it may not be necessary for it to reach a national level, providing it can be settled within the State.

We hope that this information will be of assistance to all concerned.

CHAMPUS. Undoubtedly, you will remember that, in our annual report, we discussed, at length, CHAMPUS (Civilian Health and Medical Program of the Uniformed Services). At that time we expressed the hope that there would be a "change of heart"—and that our services in this area would be retained. This has happened!

We are pleased to report that Brigadier General Norman E. Peatfield, executive director of CHAMPUS, has informed us that the Department of Defense has reconsidered its position on "contracting with medical societies or associations"—and that the contract with the Medical Society of the State of New York will be renewed. This assures the continuance of a very healthy liaison which has been in existence for about a decade.

The new contract has been received and has been signed by the chairman of our Board of Trustees and secretary, and will be forwarded to the proper officials.

Table of Staff Organization (T.O.). We attach to this report a new Table of Organization of the staff (Fig. 1 page 1496).

The following changes should be noted:

As previously announced, the Special Services Department is now under the jurisdiction of the Personnel Department of the Division of Administration.

The Department of Circulation has been transferred to the office of the Comptroller.

The Division of Communications has been reorganized; it has its full complement of staff people—a coordinator of public and professional relations, a coordinator of legislation activities, a coordinator of media relations, four field service men (instead of three)—with a redistribution of these people throughout the State; a Department of Information; a Speakers Bureau, and adequate secretarial assistance. It is our feeling that this increased staff will result in better reporting to all our people—who should know what is going on. For some time we have "preached" that "our entire membership should know the facts before they become news of yesterday."

The division and administrative heads are:

Administration: Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, assistant executive vice-president; George W. Forrest, Jr., assistant to the executive vice-president; Gretchen Wunsch, executive assistant.

Scientific Activities: Norman S. Moore, M.D., director.

Scientific Publications: William Hammond, M.D., director and editor; Alvina Rich Lewis, managing editor.

Standards of Medical Care: Samuel Z. Freedman, M.D., director.

Communications: Guy D. Beaumont, director.

Workmen's Compensation and Industrial Health: Robert Katz, M.D., director.

Medical Care Insurance: George P. Farrell, director; Robert Katz, M.D., assistant director.

Business: J. Richard Burns, director; Eugene Dombrowski, assistant director.

Research and Planning: In process of being organized, director to be appointed.

Legal Counsel: William F. Martin, Esq.

Legislation Consultant: George W. Foy, Esq.

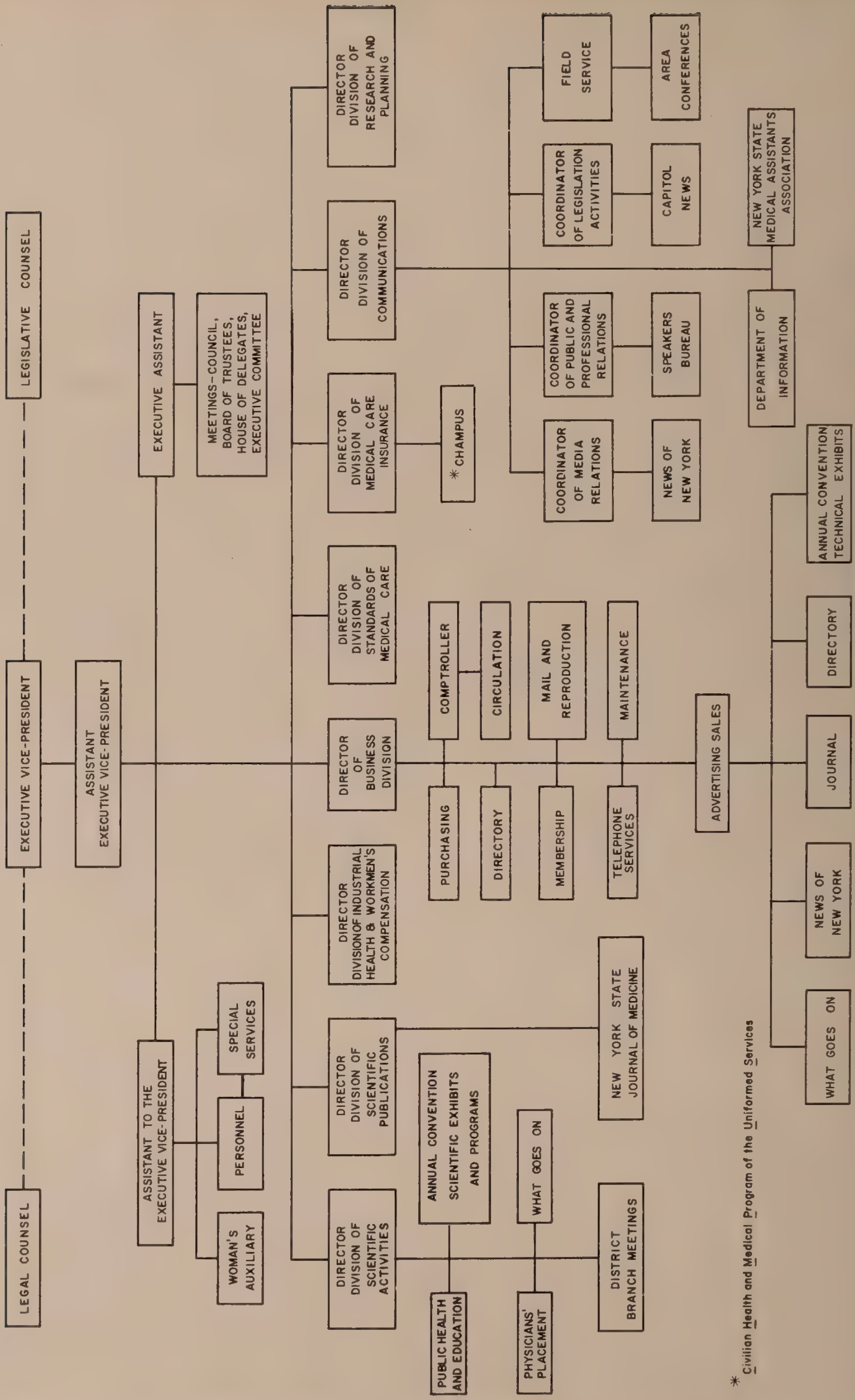
You will note that, in addition to being director of the Division of Workmen's Compensation and Industrial Health, Dr. Katz is assigned as assistant director of Medical Care Insurance. Some day we hope that these two divisions will be consolidated.

Mr. Dombrowski will take over the duties of assistant business director and still be our comptroller.

The Building. In accordance with the instructions issued to us by the Board of Trustees, we are now looking for an architect who will fulfill our needs. Thus far we have interviewed five qualified groups, and we have listened to their "tales of achievement." We should point out that the ethics of the profession of architecture do not permit competitive bidding. In the very near future, we will bring together the Building Committee and the Board of Trustees, and a choice will be announced soon thereafter.

We have applied to the various agencies of the county and town for real estate tax exemption, to which we are entitled by law. Further information about this entire subject, including estimates of costs, and so forth, will be transmitted to you at the proper time.

Division of Research and Planning. Although the plans for our Division of Research and Planning were announced some time ago, this project has not been put into active operation. We believe that an enterprise of this type cannot succeed without a well-qualified director. Recently, we circularized many agencies throughout the eastern part of the United States, looking for someone who will "fit the bill." On several occasions we have announced that we would like to attract someone of high caliber, who will play an important role in the determination and introduction of important


LEGAL COUNSEL
EXECUTIVE VICE-PRESIDENT
LEGISLATIVE COUNSEL
ASSISTANT EXECUTIVE VICE-PRESIDENT
ASSISTANT TO THE EXECUTIVE VICE-PRESIDENT
WOMAN'S AUXILIARY
PERSONNEL
SPECIAL SERVICES
EXECUTIVE ASSISTANT
MEETINGS-COUNCIL, BOARD OF TRUSTEES, HOUSE OF DELEGATES, EXECUTIVE COMMITTEE
DIRECTOR DIVISION OF SCIENTIFIC ACTIVITIES
DIRECTOR DIVISION OF SCIENTIFIC PUBLICATIONS
DIRECTOR DIVISION OF INDUSTRIAL HEALTH & WORKMEN'S COMPENSATION
DIRECTOR OF BUSINESS DIVISION
DIRECTOR DIVISION OF STANDARDS OF MEDICAL CARE
DIRECTOR DIVISION OF MEDICAL CARE INSURANCE
DIRECTOR DIVISION OF COMMUNICATIONS
DIRECTOR DIVISION OF RESEARCH AND PLANNING
PUBLIC HEALTH AND EDUCATION
ANNUAL CONVENTION SCIENTIFIC EXHIBITS AND PROGRAMS
PHYSICIANS' PLACEMENT
WHAT GOES ON
DISTRICT BRANCH MEETINGS
NEW YORK STATE JOURNAL OF MEDICINE
PURCHASING
COMPTROLLER
DIRECTORY
CIRCULATION
MEMBERSHIP
MAIL AND REPRODUCTION
TELEPHONE SERVICES
MAINTENANCE
ADVERTISING SALES
WHAT GOES ON
NEWS OF NEW YORK
JOURNAL
DIRECTORY
ANNUAL CONVENTION TECHNICAL EXHIBITS
* CHAMPUS
COORDINATOR OF MEDIA RELATIONS
COORDINATOR OF PUBLIC AND PROFESSIONAL RELATIONS
COORDINATOR OF LEGISLATION ACTIVITIES
FIELD SERVICE
NEWS OF NEW YORK
SPEAKERS BUREAU
CAPITOL NEWS
AREA CONFERENCES
DEPARTMENT OF INFORMATION
NEW YORK STATE MEDICAL ASSISTANTS ASSOCIATION

* Civilian Health and Medical Program of the Uniformed Services

FIGURE 1. Table of organization for MSSNY staff.

and valuable contributions to the welfare of the people. We envision a person with a broad background—not only in medicine and research technics, but also in the social and behavioral sciences, psychology and economics, and so forth.

As soon as we have received a number of applications, we will ask that the Committee on Research and Planning be assembled to review them.

Internal Revenue Service. We have had a number of inquiries about the progress being made in the field of "unrelated business income"—which we have discussed frequently.

The Internal Revenue Service has decided to go ahead with its controversial proposal to tax the net advertising profits of publications of nonprofit organizations.

The AMA has pointed out that:

> The regulation, which will affect state and national medical organizations, including the American Medical Association, labor unions, and such groups as the Boy Scouts and the National Education Association, will apply to taxes starting next year.
>
> The 48 per cent Federal corporate income tax will be levied against the advertising revenue over and above that needed to operate the publications involved.
>
> The AMA and many other groups protested the IRS proposal after it was first issued last April for comment on grounds that the tax agency was not authorized to impose the tax under the 1950 law dealing with "unrelated income." That law was designed to tax the business activities of nonprofit associations that were clearly not a part of the associations' main functions, such as the operation of a commercial enterprise.
>
> The final IRS regulation is certain to be challenged in court, and many lawmakers have protested the IRS' initial proposal and threatened possible congressional moves to overturn it.
>
> An estimated 700 publications are published by tax-exempt organizations including the *National Geographic*, the U.S. Chamber of Commerce's *Nation's Business*, the *Journal of the AMA*, and some union magazines.

In a newsletter of the United States Chamber of Commerce, legal experts have stressed the following:

> In computing advertising income subject to the new tax the regulations authorize deductions (1) for expenses relating exclusively to the advertising activity; (2) for an allocatable portion of any expenses (such as wages and salaries of personnel working part time on advertising and overhead) relating only partly to advertising; and (3) for any deficit sustained in the nonadvertising phase of the publication.

Of course, this entire subject is still under investigation and study by many of the organizations involved.

Here is an interesting development—in a letter sent to us by the New York district director of the IRS:

> You were advised February 4, 1965, by this office that we would request technical advice from our National Office as to whether trade show receipts received by you in 1961 were subject to the provisions of section 511.
>
> We have received a memorandum from our National Office in which it indicates that receipts from your trade show for the year 1961 are not subject to unrelated business income tax at this time. Accordingly, your return for the calendar year 1961 is accepted as filed.

Evidently, we have won one battle (1961)—but the war continues (1962–1967).

Budget. The report of the Committee on Budget and Finance should be of interest to everyone. Last year, we projected a budget deficit—which did not materialize. The figures for 1967 will show a slight "black tinge" because we were not able to activate some of the important projects that we had anticipated.

The Division of Research and Planning was not initiated. An improved, "central" filing system had to "go by the board" because we felt that, at present, it was much too expensive to organize—and we hope that it will be developed when we move into our new home. The Communications Division was not brought up to the level that we expected—because of personnel turnovers and vacancies during the period when we were seeking replacements.

The 1968 budget estimate reveals an entirely different picture. Because of the increase in dues, there will be an excess of income over expenditures during the coming year. However, our expenses will rise precipitously because of general salary increments, expansion of the Division of Standards of Medical Care, the true establishment of the Division of Research and Planning, the increased tempo of the Division of Communications, better coverage of our Division of Scientific Activities, and higher costs in the following areas—travel, conventions, AMA meetings, area conferences, and so forth.

At present, the financial situation of the Medical Society of the State of New York is a healthy one. Despite this fact, we will continue to exercise strict control over our economy. As before, luxuries will be eliminated, and the "necessities" will be scrutinized very carefully.

Miscellaneous.

Directory and Membership. We have been in touch with an expert in the field of membership compilation. In the near future, we hope that we will be able to announce a consolidation of the *Directory* and Membership Departments. We are ever seeking a solution to the problem of issuing a better, more complete, up-to-date *Directory*. It looks as if now we may be on the threshold of a "break-through" in this direction.

Advertising Sales. The revenue from the sale of our *Directory* to outside agencies amounted to over $74,000, which is much more than we have ever received. We will continue to conduct this selling campaign, which was initiated a number of years ago.

For reasons which we have been unable to determine, the income from JOURNAL advertising increased by $63,000.

Our technical exhibits at the convention are not doing as well as in previous years. The number has decreased from 122 to 103—and the loss of income is about $5,000.

Chiropractic. We are very happy to report that the services of chiropractors were eliminated from the pared-down Social Security Medicare bill. We are sure that this was brought about by the concerted effort of the American Medical Association and the various state societies.

Meetings. Since our annual report was submitted, we attended these out-of-the-ordinary meetings and events. Our purpose in doing this is to give you some idea of the variety of activities in which we participate.

1. A meeting of the executive committee of the First District Branch (Coordinating Council), in New York City, on November 14.
2. A meeting of the MSSNY delegation to the AMA, in New York City, on November 15 (see AMA report).
3. Members of the Council and staff visited our building site in Lake Success, on November 16.
4. A dinner meeting with Charles Gillett, executive vice-president of the New York Convention and Visitors Bureau, in New York City, on November 17.
5. The annual luncheon of the Medical Society of the District of Columbia, at the Statler Hilton Hotel in Washington, D.C., on the morning of November 21. This Society is celebrating its 150th anniversary, and we were invited to participate in this great event.
6. The 21st clinical convention of the American Medical Association, in Houston, Texas, November 24 to 29 (see annual report of AMA).
7. A meeting of the Empire State Medical, Scientific and Educational Foundation, in New York City, on December 13.
8. The annual dinner of the associate editorial board and section editors of the JOURNAL in New York City, on the evening of December 13.
9. A meeting of the New York State Hospital Review and Planning Council, in New York City, on December 14.
10. A dinner honoring William L. Wheeler, Jr., M.D., after ten years service on the New York State Medical Committee on Grievances, in New York City, on the evening of December 14. This was one of the finest dinners that we have ever attended.
11. The National Conference on Health Care for the Poor, sponsored by the Board of Trustees and the Council on Medical Service of the American Medical Association, in Chicago, on December 15 and 16. What took place at these meetings has been reported in the *AMA News* and in the public press.
12. A "closed conference" on osteopathy, conducted by the AMA Committee on Osteopathy, in Chicago, on December 17. A number of deans from medical schools throughout the country were present and discussed the conversion of schools of osteopathy to schools of medicine and other related subjects. We described the situation in New York.
13. The staff Christmas party, at headquarters, on the evening of December 18.
14. Another luncheon meeting with Charles Gillett and Eugene C. Hosmer of the New York Convention and Visitors Bureau, in New York City, on December 22. We talked about the AMA convention in 1969.
15. Our annual get-together with officials of Bankers Trust—our bank—on December 26.
16. On December 27, we met with four architects and discussed our building (see Building report).
17. A meeting with August J. Bardo, Jr., director of the Division of Professional Conduct of the State Education Department, in New York City, on January 5. We talked about appointments to various State committees which require M.D. representation.
18. The annual dinner of the Committee on Public Health of the New York Academy of Medicine, in New York City, on January 8.
19. The 34th annual award dinner of the Touchdown Club of New York, in New York City, on January 10. Dr. Stan Emerson and your executive vice-president were honored guests at this affair. Football coaches from all over the nation were present. The symposium on Medical Aspects of Sports, which will be sponsored by the MSSNY and of which Stan Emerson is chairman—to be held on February 10—was publicized. This news was received with enthusiasm.
20. The annual meeting of the Medical Committee on Grievances of the State Education Department, in New York City, on January 11. Your executive vice-president was elected chairman to succeed William Wheeler.
21. A meeting of the AMA Committee on Quackery, in Chicago, on January 12.
22. A meeting of a Committee on Medical Manpower, at the New York Academy of Medicine, in New York City, on January 15.
23. A luncheon meeting with officials of The Americana, in New York City, on January 17. We talked about the annual convention to be held in February.
24. A legislative dinner, in Queens County, on January 18. Members of the New York State Assembly and Senate and the House of Representatives of the United States were present.
25. A meeting to discuss the present status of Medicaid in New York, on January 29. Present were Health Commissioner Hollis S. Ingraham, Social Services Commissioner George K. Wyman, Deputy Health Commissioner I. Jay Brightman, and Drs. Wurzbach, Hughes, and Himler.

Acknowledgments. Again, your executive vice-president wishes to express his gratitude to all who have advised and helped him during the past year. We look forward to a very productive annual convention.

Respectfully submitted,
HENRY I. FINEBERG, M.D.
Executive Vice-President

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your reference committee next reviewed the annual and supplementary reports of the executive vice-president and urges each member of the House to read these reports thoroughly, since it is only in that way you can adequately appreciate the task which Dr. Fineberg continues to perform so ably. Your committee feels compelled to urge that some methods be found to eliminate some of the myriad of duties which he feels compelled to perform.

Your committee notes with pleasure the increasing efficiency of operations at headquarters. The committee feels that this is one of the major factors in the consistently improving financial status of our Society.

We feel that the Division of Communications is doing a very good job and especially note the institution of the Ad Rem bulletin boards in upstate hospitals as a splendid method of communication with the members. We hope that their use in isolated areas can be forthcoming. We further commend the field representatives for their fine job.

It is hoped that Dr. Fineberg's search for a well-qualified director of the Division of Research and Planning will soon reach fruition. We note with pleasure that we will not be losing the services of Alvina Rich Lewis to the Society, in that she will be assuming an important and much needed position in the Division of Research and Planning. One of her responsibilities will be the preparation of a complete history of the actions of the MSSNY from the turn of the century up to the present time.

The committee notes with interest that the contract with CHAMPUS has been signed and another meeting with representatives of CHAMPUS will be held on February 16, 1968, for the purpose of revising and improving some features in the contract.

In conclusion, your committee wishes to again commend the executive vice-president for the continuing excellent job which he is performing.

The House voted to adopt this portion of the reference committee report.

Board of Trustees (Annual)

To the House of Delegates, Gentlemen:

The Board of Trustees consists of the following members:

Gerald D. Dorman, M.D., *Chairman*	New York
George A. Burgin, M.D.	Herkimer
John M. Galbraith, M.D.	Nassau
John F. Kelley, M.D.	Oneida
William L. Wheeler, Jr., M.D.	New York
Waring Willis, M.D.	Westchester
James M. Blake, M.D.	Albany

On February 16, 1967, the organizational meeting of the Board of Trustees was held at The Americana following adjournment of the House of Delegates. The senior trustee, Gerald D. Dorman, M.D., of New York, was elected chairman.

Appointments were made to the Investment Committee and the War Memorial Committee. The maximum expense allowance for room and board for officers, councillors, trustees, members of the Judicial Council, and members of commissions and committees of the Society was increased from $30 to $35 per day because of price increases. This increase was recommended by the Council.

At the March 23 meeting the Trustees approved an increase of $50 in the per diem rate for the president and president-elect. This increase was recommended by the Council.

Since she was not adequately covered under our retirement plan, arrangements were made for a supplementary retirement benefit for Miss Doris Dougherty, who has served this Society long and well.

Further regular meetings of the Trustees were held in May, September, and November, and they will meet in January, 1968. A special meeting was held on July 17 to authorize the buying of a site for a permanent home for the Medical Society of the State of New York at Lake Success in Nassau County. As authorized by the Trustees pursuant to the actions of the House of Delegates, the closing of title to the property was effected on August 28. Building plans are in the hands of the Ad Hoc Committee for Our Own Building, appointed by the president.

Your chairman also attended the meetings of the Council, including the one held in Plattsburgh in June, as well as the quarterly meetings of the Council's Committee on Budget and Finance. The other Trustees have continued their practice of attending Council meetings, when possible, and have expressed their feeling that this policy is of great value in carrying out their responsibilities.

By careful limitation of expenditures and by the conservation of assets, pending official audit, it appears that we shall be able to stay "in the black" this year. However, without the increase in dues voted at the last meeting of the House of Delegates, we would face a serious deficit in 1968.

The Internal Revenue Service has not yet given us a decision on our alleged "unrelated business income," although our tax counsel, Wilkie, Farr, Gallagher, Walton, and Fitzgibbon, presented our case to them on August 17, 1966.

Our Investment Committee under Waring Willis, M.D., has invested a larger percentage of our funds in common stocks. Our land purchase necessitated the sale of somewhat less than half of the holdings in our building fund this year, and construction of our new offices will more than consume the balance of this fund.

The War Memorial Fund continues to fulfill its objectives under the chairmanship of John M. Galbraith, M.D., and requires no new funds. If it is decided to extend benefits to children of New York physicians killed in Vietnam, more funds might become necessary. So far only one New York physician, that we know of, has lost his life in that conflict, and he left no children.

The Board of Trustees are grateful for the work and devotion of our executive vice-president, Henry I. Fineberg, M.D., and his staff, in their continued dedication to the interests of the Society.

Respectfully submitted,
GERALD D. DORMAN, M.D., *Chairman*

War Memorial

To the House of Delegates, Gentlemen:

The War Memorial Committee consists of the following members of the Board of Trustees:

John M. Galbraith, M.D., *Chairman*	Nassau
George A. Burgin, M.D.	Herkimer
John F. Kelley, M.D.	Oneida

The War Memorial Committee is coming to the end of twenty years of service to children of deceased members who lost their lives as a result of World War II and the Korean War. To date, 67 students have been helped to attain their ambition of a college education—both undergraduate and postgraduate—to prepare them for many professions, ranging through medicine, nursing, architecture, dentistry, social work, teaching, and business administration.

The number of students receiving help gradually decreased, until this year, the 1967–1968 academic year, only 3 are receiving benefits, one of whom, the son of a member who died in the Korean War, entered college this year. However, there is one beneficiary who is awaiting a committee decision, a boy who is attending a preparatory school to qualify him for attendance at a college of forestry.

The decline in the number of beneficiaries whose fathers died in World War II is expected at this time, while those of the Korean War will increase. A projection showed that there will be ample funds to help them.

Each student who qualifies under the terms of the War Memorial Fund is eligible to receive $1,200 for each year that he attends an accredited college until he is twenty-five years old.

Since the cost of a college education has greatly increased over the last few years, the letters on file in our office reiterate the recipients' gratitude for the financial help given to them. Contact is maintained between the committee, and the students or their families, who report on academic progress.

The following is an approximate financial report as of December 31, 1967:

Total assessments received*	$248,630
Total interest earned*	89,612
Total benefits paid out*	253,300
Surplus of Fund, December 31, 1967	73,010
Interest earned, 1967	2,385
Payments to beneficiaries in 1967	4,400

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* Since inception of fund.

I wish to thank the members of the committee and Miss Mollie Pesikoff of the State Society staff who has assisted the committee in administering the Fund.

Respectfully submitted,
JOHN M. GALBRAITH, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your reference committee next reviewed the reports of the Board of Trustees, under the able chairmanship of Gerald D. Dorman, M.D., and we are grateful for the help which many members of the Board gave to this committee in its deliberations. We commend the action in arranging supplementary retirement benefits for Miss Dougherty as a reward for her long and devoted service.

The status of the War Memorial Fund was reviewed with much interest, and we were very impressed with the information provided us which shows a projected surplus at the end of 1973 of nearly $65,000. Your committee wishes to recommend to the Board of Trustees that it extend benefits of this fund to the children of New York physicians who may be killed in the Vietnam conflict either in a military or civilian status.

The House voted to adopt this portion of the reference committee report.

Budget and Finance

To the House of Delegates, Gentlemen:

The Budget and Finance Committee consists of the following members:

John F. Kelley, M.D., *Chairman*	Oneida
Renato J. Azzari, M.D.	Bronx
Gerald D. Dorman, M.D.	New York
John Edward Lowry, M.D.	Queens
Thomas F. McCarthy, M.D.	Bronx
Albert M. Schwartz, M.D.	New York

Following the custom initiated in 1963, the committee met quarterly on the following dates, April 27, July 20, and November 2, 1967 to review the fiscal activities for the preceding three-month period. A thorough analysis was made of the income and expenditures on a line item basis. Adjustments and revisions were made where necessary.

The revised estimated budget for the year 1967, after close of operations at September 30, 1967, reflects an excess of expenditures over income of $187,623. The actual operations through September 30, however, indicate that we are operating in the black to the amount of $54,184.

As explained in our last annual report "...sufficient appropriations are made at the beginning of each year so that a particular division or program can function without undue financial strain. During the course of the year, unanticipated occurrences tend to create savings in various line items, and therefore, although monies may be appropriated in certain areas, they may not necessarily be expended."

The difference between the estimated budget and actual operation was explained at the meeting of the Council and the Board of Trustees on November 16. It was pointed out that savings have occurred in actual operations for the following reasons:

1. Staff positions, both executive and cleri-

cal, in certain instances were unfilled for some time. The tight labor market and inability to find the suitable person for a particular position contributed greatly to the situation.

2. Certain projects that were planned for the year were not implemented for a variety of reasons, particularly in the area of public and professional relations.

3. Activities of certain committees were minimal.

Although the Budget and Finance Committee was aware that savings would occur in the above cases, it decided not to reduce the budgetary appropriations involved. If the budget estimates were cut, it would appear that, in preparing a proposed budget estimate for 1968, certain line items were being increased out of proportion, when in fact the appropriations were only being restored to the levels originally conceived.

The committee pointed out also that had all jobs been filled as projected, and had all programs and committees been operating as anticipated, the actual budgetary expenditures would have been more nearly the same as those estimated.

On November 2, the Budget and Finance Committee also met to consider the proposed budget estimate for the calendar year 1968. In order to provide maximum service to our members and to implement the mandates of the House of Delegates and Council, appropriations were made accordingly. The committee kept in mind the fact that progress had to be flavored with responsibility and provided therefore for budget estimates which in its judgment are prudent and reasonable and which will not hamper any program or division from carrying out its duties and purposes effectively.

The recommendations of the Budget and Finance Committee were presented to the Council at the meeting on November 16, 1967. The Council after discussion accepted the recommendations of the committee and referred the proposed budget estimate for the year 1968 to the Board of Trustees. On the same date, the Trustees approved the estimated budget for 1968 (Table I).

Your committee has been watching with great interest and concern the newly promulgated regulations of the Internal Revenue Service concerning taxation of so-called "unrelated business income" referred to in other reports submitted to this House. It is still too early to assess the effects of this tax on advertising income received by our JOURNAL and other publications, as well as that received from our technical exhibits, but it will undoubtedly adversely affect our financial picture in future years.

Your chairman wishes to thank the members of the committee for their earnest efforts and contributions. On behalf of the committee as a whole, he wishes to express his gratitude to Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; and Eugene S. Dombrowski, comptroller, for their prudence and dedication in managing the day-to-day fiscal affairs of the Society.

Respectfully submitted,
JOHN F. KELLEY, M.D., *Chairman*

TABLE I. Estimated budget for 1968

Income	
Dues	$1,666,000
JOURNAL advertising	345,000
JOURNAL circulation	6,000
JOURNAL reprints	20,000
What Goes On advertising	80,000
News of New York advertising	40,000
Medical Directory advertising	. . .
Medical Directory sales	50,000
Annual Convention exhibit rentals	50,000
Interest on investments	10,000
CHAMPUS	62,000
Dues collection from AMA	17,000
Relative Value Study	. . .
Miscellaneous income	. . .
TOTAL INCOME	$2,346,000
Expenditures	
Administration	$162,376
Standards of Medical Care Division	35,001
Research and Planning Division	43,574
Business Division	432,365
Communications Division	310,845
Industrial Health Division	37,160
Medical Care Division	111,236
Scientific Activities Division	151,161
Scientific Publications Division	342,193
Annual Convention	52,050
Legal Counsel	52,000
Legislative Counsel	15,000
Officers, Board, AMA delegation	83,600
House of Delegates (special committees)	5,200
Council committees	43,500
Nondivisional	225,700
TOTAL EXPENDITURES	$2,102,961
Excess of Income Over Expenditures	$243,039

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

The report of the Budget and Finance Committee was next reviewed by the reference committee. We note with pleasure that there is an anticipated budgetary surplus of $242,000. The committee hastens to recommend that this surplus be earmarked first, for satisfaction of any taxes which may be levied under the recent ruling of the Internal Revenue Service in regard to "unrelated business income," and that any and all surpluses beyond this be transferred to the Building Fund. We wish to commend Dr. Kelley and his committee for the presentation of this "black" budget.

The House voted to adopt this portion of the reference committee report.

Our Own Building

To the House of Delegates, Gentlemen:

The Ad Hoc Committee for Our Own Building is composed of the following:

Renato J. Azzari, M.D., *Chairman*	Bronx
George Himler, M.D.	New York
Ralph S. Emerson, M.D.	Nassau
Irving L. Ershler, M.D.	Onondaga
John E. Lowry, M.D.	Queens

All of the members of our Society on October 23, 1967, received a "hot line" letter giving in detail the facts concerning our acquisition of 3.9 acres of land in Lake Success, Nassau County, as the site of our own building, and in our judgment there is no necessity to repeat this information.

The chairman with the assistance of the executive vice-president immediately undertook the task of interviewing various architects in order to select this most important individual. A number of nationally known architectural firms, including the one which had designed the Levitt headquarters, were interviewed.

Your chairman is happy to report that the firm of Anthony DePace has been selected to design our building. Mr. DePace and his associates have designed a large number of school, office, and other institutional buildings in the Metropolitan New York area, including Nassau County. We expect to also retain associate architects who will perform day-to-day supervision of the construction of the building. The choice of the DePace firm was confirmed by the Building Committee on February 11, 1968, at a special joint meeting with the Board of Trustees.

In general terms we plan to construct a building of two stories and basement of approximately 20,000 square feet on each floor. The basement will be "rough" finished, permitting use if the need develops. The building will of course include Council chambers, a Board of Trustees meeting room, committee rooms of varying sizes, as well as administrative offices.

We have, through our legal counsel, William F. Martin, Esq., formally applied to the Nassau County Board of Assessors for exemption from real estate taxes. We will continue to advise you and the members of the Society periodically of the state of construction of the building.

Respectfully submitted,
RENATO J. AZZARI, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS: The following report was presented by Herbert A. Laughlin, M.D., chairman.

Your reference committee is pleased to call the attention of the House to the accomplished fact that the mandate of the House has been carried out and as of February 11, 1968, the firm of Anthony DePace has been selected as architect to design our own building. The proposed building will more than triple the space available for headquarters. We urge that the Board of Trustees continue to act with dispatch in the planning and erection of this building.

The House, after discussion, voted to adopt this portion of the reference committee report.

The House voted to adopt the reference committee report as a whole.

Medical Services

Commission on Medical Services

To the House of Delegates, Gentlemen:

The Commission on Medical Services consists of the following:

Walter Scott Walls, M.D., *Chairman*	Erie
George Rehmi Denton, M.D., *Vice-Chairman*	Albany
Herbert H. Bauckus, M.D.	Erie
Dallas E. Billman, M.D.	Steuben
Frederic W. Holcomb, Jr., M.D.	Ulster
Robert W. Hurd, M.D.	Oneida
Robert Elmer Westlake, M.D.	Onondaga

Reports of the individual committees follow, and it can readily be seen that the committees have been quite active.

The Economics Committee has been especially busy and is presently embarking on the task of setting up a new Relative Value Scale which is badly needed.

The Committee on Industrial Health is in the process of making a State-wide survey of occupational health services.

The Committee on Workmen's Compensation continues to be a busy committee with the endless adjustments of the compensation fee schedule and the relationships between doctors, carriers, and hospitals.

During the past year the activities of the various committees were reported to the Council, by the chairman or vice-chairman of the Commission, for either appropriate action or information purposes.

The chairmen and members of the various committees merit sincere thanks from the members of the State Medical Society for the time and effort they have spent on their assigned tasks.

It would be remiss not to mention the efficient services of staff members assigned to these committees, particularly, the conscientious work of George P. Farrell and Robert Katz, M.D.

Respectfully submitted,

WALTER SCOTT WALLS, M.D., *Chairman*

GEORGE REHMI DENTON, M.D., *Vice-Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee has reviewed the report of the chairman of the Commission on Medical Services and feels that the commission should be commended for its work and endorses his report.

The House voted to adopt this portion of the reference committee report.

Industrial Health

To the House of Delegates, Gentlemen:

The following is the report of the Committee on Industrial Health. The Committee consists of the following members:

Dallas E. Billman, M.D., *Chairman*	Steuben
James J. Brandl, M.D.	Erie
Sam R. Burnett, M.D.	Schenectady
Peter J. DiNatale, M.D.	Genesee
*Nicholas I. Klimow, M.D.	Chemung
Herbert F. Wendelken, M.D.	Kings

During the twelve-month period since its last report to the House of Delegates, the committee met on three occasions.

The committee considered various problems facing the practice of occupational medicine in our State at this time. Preliminary steps have been taken for a State-wide survey of industrial medical resources to be preceded by a pilot study in a representative region of our State.

The committee endorsed the program of the American Medical Association's Council on Occupational Health to set up a Registry of Information on Adverse Reactions Resulting from Occupational Exposure. The program was publicized to our membership in the *News of New York.*

We are continuing our program of writing short pertinent reports on topics relating to occupational medicine which we feel are of interest to all physicians. An article on "Medical Certificate in Industry" was prepared for publication in the NEW YORK STATE JOURNAL OF MEDICINE by Robert Katz, M.D., director, Division of Industrial Health and Workmen's Compensation, and James J. Brandl, M.D., a member of the committee. To stimulate activity in the county medical societies' industrial health committees, detailed reports of scientific meetings attended by committee members and the director are now sent to all county society chairmen, in the hope that they will follow-up topics of special interest to them by obtaining further information from the Division of Industrial Health and Workmen's Compensation or directly from the authors or panelists.

A survey of source materials to study economic advantages of industrial medical programs did not yield conclusive results because of lack of available data or the unwillingness of those solicited for information to participate in such a survey. While the need for information was readily acknowledged by all parties, no one was willing to disclose results which may not come up to anticipation or reputation, even though such findings could lead to recommendations designed to improve procedures and to pave the way for a joint approach to the solutions of the problems.

The director of the division was invited to participate as a guest lecturer on three orientation symposia sponsored by the American Management Association for medical directors, industrial nurses, personnel directors, and safety managers. These symposia have shown that there is a marked increase in interest by industrial management in the health and welfare of their employes.

The director had several informal conferences with managers of employe benefit programs of national corporations who have sought guidance in setting up and maintaining adequate programs for their firms.

Detailed reports of the following meetings were prepared by the director and distributed as indicated in this report: tri-state meeting of the American Industrial Hygiene Association; joint meetings of the New York State Society of Industrial Medicine, Inc., and the Section on Occupational Medicine of the New York Academy of Medicine; annual meeting of the Industrial Medical Association; the 27th Congress on Occupational Health; and the third annual joint meeting of the American Industrial Hygiene Association, Health Physics Association, and the New York State Society of Industrial Medicine, Inc. The director also attended the Institute for Physicians in Industry held annually at Columbia University School of Public Health and Administrative Medicine, several meetings of the New York County Medical Society's Committee on Industrial Medicine, and spoke before the New York Association of Radiology Technicians.

In the course of a visit of a group of Swiss physicians to the State Medical Society headquarters office, it was interesting to learn that occupational health services, as known in the United States, are relatively rare in Switzerland where the emphasis is still on the treatment of industrial injuries, rather than on the prevention of industrial accidents and occupational diseases.

The participation of several county and State medical society committee chairmen in the meeting of the American Medical Association's Council on Occupational Health which preceded the 27th Congress on Occupational Health, may be ascribed directly to improved communications between the State Medical Society's committee and the county medical society committees. Many valuable recommendations made at that meeting will be put into action by our committee at a future date.

The director was encouraged to broaden the program of employes' health services for the headquarters staff, which has again participated to a great extent in a voluntary program of vaccination against influenza.

The committee is grateful for the tireless efforts of the director of the Division of Industrial Health and Workmen's Compensation, Robert Katz, M.D., and his administrative assistant, Miss Alice E. Wheeler, and commends them for their continued readiness to follow through in the fulfillment of the committee's program.

Respectfully submitted,
DALLAS E. BILLMAN, M.D., *Chairman*

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* Deceased.

Report of Reference Committee on Medical Services: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the report of the Industrial Health Committee and commends the efforts of this committee under the chairmanship of Dallas E. Billman, M.D., and Robert Katz, M.D., director of the Division of Industrial Health and Workmen's Compensation.

The House voted to adopt this portion of the reference committee report.

Labor Health Facilities

To the House of Delegates, Gentlemen:

The following is the report of the Special Committee on Labor Health Facilities.

The committee members are as follows:

William H. Foege, M.D., *Chairman*	New York
Theodore Rosenthal, M.D.	New York
Louis Venet, M.D.	New York

The Special Committee on Labor Health Facilities has continued its efforts to establish a greater harmony between organized labor and organized medicine. A new edition of the questionnaire originally circulated in 1964 was sent to the various labor health centers. This included a group of questions proposed by one of the centers to assist in establishing a uniform vacation policy for the center.

In spite of our attempt to cooperate with the centers, the response to the questionnaire was very poor, in contrast to the excellent response in 1964.

Several meetings of the committee were held to consider the information which might be obtained from the forms which were returned, but the data were insufficient to warrant any conclusions. It seemed, however, that there had been some decrease in utilization of the labor health centers as compared to 1964.

In another attempt to establish communications with the labor health centers, the committee is arranging a luncheon meeting at which Walter Sheerin, executive director of the medical care subcommittee of the New York City Central Labor Council AFL-CIO, will be invited to speak on a topic of interest to the medical directors and business administrators of the labor health facilities. It is hoped by this means to establish a pattern of frank discussion of mutual problems.

During the past year there has been no indication that the air of suspicion which pervades the relationship between labor and medicine has been dispelled. However, this committee, realizing the significance of the mutual problems of labor and medicine and the importance of a cooperative approach based on understanding and trust, will continue in its efforts to achieve these goals.

Respectfully submitted,
William H. Foege, M.D., *Chairman*

Report of Reference Committee on Medical Services: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the report of this committee and commends the work of the committee under the chairmanship of William H. Foege, M.D.

The House voted to adopt this portion of the reference committee report.

Economics

To the House of Delegates, Gentlemen:

The Economics Committee is composed of the following:

Robert E. Westlake, M.D., *Chairman*	Onondaga
Carl Ackerman, M.D.	Bronx
Jeff J. Coletti, M.D.	Nassau
Gerald L. Glaser, M.D.	Monroe
Robert George Hicks, M.D.	New York
Adelaide Romaine, M.D.	New York
Wallace M. Sheridan, M.D.	Westchester

The committee held four meetings during the year, March 30, April 26, June 21, and September 27, 1967.

At the March meeting plans for the coming year were developed. The committee recommended that county society economics committee chairmen organize in order to send a liaison representative from each district branch to all meetings of the State Society's Economics Committee.

Relative Value Scale. In accordance with a recommendation of the committee at its meeting in March, notices of the April 26 meeting of the Economics Committee were sent to the medical economics chairmen and presidents of the county medical societies and of all specialty groups. At this meeting, the chairman welcomed 35 representatives and explained that the committee was embarking on a program for the revision of the Relative Value Scale through consultation with all county medical societies and specialty groups.

A letter was presented from Henry I. Fineberg, M.D., stating that the Reference Committee on Medical Services had recommended at the 1967 House of Delegates "that the Council establish a bureau for the maintenance of a continuing study of the Relative Value Scale and that this bureau be staffed and financed by the State Medical Society." The Council referred this to the Committee on Economics with the request that the committee report to the Council regarding the cost and other details of such a bureau.

Dr. Westlake pointed out that the "name of the game" is "freedom" and that each specialty group and county medical society will have an opportunity to present to the committee recommendations for the revision of their section of the Relative Value Scale. He said that at this point the most important step is to have groups present a clear description of each service performed.

The chairman requested that the specialty groups report back to the committee by August 31, 1967, with definite descriptions of procedures so that there is no misunderstanding when surveys are made.

The question was raised, "Where would the general practitioner fit into the picture?". The chairman explained that the Relative Value Scale is composed of definitions of services performed, not of physician characteristics.

The committee authorized its chairman to work with the Social Service Division of the Syracuse University Research Corporation on a proposal for statistical study of the Relative Value Scale.

At the June meeting, the revision of the Relative Value Scale was discussed at considerable length. The chairman mentioned that Blue Shield has a huge stake in this and if the State Medical Society cannot carry the financial end of it Blue Shield might fund the project, particularly since an outside organization is developing the prospectus. Heretofore, organized medicine has not had the necessary documentary evidence that this survey can produce.

The chairman presented to the committee a proposal of the cost of a Relative Value Scale study by the Syracuse University Research Corporation, and it was recommended that this be brought to the attention of the president and the Budget Committee.

The chairman presented a prospectus by the Syracuse University Research Corporation to Dr. Fineberg on September 20, 1967, outlining, in detail, the development of a Relative Value Scale for the practicing physicians in New York State. Dr. Fineberg presented the prospectus to the officers, councillors, and trustees of the State Medical Society on September 22, 1967.

At the September meeting, 25 representatives from county medical societies and specialty groups attended. The chairman spoke of the responsibility given to the Economics Committee of developing a "usual and customary" fee schedule. He requested the county medical societies and specialty groups to give the committee an up-to-date set of descriptive terms. A representative of the Syracuse University Research Corporation explained that it planned to make a "pilot" study first and then to follow with a regular survey in about six months.

Several county medical societies reported that they have completed a relative value study and three of the specialty groups also reported completion of such a study.

Retirement Plans. A Keogh Retirement Plan was discussed at the March meeting, and it was felt that county medical societies would want no State activity at this time.

Dependents' Medical Care. The matter of the review of the Dependents' Medical Care claims was discussed at the March meeting, and a subcommittee was appointed to review these claims as often as necessary.

At the September meeting a letter, dated July 27, 1967, from Brigadier General Norman E. Peatfield, MC, U.S. Army, Executive Director, Office of the Surgeon General, Denver, Colorado, addressed to Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, was presented, stating that medical societies acting as fiscal agents for the payment of physicians' bills is to be discontinued on the termination of the present contracts. The Society's present contract terminates January 31, 1968.

During the year, the subcommittee reviewed approximately 400 claims which required special consideration and recommendations to the Office for Dependents' Medical Care for authorization. The recommendations of this committee were approved by the Office for Dependents' Medical Care, without exception. The committee and George P. Farrell, administrative officer, have experienced fine cooperation from Colonel William H. Hayes, contracting officer, and his staff.

Acknowledgments. Your chairman wishes to express appreciation to the members of the committee for attendance at meetings and the splendid cooperation achieved in dealing with rather complicated and detailed matters. The chairman also wishes to thank George P. Farrell, administrative officer, and his secretary, Mrs. Clementine Thompson, for their fine cooperation in preparing and sending notices of meetings to county medical societies and specialty groups. Mr. Farrell's advice and guidance was of great help to the committee.

Respectfully submitted,
ROBERT E. WESTLAKE, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the report of the Economics Committee which included the Relative Value Scale, the Retirement Plan, and Dependents' Medical Care. The reference committee commends the chairman, Robert E. Westlake, M.D., and George P. Farrell, administrative officer, for their close attention to the many varying problems coming before the Economics Committee.

The House voted to adopt this portion of the reference committee report.

Liaison with Veterans Administration

To the House of Delegates, Gentlemen:

The Subcommittee on Liaison with the Veterans Administration, of the Economics Committee, consists of the following:

Herbert H. Bauckus, M.D., *Chairman*	Erie
James L. Palmer, M.D.	Broome

On July 28, 1967, S. A. Frankenthaler, M.D., clinic director of the Veterans Administration Regional Office, 252 Seventh Avenue, New York, New York, addressed a letter to the Medical Society of the State of New York regarding amendments to the fee schedule for medical services under the agreement with the Veterans Administration, as follows:

Delete item numbers 9051 and 9052; substitute the following:

9050	Psychotherapy, full session, 50 minutes, office, hospital, or home	5.0
9051	Psychotherapy, half session, 20 to 25 minutes, office, hospital, or home	3.0
9052	Psychotherapy, limited session, 5 to 15 minutes, office, hospital, or home	1.5

In June, 1967, a letter was directed to the members of the medical profession by the Chief of Outpatient Services, Veterans Administration, calling their attention to the implementation of a simplified procedure beginning July 1, 1967, for authorizing each eligible veteran to obtain outpatient medical services from a physician of his choice. An outpatient medical treatment identification card issued to the veteran will serve as his authority to obtain this care.

A letter dated September 25, 1967, addressed to Henry I. Fineberg, M.D., executive vice-president, from Edward C. Rozek, M.D., president, Medical Society of the County of Erie, called his attention to the fact that the fee schedule negotiated by the Medical Society of the State of New York with the Veterans Administration for the latter's program for medical care for veterans in the home or office by their personal physician was rejected as "substandard" by the comitia minora on September 19, 1967, on recommendation of its economics committee.

We are indebted to Walter Scott Walls, M.D., chairman of the Commission on Medical Services, and Robert E. Westlake, M.D., chairman of the Economics Committee, for their support.

The subcommittee expresses its appreciation to George P. Farrell for his assistance.

Respectfully submitted,
HERBERT H. BAUCKUS, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the work of this committee and commends Herbert H. Bauckus, M.D., for his untiring efforts on behalf of this committee.

The House voted to adopt this portion of the reference committee report.

Medical Care Insurance

To the House of Delegates, Gentlemen:

The Committee on Medical Care Insurance is composed of the following:

Robert W. Hurd, M.D., *Chairman*	Oneida
Lucius H. Bugbee, Jr., M.D.	Chautauqua
Robert D. Fairchild, M.D.	Onondaga
Francis J. Loperfido, M.D.	Bronx
John D. Naples, M.D.	Erie
Harry John Mellen, M.D.	Albany
Philip M. Standish, M.D.	Ontario
Kurt Rosenberg, M.D.	Queens

The committee held two meetings during the year, May 11 and November 9.

Chautauqua Region Medical Service, Inc At the May meeting an ad hoc committee was appointed to implement the recommendation of the Reference Committee on Medical Services regarding the resolution submitted by the Medical Society of the County of Chautauqua withdrawing as the sponsoring and approving medical society for Chautauqua Region Medical Service, Inc., Jamestown, which was approved by the county society at its meeting on March 9, 1966.

Your chairman appointed Robert W. Hurd, M.D., Utica, and John D. Naples, M.D., Buffalo, to represent the State Medical Society. The Chautauqua County Medical Society appointed Myron B. Franks, M.D., and Lewis F. Kibler, M.D., as its representatives, and by mutual agreement, Carlton E. Wertz, M.D., was appointed chairman.

The ad hoc committee met in June to consider this matter in accordance with the standards outlined in paragraph 2 of the Standards for Approval by the Medical Society of the State of New York of New York State Medical Care Plans. At this meeting, Myron B. Franks, M.D., an ophthalmologist, and Lewis F. Kibler, M.D., an anesthesiologist, both nonparticipating physicians in the plan, spoke on the Chautauqua County Medical Society's resolution of March 9.

Dr. Hurd presented a résumé of what had transpired from the time of the March meeting, which included a report from Robert Johnson, managing director of Chautauqua Region Medical Service, Inc. The committee concluded that inasmuch as 83 per cent of the physicians of the Chautauqua Region Medical Service, Inc. are still participating in the plan, after more than three years of dispute, there must be a small group of dissident physicians who voted disapproval of the plan, but who do not represent the feelings of the majority of the physicians.

The ad hoc committee recommended provisional approval for one year, subject to review at that time, and called to Dr. Franks's attention that there is existing machinery for working out such problems and urged him and his society to use this means of solving their differences. The committee commended Dr. Franks for keeping this disagreement private and out of the news media.

Genesee Valley Medical Care, Inc. At the November meeting the committee considered the following resolution submitted by the Medical Society of the County of Monroe:

> WHEREAS, Standards for Approval of New York State Medical Care Plans have been promulgated and supported by the Medical Society of the State of New York and its component county societies; and
>
> WHEREAS, It is the opinion of the Medical Society of the County of Monroe that Genesee

Valley Medical Care, Inc., has failed to maintain these standards; and

Whereas, Genesee Valley Medical Care, Inc., has failed to provide the greatest possible scope of benefits to its subscribers by refusing to consider inclusion of outpatient radiology services and other suggested extensions of coverage in its basic contract; and

Whereas, Genesee Valley Medical Care, Inc., has restricted free choice of physician by virtue of their unwillingness to pay subscribers 100 per cent of parity unless the services of a participating physician are obtained, thus holding an economic club over the heads of both physician and patient, and leaving no available alternative to arbitrary Blue Shield contractual arrangements; and

Whereas, There are other inequities which have not been resolved by negotiations during the last several months, including, but not limited to, the right to bill Medicare beneficiaries directly, and a reasonable resignation period for participating physicians; now therefore be it hereby

Resolved, That the Medical Society of the County of Monroe, Inc., withdraw its approval of Genesee Valley Medical Care, Inc., until such time as these matters have been satisfactorily resolved; and be it further

Resolved, That the Medical Society of the County of Monroe, Inc., request the Medical Society of the State of New York to initiate appropriate procedures directed at possible withdrawal of its approval of Genesee Valley Medical Care, Inc.

Your chairman pointed out that after the resolution was received in June, several meetings were held by the ad hoc committee of the county medical society with representatives of Genesee Valley Medical Care, Inc. Also correspondence received from the county society and Genesee Valley Medical Care, Inc., in response to a letter from the chairman, showed that 9 out of the original 11 changes requested by the county medical society have been mutually agreed on and that there will be further negotiation on the two remaining questions.

Recommendations. Your committee discussed the report of the ad hoc committee and approved its recommendation that one-year provisional approval be given by the Medical Society of the State of New York to the Chautauqua Region Medical Service, Inc.

The committee also recommended that a letter be sent by your chairman to all members of the State Medical Society calling their attention to the action taken by the ad hoc committee and to the fact that the machinery necessary to resolve such differences is available within their county medical societies.

Medical Credit Cards. The committee considered a letter referred to it by Henry I. Fineberg, M.D., executive vice-president, regarding medical credit cards.

Joseph G. Zimring, M.D., chairman of the Committee on Ethics, was invited to speak on "Medi-Card Inc." Dr. Zimring pointed out that this is a credit card organization that has been trying to get the approval of the State Medical Society for the past two years. The committee voted to request the Committee on Ethics to study, in depth, the ethics involved in the payment of medical fees with credit cards and to recommend a policy to the Council.

Acknowledgments. Your chairman wishes to express appreciation to the members of the committee for their cooperation, to George P. Farrell for his assistance and guidance, and to Mrs. Clementine Thompson for her secretarial assistance.

Respectfully submitted,
Robert W. Hurd, M.D., *Chairman*

Report of Reference Committee on Medical Services: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the annual report of this committee and commends its chairman, Robert W. Hurd, M.D., and his committee for their efforts during the past year.

The House voted to adopt this portion of the reference committee report.

Bureau of Medical Care Insurance

To the House of Delegates, Gentlemen:

The Bureau of Medical Care Insurance operates under the direction of the Economics and Medical Care Insurance Committees, components of the Commission on Medical Services. George P. Farrell is director of the Bureau of Medical Care Insurance and administrative officer of CHAMPUS (Public Law 614), Dependents' Medical Care Program.

Your director serves as adviser to these committees and also to the Subcommittee on Liaison with the Veterans Administration.

Meetings. Your director has attended all meetings of the committees and has also attended the following meetings:

March 2 and 3, and October 16 and 17, 1967: Blue Shield conferences in Washington, D.C.

March 20, 1967: Spoke to the Disabled Officers Association, Empire Chapter, at the Gramercy Park Hotel, New York City.

April 11, 1967: Spoke before the New York Chapter of the American Red Cross at 150 Amsterdam Avenue, New York City, and on October 19, 1967, the Chemung County Chapter of the American Red Cross at Watkins Glen on Public Law 614.

Spoke before the following Medical Assistants conferences: October 31, 1967, Nassau County Medical Society; January 24, 1968, Manhattan; January 31, 1968, Bronx; February 8, 1968, Richmond.

Attended a workshop meeting at the Office for Dependents' Medical Care, in Denver, Colorado, from May 3 to 6, 1967.

August 25, 1967: Walter S. Walls, M.D., chairman of the Commission on Medical Services, and your director met with Colonel William H.

TABLE I. Membership in Blue Shield and Blue Cross Plans

	Membership		Per Cent of	Increases	
Location	Blue Shield	Blue Cross	Members	Blue Shield	Blue Cross
New York	5,250,000	7,575,672	69.30	244,781	37,329
Buffalo	864,573	888,824	97 27	18,680	15,519
Rochester	725,869	745,133	97.41	34,876	35,070
Albany	390,122	424,843	91.82	10,501	15,220
Syracuse	319,410	431,568	74.01	16,551	5,817
*Utica	278,060	261,787	95.07	1,409	2,311
Jamestown	46,204	53,636	85.77	1,894	−2,564
Watertown	...	30,644	...	...	468
	7,874,238	10,412,107		328,692	109,170

* Utica Plan serves Watertown area for Blue Shield members. Watertown Blue Cross members added to Utica Blue Cross members in calculating percentage.

Hayes, contracting officer for the Civilian Health and Medical Program of the Uniformed Services, of Denver, Colorado, and Colonel McKenzie from the office of the Deputy Assistant Secretary of Defense, Washington, D.C., to discuss reconsideration of continuing the contract under the CHAMPUS program.

December 4, 1967: Met with Colonel William O. Prettyman, Jr., and Lt. Colonel George M. McMartin, Assistant Inspectors General, to review the manner of operation in processing physicians' claims and to discuss other matters pertinent to the over-all Uniformed Services Health Benefits Program.

Progress Reports. Because of the change in the annual meeting date from May to February, the Annual Progress Report on New York State Blue Shield Plans will be prepared and mailed to county medical societies and others, in the near future.

Membership as of December 31, 1967, in New York State Blue Shield Plans (subscribers and dependents) was 7,874,238 (Table I). Claims paid for period ending December 31, 1967, amounted to $118,319,903.40, covering 3,557,766 claims.

Medicare. On December 21, 1967, Brigadier General Norman E. Peatfield, executive director of the CHAMPUS program, notified Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, that the Department of Defense had reviewed its position regarding the discontinuance of the contract, as outlined in his letter of July 20, 1967, and was pleased to state he was authorized to renew the contract with the Medical Society of the State of New York. The contract was renewed on January 26, 1968, for the period beginning February 1, 1968, and ending January 31, 1969.

The total amount paid physicians for the year ending December 31, 1967, was $1,125,247, representing 13,850 claims for an average of $81.24 per claim.

For the period from January 1, 1957, through December 31, 1967, 153,471 claims had been paid to physicians in the total amount of $11,414,183, for an average of $74.39 per claim.

During this period 12,812 physicians participated in the program, and 778 new physicians provided service to dependents in 1967.

New Uniformed Services Health Benefits Program. After one full year's exposure to the program, including in-hospital and outpatient care both for active duty members and retirees and their dependents, and deceased members of the uniformed services, the average daily work load has increased considerably. An unusual amount of time is required in establishing deductibles ($50 for an individual and $100 for a family) before outpatient benefits can be provided. An applicant usually submits an average of 15 drug bills and other receipted bills before they qualify for a deductible.

Under the expanded program we are also responsible for the payment of private duty nursing in the hospital, practical duty nursing in the home, outpatient care in the hospital, ambulance service, artificial eyes and artificial limbs and the rental of wheel chairs, hospital beds, and so on, also payment for services provided the physically and mentally handicapped in private, public, and state institutions.

Due to the difficulty in obtaining additional personnel to meet this increased work load, a delay was caused in the payment of claims.

Conclusion. I wish to express my appreciation to Alric Fischle and the members of his staff for the efficient and conscientious effort put forth in administering the Medicare program during the past year, also to Mrs. Clementine Thompson, secretary to your director.

Respectfully submitted,
GEORGE P. FARRELL, *Director*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the annual report of the Bureau and commends George P. Farrell, director of the Bureau, for the accomplishments of this Bureau.

The House voted to adopt this portion of the reference committee report.

Workmen's Compensation (Annual)

To the House of Delegates, Gentlemen:

The following is the report of the Council Committee on Workmen's Compensation and of the Division of Workmen's Compensation.

The committee consists of the following members:

Frederic W. Holcomb, Jr., M.D., *Chairman*	Ulster
Robert B. Bryant, M.D.	Onondaga
Peter A. Casagrande, M.D.	Erie
Wyllys A. Dunham, M.D.	Schenectady
Thomas M. Flanagan, M.D.	Chenango
Warren W. Leeds, M.D.	Westchester
Albert M. Schwartz, M.D.	New York
Raymond F. Smith, M.D.	Nassau
Robert E. Wolf, M.D.	Monroe

Since its last report to the House of Delegates, the committee has met on two occasions to consider problems relating to workmen's compensation matters and to advise the Medical Society's representatives on the Workmen's Compensation Board's Advisory Committee for the Medical Fee Schedule and Allied Problems. The committee gave serious consideration to all complaints and suggestions referred by members as individuals or as representing various specialty groups.

Inconsistencies between workmen's compensation and other third-party medical care programs became evident and were the subject of actions taken or pending as indicated below.

Upward revision of many items in the fee schedule was recommended to the Chairman of the Workmen's Compensation Board on approval by the Council of the Medical Society of the State of New York. These recommendations are at the time of this report under consideration by all interested parties. A revision of the MR55 procedure dealing with request for information regarding unpaid medical bills for which no objection has been filed is under review by the administrative staff of the Workmen's Compensation Board. Problems dealing with bills submitted by hospital-based physicians are under close scrutiny and may well be the subject of clarification in the near future. Difficulties encountered by attending physicians, based on the selection of medical inspectors by certain insurance carriers, were brought to the attention of the New York Compensation Insurance Rating Board through the Advisory Committee.

Medical society representatives attended 11 meetings of the Advisory Committee during the past year and participated in recommendations to the Chairman of the Workmen's Compensation Board dealing with the issues of direct supervision of the Department of Physical Medicine and Rehabilitation by authorized physiatrists; certain medical manipulative procedures; the enforcement of Medical Rule 7 covering information from the preceding physician by a superseding attending physician and Medical Rule 9 covering care of patients with compensable disorders by registered physical therapists on direction of the treating physician. Consideration was also given to the rendering of follow-up care in hospital emergency rooms.

The Advisory Committee recommended to hold further consideration of resolution 67–79 of the House of Delegates in abeyance and to defer action thereon, while the administrative staff of the Board attempts to correct the gap in communications which was the subject matter of the resolution. On request, the Workmen's Compensation Board will notify the attending physician or consultant of the status of any case under his care.

Fee Schedule. The applicability of the current fee schedule after July 1, 1967, to all cases regardless of the date of accident was brought to the attention of all physicians through publicity in *News of New York.* Pending completion of a study of usual and customary fees, action to bring the workmen's compensation fee schedule into line with the Relative Value Scale adopted by the Medical Society of the State of New York has been held in abeyance. The revision of certain items found by the committee to be grossly inadequate has been recommended as previously indicated. In view of changes recently initiated in the practice of medicine related to emergency care, certain items in the schedule will require special clarification, particularly those pertaining to the first visit in the hospital and follow-up care if the physician's practice is limited to the hospital emergency room.

Legislation. Strong opposition by the Medical Society of the State of New York to the inclusion of chiropractors under the Workmen's Compensation Law was expressed on several occasions. The committee has recommended to the Committee on State Legislation that it introduce in the Legislature and support various amendments designed to improve patient care and to eliminate some objectionable features currently contained in the Workmen's Compensation Law. Items covered include the extension of the definition of "compensation" to cover medical care, the elimination of the requirement for authorization under the Workmen's Compensation Law to certify claimants for benefits under the Disability Benefits Law, the reimbursement of payments to physicians by compensation claimants, and the addition of interest at the legal rate for payments withheld for an unnecessarily long time interval.

The director attended the public hearing of the Joint Legislative Committee on Industrial and Labor Conditions and a full day's session devoted to consideration of the labor and workmen's compensation laws sponsored by the New York Chamber of Commerce.

Education. As in previous years the *News of New York* was utilized to highlight activities in workmen's compensation of general interest. In addition to the item relating to the fee schedule, physicians were urged to comply with the provision of transmitting information to succeeding physicians as required by law and Medical Rule 7. They were also advised of the increase in the statutory minimum fee for the arbitration of medical bills from $2.00 to $5.00 which became effective April 21, 1967. The awarding of a plaque and citation to the Chairman of the Workmen's Compensation Board was also reported in the March, 1967, issue of *News of New York* together with a photograph of General Solomon E. Senior, Chairman of the Workmen's Compensation Board for the State of New York. The award was made for his "vision, initiative, and leadership" which has "ensured the availability of the finest medical care to the workers of the Empire State."

The director participated as guest speaker in three symposia sponsored by the American Management Association for medical directors, industrial nurses, and personnel and safety managers. His presentation stressed medical as well as administrative problems in workmen's compensation. The director chaired the Section on Medical-Legal and Workmen's Compensation Matters at the 1967 Annual Meeting of the State Medical Society. A panel discussion on problems in workmen's compensation involving third-party actions held the interest of over 200 persons attending the meeting.

The director was invited to address a meeting of the Nassau and Suffolk County Medical Assistants Association on a topic of medical forms under workmen's compensation and disability benefits laws. This subject matter was also covered by the director during his annual guest lecture to the Rockland County Community College in the Course for Medical Assistants.

Meetings and Liaison. The director attended several meetings of the American Academy of Compensation Medicine and was invited to participate in meetings of their board of governors.

The Workmen's Compensation Board's Medical Society invited the director to their annual meeting and to a retirement dinner for three of their members. The director was also present at a full day's session of the Self-Insurers Association devoted to problems in workmen's compensation.

At the opening of a new district office of the Workmen's Compensation Board in Nassau County, the director represented the Medical Society of the State of New York. The opening ceremonies included an address by the Chairman of the Workmen's Compensation Board and by the Governor of the State of New York. The director also participated in the planning committee for an all-day symposium on Rehabilitation in Workmen's Compensation, sponsored by the Central Labor Council of the AFL-CIO, and reported on the symposium, which was held in New York City during the month of June, to the committee members and to the chairmen of workmen's compensation committees throughout the State. He also attended the annual meeting of the American Medical Association and held numerous informal meetings with officials of the Workmen's Compensation Board, the New York Compensation Insurance Rating Board, and representatives of labor health facilities.

Arbitration. During the preceding twelve months, 97 arbitration sessions were held throughout the State; 65 were in the New York City area. The relative increase in the number of calendars in the upstate region may be due to the unfamiliarity of certain carriers with alternatives to the settlement of disputes involving medical bills or to progressive unwillingness of claims examiners to settle cases following an upward revision of the fee schedule. A total of 2,757 cases were submitted for arbitration. Disputed medical bills amounted to $426,965.51. Postponements deferred the settlement of 406 cases; 1,581 cases were settled by arbitration; 770 cases were settled without hearing, and 45 cases were brought to amicable conclusion by direct negotiation with the assistance of our Bureau of Workmen's Compensation.

The committee is pleased to commend Robert Katz, M.D., director of the Division of Industrial Health and Workmen's Compensation, and his administrative assistant, Miss Alice E. Wheeler, for their exemplary devotion to a difficult task and the dedicated service which they rendered.

Respectfully submitted,

FREDERIC W. HOLCOMB, JR., M.D., *Chairman*

Workmen's Compensation (First Supplementary)

To the House of Delegates, Gentlemen:

Since submission of the annual report, negotiations for revision of the fee for certain listed procedures have continued. At the November, 1967, meeting of the Workmen's Compensation Board's Advisory Committee for the Medical Fee Schedule and Allied Problems, the carriers and self-insurers offered a 7.5 per cent increase on approximately one half of the items listed in the Medical Society's proposal. The members of the committee were polled by letter ballot on the counter proposal of the insurance carriers and self-insurers. The majority of the members were dissatisfied with the 7.5 per cent increase offer and submitted recommendations of their own. A composite of the new recommendations received was submitted at the next meeting of the Advisory Committee in December, 1967. It consisted of a request for an increase of 15 per cent on all the items contained in the original proposal except for lines 2050 and 2053 of the fee schedule, for which no compromise offer was made.

The Claims Committee of the New York Compensation Insurance Rating Board met with the representatives of the Associated Industries and the Self-Insurers Association. The report of this meeting was presented to the Advisory Committee on January 4, 1968. Carriers and self-insurers agreed to a 15 per cent increase covering all items in our proposals but recommended changes in the items listed below, as follows:

2050—Excision of intervertebral disk—to be increased approximately 25 per cent to $360 with a twelve-week aftercare period.

2053—Excision of intervertebral disk with spinal fusion (one surgeon) increased 19 per cent to $480 and twenty-six weeks aftercare.

2054—By neurosurgeon and orthopedist—increased 15 per cent to $529 and twenty-six weeks aftercare.

While the aftercare periods are longer than those heretofore listed in the Workmen's Compensation fee schedule, they are equal to those adopted in the Relative Value Scale of the Medical Society of the State of New York (see items 0634, 0639.)

The terms of the revision were reported to and accepted by the Council of the Medical Society of the State of New York. With the concurrence of the Medical Society's representatives to the Workmen's Compensation Board's Advisory Committee, a unanimous recommendation will be forwarded to the Chairman of the Workmen's Compensation Board. It is anticipated that the increased fees will go into effect July 1, 1968, allowing ample time for consideration by the Chairman and his Advisory Council and for filing with appropriate State agencies.

The committee wishes to commend our representatives to the Advisory Committee, George Himler, M.D., Carl F. Freese, M.D., and Robert Katz, M.D., for their diligent efforts in this matter.

Respectfully submitted,

FREDERIC W. HOLCOMB, JR., M.D., *Chairman*

Workmen's Compensation
(Second Supplementary)

To the House of Delegates, Gentlemen:

It has come to the attention of the Committee on Workmen's Compensation that a legislative amendment has been introduced (Assembly Int. 2132, Senate Int. 1608) to change Section 13–h of the Workmen's Compensation Law dealing with medical care rendered at wholly tax-supported hospitals.

The amendment is designed to exempt Veterans Administration hospitals from the provisions of this section of the law.

The committee can see no reason why preferential treatment shall be afforded to Veterans Administration hospitals operated by the Federal government and therefore recommends that a statement in opposition to this amendment to Section 13–h of the Workmen's Compensation Law be transmitted to the chairman and members of the Joint Legislative Committee on Industrial and Labor Relations.

Respectfully submitted,

FREDERIC W. HOLCOMB, JR., M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee took note of the annual report and supplementary reports of the Workmen's Compensation Committee under the chairmanship of Frederic W. Holcomb, Jr., M.D., and Robert Katz, M.D., director of the division, and commends them for their efforts in obtaining an increase in certain items in the Workmen's Compensation fee schedule and for its position on the amendment to Section 13–h of the Workmen's Compensation Law to exempt Veterans Administration hospitals from the provisions of this section of the law.

The House voted to adopt this portion of the reference committee report.

Proposed Health Insurance Law

To the House of Delegates, Gentlemen:

This committee is made up of the following members:

Ralph S. Emerson, M.D., *Chairman*	Nassau
John Lee Clowe, M.D.	Schenectady
George Himler, M.D.	New York
Herbert E. Joyce, M.D.	Erie
Eli A. Leven, M.D.	Monroe
Edward Siegel, M.D.	Clinton
Wallace M. Sheridan, M.D.	Westchester
Robert W. Smith, M.D.	Broome
Robert E. Westlake, M.D.	Onondaga

The committee, appointed by Frederick A. Wurzbach, Jr., M.D., president, and confirmed by the Council at its May meeting, swung into action shortly after its formation. Four committee meetings were held; critiques of proposed laws were drawn up and widely distributed; numerous communications were sent to county medical societies, including a poll; and a detailed report of the committee's activities, including its conclusions and recommendations, was submitted to the Council.

Since a complete review of the committee's work and findings was made to the Council and is a matter of record easily accessible to members of this House, this report will be restricted to a brief synopsis of the committee's activities.

Committee Charge. The committee was charged with the responsibility to: (*a*) conduct a poll of the physicians of New York State to determine if they favor the philosophy of a compulsory or universal health insurance bill, and if they do, under what conditions, and (*b*) make recommendations to the Council regarding the basic principles which are essential elements of such legislation, and if the Council does not approve of the philosophy of comprehensive or universal health insurance, make recommendations concerning the State Society's position on this proposed program.

General Critique of 1967 Bill. Your committee appreciated the opportunity to conduct a study of one of the broadest health insurance coverage programs ever presented in this State, namely, S. 4268 (1967), An Act to amend the Workmen's Compensation Law, the insurance law, and the social welfare law, in relation to health insurance benefits for covered employes. While Medicaid has a potential of a few million citizens, this compulsory or universal health insurance bill was much more comprehensive and would have affected 90 to 95 per cent of the working population, if Medicaid and Medicare were included. Since the delivery of quality medical care to the people of this State is the concern and responsibility of the medical profession, your committee conducted an in-depth study of this proposal.

While the intent of the bill was laudable, its many defects made it unacceptable to the medical profession in New York State.

To amend the Workmen's Compensation Act and include this bill under a new article to be called 9A would be a serious mistake. The Workmen's Compensation Act as currently administered is obsolete, burdened with red tape, saddled with an antiquated fee schedule, a system of inefficient processing of claims, and entangled with a maze of bureaucratic legal interpretations. The Workmen's Compensation Board is not geared to the scientific, technologic, or commercial era of 1967.

The proposed law did not provide a safe guarantee of the right of the patient to select his own physician or facility as is provided under Title 18 of the Medicare law (PL 89–97).

The minimum standards required by the new legislation were substandard compared with current accepted levels of adequate coverage. It did not provide for outpatient diagnostic work. To allow for only one hospital visit a day is incredible and completely disregards current quality medical care of the acutely ill patient.

Although the "usual, customary, and necessary charges" were mentioned for physician services, it contradicted this by stating payments would depend on the contract with the carrier.

Surgical charges for operative procedures were to include ninety days preoperative care and ninety days postoperative care which indicates the authors have little, if any, concept of surgical specialty care. Contrary to the provisions in Title 18, it lumped hospital-based physician services under hospital services. Benefits from the plan would be exempt from all claims or creditors and made no provision for payment of medical services.

The procedure for recovery from actionable injuries, where litigation is involved, made no provision for extensive medical services or responsibility on the recipient and may be limited to the payment of the health insurance benefits.

The proposed law gave the authority to the "Chairman of the Workmen's Compensation Board to make all rules and regulations as may be appropriate to carry out the provisions of this article." This absolute authority by administrative fiat could wipe the slate clean of all the previous safeguards for which our State Society has so tenaciously fought and create a new ballgame, thereby compounding the administrative fiasco.

The confusion, indecision, red tape, and inefficiency of our Medicaid program should at least have taught us a lesson that this is not the right approach. The program on an actuarial basis will be excessively costly for the benefits it proposed to provide and may have a serious detrimental effect on marginal small businesses. There was no provision for a medical review committee of the Medical Society.

In summary, the inconsistencies, vagueness, unrealistic approach to scientific medicine as practiced in 1967, and the bureaucratic controls inherent therein could only result in the conclusion that this bill is unacceptable in its present form and requires drastic surgery and revision.

Committee Meetings. Four committee meetings were held. At the first meeting on June 12 it was agreed: (1) the committee members were to be responsible for obtaining the consensus of the members in their respective districts, and (2) a memorandum was to be sent to each county medical society. This memorandum was mailed and included a questionnaire, or poll, similar to the charge of the committee, a suggested list of basic principles to stimulate discussion, and a digest of the 1967 bill prepared by our legislative counsel.

At the second meeting, July 19, reports from 29 counties were reviewed. These reports were in response to your committee's memorandum. Since it was clear from these preliminary reports that there was an appalling lack of information throughout the State regarding the realities of the problem, the committee decided to conduct an education campaign. Accordingly, a mailing was made to all county societies which included definition of terms concerning compulsory or universal health insurance, comments on basic principles involved, as well as a specific critique of the 1967 bill prepared by the Nassau Physicians Guild. In response to requests for further clarification, an article entitled, "The Promised Land or Mirage" was published in the *Nassau Medical News* and in Suffolk County and distributed to members of the committee.

At the third meeting, September 20, additional reports from county medical societies were discussed, and the over-all picture to date was reviewed. Proposed amendments to the 1967 bill, S. 4268, drawn up by the State Legislature's Joint Legislative Committee on Compulsory Health and Hospital Insurance, as well as a letter from Joseph Jaspan, Esq., legal counsel to the Joint Legislative Committee, were also discussed by the committee. The proposed contents of your committee's report to the Council were outlined and members made recommendations for inclusion therein. At its fourth meeting, on November 1, your committee's report to the Council was revised and approved. A proposed bill on a New York State Health Insurance Commission Act, prepared only for study purposes by the New York State Health Department, also was analyzed and a critique prepared and sent to the Council. Opposition to the proposal, in the form studied by the committee, was recommended to the Council.

County Medical Societies Poll. The following is a summary of the replies from the county medical societies concerning the committee's poll regarding compulsory or universal health insurance.

As of November 1, 41 county medical societies had replied to the memorandum, dated June 26, 1967, sent out by the committee's chairman. Many of these replies were official communications; others were unofficial. The following county medical societies sent in one or more replies: Albany, Allegany, Broome, Chautauqua, Chemung, Chenango, Clinton, Columbia, Delaware, Erie, Essex, Genesee, Herkimer, Jefferson, Kings, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Orange, Oswego, Otsego, Queens, Rensselaer, Richmond, St. Lawrence, Schoharie, Schuyler, Seneca, Steuben, Suffolk, Tompkins, Ulster, Washington, Wayne, and Wyoming.

In response to the basic question listed as number 1 in the memorandum, "Is the majority of the membership of your county medical society for or against the philosophy of compulsory or universal health insurance?," the following is a breakdown of the general position taken by the county medical societies:

A. *For the philosophy of compulsory or universal health insurance*—12

Clinton, Essex, Kings, Madison, Monroe, Nassau, Oneida (president as individual), Orange, Rensselaer (delegate), Suffolk, Wayne, and Seneca.

B. *Against the philosophy of compulsory or universal health insurance*—26

Allegany, Broome, Chautauqua, Chemung, Chenango, Columbia, Delaware, Erie, Genesee, Herkimer, Jefferson, Livingston, Montgomery, Niagara, Onondaga, Oswego, Otsego, Queens, Richmond, Schoharie, St. Lawrence, Steuben, Tompkins, Ulster, Washington, and Wyoming.

C. *Equally divided, 50 per cent for and 50 per cent against, the philosophy of compulsory or universal health insurance*—Schuyler.

D. *No specific position for or against the philosophy of compulsory or universal health insurance*—2.

Albany County replied, "Since no specific proposal, cannot endorse or criticize."

New York County replied, "Universal health insurance practically in effect—question largely academic." (New York, however, spelled out several specific comments in regard to priority of principles.)

Since a great number of counties were opposed to the principle of compulsory or universal health insurance, most of the respondents did not answer the other two questions concerning specific conditions and priority of principles set forth in the memorandum. While many of the replies contained answers to the other two questions, there was no uniformity in the manner in which they were answered. Some of these responses were in generalities; others merely said "yes" or "no" and did not indicate the numerical order of priority requested; and only a very few answered in the manner that was requested. Because of these factors, this brief general review has been confined to data concerning the basic question and does not contain statistics in regard to the other two questions.

Area Reports. A summary by areas throughout the State was submitted by committee members in the Council's report. Nassau County Medical Society presented a report including the details of Part B, Title 18, PL 89–97, which its membership believed were essential in the public interest. Great emphasis was placed on a medical review committee as outlined in the conclusions and recommendations of this report.

General Comments. The State-wide poll of physicians clearly indicated that they were opposed to compulsory or universal health insurance legislation, as proposed in S. 4268 (1967). It is difficult to predict whether or not the doctors throughout the State would support its implementation. Since the sentiment was so overwhelming that this legislation was not in the public interest, we cannot see how the State Medical Society could urge our members to support it.

This is not to say we are against constructive health insurance legislation utilizing the private insurance sector and preserving the individual rights and dignity of all citizens, because we have encouraged this for many years. Just as organized labor and industry favor the principle of collective bargaining, neither would be foolish enough to give approval to any legislation until they had examined and given approval to the crossing of every "t" and the dotting of every "i." To expect the medical profession to do otherwise would be naive, especially after the experience of Medicaid.

Any future legislation of this nature should be similar to Part B of Title 18 of the Medicare law which preserves the rights of the public and the medical profession.

This approach has functioned reasonably well despite the excessive red tape and regulations and would probably enlist some support of the profession if it were structured with proper safeguards. This is contrasted with the Medicaid approach which has been unsatisfactory in many ways in New York State.

Other pertinent suggestions which have been emphasized are: (1) medical review committees of the local county medical societies to be included to assure (*a*) quality medical care, (*b*) grievance mechanism, and (*c*) utilization control; (2) the plan not be a service type benefit program; and (3) the program be under the control and supervision of the State Health Department and not under the jurisdiction of the Workmen's Compensation Board.

The cost of this program could be disastrous to marginal industries and burdensome to all of our citizens, especially if we were wedded to hospitalization in one package. The physician might be tagged as the scapegoat for the rapidly escalating hospital costs which are 70 per cent labor costs with a 13 to 15 per cent annual increment. It might be prudent to consider separate packages.

It would appear important to emphasize that government cannot be all things to all people at the same time. The cost would be prohibitive. With the small percentage of the population under Medicaid producing financial strain, the financial burden of covering 90 per cent of the population would be incredible. To avoid this potential disaster and gain some actuarial experience, it would seem wise to develop a broad base established on basic principles consistent and compatible with deliverance of good quality medical care and build on this foundation in successive steps in future years.

To accomplish the long-range goal would require constant surveillance and counseling by organized medicine on a partnership basis and not in the capacity of a technical adviser but in the capacity of a policy adviser. With the health industry the third largest in the nation, the medical profession should be cooperating with government serving in the capacity of the "fifth estate."

Conclusions and Recommendations. Your committee submitted a detailed report of its conclusions and recommendations to the Council at its November 16 meeting. The following are the conclusions and recommendations approved by the Council at that meeting.

1. The vast majority of physicians throughout New York State are opposed to the principle of compulsory or universal health insurance.

2. Health insurance legislation containing the following safeguards, which are similar to Part B of Title 18, PL 89–97, the Social Security Amendments of 1965 (Medicare), for physicians services might enlist a broad base of support if:

(*a*) The following specific safeguards are provided:

(1) Option of direct billing by physicians for services rendered.
(2) Free choice of physician and facility (office and hospital).
(3) Fee for service.
(4) Usual and customary fees of physicians in their respective areas.
(5) Use of insurance carriers.
(6) Co-insurance principle.
(7) Direct billing by hospital-based physicians (pathologists, radiologists, anesthesiologists, physiatrists, and others) for professional services rendered.

(*b*) Red tape and regulations were minimized.

(*c*) The New York State Health Department controls and supervises the program.

(*d*) The program were not a paid-in-full service benefit type plan.

(*e*) New York State pay insurance premiums for the indigent or low income category and this insurance be utilized before the patient is eligible to receive Medicaid assistance for medical services.

(*f*) Physicians review committees of the county medical societies are established:

(1) To provide quality medical control for the program. This committee should approve the formation of all group plans in their respective areas and make spot checks of the quality of services to maintain high standards of medical care.
(2) To serve as a grievance committee with the insurance carriers to prevent abuses in utilization and physician fees within the framework of the usual and customary charges in their respective areas.

(*g*) The costs were not prohibitive to the employer and employe.

(*h*) The support of the Medical Society of the State of New York were enlisted at a policy decision level to ensure the long-range goal of quality medical care for all of the residents of New York State.

3. The physicians throughout the State have been given the opportunity to express their opinions concerning compulsory or universal health insurance legislation and are more knowledgeable and united as a result of the in-depth study of this subject.

Acknowledgments. Your chairman wishes to express his deep appreciation to the members of this committee for their splendid cooperation and dedication in formulating this report.

Your committee also would like to thank particularly Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; Martin J. Tracey, Esq., coordinator, legislation activities, and the staff for their invaluable assistance, as well as George W. Foy, Esq., and John C. Rice, Esq., legislative counsel. We also thank the component county medical societies, their legislation committees, Nassau Physicians Guild, and the physicians throughout the State for their prompt response and enthusiastic spirit in fulfilling this mission during the summer vacation period.

Respectfully submitted,
RALPH S. EMERSON, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the report of this committee under the chairmanship of Ralph S. Emerson, M.D., and commends this committee for its exhaustive study and thorough deliberations during the past year.

The House voted to adopt this portion of the reference committee report.

On OEO Clinics

To the House of Delegates, Gentlemen:

The membership of the Ad Hoc Committee on OEO Clinics is as follows:

Walter T. Heldmann, M.D., *Chairman*	Richmond
Carl Goldmark, Jr., M.D.	New York
John E. Lowry, M.D.	Queens

The committee was charged, essentially, with the task of gathering information and trying to understand the purposes, organization, and activities of the Office of Economic Opportunity, established to implement the distribution of services included under the antipoverty program.

Health services are a vital part in the whole scheme of activities—but only a part. Provision is made also for job training, education, home care, job placement, and many other services considered essential in providing help to the "whole person." Physician services are to be rendered at a central location under the direction of a medical director who is to be responsible for hiring physicians and supervising their activities. Since paramedical services are essential, he is charged with correlating all the requirements. He will work with social service, home-care, nursing, and other personnel involved.

All the departments will be under the jurisdiction of a local group or "corporation" which is set up to administer the plan. It will receive public funds and be responsible for their proper distribution. In essence the plans aim at giving the "consumers" the major voice in deciding what services are necessary in the community and how they shall be provided. Comprehensive health care is but one of these services.

As of this writing only one such activity is in existence in the State of New York, in The Bronx. It is called the "Neighborhood Medical Care Demonstration," and its objectives are: "To provide residents in a low-income area with training and employment as health workers, to provide a neighborhood health center and its parent hospitals with trained medical personnel, and to provide health personnel who bridge the language and cultural gaps between the professionals and low-income patients."

Local county medical societies have shown an interest in this matter. In New York, "The possible involvement of the Medical Society of the County of New York in planning for neighborhood comprehensive health care centers, financed by funds from the Office of Economic Opportunity (OEO), has moved a step forward as the comitia minora directed subcommittees of public health and medical economics to study and submit plans for the organization of such centers. If such plans are approved by the comitia, application will be made for an OEO grant on behalf of the medical society."

In Monroe County the county medical society has been consulted and agreed to the establishment of such facilities under the county health department.

In other large centers in the State very little has been started.

Your committee will continue to follow whatever progress is made and will make itself available in any capacity it can serve.

Respectfully submitted,

Walter T. Heldmann, M.D., *Chairman*

Report of Reference Committee on Medical Services: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee reviewed the report of this committee and commends the chairman, Walter T. Heldmann, M.D., and his committee for their work in dealing so well with a new and difficult problem.

The House voted to adopt this portion of the reference committee report.

68-7. Compulsory Health Insurance Legislation

Introduced by Nassau and Suffolk County Medical Societies

Whereas, The subject of compulsory health insurance legislation, also known by the synonyms "universal," "catastrophic," and "premium" insurance, has resulted in considerable difference of opinion as to its justification; and

Whereas, Compulsory health insurance legislation has created a wide divergence of opinion throughout the State of New York concerning inclusions, benefits, and the portion of the population to be covered; and

Whereas, There is considerable difference of opinion among legislators regarding justification for and the comprehensiveness of compulsory health insurance legislation; and

Whereas, Many of these legislators have expressed concern regarding the future of the Medicaid program and of such legislation; and

Whereas, The Nassau and Suffolk County Medical Societies and the Medical Society of the State of New York have agreed on 12 cardinal principles on which any acceptable compulsory health insurance legislation must be based; now therefore be it

Resolved, That in any discussions concerning the development of the universal or compulsory health insurance program, the Medical Society of the State of New York insist on the incorporation of the following criteria in any deliberations with State authorities:

1. Freedom of choice by the individual consumer of physician and facility;
2. State Health Department to administer program;
3. Reimbursement on the basis of usual, customary, and prevailing fees;
4. Adequate coverage with regard to scope of benefits and the number of individuals eligible to participate;
5. Coverage for diagnostic services performed in a physician's office;
6. Co-insurance (80 per cent–20 per cent basis) or deductible;
7. Medical assistance under Medicaid become effective only on the exhaustion of the benefits of the insurance program;
8. Insurance agencies to be utilized as carriers, not as fiscal intermediaries;
9. Dual coverage be eliminated;
10. License to practice medicine be the only qualification required of physicians for participation in the program;
11. Physicians to be reimbursed for in-hospital services such as radiology, pathology, anesthesia, and physical medicine;
12. Medical society review committees be established for the purpose of providing quality controls for the program and to serve as grievance committees for the carriers to prevent abuse of utilization and excessive charges for medical services.

68-20. Standards for Legislation Providing Comprehensive Health Insurance

Introduced by Medical Society of the County of Monroe, Inc.

Whereas, As physicians our primary concern is the provision of quality medical care; and

Whereas, We recognize that government,

representing the public, has the responsibility of making quality medical care available to those in genuine need; and

WHEREAS, It is now generally conceded that the Medical Assistance for Needy Persons Act, Public Law 89–97, as presently implemented, is unduly costly, bound up in administrative red tape, and is not geared to provide medical care of good quality; and

WHEREAS, It is estimated that during the past year approximately 3 million people, of the estimated 6 million persons in the State who are eligible, have participated in the plan, many of whom could have been better served by health insurance; and

WHEREAS, We believe that a properly designed and administered health insurance program would halt further encroachment of government into the private practice of medicine; now therefore be it

Resolved, That the Medical Society of the State of New York urge enactment of a satisfactory health insurance law with provisions and safeguards for the patient as follows:

1. That such insurance be available to all, employes and employers alike, and their dependents;
2. That employer and employe each be required to contribute toward the cost of protection;
3. That insurance carriers be utilized as carriers, not as fiscal intermediaries;
4. That, in addition to hospital protection such as is available in good basic Blue Cross Plans, there be insurance coverage for diagnostic services rendered both in and out of the hospital;
5. That there be parallel coverage for medical services rendered in the doctors' offices as well as in the hospital to keep utilization and costs of institutions to a minimum;
6. That co-insurance be required for outpatient medical service to avoid overutilization of facilities and physicians' time;
7. That there be provision for extended care facility coverage, home-care protection, and rehabilitation services;
8. That there be guaranteed free choice of physician and facility;
9. That physicians' fees be paid on a usual, customary, and prevailing basis;
10. That there be the option of direct billing by physicians, including hospital-based physicians, for services rendered;
11. That the program be controlled and supervised by the New York State Health Department and that there be adequate practicing physician representation on any commission charged with administering the system of health insurance;
12. That professional review and mediation committees be maintained by the county medical societies to prevent abuses, to establish guidelines, and to work as grievance committees with the insurance carrier. Appeal from county medical society decisions should be provided through either regional or State review committees;
13. That a suitable program of assistance with premium costs be provided for employes of low income and for those eligible for welfare aid and that such insurance be utilized before the patient becomes eligible to receive Medicaid benefits;
14. That the advice and support of the Medical Society of the State of New York be enlisted, at the policy-making level, to insure the long-range goal of quality medical care for all residents of New York State.

68–30. Safeguards in Proposed Compulsory Health Insurance Legislation

Introduced by Medical Society of the County of Orange

WHEREAS, The Medical Society of the County of Orange has been advised that a bill to enact some type of compulsory or universal health insurance has been or will be introduced in the present session of the New York State Legislature; and

WHEREAS, The Medical Society of the County of Orange continues its untiring efforts, on behalf of the people of this county as well as the whole State of New York, to improve their health and welfare; and

WHEREAS, The Medical Society of the County of Orange continues to demonstrate its willingness to approve, aid, and cooperate in the development of good health legislation in preference to opposing poor health legislation after it has been enacted; and

WHEREAS, Any health legislation should be financially sound, adequate in scope of services, and administratively functional; and

WHEREAS, A careful survey of the opinions of the membership of the Medical Society of the County of Orange has indicated that they would not support any new health legislation unless it contained certain safeguards; now therefore be it

Resolved, That the Medical Society of the State of New York adopt the following rules and regulations as minimum requirements for its approval of any new compulsory or universal health insurance plan:

1. To be eligible a person must be a resident of New York State for six months or continuously employed in New York State for at least three months;
2. Premiums are to be paid by the individual without a compulsory contribution by the employer;
3. All insurance companies licensed in New York State are to be eligible to write policies on an individual or group basis;
4. A single annual $100 deductible is to be applied to all services, including hospital services;
5. Premiums and deductibles, if any, are to be exempt from State taxes;
6. All individuals from birth to age sixty-five shall be eligible;
7. Free choice of physician and hospital facility shall be guaranteed by law;

8. Fee schedules shall be uniform, Statewide, and with the current Medicaid fee schedule as the absolute basic minimum;

9. Fee adjustments shall be made annually and automatically to correspond with percentile changes in the cost of living index, the latter to be determined without the inclusion of medical fees; and be it further

Resolved, That copies of this resolution be sent to the Governor and all State legislators, and this resolution be referred to the State Legislation Committee of the Medical Society of the State of New York for appropriate action.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Resolutions 68–7, 68–20, and 68–30, all of which are concerned with compulsory health insurance legislation, were discussed at length. Delegates showed a high degree of interest and participation in the discussions. These have been combined into one substitute resolution as follows:

> WHEREAS, The Council of the Medical Society of the State of New York has approved the report of the Ad Hoc Committee on Proposed Health Insurance Law and has accepted the report which states "the vast majority of physicians throughout New York State are opposed to the principle of compulsory or universal health insurance"; and
>
> WHEREAS, There is a genuine need for health insurance protection for the low-income citizens; and
>
> WHEREAS, The rollback of Medicaid will leave a segment of the population without adequate insurance protection; and
>
> WHEREAS, The Nassau, Suffolk, Orange, and Monroe County Medical Societies and the Medical Society of the State of New York have agreed on the principles on which acceptable health insurance legislation must be based; now therefore be it
>
> *Resolved,* That there be a Bill of Rights for the consumer and the physician as identified in resolution 40 of the American Medical Association, November, 1967, Houston meeting, as established to guide the deliverance of services according to the intent of the Congress; and be it further
>
> *Resolved,* That the Medical Society of the State of New York recommend an insurance program similar to Title 18, Part B, to provide coverage for those who are affected by the changes in the Medicaid law; and be it further
>
> *Resolved,* That in any discussions concerning the development of all health insurance programs the Medical Society of the State of New York insist on the incorporation of the following criteria in any deliberations with State authorities:
>
> 1. Freedom of choice by the individual consumer of physician and facility;
> 2. State Health Department to administer program;
> 3. Reimbursement on the basis of usual, customary, and prevailing fees, in the respective geographic areas;
> 4. Adequate coverage with regard to scope of benefits and the number of individuals eligible to participate as negotiated by the Medical Society of the State of New York and the government of the State of New York;
> 5. That there be parallel coverage for medical services wherever performed;
> 6. Co-insurance be required;
> 7. Premiums and deductibles, if any, are to be exempt from State taxes;
> 8. Medical assistance under Medicaid become effective only on the exhaustion of the benefits of all other insurance programs;
> 9. Insurance agencies to be utilized as carriers, not as fiscal intermediaries;
> 10. Duplicate coverage for the same service be eliminated;
> 11. License to practice medicine be the only qualification required of physicians for participation in the plan;
> 12. All physicians to be reimbursed for in-hospital services; physicians' services shall be considered separately on hospital billings, or a separate bill should be submitted and not included in hospital billing, as amended in Medicare, Title 18, Part B;
> 13. Medical Society review committees be established for the purpose of providing quality controls for the program, to serve as grievance committees for the carriers and to control utilization and medical services;
> 14. A suitable program of assistance with premium costs be provided those eligible for welfare aid;
> 15. That the advice and support of the Medical Society of the State of New York be enlisted, at the policy-making level, to insure the long-range goal of quality medical care for all residents of New York State.

The House, after discussion, voted to amend the substitute resolution of the reference committee by adding to the second Resolved the words "Part A and" following the words "Title 18" and the words "on a cost-sharing basis" at the end; by adding a fourth Resolved which would read "That copies of this resolution be sent to the Governor, the State Commissioner of Health, and other interested legislative leaders of the State"; by deleting from the third Resolved the words "insist on the incorporation of the following criteria" and substituting the words "endorses the following principles"; by changing in the third WHEREAS *the word "will" to "may"; so that the amended resolution then read as follows:*

> WHEREAS, the Council of the Medical Society of the State of New York has approved the report of the Ad Hoc Committee on Proposed Health Insurance Law and has accepted the report which states, "the vast majority of physicians throughout New York State are opposed to the principle of compulsory or uni-

versal health insurance"; and

Whereas, There is a genuine need for health insurance protection for the low-income citizens; and

Whereas, The rollback of Medicaid may leave a segment of the population without adequate insurance protection; and

Whereas, the Nassau, Suffolk, Orange, and Monroe County Medical Societies and the Medical Society of the State of New York have agreed on the principles on which acceptable health insurance legislation must be based; now therefore be it

Resolved, That there be a Bill of Rights for the consumer and the physician as identified in resolution 40 of the American Medical Association, November, 1967, Houston meeting, as established to guide the deliverance of services according to the intent of the Congress; and be it further

Resolved, That the Medical Society of the State of New York recommend an insurance program similar to Title 18, Part A and Part B, to provide coverage for those who are affected by the changes in the Medicaid law, on a cost-sharing basis; and be it further

Resolved, That in any discussions concerning the development of all health insurance programs the Medical Society of the State of New York endorse the following principles in any deliberations with State authorities: (*numbers 1 through 15 as in substitute resolution of reference committee*); and be it further

Resolved, That copies of this resolution be sent to the Governor, the State Commissioner of Health, and other interested legislative leaders of the State.

The House then voted to adopt this portion of the reference committee report as amended.

68-3. Removal of Restrictions on Blue Shield Programs Based on Usual, Customary, and Prevailing Fees

Introduced by Medical Society of the County of Albany

Whereas, The use of usual, customary, and prevailing fees provides the simplest and most equitable method of third-party payment to physicians in different locations and of varying levels of professional training; and

Whereas, Blue Shield of Northeastern New York has proposed a nonceiling service benefit plan utilizing this concept of payment; and

Whereas, The ever-increasing number of national Blue Shield contracts mandates this type of arrangement for these accounts; and

Whereas, The State Superintendent of Insurance has placed unrealistic and unnecessary restrictions on the use of this method of payment; now therefore be it

Resolved, That the Medical Society of the State of New York go on record as advocating the removal of the unrealistic and unnecessary restrictions imposed by the State Superintendent of Insurance on Blue Shield programs which utilize the concept of usual, customary, and prevailing fees in making payment for medical services; and be it further

Resolved, That a copy of this resolution be forwarded to the Governor of the State of New York and to the Superintendent of Insurance.

Report of Reference Committee on Medical Services: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends that this resolution be adopted with the deletion of the words "unrealistic and unnecessary" from the fourth Whereas and from the first *Resolved.*

The House, after discussion, voted to amend the reference committee report by changing the fourth Whereas *to read as follows: "The State Department of Insurance has so far severely limited the use of this method of payment," and by changing the first Resolved to read as follows: "That the Medical Society of the State of New York advocate that the New York State Department of Insurance allow the Blue Shield plans to utilize the concept of usual, customary, and prevailing fees in all programs for all classes of subscribers."*

The House then voted to adopt this portion of the reference committee report as amended.

68-10. Revision of the Standards for Approval by Medical Society of the State of New York of New York State Medical Care Plans

Introduced by Medical Society of the County of Chautauqua

Whereas, A subscriber's free choice of physician may be restricted by a Blue Shield plan's policy of paying no benefits or only a percentage of the scheduled benefits for the services of nonparticipating physicians; and

Whereas, Blue Shield plans no longer need the participating physician agreements to compete with commercial insurance programs; and

Whereas, Blue Shield boards may be self-perpetuating; and

Whereas, Some Blue Shield plans have adopted new and supplementary programs without consulting the sponsoring medical society; and

Whereas, Blue Shield fee schedules are generally revised at prolonged intervals and then only in response to pressure by physicians; now therefore be it

Resolved, That the Medical Society of the State of New York revise the Standards for Approval by the Medical Society of the State of New York of New York State Medical Care Plans to (1) delete from item 2 under "Claim Payments" the phrase "at the option of the plan" which would result in the elimination of differentials in payments to participating and nonparticipating physicians; (2) provide for the regular rotation of board members; (3) limit the required notice period for withdrawal of physicia nparticipation to sixty days; and (4) provide for annual review of fee schedules with sponsoring county medical societies.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends that the last four WHEREASES be deleted and that the *Resolved* be changed to read as follows:

Resolved, That the Medical Society of the State of New York through its Medical Care Insurance Committee study the Standards for Approval by the Medical Society of the State of New York of New York State Medical Care Plans to (1) eliminate differentials in payments to participating and nonparticipating physicians and (2) to re-evaluate the Standards for Approval where indicated, as adopted by the House in 1961.

The House voted to adopt this portion of the reference committee report.

68–13. Fees and Billing for Medical Services Under Workmen's Compensation Law

Introduced by Section on Anesthesiology

WHEREAS, Twenty-four states have established a system of usual, customary, and reasonable fees for medical services under Workmen's Compensation Law; and

WHEREAS, Medicare and many Blue Shield plans reimburse physicians on the basis of usual, customary, and reasonable fees; and

WHEREAS, Organized medicine is striving for usual, customary, and reasonable fees for all medical services; now therefore be it

Resolved, That the Medical Society of the State of New York take appropriate steps to establish usual, customary, and reasonable fees for services rendered under the Workmen's Compensation Law; and be it further

Resolved, That the Medical Society of the State of New York take necessary action to obtain the right of billing the patient directly under the Workmen's Compensation Law.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends the adoption of this resolution with the first two WHEREASES changed to read as follows:

WHEREAS, Several states have established a system of usual, customary, and prevailing fees for medical services under Workmen's Compensation Law; and

WHEREAS, Medicare and many Blue Shield plans reimburse physicians on the basis of usual, customary, and prevailing fees; and

The House, after discussion, voted to disapprove this portion of the reference committee report and then voted to disapprove the original resolution 68–13.

68–17. Medical Fees and RevisedForms and Procedures in Uncontested Cases Under Workmen's Compensation Law

Introduced by Medical Society of the County of Rockland

WHEREAS, Recent Federal legislation has emphasized that medical care should be paid for on a reasonable basis; and

WHEREAS, Some of the insurance carriers under the Workmen's Compensation Law are extremely slow in paying fees; and

WHEREAS, The current claim forms are cumbersome; now therefore be it

Resolved, That the Medical Society of the State of New York introduce and support legislation to provide for usual, customary, and prevailing fees for medical services under the Workmen's Compensation Law; and be it further

Resolved, That the Medical Society of the State of New York request the Chairman of the Workmen's Compensation Board to (1) develop revised and simplified claim forms, (2) adopt a regulation permitting physicians to send one report to the carrier and requiring the carriers to disseminate copies of that report to other appropriate agencies, and (3) adopt a regulation imposing an interest charge of 0.5 per cent per month to be paid by the carrier to the physician to begin thirty days after the submission of a claim on all unpaid bills in uncontested cases.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends that this resolution be disapproved. In the discussion that developed your committee felt that implementation of the second *Resolved* was not feasible.

The House, after discussion, voted to adopt this portion of the reference committee report, thereby disapproving resolution 68–17.

68–32. Assignment of Blue Shield Benefits to Nonparticipating Physicians

Introduced by Bronx County Medical Society

WHEREAS, Blue Shield has been known as "The Doctor's Plan"; and

WHEREAS, Doctors have been instrumental in helping to organize and strengthen Blue Shield; and

WHEREAS, Blue Shield has heretofore honored assignments of claims by patients to doctors who were not participating physicians of Blue Shield; and

WHEREAS, Blue Shield now refuses to honor such assignments; and

WHEREAS, This is tantamount to coercion and intended to force a doctor to participate in the plan if he wants to be paid directly; now therefore be it

Resolved, That the Medical Society of the State of New York go on record as being opposed to the coercion of physicians into participation by the present Blue Shield policy of not recognizing assignments of benefits by patients to nonparticipating physicians; and be it further

Resolved, That the Medical Society of the State of New York request all Blue Shield plans in the State to honor assignments to nonparticipating physicians.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends disapproval of this resolution since the rules regarding payment are incorporated in the basic contract of the Blue Shield plan.

The House, after discussion, during which it was voted to delete a sentence from the reference committee report (deletion already made) *voted to adopt this portion of the reference committee report, thereby disapproving resolution 68–32.*

68–34. Insurance Coverage for Ambulatory Prehospitalization Workup

Introduced by Medical Society of the County of Erie

WHEREAS, Many health insurance carriers do not provide coverage for prehospitalization x-ray and laboratory services unless done on a hospital inpatient basis; and

WHEREAS, Failure to provide coverage for prehospitalization x-ray and laboratory services on an outpatient basis frequently leads to unnecessary utilization of scarce and costly hospital beds; now therefore be it

Resolved, That the Medical Society of the State of New York endorse the principle of health insurance coverage for outpatient prehospitalization x-ray and laboratory services and that it work actively to make this form of coverage more universal; and be it further

Resolved, That the delegates from the Medical Society of the State of New York to the American Medical Association be instructed to introduce a similar resolution at the next meeting of the House of Delegates of the American Medical Association in June, 1968.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends approval of this resolution in principle and recommends that the first *Resolved* be changed to read as follows:

> *Resolved*, That the Medical Society of the State of New York endorse the principle of health insurance coverage for outpatient x-ray and laboratory services prior to a scheduled hospital admission, and that it work actively to make this form of coverage more universal.

The House, after discussion, amended the report by inserting in the first Resolved the words "wherever performed" after the word "services" so that the first Resolved then read: "That the Medical Society of the State of New York endorse the principle of health insurance coverage for outpatient x-ray and laboratory services wherever performed prior to a scheduled hospital admission. . ."

The House then voted to adopt this portion of the reference committee report as amended.

68–51. Voluntary Health Insurance in New York State

Introduced by Bronx County Medical Society

WHEREAS, The Medicare and Medicaid programs both are offering a wider scope of benefits than current Blue Shield programs and these will be used as yardsticks to measure the adequacy of voluntary health insurance programs; and

WHEREAS, The continued soundness of the voluntary health insurance system is being seriously threatened by numerous other factors—the effects of inflation making the majority of present contracts indemnity in type and thus covering less of the patient's health care bill and the increasing demand on the part of the public for more comprehensive health insurance coverage; and

WHEREAS, In the past several years there has been little increase in the benefits offered to subscribers and in the physician fee schedules of most voluntary insurance contracts; and

WHEREAS, The Associated Hospital Service of New York has recently inaugurated an experimental program for insurance against the cost of drugs; and

WHEREAS, As physicians we are concerned with the conservation of health care dollars, the equitable distribution of health services to match the present government-supported programs; and

WHEREAS, Many of the voluntary health insurance plans have to date not shown sufficient evidence of sustained and progressive planning to meet the public's demand for a broader spectrum of health insurance coverage; now therefore be it

Resolved, That the Medical Society of the State of New York, through its Commission on Medical Services and its Medical Care Insurance Committee, make a determination of its requirements for its continued support of the voluntary health insurance programs, such requirements to include the services to be covered, the manner in which they are to be rendered, with due emphasis on comprehensive medical care, and payments to physicians of the usual, customary, and prevailing fees; and be it further

Resolved, That the Medical Society of the State of New York inform the New York State Association of Blue Shield Plans and other voluntary insurance carriers that the continued success of their insurance plans will depend entirely on their ability to meet the demands of the public for comprehensive medical care and of the physician for adequate fee schedules.

REPORT OF REFERENCE COMMITTEE ON MEDICAL SERVICES: The following report was presented by Vincent J. Tesoriero, M.D., acting chairman.

Your reference committee recommends approval of this resolution with the deletion of the last *Resolved*, since your committee feels that this is redundant.

The House voted to adopt this portion of the reference committee report.

The House voted to adopt the reference committee report as a whole as amended.

Standards of Medical Care

Commission on Standards of Medical Care

To the House of Delegates, Gentlemen:

The Commission on Standards of Medical Care consists of the following members:

Waring Willis, M.D., *Chairman*	Westchester
Charles M. Brane, M.D.	Westchester
Edward Siegel, M.D.	Clinton

Last year's report, which was the first, outlined the history of the origin of the Commission and the method of its organization. It also looked forward to an active and productive year, and the reference committee predicted, "many new ideas will be forthcoming."

The reports of the various committees under the jurisdiction of the Commission note in detail the prolific activities which have resulted. Thus the Committee on Medical Review is well advanced in its organization and work producing a manual for internal hospital review of standards. It is hoped thata grant can be obtained from the Division of Medical Care Administration of the Department of Health, Education, and Welfare to do a study of methodology of establishing such a system. Both the chairman of the committee, Charles M. Brane, M.D., and the director of the Division of Standards of Medical Care, Samuel Z. Freedman, M.D., have performed well beyond the call of duty to arrive at this stage.

The Committee on Hospital-Based Physicians, under Norman S. Blackman, M.D., chairman, has been occupied almost continuously with problems arising out of the implementation of Medicare and Medicaid which affect the economic and "working relations" between the hospitals and employed physicians. This is an area strange to our profession, but the committee is quickly and successfully meeting the challenge.

In a related sense the Committee on Hospital and Professional Relations, under Bernard J. Pisani, M.D., chairman, is very active in protecting the professional position of physicians in hospitals both in the area of "tenure" and in the fair distribution to the attending staff of monies made available through the teaching programs for interns and residents.

Although the Committee on Mediation and Insurance Claims Review met only once, it was very active in furnishing advice and help to many members and lay people through the director of the Division of Standards of Medical Care and others at headquarters.

The detailed report of the Committee on Utilization Review emphasizes the complications met in establishing understanding and producing a working structure in the area of utilization review, particularly in extended care facilities.

Under Vincent J. Tesoriero, M.D., chairman, the Committee on Nursing has continued its provocative, scholarly, and productive work and has advanced ideas which should bear fruit and provide more and better nursing. Its record to date and over the years deserves the Medical Society's highest praise.

Joseph G. Zimring, M.D., and his Committee on Ethics are always, almost daily, active in interpreting the code of ethics. The manner in which this is done, with clearness, decisiveness, and learning, continues to be a record which is taken almost for granted.

Since the last meeting of the House of Delegates, the Committee on Public Medical Care has been added to the Commission. No activity is reported because, with the introduction of Medicaid, its functions are in abeyance since its previous work was with welfare. It will become a functioning group again when the Technical Advisory Committee on Medical Care, now meeting with the appropriate government departments involved in this "mess," has finished its work. Incidentally, Dr. Freedman has been designated by the executive vice-president to sit in on the deliberations so that the Division will be prepared to work with Robert Schwinger, M.D., and his committee when it becomes active again.

The Commission on Standards of Medical Care has made every effort to implement its promise of a year ago. We wish to express our sincere appreciation to Samuel Z. Freedman, M.D., the director of the Division; his secretary, Miss Irene Rose; and the entire headquarters staff, under Henry I. Fineberg, M.D., our executive vice-president.

Respectfully submitted,
WARING WILLIS, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

Your reference committee first studied and reviewed the reports of the commission and various committees comprising this Commission on Standards of Medical Care as reported in the House of Delegates handbook. It is to be recalled that this commission is only fifteen months old and its first report was given at last year's annual meeting. In the scope of the work done by the various committees and in the material covered and problems reviewed, it is safe to say that this commission has graduated from a state of infancy to one of pediatric maturity. The report of the Commission on Standards of Medical Care, chaired by Waring Willis, M.D., gives a summation of the work done by the various committees of this commission. Dr. Willis is to be congratulated, along with Dr. Freedman, on the amount and quality of work performed.

The House voted to adopt this portion of the reference committee report.

Ethics (Annual)

To the House of Delegates, Gentlemen:

The Committee on Ethics is composed of the following members:

Joseph G. Zimring, M.D., *Chairman*	Nassau
Walter J. Clarkson, M.D.	Suffolk
Oscar Greene, M.D.	Essex
Warren A. Lapp, M.D.	Kings

During the first four months of this year, as a result of my joining the exclusive "coronary club," the following thoughts were a result of my enforced idleness.

Ethics in medicine is the object of investigation by many groups, such as the Hart Committee in Washington, D.C., certain state legislators, and other critics who can find nothing else to do. Our image is being smeared in the newspapers because of a few members of our profession who belong to either one of the two following groups:

1. The uninformed, especially those who have not even read the code of ethics—these can be educated; and
2. The pathologic group, who have a completely warped attitude concerning the code of ethics and should be completely exorcised from our profession.

After giving this a great deal of thought and after going through the literature on ethics, I can see only two methods of correcting the present situation. The first method is a stricter enforcement of our code of ethics after a complete review of the code and reinforcement of any weak points.

The second method was proposed by the American Medical Association's House of Delegates in 1961. It was proposed that each medical school develop and present a required course in ethics. To date only a few schools have started such a course, but this is not enough. I believe that our State Society should stimulate the interest of the medical schools in our State in this field of medicine and urge them to have formal lectures covering the codes of ethics of our State Society and of the AMA. These schools could utilize visiting lecturers from our State Society who have had first-hand experience and can illustrate their talks with case reports and thus more effectively present the material. I say visiting lecturers because, with so many faculty members serving as full-time teachers, they are unaware of the ethical problems which will confront the student after he has become a practicing physician. These lecturers should be practicing physicians who are members of the Medical Society of the State of New York and who are in the private practice of medicine. Another stimulant to the medical schools would be the inclusion of questions on ethics by the State Board of Medical Examiners in their examination.

To several inquiries on the use of credit cards, the committee advises that the Medical Society of the State of New York disapproves of the use of credit cards in the payment of medical fees.

A letter was received from Onondaga County Medical Society requesting advice on the ethics of assigning or selling medical accounts receivable for a discount to professional organizations. The committee answered this by presenting the following resolution to the Council on June 8:

> *Resolved*, That the Council of the Medical Society of the State of New York disapprove the assignment of medical accounts receivable or the selling of medical accounts receivable for a discount to any organization.

This resolution was based on the following facts:

1. Chapters 256 and 257 of the Laws of New York State, 1966, known as the Medical Assistance for Needy Persons Law, implementing Title 19, Federal Public Law 89–97, forbids the assignment of any bill. Section 367–a, paragraph 1 (page 18, line 10), states: "Any payments with respect to any medical assistance shall be made to the person, institution, State department or agency or municipality supplying such medical assistance, except as otherwise permitted or required by applicable Federal and State provisions, including the rules of the board and regulations of the department."

2. Handbook 9, Professional Education, University of the State of New York, contains the following applicable rules:

> (*a*) Section 6514, paragraph 2, page 38, "The license or registration of a practitioner of medicine, osteopathy, or physiotherapy may be revoked, suspended, or annulled .. after due hearing in any of the following cases... (f) That a physician, osteopath, or physiotherapist has directly or indirectly requested, received, or participated in the division, transference, assignment, rebate, splitting, or refunding of a fee for, or has directly or indirectly requested, received, or profited by means of a credit or other valuable consideration as a commission, discount, or gratuity in connection with the furnishing of medical or dental care, diagnosis, or treatment of services including x-ray examinations and treatment... ."
>
> (*b*) Article II, Section 30, paragraph 4, page 78, states: "Unprofessional conduct in the practice of medicine shall include but not be limited to the following... (c) The revealing of facts, data, or information obtained in a professional capacity relating to a patient or his records without first obtaining consent of

the patient or his duly authorized representative, except if duly required by a court of competent jurisdiction or statute."

Medicaid bills must contain the name of the patient, diagnosis, and treatment. If these bills are assigned or sold to an outside organization for a discount, the physician thus reveals important information about the patient without the patient's consent.

3. The *Principles of Professional Conduct* of the Medical Society of the State of New York also forbid the divulging of any confidential information acquired by the physician in treating a patient.

4. The Judicial Council of the American Medical Association in its *Opinions and Reports 1966*, Section 5, paragraph 32, states the following: "The Council looks with disfavor on the use of this service (billing service) and similar operations by physicians because of the implication of advertising and patient solicitation. Further, the Council does not believe that these kinds of plans uphold the dignity and honor of the profession."

The Council passed this resolution.

The committee received the following letter from Howard A. Weiner, M.D., vice-president, Association of New York City School Psychiatrists:

> "Since the advent of Medicaid in New York State, it has become possible for many emotionally disturbed children and their parents to receive needed psychiatric attention not previously available. One of the largest referral agencies for such children is the Bureau of Child Guidance of the Board of Education of the City of New York.
>
> "I represent the Association of New York City School Psychiatrists, the professional organization of this Bureau. Our Bureau can provide little psychiatric care because of the paucity of time available. We are also constrained from prescribing medications by law.
>
> "A number of our members who have associated with the State Medicaid system would be willing to see such children in their private practices if it were deemed ethical by the proper professional bodies. These psychiatrists all are trained in child psychiatry.
>
> "Would you please offer an opinion as to the ethical issues involved in setting up a panel of doctors who are at once employes of the Bureau of Child Guidance and would receive referrals from the same Bureau privately?
>
> "The City of New York, in spite of its high concentration of psychiatrists, still, of course, is woefully short of qualified psychotherapists for children. Consequently, this issue takes on great importance.
>
> "I would be grateful for your prompt reply."

The committee replied to Dr. Weiner as follows, with the approval of the Council:

> "The Bureau of Child Guidance of the Board of Education of the City of New York may avoid conflict with the *Principles of Professional Conduct* of the Medical Society of the State of New York and also avoid conflict with the private practicing physician in the City of New York by observing the following guidelines as drawn up by the Committee on Ethics.
>
> "A. The family physician should be notified of the need for therapy by his patient and requested to make a recommendation of a psychiatrist to his patient; or
>
> "B. The patient should be referred to the local medical society for the name of a psychiatrist; or
>
> "C. Setting up of a referral list of psychiatrists to be used by the physicians of the Bureau of Child Guidance with the following provisions:
>
> > "1. The referral list should embody not only those psychiatrists employed by the Bureau of Child Guidance but those private practicing psychiatrists of New York City, who are willing to accept Medicaid patients.
> >
> > "2. Personal contact at the Bureau with a patient makes that physician ineligible for referral.
> >
> > "3. Patients should be given the names of three (3) psychiatrists in the vicinity of their homes.
> >
> > "4. The referral list should be in continuous rotation.
>
> "We hope that the above may be of assistance to you."

There were many letters received by the committee this past year. Several were answered directly, but many were referred to the local medical societies because local problems were involved.

Respectfully submitted,
JOSEPH G. ZIMRING, M.D., *Chairman*

Ethics (Supplementary)

To the House of Delegates, Gentlemen:

Inadvertently, there came to the attention of the Committee on Ethics what in our opinion was an indiscriminate use of the master list of the membership of our State Society. The committee forwarded its findings to the Executive Committee with the suggestion that the final voice in approving the use of our membership list be with the State Society.

The chairman received the following report from Henry I. Fineberg, M.D., executive vice-president: "After considering your report of April 17 and the correspondence from the AMA and from Nite-Owl Coverage, Inc. which accompanied it, the Executive Committee voted unanimously to disapprove the action of the AMA in making this list available and to request that the state societies be consulted and that they have the power to approve or disapprove such an arrangement in their respective states. . . . The action of the Executive Committee was approved by the Council at its meeting on May 25, 1967."

In answer to a request on the ethical aspect on certain announcements to be put forth by the American College of Pathology, the following letter was sent to Dr. Dorman:

> "Your letter of September 14, 1967, addressed to Henry Fineberg, M.D., executive vice-president of the MSSNY, was referred to the Committee on Ethics. The Committee on Ethics has carefully studied the questions on ethics involved in the guidelines of your committee's report.
>
> "Under the heading of 'General Ethical Aspects' the Committee on Ethics believes that your report should quote verbatim both paragraphs 6 and 12 of Section 7 of Judicial Council Opinions and Reports, 1966, in reference to the subject of billing.
>
> "Under the heading of 'Ethics of Announcements' the Committee on Ethics agrees with your first paragraph but would like to emphasize one point—that the directors of the laboratories contact the local medical society in order to obtain the regulations on announcements of that locality.
>
> The committee also believes that the following paragraph should be completely deleted: "An effective and yet dignified and professionally acceptable reminder for keeping physicians informed is a periodic written quality control report containing objective statistical evidence of reliability and accuracy of pertinent tests. Occasional brief but understandable descriptions of quality control practices and/or improvements in analytical procedures and changes in reporting units would not only be appropriate but educationally informative to the referring physician and justify his continued confidence."
>
> "Solicitation of patients, directly or indirectly, by a doctor of medicine, by groups of doctors of medicine, or by institutions or organizations is unethical. This principle protects the public from the advertiser and salesman of medical care by establishing an easily discernible and generally recognized distinction between him and the ethical doctor of medicine. Among unethical practices are included the not always obvious devices of furnishing or inspiring newspaper or magazine comments concerning cases in which the doctor of medicine or group or institution has been, or is concerned. Self-laudations defy the traditions and lower the moral standard of the medical profession; they are an infraction of good taste and are disapproved."
>
> "The committee hopes that the above may be of assistance to you."

A communication has gone out to medical schools of this State on the subject of conducting a course on ethics.

The chairman would like to express his sincere appreciation to Samuel Z. Freedman, M.D., director of the Division of Standards of Medical Care; Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; and Irene Rose, secretary to Dr. Freedman, for their kind and understanding assistance during the past year.

Respectfully submitted,

JOSEPH G. ZIMRING, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

The Committee on Ethics, chaired by Joseph G. Zimring, M.D., spent a very busy year defining questions of ethics, on the ethics of new methods of the practice of medicine, especially as regards the disbursement of fees. The committee emphasizes, and your reference committee concurs, that it would be beneficial to have medical schools include lectures on ethics, given by practicing physicians, in their schedules of study. The medical school graduates would be more oriented ethically than they are at present. During the year, inquiries on the use of credit cards were made from several areas of the State, and these areas were notified that the Council of the Medical Society at the present time disapproves the use of credit cards and the assignment of medical accounts receivable in any form or guise.

Dr. Zimring's committee also was asked about the ethics involved in the treatment of New York City school children in need of psychiatric care who were screened by members of the Bureau of Child Guidance who then might give private treatment to these children. Guidelines were set up for the proper conduct of this problem. In a supplementary report, Dr. Zimring's committee stated it was their feeling that the sale of membership lists of the Medical Society of the State of New York should be limited to the Medical Society of the State of New York and to no other agency.

Dr. Zimring's committee, in answer to a request on the ethical aspects of certain announcements to be set forth by the American College of Pathology, set forth a series of guidelines to assist the American College of Pathology in this work.

The House voted to adopt this portion of the reference committee report.

Hospital and Professional Relations (Annual)

To the House of Delegates, Gentlemen:

The committee consists of the following:

Bernard J. Pisani, M.D., *Chairman*	New York
Albert M. Betcher, M.D.	New York
C. Joseph Delaney, M.D.	New York
Kenneth H. Eckhert, M.D.	Erie
August H. Groeschel, M.D.	New York
Joseph J. Kaufman, M.D.	Wayne
Herbert J. Wright, Jr., M.D.	Schenectady

A brochure being prepared at the direction of the executive vice-president, outlining, among other things, the functions of committees notes that this committee is responsible for:

1. Hospital-physician relationship—doctors responsible for work of physicians.

2. Doctors relationship—tenure, appointments to staff, and free-choice principle.

3. Hospital relationships—responsibility for intern and resident training, community responsibility, responsibility to attending staff, and the economic and ethical standards in staffing of emergency rooms.

4. Education—outpatient department availability for area physicians, and the encouraging of attendance at clinicopathologic conferences and other hospital meetings by area physicians.

Last year's report noted that the committee "will be concerned with problems that arise from the direct relationship between the physician and the hospital involved."

During the past year, two particular areas were thoroughly explored. They are (*a*) tenure and (*b*) responsibility for enforcing the means for providing support to the area of intern and resident training. The former was particularly sensitive since the introduction of Medicare and Medicaid has produced a situation which might embarrass individual physicians in relation with a hospital board if agreement was at variance with the implementation of these new and "restructured" economic legislative acts. The Medical Society of the State of New York speaking on behalf of its members can provide guidelines to help all concerned in arriving at a mature, fair, and professional understanding. At the 1967 meeting of the House of Delegates two resolutions (67–4, 67–63) relating to hospital staff tenure were introduced. The reference committee recommended and the House approved the principles involved. An example of the influence of such an understanding between organized medicine and the hospital associations can be seen in the following notice sent by letter to all members of a hospital in Brooklyn where the board of trustees is "providing a mechanism for review and appeal of nonreappointment (that) provides to each physician the 'due process' action recommended by the State Medical Society and the Hospital Association."

In the matter of intern and residency training, the following letter, which was sent to approximately 200 hospitals in the State, is self-explanatory.

> "According to Social Security Administration's instructions, arrangements have been made for hospitals which have teaching programs for residents and interns to collect the fees for the attending staff due the latter under the provisions of Title 18, part B (PL 89–97, 1965). Although no directive has been issued to segregate these funds for division among the physicians, some hospitals already have made such provisions.
>
> "The Medical Society of the State of New York, through its Committee on Hospital and Professional Relations,. . .is collecting data on the type of agreement being entered into between the hospitals and physicians. The Society wishes to be helpful in making the system work with fairness to patients, government, hospitals, and physicians.
>
> "Therefore, if you will kindly supply us with a copy of the 'contract' and/or other arrangement between your hospital and the physicians whose fees will provide the money to be allocated, the Committee on Hospital and Professional Relations will study the matter and make whatever pertinent comments may be indicated.
>
> "I know you will understand the request is made in a spirit of cooperation and that you will therefore be helpful.
>
> "May I look forward to an early reply."

Many replies have already been received. At this time one can look forward to a new spirit of cooperation between the voluntary "teaching" hospitals and the physicians.

When the replies are collated, physicians will be in a firm position to receive their due compensation in this vital field of teaching, since the Society will then have information to guide them in discussions with their hospital boards and administrators.

A subcommittee is being set up to study in greater depth hospital emergency room conditions in various parts of the State.

No other items needing immediate attention were referred to our committee, but members are encouraged to refer to Society "headquarters" all items in which we may be of help. We are confident that Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, will, as usual, supply your committee with the information and background material needed to guide it toward a satisfactory solution or arrangement.

Respectfully submitted,
BERNARD J. PISANI, M.D., *Chairman*

Hospital and Professional Relations (Supplementary)

To the House of Delegates, Gentlemen:

The response to the letter sent to hospitals regarding the disposition of the monies earned by physicians in the teaching program of interns and residents has been very satisfactory. Without exception these funds are at the disposition of the doctors involved who decide the method of distribution.

The patterns developed fall into three categories. In one the hospital collects the funds for the physicians, and these monies, less the charge for bookkeeping services, are distributed on a point system for services rendered by the individuals involved.

As a modification of the above, again with the hospital billing, the monies are apportioned to the several departments and the physicians of each department determine the final disposition.

The third method does not employ the hospital as the collecting agency. The physicians in this plan have engaged the services of a third party which, for a specified percentage of the total amount collected, turns the remainder over to the departments which in turn arrange for the distribution to the individual physician.

In general the above explains the broad outlines. Details vary, however, from hospital to hospital. To date the committee has not been alerted to any complaints.

Respectfully submitted,
BERNARD J. PISANI, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

Under the guidance of Dr. Pisani, this committee dealt mostly with the hospital-physician relationship according to his appointment to the staff. They also studied hospital relations—responsibility for intern and resident training, and education—outpatient department availability for area physicians. Attendance at clinicopathologic conferences and other hospital meetings by area physicians was encouraged.

One of the important projects of this committee was the directing of letters to hospitals with teaching programs for residents and interns, requesting data as to the method of collection of fees for the attending staff for medical services. Many replies were received, and the patterns used by the hospitals fall into three categories. In one, the hospital collects the funds for the physicians, and these monies, less the charge for bookkeeping services, are distributed on a point system for services rendered by the individuals involved.

As a modification of the above, again with the hospital billing, the monies are apportioned to the several departments and the physicians of each department determine the final disposition.

The third method does not employ the hospital as the collecting agency. The physicians in this plan have engaged the services of a third party which, for a specified percentage of the total amount collected, turns the remainder over to the departments, which in turn arrange for the distribution to the individual physician.

Without exception, it would seem that monies received from fees for professional services are collected and segregated into funds to be disposed of by the wishes of those for whose services the fees were collected.

Since there are instances in which it is felt some hospitals are not following such procedures, your reference committee urges the Hospital and Professional Relations Committee to continue investigation of this matter.

The House voted to adopt this portion of the reference committee report.

Hospital-Based Physicians

To the House of Delegates, Gentlemen:

The committee consists of the following members:

Norman S. Blackman, M.D., *Chairman*	Kings
Alfred A. Angrist, M.D.	Bronx
Ralph S. Emerson, M.D.	Nassau
Eugene Moskowitz, M.D.	Westchester
John F. Roach, M.D.	Albany
Harold N. Schwinger, M.D.	Kings
Victor J. Tofany, M.D.	Monroe

Subjects which are the concern of the committee can be classified as follows:

1. Ethical and legal relations between hospital and hospital-employed physicians.
2. Study of the Medical Practice Act in relationship to possible violations by hospitals of the corporate practice of medicine; meet with the Attorney General to clarify the issue;
3. Cooperation with the Committee on Hospital and Professional Relations in the matter of disposition of fees collected by physicians for patient care.

In the area of item 1, it is accepted that patients are primarily treated in hospitals by physicians and not by the "hospitals." Until the introduction of Medicare and, particularly, Medicaid, there were "charity" patients, but now there are, according to Governor Rockefeller, no "second-class medical citizens." In urban areas, particularly in the City of New York, therefore, the new sources of monies made available for the payment of services rendered by physicians has accentuated the legal and ethical relations between hospitals and hospital-employed physicians.

Our committee, therefore, has been occupied with defining the areas of conflict and suggesting methods to arrive at satisfactory conclusions. Ethical concepts are clearly defined by the AMA code of ethics which, in essence, give the physician the choice of how he shall dispose of his "earnings" from services rendered to patients in hospitals.

Our House of Delegates in 1967 accepted the report of the Committee on Ethics which in essence cautions physicians (1) against signing over their third-party payments without a clear written understanding that the monies involved are theirs and disposition of these funds must be mutually agreed to; (2) in the case of full-time physicians it must be stipulated that their salaries can be reduced by the amount collected from such sources but that any fees above the limits of the salary be retained by the physicians. Such an arrangement will probably be worked out with the hospitals through the negotiations now in process between representatives of the Medical Society of the State of New York and the hospital organizations. This is also being urged on the State Health Department so that it will "disapprove any hospital regulation or procedure which would make hospital privileges contingent on assigning or rebating to the hospital of Medicare or Medicaid fees by physicians."

The legal aspects are not, as of now, universally clearly understood or accepted. Therefore your committee has pursued its study in this area through a meeting and discussions with the Attorney General's office. On June 26 a delegation met with Samuel A. Hirshowitz, first assistant attorney general of the State of New York, in New York City. The Medical Society of the State of New York was represented by Waring Willis, M.D., Henry I. Fineberg, M.D., Samuel Z. Freedman, M.D., J. Richard Burns, Esq., and your chairman. Also present was John Calanese, Esq., of the Attorney General's office.

There was a meeting of the minds and the atmosphere was congenial. In order for the Attorney General to proceed, evidence was necessary, and this is now being sought. Pursuit of this matter in the hope that final adjudication of the corporate practice of medicine will result remains one of the committee's chief considerations.

To help physicians in their contractual arrangements with hospitals, the committee recommended and the Council approved that our legal counsel draw up guidelines for a contract between the individual physician and the hospital involved. This is in the process of development.

Since all physicians employed by hospitals do not render direct professional services to patients, the committee recommended, and the Council tabled for further study, the following classifications for purposes of remuneration:

1. Personal physicians
2. Hospital-appointed consultants
3. Physician educators
4. Physician administrators
5. Physicians functioning in one or more categories.

Robert Katz, M.D., director of the Division of Industrial Health and Workmen's Compensation, brought to the attention of the committee that in some instances services rendered to patients in emergency rooms were billed for twice. This has since been corrected.

The committee expresses its sincere appreciation to Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, and to Waring Willis, M.D., chairman of the Commission on Standards of Medical Care, for their mature advice and guidance in the work of the committee.

Respectfully submitted,
Norman S. Blackman, M.D., *Chairman*

Report of Reference Committee on Standards of Medical Care: The following report was presented by George McCauley, M.D., chairman.

As contained in the report of the Committee on Hospital-Based Physicians, chaired by Norman S. Blackman, M.D., this committee found itself face to face with the problem of the salaried physician, the disposition of fees accrued to him for his professional services, and the question of the hospital practice of medicine. Your reference committee is fully aware that there still has not been a definition of the hospital practice of medicine. There may be a new trend in medical care; namely, that there are some physicians who would prefer to be salaried and accept their salary as full compensation for professional services. Your reference committee suggests to the committee that a poll be taken throughout the State on hospital-salaried physicians to obtain information and seek their comments on their contractual arrangements with the hospital. This should include whether or not they are satisfied with these arrangements, or what improvements in the contract they might suggest. The results of such a poll would be helpful in manual form as a guideline to young physicians entering the practice of medicine to safeguard them in their contractual arrangements if they desire to become full-time salaried physicians.

The chairman of this committee and your reference committee agree that the work of the hospital-based physician must be fragmented into how much time he spends teaching, caring for patients, doing administrative work, and so forth. It is only in this way that the percentage of his salary, attributed to fees for medical services, could be ascertained. Obviously, more work in this sphere is needed. The committee is to be commended on the task they have done in this area and deserve our support and cooperation in further studies on this subject.

The House, after discussion, voted to amend the reference committee report to include in the suggested poll of physicians (1) a question as to how many of the physicians, who have signed contracts with hospitals, were coerced into doing so, and (2) a question to determine the role of the hospital administration in any alleged coercion of physicians in their contractual arrangements.

The House then voted to adopt this portion of the reference committee report as amended.

Mediation and Insurance Claims Review

To the House of Delegates, Gentlemen:

The Committee on Mediation and Insurance Claims Review consists of the following members:

Carl Goldmark, Jr., M.D., *Chairman*	New York
Milton Gordon, M.D.	Suffolk
Elvin H. Gottdiener, M.D.	Dutchess
Peter V. Gugliuzza, M.D.	Queens
Walter F. Harrison, Jr., M.D.	Warren
Irving M. Pallin, M.D.	Kings

It was necessary to have but one formal meeting of the committee, on May 3, 1967. At headquarters, however, activity was almost hectic through telephone and mail communication with very many members of the Society. Understandably, confusion was rife because of the difficulty in comprehension of decisions of the carriers in paying claims on the basis of usual, customary, and prevailing fees.

At the May 3 meeting, it was decided "to keep statistics as to the number of complaints received and the resolution of these problems so that they may be included in the annual report." The director of the Division of Standards of Medical Care, Samuel Z. Freedman, M.D., reports that no formal complaints were received. Often all that was necessary was an explanation, and in several instances, where an immediate reply could not be made, satisfactory results were obtained by a letter or a telephone call to the carrier. As of now the questions are much fewer, and it appears that there is a clearer understanding of the workings of Medicare. As much cannot be said of Medicaid, particularly in New York City, where the situation is in a period of extreme confusion and very few physicians are participating. It is hoped that ultimately, through the meetings of the Technical Advisory Committee on Medical Care, under George Himler, M.D., with the New York State Health Department and the local New York City authorities, some solution will result.

In the 1966 report to the House of Delegates, the committee offered its services "to individual county societies and/or district branches, if they so desire, to help them set up review committees to consider complaints from doctors or patients against insurance carriers and/or fiscal intermediaries under PL 89–97, Part B . . . ." No such requests have been received. Your committee interprets this as a good sign. The offer, however, still stands.

Respectfully submitted,
Carl Goldmark, Jr., M.D., *Chairman*

Report of Reference Committee on Standards of Medical Care: The following report was presented by George McCauley, M.D., chairman.

This committee, chaired by Carl Goldmark, Jr., M.D., was busy at the beginning of the year answering complaints of fiscal intermediaries and insurance carriers in the payment of claims on the basis of usual, customary, and prevailing fees. As time went on, apparently the complaints resolved themselves and the number of inquiries diminished greatly. Dr. Goldmark is to be congratulated on the telephone explanations he gave to the inquirers during the year.

The House voted to adopt this portion of the reference committee report.

Medical Review

To the House of Delegates, Gentlemen:

The Committee on Medical Review consists of the following:

Charles M. Brane, M.D., *Chairman*	Westchester
Joel J. Brenner, M.D.	Nassau
George Himler, M.D.	New York
Edward C. Hughes, M.D.	Onondaga
George G. McCauley, M.D.	Tompkins
Mortimer W. Rodgers, M.D.	New York
Harold J. Safian, M.D.	New York
Walter T. Zimdahl, M.D.	Erie

The year 1967 has been devoted to the accomplishment of the objectives delineated and approved by the committee at its meeting on November 30, 1966. The advice and approval of the committee and its advisers were received during the year through personal and mail communication. At a meeting of the committee on September 13, 1967, the mode of fulfillment of the objectives for the year to date and for the remainder of the year was reviewed and approved with some minor modifications.

The following objectives have been fulfilled:

1. Methodology for the review of quality of medical care has been developed. This methodology applies to the retrospective review of hospital records. A review pattern or form which may be applied to specific diagnoses and procedures has been designed. It is arranged in category-item form following the logical and temporal sequence of diagnosis and treatment. Purely informational questions may be answered by paramedical personnel, but the pattern requires that those questions involving analysis and evaluation be answered by reviewing physicians. It has been named the Category-Item Review Pattern.

2. The efforts of the committee in developing this methodology have been and are being planned in coordination with individuals representing other organizations who have an interest in, and responsibility for, medical review.

3. Six subcommittees of physicians with State-wide representation have been formed to decide on the standards of care for each of 6 diagnoses and procedures and to fit these standards to the framework of the Category-Item Review Pattern developed and approved by the Medical Review Committee.

4. A written guide has been prepared to aid each of these subcommittees in accomplishing these aims.

5. The writing of a Medical Review Manual, well under way, will be finished before January 1, 1968. This loose-leaf manual will include a discussion of medical review. The structuring of hospital review committees will be described with enough variants, fitted to a common approach, so that the structure best fitted to an individual hospital may be chosen by the hospital medical staff. The responsibilities and functioning of such committees will also be described. Review patterns, worksheets for the assessment of quality of medical care, for specific diagnoses and procedures will be added as these are developed.

Planning for testing the methodology of medical review as developed by the Medical Review Committee and as applied by the subcommittees to specific diagnoses and procedures is well under way. It is hoped that completion of this planning will allow testing of the methodology during 1968 and that the manual with its appended review patterns will be available before the end of 1968 for the use of those physicians, hospital staffs, and medical organizations wishing to use it.

The chairman wishes to thank all the members of his committee and the committee advisers for their ongoing aid and advice. He also wishes to thank all of the members of the subcommittees who have accepted the responsibilities entailed in such membership.

Respectfully submitted,
Charles M. Brane, M.D., *Chairman*

Report of Reference Committee on Standards of Medical Care: The following report was presented by George McCauley, M.D., chairman.

The Committee on Medical Review, chaired by Charles M. Brane, M.D., has undertaken a job that few thought could be done. A methodology, believed quite simple for auditing medical care based on hospital records, has begun and is well under way. Subcommittees of Statewide physicians have been asked to form and establish standards of care for each of six common diagnoses. The preparation of a medical review manual, which will be of help to medical review committees of hospitals, is also near completion. A grant is being requested from the Federal government to test this methodology of audit review in six voluntary hospitals—two rural, two suburban, and two metropolitan. It is hoped that this study will determine whether or not the plan is feasible and workable. If so, the number of review patterns for other diagnoses will be increased and made available to hospitals and medical staffs requesting same. This form of study differs greatly from that employed in the State of Michigan, in that their audit review is concerned primarily with utilization. The review presented by Dr. Brane's committee has to do chiefly with the standards and quality of medical care.

The House, after discussion during which a motion to amend the reference committee report to include proprietary hospitals in the study was lost, voted to adopt this portion of the reference committee report.

Nursing

To the House of Delegates, Gentlemen:

The membership of the Committee on Nursing is as follows:

Vincent J. Tesoriero, M.D., *Chairman*	Kings
Frank Albert Baumann, M.D.	Broome
Lester J. Candela, M.D.	Queens
Douglas S. Damrosch, M.D.	Otsego
Ralph F. Jacox, M.D.	Monroe
David L. Koch, M.D.	Seneca
John F. Prudden, M.D.	New York

During the past year the committee has held three meetings and also has met three times with representatives of the New York State Nurses Association and the Hospital Association of New York State.

All discussions on nursing education stressed the importance and need to continue diploma schools and to upgrade them in quality. The committee feels that all levels of education and nursing should be supported and none discontinued. Organized nurses associations do not concur in this opinion. The committee is supported on the continuation and improvement of diploma schools by various groups, such as the American College of Surgeons, association of psychiatrists, and leading medical educators.

There was considerable discussion on the recruitment of nurses and the many factors aggravating the present shortage which is reaching critical proportions. Among these factors, as expressed by a director of a school of nursing, is that "as a result of the increasing national emphasis on placing nursing in a college setting, student enrollment has steadily decreased the last two years and qualified faculty are most difficult to obtain." This three-year diploma school, one of the nation's best, was closed this year. Another condition considered by the committee was the matter of extending credit for various levels of nursing education toward a baccalaureate degree. The committee supports this concept and will so inform the appropriate private and public education agencies and organizations.

The committee notes with approval that a new commission is studying the needs in nursing education to formulate a more realistic policy for the future. It also advocates that in any such studies and policy making, the medical profession participate to give these groups the benefit of its experience and concern in good patient care. This goal, common to the nursing and medical professions, can be achieved better by such collaboration.

The following letter and resolution was sent to the American Medical Association's Committee on Nursing, the Joint Commission on Accreditation of Hospitals, and to a member of the New York State Board of Regents.

"The Medical Society of the State of New York through its Council has approved the following resolution submitted by its Committee on Nursing:

> 'WHEREAS, The education of nurses is a matter of great concern to all who have responsibility for the care of the sick; and
>
> 'WHEREAS, It is the conviction of this committee that, in many schools of nursing, clinical training and experience are woefully inadequate; and
>
> 'WHEREAS, It is further the conviction of this committee that the responsibility for evaluation of the effectiveness of nursing school curricula should be shared by the medical and nursing professions; now therefore be it hereby
>
> '*Resolved*, That a Joint Commission on Accreditation of Schools of Nursing be established with representatives from the American Nursing Association, the National League for Nursing, the American Medical Association, and the American Hospital Association; and be it further
>
> '*Resolved*, That said Commission be directed to establish standards for nursing education and to develop the organization necessary to conduct surveys to evaluate compliance with such standards and to assume such other responsibilities as shall be necessary to assure the highest possible degree of professional skill and competence among graduates of schools of nursing.' "

A letter from W. Benson Harer, M.D., chairman of the American Medical Association's Committee on Nursing, stated: "The supply of nurses, nursing education, and accreditation of schools of nursing are matters of great importance and are being studied extensively by government and many other organizations. It is impossible at this time to predict what action will be taken on these matters. I assure you that the Committee on Nursing is devoting much time and thought to all problems of nursing and will give serious consideration to the resolution adopted by the Medical Society of the State of New York."

Your chairman attended a conference sponsored by the AMA Committee on Nursing held in Chicago on October 5 and 6. Participating were 47 representatives of state medical societies' liaison committees with nursing. The excellent attendance points up the nation-wide interest in nursing by the medical profession.

On October 5 there was a reception with lively discussion and interchange of experiences and ideas. This was followed by dinner and an address by Milford O. Rouse, M.D., president of the American Medical Association. He stressed the great importance of the concern and interest of the medical profession in supporting the nursing profession in improving their economic and environmental conditions.

On October 6 the meeting was held at the AMA headquarters auditorium. The morning session, chaired by Edward Pellegrino, M.D., featured an excellent address by Eleanor Lambertsen, R.N., Ed.D., on "Current Nursing Education and Practice," which was followed by considerable discussion and expression of opinion. The trend toward "nursing education in a university setting" is apparently inevitable and is becoming more accepted in various states by the medical profession.

The afternoon session included a report on "The Development and Activities of Joint Physician-Nurse Liaison Committee," by Sister M. Raphael, R.N., and Joseph Marshall, M.D., both of Idaho. This is a formal committee which has been very successful in its activities, with alternate hosts and chairmen. It is similar to the informal joint meetings our committee has been holding during the past four years.

It was apparent that throughout the nation there is need for better physician-nurse professional relations. This is best achieved at the local level. The medical profession in general must be alerted to the importance of learning more about modern nursing education and practice and to regard the nurse as coworker or colleague in the care of a patient.

It is expected that nursing education will continue to be discussed at meetings of the committee and joint meetings with representatives of the Hospital Association and the Nurses Association during the coming year. We feel that discussion and collaboration rather than independent action should be fostered and that nursing education is the proper concern of physicians since it cannot be disassociated from nursing practice.

Respectfully submitted,

VINCENT J. TESORIERO, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

The Committee on Nursing, chaired by Vincent J. Tesoriero, M.D., states again the concern of your Society with the availability of competent nurses. We view with alarm that there has been a decrease in the interest of the diploma school type of nursing education. It is commendable that the nursing profession would wish to upgrade the profession of nursing by requiring a baccalaureate degree, but when 80 per cent of the nurses who now staff our hospitals come from diploma type schools of nursing and only 20 per cent have received baccalaureate degrees, and when we note with alarm the need for many more extended care facilities which will require nurses, your Committee on Nursing and your reference committee feel that the diploma school type of nursing education should not be abandoned. It is felt that the medical profession should not dictate to the nursing profession the methods of nursing education, but show that we are vitally interested in having competent nurses in sufficient number to adequately care for our sick patients.

Your reference committee feels that we should work toward better physician-nurse professional relationships. This should begin in our own local hospitals. The Medical Society of the State of New York should support any legislation that will assist the nursing profession in obtaining better education and greater numbers of competent graduate nurses.

The House voted to adopt this portion of the reference committee report.

Public Medical Care

To the House of Delegates, Gentlemen:

The membership of the Committee on Public Medical Care is as follows:

Robert Schwinger, M.D., *Chairman*	Queens
Albert F. R. Andresen, Jr., M.D.	Westchester
Marcelle T. Bernard, M.D.	Bronx
I. Jay Brightman, M.D., *Adviser-Member*	Albany
Maura L. Flynn, M.D.	Westchester
Arthur H. Mulligan, M.D.	Herkimer
Milton B. Spiegel, M.D.	Kings

Since the introduction of Medicaid, the activities of the committee are at a standstill. Previously the problems arising under the welfare system occupied most of its attention. It is expected that when the activities of the Technical Advisory Committee on Medical Care presently involved in the clarification of the Medicaid problems are completed, our committee will be charged with the vital function of helping Medicaid work to the mutual satisfaction of patients and physicians. Until such time we are following the proceedings and studying the matter. We are confident that the chairman, George Himler, M.D., and the members of the Technical Advisory Committee will be successful in reaching a satisfactory solution in this new and provocative area of medical care.

Respectfully submitted,

ROBERT SCHWINGER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

The Committee on Public Medical Care,

chaired by Robert Schwinger, M.D., has had a relatively inactive year. The committee dealt with the problems of welfare patients, and since the advent of Medicaid its program has been at a standstill. Your reference committee recommends to the Council that the Committee on Public Medical Care be abolished.

The House voted to adopt this portion of the reference committee report.

Utilization Review

To the House of Delegates, Gentlemen:

The membership of the Committee on Utilization Review is as follows:

John A. Finkbeiner, M.D., *Chairman*	New York
Mark A. Freedman, M.D.	New York
Daniel Friedman, M.D.	Suffolk
James Q. Haralambie, M.D.	Westchester
Jason K. Moyer, M.D.	Broome
Charles D. Sherman, Jr., M.D.	Monroe
Herbert J. Wright, Jr., M.D.	Schenectady

This is the first report of this committee since it did not meet until after the annual meeting of the State Society in February, 1967.

The committee is charged with the following responsibilities:

1. To concern itself with the economic management of health care;
2. To maintain close relations between the medical profession and the fiscal intermediaries;
3. To assist in developing standards and methodology for utilization review in four specialized and different areas of health care: physicians offices, general hospitals, extended care facilities, and home health services; and
4. To assist the district and county medical societies to become knowledgeable in the demands of Public Laws 89–97 and 89–239 and Article 28 of the Public Health Laws of 1965.

Implied in these responsibilities, of course, is the necessary public relations to make the program effective.

The committee has met three times to date and concentrated its attention on standards and methodology in utilization review in extended care facilities. At the meeting of April 14, Samuel Z. Freedman, M.D., director of the Division of Standards of Medical Care, arranged for Benjamin Sandberg, assistant regional representative of the Social Security Administration, Bureau of Health Insurance, to meet with the committee. Although there was thorough discussion with this representative, there is still a lack of definitions and guidelines from the Federal and State departments involved.

The following minutes and resolution of the May 12 meeting were approved by the Council at its meeting in Plattsburgh on June 8:

Although the lack of adequate definitions and guidelines from the Federal and State programs handicapped the discussion and rendered decision uncertain, the committee recommends:

1. *Handbook: Extended Care Facility and Utilization Review* published by the Regional Utilization and Medical Review Project, Rochester, New York, serve as a model for such review. Particularly helpful was their definition of an extended-care patient as one "whose condition can be improved by convalescent or rehabilitative care within sixty days or less" (p. 17). It is further recognized that the differentiation between custodial and convalescent care may vary from patient to patient, depending on the medical condition, and may vary in different geographic areas depending on the health resources available.
2. It is the responsibility of county societies and/or district branches and/or other appropriate groups to form a utilization review project to conduct and administer utilization review in extended care facilities in their respective districts or counties. The membership of this committee should be selected so that physicians using or having other financial interest in a particular extended care facility shall not review that facility.
3. Case selection and the initial review is to be made in the extended care facility by the physician-surveyor who then shall report to the utilization project group as well as refer to them any cases for further discussion and final disposition.
4. Fees are to be collected from the individual extended care facility by the project group. Provision is also to be made for payment of secretarial and other overhead expenses. The physicians rendering the utilization review services are to be paid by the project group. Reimbursement is to be for professional services beyond that which can normally be expected as part of society-committee membership. Under no circumstances is a physician to arrange to service a facility as an individual.
5. The quality of patients' records in an extended care facility is to be improved.
6. It is essential that cooperation with the carrier and interested government agencies be maintained.
7. These recommendations with the following resolution are to be widely circulated to all health agencies, carriers, and other interested parties.

> WHEREAS, PL 89–97 provides for extended care facility accommodation, when medically necessary, for patients discharged from an "acute hospital" stay; and
>
> WHEREAS, The extended care facility must provide for utilization review; and
>
> WHEREAS, Payment for utilization review is made available through the carrier; and
>
> WHEREAS, The role of the physician in utilization review has been repeatedly reaffirmed; now therefore be it hereby
>
> *Resolved*, That the Medical Society of the State of New York recommend that utilization review in extended care facilities be made available through the local county medical societies and/or district branches; and be it further
>
> *Resolved*, That each county medical society or district branch establish a committee to conduct and administer extended care facility utilization review, under the direction of that

county medical society and/or district branch, to collect the fees and distribute them to the physicians furnishing the service.

Despite distribution on July 24 of this information to all county medical societies and secretaries of district branches by Dr. Fineberg, there has been little response to date. Therefore, the development of methods and means of implementing the recommendations is an immediate task for the committee as well as consideration of the remainder of its charges and responsibilities.

On October 13, Dr. Freedman visited the offices of the Regional Utilization and Medical Review Project in Rochester. He observed the extended care facility utilization review committee in action and discussed all its activities in detail with Carmel Cristo, M.D., medical director. This information will be of great help to our committee.

The committee acknowledges with grateful thanks and appreciation the guidance and assistance of Samuel Z. Freedman, M.D., director, Division of Standards of Medical Care, Miss Irene Rose, his secretary, and the entire staff of the Medical Society of the State of New York.

Respectfully submitted,
John A. Finkbeiner, M.D., *Chairman*

Report of Reference Committee on Standards of Medical Care: The following report was presented by George McCauley, M.D., chairman.

The Committee on Utilization Review, chaired by John A. Finkbeiner, M.D., has been hard set to define guidelines for utilization review committees. As the result of Federal legislation, utilization review committees must be set up, especially to survey utilization in extended care facilities. Fortunately, some areas of the State, *including the Seventh District Branch and the Genesee Valley area,* have excellent programs with handbooks of guidance already in existence. The Utilization Review Committee and your reference committee concur that it is the responsibility of county societies or district branches to form utilization review groups. In order to participate in the Federal program, extended care facilities need such reviews, and with such a scarcity of needed extended care facilities, we must organize groups of physicians to do this work now.

The House, after discussion, voted to amend the report of the reference committee to include mention of specific areas of the State where such utilization review programs have been developed (see italicized portion above) *and then voted to adopt the reference committee report as a whole as amended.*

68-1. Bank Credit Card Programs

Introduced by Medical Society of the County of Erie

Whereas, The Judicial Council of the American Medical Association has held that physician participation in bank credit card programs is not per se unethical; and

Whereas, The Council of the Medical Society of the State of New York contrariwise has held that physician participation in such financing programs is per se unethical; and

Whereas, It is highly desirable that there be uniformity of opinion on the use of bank credit cards as a form of payment for professional services; and

Whereas, The Judicial Council of the American Medical Association has established guidelines governing the utilization of bank credit card programs by physicians; now therefore be it

Resolved, That the Medical Society of the State of New York adopt the following policy statement of the American Medical Association, dated November, 1966, entitled, "Participation by Physicians in Bank Card Programs":

The growth and development of credit cards is burgeoning. A new form of card, the so-called bank card, is being widely introduced. Bank cards are issued without cost to the card-holder; they are acceptable at many more places than conventional credit cards; they are sponsored by large, reputable banks. They are an innovation in our economic system.

As these bank card plans have come into being, in all parts of the country, physicians have asked if they may ethically use bank cards as a form of payment for professional services. Some medical societies have said physicians may participate; others have said physicians may not.

The Judicial Council believes a uniformity of opinions is desirable. In matters of ethics it would seem indisputable that a general rule should be determined for the guidance of the profession, and that this rule should be implemented at local level.

The medical profession has officially recognized that it cannot dictate to patients how they shall finance their medical bills. It can and should, however, determine principles to guide its members in determining whether and how they may participate in any payment program.

If the bank card were merely a substitute for cash or check in the payment of bills, little or no problem would be presented to physicians regarding their use; they would be merely a newly adopted medium of exchange. Bank cards however, serve a twofold function: They are a convenience—a substitute for currency or check in the payment of indebtedness, and they are also a financing mechanism. Consequently, their indiscriminate use, especially the financing of larger medical bills through banks, could result in additional cost to patients. While the doctor's fee for medical care would not increase, the cost of financing payment of that fee through a third party would be imposed on the patient. Of course, patients may voluntarily elect to pay larger amounts in return for the convenience of a given program. Still the medical profession has a responsibility to guard against patients being placed in untenable financial conditions because of over-all medical care costs. That is why medicine has been in the forefront in encouraging prepayment and insurance programs to provide for the costs of medical services. It must, therefore, maintain its position of safeguarding patients' interests when considering new methods of financing personal indebtedness.

The Judicial Council is of the opinion that neither endorsement nor disapproval should be given to the bank card system at this time.

In June, 1965, the Judicial Council and the Council on Medical Service jointly agreed that any proposed plan for financing medical care or parts of medical care should be judged by the physician in the light of whether or not it might "result in advertising or solicitation of patients by physicians, profit to physicians for other than professional services, exploitation of the patient, or unnecessary increase in the cost of medical care."

Judged by these criteria, the Judicial Council is of the opinion, at this time, that physician participation in bank card programs is not per se unethical. It is of the opinion that physicians may ethically accept bank cards in the payment of current medical bills in lieu of cash or check, that is, as a medium of exchange.

The use of bank cards in financing medical fees must, however, be viewed with reserve at the present stage of their development. While patients may not be denied the right to determine matters of their personal budgeting, physicians must not encourage the use of this financing method if in operation it might compromise the ideals of the medical profession or add to the financial burden of patients.

In connection with physician participation in bank card programs, the Judicial Council recommends the following principles to be implemented and applied as necessary by the county medical society for the guidance of physicians as these programs develop:

1. The county medical society should be satisfied as to the financial and professional integrity of the plan. It should negotiate with the plan sponsors to insure that service charges to the physician are reasonable. It should insist that the plan be open to all physicians on the same terms and that it not exploit or capitalize on physicians' participation in the plan. It should advise the plan that the listing of physicians in directories of participating members is contrary to the ethics of the medical profession.

2. The individual physician may not, because of his participation, increase his fee for medical service rendered the patient. He may not use the plan to solicit patients. He may not encourage patients to use the plan. His position must be that he accepts the plan as a convenience to patients who desire to use it. Plaques or other devices indicating participation in the plan within the physician's office shall be kept to a discreet and dignified minimum. Plaques, signs, or other devices indicating such participation visible outside the physician's office are unacceptable.

3. The use of a bank card in connection with the payment of larger fees—which might normally be paid to the physician in installments—is not to be encouraged. All members of the Association are expected to continue the traditional practice of permitting patients of limited means to pay relatively large fees in installments without interest or carrying charges. Out of respect for the dignity and traditions of the medical profession, the physician may not relieve himself of his obligations "to render service to humanity, reward or financial gain being a subordinate consideration."

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

This resolution, which deals with the ethics of the use of bank credit card programs, requests the Medical Society of the State of New York to adopt the stand of the Judicial Council of the American Medical Association that the use of credit cards as a means of payment for medical services is "not unethical." In 1965, this problem was studied by the Judicial Council of the AMA, and it was their feeling that neither endorsement nor disapproval should be given to the bank card system at that time. It was felt that this practice might result in advertising or solicitation of patients by physicians, profit to physicians for other than professional services, and exploitation of the patient, and that it might unnecessarily increase the cost of medical care. If the credit card plan under consideration did not do these things, the Judicial Council felt that physician participation in the bank card program is "not unethical."

The Council of the Medical Society of the State of New York, at its meeting on November 18, 1965, passed a resolution stating that doctors of medicine participating in any credit card program are unethical. This was approved by the House of Delegates of the Medical Society of the State of New York at its meeting in February, 1966.

This reference committee reaffirms the stand that the use of credit cards by doctors of medicine is not ethical because the physician becomes an agent for a commercial enterprise, that he inadvertently can become the victim of advertising, that in the near future many banks may supply this service and each doctor's office may become rated on the number of bank credit cards he will accept. Dr. Zimring's committee wrote to all the county medical societies in the State, and his replies showed that there was only one county in favor of the use of credit cards, three had no official stand, 27 were against. Also, inquiries addressed to 50 state societies resulted in replies from 43, showing that eight were for, eight were definitely against, and 27 had taken no official position.

Your reference committee recommends disapproval of this resolution.

The House, after discussion, voted to adopt this portion of the reference committee report, thereby disapproving resolution 68-1.

68–2. Legislative Immunity for Members of Utilization Committees

Introduced by Eighth District Branch

> WHEREAS, Utilization committees are mandated by law; and
>
> WHEREAS, Physicians serving on such committees may incur legal liability for errors of judgment or errors due to inadvertence; and
>
> WHEREAS, A number of states have enacted statutes granting legal immunity to physicians serving on utilization committees providing they act in "good faith and without malice"; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York initiate and support legislation granting physicians in this State immunity from suit for acts of omission or commission in the performance of their functions on utilization committees.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

This resolution requests the Medical Society to initiate and support legislation granting legal immunity for members of utilization committees. A bill to this effect has been drawn up and will be presented at the present legislative session within the very near future.

Your reference committee approves this resolution.

The House voted to adopt this portion of the reference committee report.

68–24. Composition of Comprehensive Health Care Planning Agencies

Introduced by Seventh District Branch

> WHEREAS, Many agencies and groups are becoming involved in comprehensive health care planning; and
>
> WHEREAS, It is imperative that this type of planning be properly effected; and
>
> WHEREAS, The medical profession is an integral component of all aspects of health care; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York, in its discussions and negotiations with such agencies responsible for the areawide comprehensive health care planning, make every effort to secure the adoption of the following principles:
>
> 1. That the groups entrusted with the planning effort be based in the geographic area involved;
> 2. That such groups be comprised of community leaders from all segments of society; and
> 3. That the medical profession be represented on such agencies by practicing physicians in sufficient numbers to insure meaningful deliberations and decisions.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman:

Your reference committee is in sympathy with the intent of this resolution, but would change the third *Resolved* by deleting the word "practicing" and after the word "physicians" adding the words "in the private practice of medicine." It is felt that the physician in the private practice of medicine might be more attuned to the needs of health care planning than his hospital-based colleague.

Your reference committee recommends approval of this resolution as changed.

The House, after discussion, voted to amend the report of the reference committee by changing the next to last sentence of the report to read, "It is felt that the physician in the private practice of medicine might be best attuned to the needs of health care planning," *and then voted to adopt this portion of the reference committee report as amended.*

68–44. Principles of Physicians Charges for Services Rendered by Contract Laboratories

Introduced by First District Branch

> WHEREAS, Laboratory examinations are invaluable aids to physicians who are charged with the responsibility of diagnosis and treatment of disease; and
>
> WHEREAS, The technics and methods of laboratory examinations have undergone tremendous change and development, and many of the laboratory examinations and procedures are now being performed more accurately and efficiently with fully automated and semiautomated equipment; and
>
> WHEREAS, Such automated equipment is utilized most economically in the performance of laboratory examinations on a multitude of specimens in series; and
>
> WHEREAS, Such automated equipment for the most part is available in laboratories which render their services to physicians on a contract or fixed fee basis, which fees are not related to any particular patient; and
>
> WHEREAS, The services rendered by these laboratories result in economies which should accrue to the patient; and
>
> WHEREAS, A substantial and increasing number of physicians are utilizing the facilities and services of such laboratories under the contract plan; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York adopt the following principles:

1. That when a physician contracts with a clinical laboratory for routine laboratory services for his patients, at a fixed fee, the economies effected by such an arrangement be passed on to his patients in the form of correspondingly lower charges;
2. That physicians shall not derive pecuniary profit in their charges for services rendered by contract laboratories, at fixed rates, and billed directly to them.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

Your reference committee is in hearty agreement with this resolution that economies effected by arrangements with contract laboratories should be passed on to the physician's patients, and that no physician shall exploit his patient by charging a higher fee for laboratory services for which he is directly billed.

Your reference committee recommends approval of this resolution.

The House voted to adopt this portion of the reference committee report.

68–45. Minimum Standards for Government Agents Who Direct or Control Privately Practicing Physicians

Introduced by Warren County Medical Society

WHEREAS, Increasing government control of the practice of medicine is leading to an increase in the supervision of physicians and health facilities; and

WHEREAS, Government agents are making rules and decisions affecting practicing physicians and health facilities; and

WHEREAS, It is in the best interests of patients, physicians, and health facilities that proper rules and decisions be made; and

WHEREAS, Physicians in the private practice of medicine are most familiar with the professional problems involved in private practice; now therefore be it

Resolved, That the Medical Society of the State of New York seek the introduction of and support legislation to require that individuals who are elected or appointed to government agency positions in New York State, and who direct or control practicing physicians in any way, be required to be physicians licensed by New York State who have been in the private practice of medicine for at least two years.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

This resolution would request the Medical Society of the State of New York to initiate and support legislation requiring all individuals elected or appointed to any government position in New York State who might control the practicing physician, to be required to have been a licensed physician in New York State in the private practice of medicine for a minimum of two years. Because at present so many nonmedical government officials have some say in the control of the practicing physician, the request in this resolution was believed by your reference committee to be most impractical and for this reason its disapproval is recommended.

The House voted to adopt this portion of the reference committee report, thereby disapproving resolution 68–45.

68–6. Reaffirmation of the Principle of Humanism in Medical Practice

Introduced by Nassau and Suffolk County Medical Societies

WHEREAS, Population growth, socioeconomic change, and technologic advances have required medicine to re-evaluate and redirect the delivery of comprehensive medical and hospital services to the public; and

WHEREAS, Responding to these needs requires increasing specialization and utilization of nonmedical personnel and technology; and

WHEREAS, This direction in medicine is increasing the fragmentation of medical services; and

WHEREAS, Such developments lead to dehumanization of patient care detrimental to all concerned; now therefore be it

Resolved, That the Medical Society of the State of New York establish a task force of medical, community, and hospital leaders, including representatives of psychiatry, to reaffirm the principle of humanism in medical practice to the end that there be (1) a revival of the scientific application of the therapeutic aspects of the doctor-patient relationship, and (2) a greater application and knowledge of psychiatric principles in all patient problems and care; and be it further

Resolved, That this task force stimulate and support the application of these principles of the doctor-patient relationship in teaching programs, residency training programs, and by all physicians in private and hospital practice, to sustain the concept implicit in comprehensive health care that the whole person is greater than the sum of his psycho-physio-social parts.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

This resolution appeared quite ambiguous to the members of the reference committee in that it deplored the fragmentation of medical services through specialization and requested a task force of medical, community, and hospital leaders to reaffirm the principle of humanism in medical practice. No one appeared before the reference committee from the two county medical societies submitting this resolution to explain and discuss its meaning and intent. Your reference committee therefore recommends that no action be taken on this resolution.

The House voted to adopt this portion of the reference committee report.

68–56. State Education Law and Physicians' Fees

Introduced by Medical Society of the County of Queens

> WHEREAS, Section 6514 of the Education Law provides:
>
> 6514. Revocation of certificates, annulment of registrations.
>
> 2. The license or registration of a practitioner of medicine. . .may be revoked, suspended or annulled or such practitioner reprimanded or disciplined in accordance with the provisions and procedure of this article upon decision after due hearing in any of the following cases:
>
> > (*f*) That a physician. . .has directly or indirectly requested, received or participated in the division, transference, assignment, rebate, splitting or refunding of a fee. . .in connection with the furnishing of medical, surgical or dental care, diagnosis or treatment or service. . .; and
>
> WHEREAS, Some hospitals are requesting, through various devices and mechanisms, the fees of physicians as enumerated in 2(f); now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York inform its membership of the provisions of Section 6514, 2(f) of the State Education Law; and be it further
>
> *Resolved*, That the Medical Society of the State of New York initiate a study of the status of corporate entities which in any manner cause violation of Section 6514, 2(f) of the State Education Law.

REPORT OF REFERENCE COMMITTEE ON STANDARDS OF MEDICAL CARE: The following report was presented by George McCauley, M.D., chairman.

This resolution would bring to the attention of all practicing physicians Section 6514 of the present Education Law that calls for revocation of license or registration of any practitioner of medicine, who directly or indirectly participates in transference, assignment, rebate, or splitting of a fee in any guise. In discussion of this resolution, it was pointed out that many hospital-based physicians and some physicians in teaching hospitals have been required to sign contracts turning over all or part of their fees for medical care to the hospital.

Your Committee on Hospital-Based Physicians, under Dr. Blackman, and your Hospital and Professional Relations Committee, under Dr. Pisani, are most anxious to know of these violations. There have been many accusations, but no definite documentation to date. Your reference committee feels that any documentation of such hospital action should be forwarded to Samuel Z. Freedman, M.D., director of the Division of Standards of Medical Care of the Medical Society of the State of New York, so that the matter could be submitted to the Attorney General.

Your reference committee approves this resolution.

The House, after discussion, voted to amend the reference committee report by deleting from the report everything except the last sentence, "Your reference committee approves this resolution," *and then voted to adopt this portion of the reference committee report as amended.*

At this point, the House took from the table the portion of the report of the Reference Committee on Public and Professional Affairs on resolution 68–29 (see page 1617). *After discussion, during which a motion to adopt this portion of the report disapproving resolution 68–29, was lost, the House then voted to approve resolution 68–29.*

The House voted to adopt the reference committee report as a whole as amended.

Medicare and Medicaid

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

Medicaid

Medicaid, as implemented, has caused severe frustration and anxiety among the members of the Medical Society of the State of New York for the past two and one-half years. The disorganization that has characterized its administration was one of the major reasons for disapproval by the House of Delegates in 1967. Confusion, red tape, delay in payment, and administrative decentralization has caused our representing committees to despair of ever solving the multiple problems.

The Department of Social Services has deliberately started the "home rule prerogatives" of districts, causing a multiplicity of authority, rules, and procedures throughout the State; and unfortunately the longer these multiple local districts are permitted to continue in this practice, the more difficult it will be to change the system.

The tremendous economic impact of the program, as reported by Peat, Marwick, Mitchell & Company, has apparently been greater upstate than in New York City as far as monies expended. At the start of Medicaid, the yearly payment for health services in the State was about $235 per individual. Since that time it has risen to $275, and it is expected that with full participation it will rise to $300, at existing prices. We can only hope that the legislators can act in their wisdom to correct this unwieldy and costly program.

The House voted to adopt this portion of the reference committee report.

Technical Advisory on Medical Care (Annual)

To the House of Delegates, Gentlemen:

The Technical Advisory Committee on Medical Care consists of the following members:

George Himler, M.D., *Chairman*	**New York**
William L. Wheeler, Jr., M.D., *Cochairman*	New York
John H. Carter, M.D.	Albany
George Rehmi Denton, M.D.	Albany
John T. Donovan, Jr., M.D.	Niagara
Carl F. Freese, M.D.	Nassau
David S. Gerbarg, M.D.	Ulster
George G. McCauley, M.D.	Tompkins
Stewart Clyde Wagoner, M.D.	Schenectady

The Technical Advisory Committee on Medical Care held several meetings with the New York State Health Department in 1967. This report will set forth the progress that was made toward meeting the directives of the 1967 House of Delegates and the current status of the Medicaid program.

Administration of Medicaid. One of the major reasons for disapproval by the House of the Medicaid program in 1967 was the disorganization that characterized its administration. The Delegates called on the State Commissioner of Social Services to create a uniform, State-wide program, with standard forms and procedures, to help minimize confusion, red tape, and delays in payment. Your committee has been unable to gain acceptance for this principle of uniformity in spite of its obvious advantages. Not only has the Department of Social Services made no effort in that direction, it has deliberately supported the home rule prerogatives of the Social Service districts. As a result, there are as many Medicaid programs as there are such districts, each with its own rules, regulations, and procedures. The efficiency of the local Social Service offices covers a wide range, as does the cordiality of their relations with the physicians of their respective areas. On the whole, the quality of administration has not improved noticeably over that of a year ago. The performance standards the Governor was asked to require his commissioners to establish have not even been developed, let alone enforced.

Intermediary Operation. In keeping with its exaggerated respect for home rule, the State Department of Social Services has refrained from encouraging district offices to turn to an intermediary type of operation similar to that of the Title 18 program, although legislation permitting them to resort to this expedient does exist. The local offices, on the other hand, have indicated that they will take no affirmative action without the specific approval of the Department at the State level. As a direct outcome of this policy or lack of it, there are 64 administrative agencies in the State duplicating the personnel and equipment of the Title 18 carriers which, in almost every instance, could do the job more efficiently. In addition to the fact that this is a financial burden to the program and, therefore, ultimately to the taxpayer, it is a nuisance to physicians who must put up with the red tape and inefficiency of their local bureaucracy. It would not be so bad if this type of operation were merely wasteful and inconvenient, but it carries a potential danger with it as well.

The longer the Social Service districts are permitted to delay in turning to intermediary administration, the less likelihood there is of its being adopted. These local administrative agencies, once entrenched in Medicaid, will be almost impossible to dislocate from the program, since all government officials tend to resist the diminution of their own empires. It may also be taken as axiomatic that parallel organizations (Title 18, private carriers, and Title 19, public agencies) to administer programs of health care financing will not long exist side-by-side. The trend will inevitably be for one to replace the other entirely. Direct administration of Medicaid by government constitutes a continuing threat to the viability of the prepaid voluntary health insurance system that the medical profession was instrumental in developing.

Direct Billing. The House of Delegates in 1967 called also for granting physicians the option of billing patients directly for services rendered under the Medicaid program. Patients cannot now seek reimbursement if they pay their physicians out of pocket because Medicaid is a so-called vendor payment program that permits payment only to providers of services. The attainment of the direct billing option requires modification of the Social Security law and is under consideration among the Medicare amendments presently before Congress.

Free Choice Legislation. The right of Medicaid patients to free choice of physician and facility is now being enforced under the provisions of a regulation adopted by the New York State Board of Social Welfare in 1966. As the delegates are aware, a bill to incorporate this guarantee into the Medical Assistance for Needy Persons law failed by one vote in the New York State Legislature. Your Committee on State Legislation will seek reintroduction and increased support for the bill during the current legislative session.

Eligibility. The New York State Board of Social Welfare did not follow the recommendation of the Medical Society of the State of New York that income eligibility for medical assistance be set at 150 per cent of the income level required for money assistance. The Ways and Means Committee of the House of Representatives is now recommending that the eligibility level be reduced progressively over the next three years from 150 per cent of the money assistance ceiling, to 133 per cent, and, finally, to 125 per cent. This would ultimately bring the income eligibility for medical assistance payments to about $3,900 per year for a family of four with one wage earner. Your chairman believes that this would be a rather harsh cutback from present levels and that it would work much hardship in this State.

It is to be borne in mind, however, that if Congress does act favorably on the recommendations of the House Ways and Means Committee, the State of New York will not be compelled to adopt the income ceilings called for. The effect of the amendment would be merely to limit the amount of the Federal contribution to the State's Medicaid program. If, under these circumstances, current State income ceilings were continued in force, it would throw an intolerable burden on the taxpayers of New York.

Your chairman therefore recommends that the Medical Society of the State of New York reaffirm its action of 1967 in calling for a rollback of the eligibility income ceiling to 150 per cent of the money assistance level and oppose the more drastic reduction being contemplated in Congress.

Usual, Customary, and Prevailing Fees. In accordance with the mandate of the House of Delegates, your committee continued to press for the adoption of the Title 18 method of fee determination to replace the Maximum Fee Schedule promulgated in July, 1966. In late 1966 and early 1967, Hollis S. Ingraham, M.D., State commissioner of health, who has the authority to certify fees but not to promulgate them, certified to George K. Wyman, State commissioner of social services, that reimbursement to physicians should be on the basis of the "usual, customary, and prevailing" concept. Shortly thereafter, Commissioner Wyman, in a public statement, gave his support to the same principle. Since Governor Rockefeller had already announced his intention that physicians be paid their usual rates under the program, your committee enjoyed a brief period of euphoria. This was dispelled, never to return, on the discovery that there was one more hurdle to be cleared in the person of the Director of the Budget, who has so far turned a deaf ear to our urgings as well as those of the Commissioner of Health.

Your committee was informed that the Department of the Budget would conduct a study of prevailing fees to determine actual fee levels and their potential cost impact on the program. Those responsible for the study journeyed to Washington and to Baltimore and returned with hints that the Medicare program would shortly be in difficulties because of escalation of physicians' fees. There were apparently little or no concrete data gleaned from these visits, or at least none were given in the reports. In spite of the excruciatingly slow rate of progress of this study, its mere existence gave your committee hope that the principle we were fighting to establish was receiving serious consideration. That hope was interred in mid-1967, together with the survey, when the latter shuddered to a halt and those who had been conducting it were given other assignments.

Meanwhile, back at the State Department of Health, the Office of Health Economics, under the direction of David M. Schneider, Ph.D., was also attempting to secure information from the Social Security Administration and the Title 18 carriers on fee levels and costs under the Medicare reimbursement formula. Dr. Schneider reported that the intermediaries and the Social Security Administration were both reluctant to provide the study group with the data they sought. This survey was therefore also quietly abandoned.

From the beginning of the Medical Assistance to Needy Persons program, your committee has been convinced that accurate fee information is an essential tool in any negotiation and that, in this situation, it is imperative that we be able to document customary fees in the various regions of the State in a precise and unimpeachable manner. The committee had already recommended tentative regions for the appointment of study committees. It was felt, however, that the fee structures arrived at by these committees, if and when they were set in operation, would be suspect on the basis that physicians were reporting on their own fees. Accordingly, your committee suggested to the Council that the proposed fee survey should be conducted by a competent agency, independent of the State Medical Society, to free it from the taint of professional bias.

Simultaneously, the Society's Economics Committee was preparing to fulfill the mandate of the House of Delegates to revise the Relative Value Scale. It was immediately apparent that the type of information needed for this purpose was almost precisely the same as that required by your committee and that, with very little modification, the Economics Committee's study could be made to serve both purposes. A meeting was therefore held with the chairman of the Economics Committee and the following recommendations to the Council were agreed on:

1. That the study proposed by the Economics Committee to revise the Relative Value Scale be approved with whatever structural changes that are necessary to provide the fee information required by the Technical Advisory Committee.
2. That whatever agency is chosen to conduct the study do so under contract with the Empire State Medical, Scientific and Educational Foundation.
3. That the Economics Committee be charged with the conduct and/or supervision of the project.
4. That the chairman of the Technical Advisory Committee, in conjunction with the chairman of the Economics Committee and the president of the Foundation, be empowered to agree with the New York State Department of Health on the conditions of their possible participation in the project. These agreements were to include but not be limited to (*a*) the authority of the participants, (*b*) cooperation in the preliminary planning of the study, (*c*) the amount of the Health Department's contribution, (*d*) the possible involvement of other interested agencies, and (*e*) disposition of the data and conclusions.

The necessary authorization was given by the Council and the survey is in the process of being prepared. Since the results will not be available for some time, the proposed regional fee study committees have not been appointed nor, indeed, has the composition of the regions themselves been finalized. Your committee recommends that these be appointed when the study group's report can be made available for their comment and recommendations and for distribution to the physicians of their areas. It is the hope of your committee that, in addition to providing the needed fee information, the survey will yield data to determine the validity of the concept of regional differences in medical fees. The protests of some county medical societies on their tentative assignments to regions makes it appear that area differences in fee levels are breaking down.

Pilot Project—In June, 1967, William B. Forsyth, M.D., deputy director of medical services in Monroe County, published the results of a pilot project he had conducted in that county on usual, customary, and prevailing fees for home and office visits. The report confirmed your committee's contention that payment on this basis would have little impact on the total cost of the Medicaid program. The State Health Department, on reviewing the report, decided to recommend that a similar pilot project be conducted in four counties—urban, suburban, and rural—and that those counties be guaranteed reimbursement by the State for any extra costs they might incur. The Health Department, at the time of this report, is seeking the approval of the Department of Social Services. Your committee feels that such a pilot study would have value in determining the specific cost impact of the payment of usual and customary fees and would also help to indicate the administrative difficulties that might arise. A final decision on whether or not the project will be undertaken has not yet been made.

In spite of the flurry of activity in studies of prevailing fees your chairman cannot help but report that, in his opinion, the very term is anathema to the minds of those officials and legislators whose approval would be necessary for the adoption of this method of payment. The cost of the Medicaid program has been so great that the protests have reached almost the proportions of a taxpayers' revolt. It is not generally appreciated that over 80 per cent of this cost is ascribable to nonmedical payments. Under these circumstances, it is extremely unlikely that any payment mechanism will be adopted that would permit an increase in physicians' fees even if it could be shown that total costs would not increase.

As time goes on, inflationary trends will make the currently inadequate Maximum Fee Schedule progressively more substandard. Since your committee is specifically prohibited from accepting any fixed fee schedule, your chairman foresees that the specialty societies will be compelled to seek to negotiate higher "interim" fees for their members, as they have done once before. This circumvention of the State Medical Society is destructive to its efforts to put Medicaid on a workable footing.

Your chairman recognizes the declared intent of the House of Delegates that the Society's adherence to the principle of "usual, customary, and prevailing" be held inviolate. On the other hand, it is becoming apparent that, as scheduled fees sink lower in comparison with customary charges, many more physicians will decline to participate in the Medicaid program. The medical profession is already receiving unjust criticism for the deficiencies of the program and the unwillingness of a large percentage of physicians to accept its terms. A significant further withdrawal of physicians from the program would be harmful to our public posture.

In order to forestall this possibility, your chairman recommends that your committee, or any other appropriate committee of the Society, be given some latitude in negotiating interim fees. When the Relative Value Scale has been revised, it could be used for that purpose with a suitable conversion factor and possibly another multiplier to take regional fee differences into account. Your chairman is aware that this proposal was rejected by the House of Delegates in 1967. He renews it at this time, with trepidation, only because he believes it to be necessary to prevent further deterioration of a bad situation. To complete the portion of this report dealing with physicians' fees, your chairman would like to refer the delegates to the report of the Coordinating Council of the First District Branch, a section of which describes the regulations that have been established by the New York State Department of Health for payment for services rendered to Medicaid beneficiaries in ambulatory care facilities and on hospital teaching services. Another section in that report deals with the disposition of fees paid to hospitals on behalf of staff physicians, which may also be of general interest.

Request to Governor for Negotiating Committee. Your committee has noticed a gradual degradation of the functions of the Technical Advisory Committee on Medical Care and the importance of the matters brought before it. It has been impossible to reach decisions on major policy with the State Health Department through this mechanism. Even when the Health Department does come to a major decision, it is often not binding because authority over the program overlaps and is divided among the Department of Health, the Department of Social Services, and, apparently, the Department of the Budget.

Your committee, as originally appointed, was charged with the responsibility of negotiating with an Interdepartmental Task Force and was not intended to be either technical or advisory in nature. It is true that, on the recommendation of your committee, a representative of the Department of Social Services has been attending the meetings. This improves our communications but does not change the fact that the current arrangement does not provide for positive action on matters of considerable importance and urgency. Accordingly, your committee recommended to Frederick A. Wurzbach, Jr., M.D., president, that he write to Governor Rockefeller requesting him to set up a committee with top echelon representation from the office of the Governor, the Department of Health, the Department of Social Services, the Department of the Budget, and the Technical Advisory Committee, and that the group thus formed have the power to act. The letter was sent on April 25, 1967. This request, together with a similar later one, was denied.

The only recourse your chairman has been able to discover to secure prompt discussion and action on matters of importance and urgency has been to ask for a meeting with Alton Marshall, the Governor's secretary, and the State officials involved in the Medicaid program. He did this on two occasions, acting in another capacity, and although the results were not spectacular, the meetings were useful, and final decisions were made. This arrangement is not entirely satisfactory since it cannot be used regularly. Your committee therefore usually uses its meetings with the Health Department to introduce questions of major policy and carries these further only when action is not forthcoming.

Physician Qualifications. The New York State Department of Health has insisted on implementing its qualification and postgraduate study requirements for physicians participating in Medicaid. These are to go into effect early in 1968 despite the protests of the Medical Society of the State of New York. These protests have been based on the conviction that such requirements are not necessary or even conducive to the improvement of medical care and that they would establish the Health Department as a secondary agency for the licensing of physicians. Although the Empire State Medical, Scientific and Educational Foundation was authorized to work with the Health Department in developing opportunities for physicians to maintain and improve their skills through postgraduate study, this activity is not to be interpreted as acquiescence by the Medical Society of the State of New York to the proposed regulations.

Summary. Your chairman must therefore regretfully report that, in spite of strenuous efforts on the part of your committee, not a single one of the major requirements of the 1967 House of Delegates has been met by the State Administration. The only accomplishment of the year was a modest one in the form of the State Medical Manual which, ignoring the regulations on physician participation in Medicaid and the fee schedule it contains, will ultimately become a useful administrative tool.

This, then, is the condition of the New York State Medical Assistance to Needy Persons program in November, 1967, when this report is being submitted. It is unlikely that there will be any important changes in it between now and the 1968 annual meeting of the House of Delegates. State officials are obviously waiting for congressional action on the recommendations of the House Ways and Means Committee before they even consider modifying the present program. They may also anticipate alterations in the New York State law at the next session of the State Legislature. Whatever their reasons, meetings dates have been scheduled further and further apart and what we ruefully call negotiations are in a state of suspended animation awaiting the stimulus of expected legislation for their revival.

Your chairman would like to touch briefly on the question of "universal health insurance" or what he likes to call compulsory voluntary health insurance. A proposal of this nature was considered by the State Administration and by the Legislature in 1967 but was not adopted. Regardless of the effect of future legislation on the New York State Medicaid program, your chairman is convinced that there will be a strong drive to enact a universal health insurance program. This will be the subject of the report of another committee of which your chairman is a member, so it will not be elaborated on here. The important thing to remember is that Medicaid will still be operational whatever changes may be made in the Medical Assistance to Needy Persons Law. The correction of its many deficiencies will be no less important if part of the program is turned back to the private sector. Your State Society must continue to demand and fight for those corrections.

Your committee would emphasize the weaknesses inherent in the divided administration of the Medicaid program. It has resulted in operational chaos. In addition, it makes meaningful negotiation between the State Administration and the State Medical Society impossible. Your committee's desire to establish a high level negotiating group was based on its recognition of this fact. It would be even more beneficial to the proper development of the Medicaid program if it were turned over to a single agency vested with all necessary authority. The present arrangement is about as viable as a three-headed calf. There will be additional recommendations in a supplementary report to be submitted to the House.

Conclusion. In closing, your chairman would like to express his sincere gratitude to the members of the committee. They have been faithful in their attendance at meetings, mature and flexible in their thinking, and an inexhaustible source of advice and support.

Respectfully submitted,
GEORGE HIMLER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

The Technical Advisory Committee, under the excellent chairmanship of George Himler, M.D., has worked long and diligently in our interest, trying to carry out the mandate of the 1967 House of Delegates on direct billing, free choice of physician, usual and customary fee, co-insurance and deductible features, and the use of intermediaries. Your reference committee has noted that, in the summary, the chairman of the committee regretfully reported that in spite of strenuous efforts on its part, not a single one of the major requirements of the 1967 House of Delegates has been met by the State administration.

We strongly urge each member of the Society to read this report carefully, and we commend Dr. Himler and his committee for their tremendous expenditure of time and energy in our behalf.

The House voted to adopt this portion of the reference committee report.

Technical Advisory on Medical Care (Supplementary)

To the House of Delegates, Gentlemen:

The enactment on January 2, 1968, of Public Law 90–248, the "Social Security Amendments of 1967," has caused and will cause significant change to take place in the New York State Medicaid program. The new law sets a limit on Federal participation in the financing of the various state medical assistance programs. Specifically, it prohibits Federal payment for medical assistance "in any state, for any member of a family the annual income of which exceeds $133^1/_3$ per cent of the highest amount that would ordinarily be paid to a family of the same size without any income or resources, in the form of money payments under the state plan for Aid to Families with Dependent Children."

The delegates will remember that a rollback of eligibility levels was called for at the annual meeting of 1967, and that the standard tentatively recommended for the hypothetic family of four with one wage earner was the old Kerr-Mills $5,300 per annum. It is difficult to state the precise dollar amount of the eligibility criteria imposed to limit Federal participation, but they are certainly lower than $5,300.

Your chairman cannot help but point out that the stubborn adherence of State officials to an unrealistically high income eligibility requirement, in spite of the advice of the State Society and the warnings of competent actuaries, has done severe and perhaps permanent damage to the Medicaid program. The response of Congress to this error in judgment, in the form of the Social Security Amendments of 1967, is more than corrective, it is harsh to the point of being punitive. The State is now faced with choosing between the unhappy alternatives of curtailing the Medicaid program to an extent that will cause actual hardship, or of requiring its taxpayers to shoulder the financial burden of lending medical assistance to those who are in need but do not qualify under the Federal criteria. A more thoughtful and cautious approach on the part of the State would have averted this situation.

It seems to your chairman that the Medical Society of the State of New York should support eligibility requirements at or near $5,300 income per year for a family of four, with the understanding that the levels will be adjusted as need and prudence dictate. If adopted, this would mean that New York State would bear a larger proportion of the total cost of Medicaid than it does at present, but this is unavoidable if we are to meet the health care requirements of the medically indigent.

Another amendment applies to both Medicare and Medicaid. The Federal government agrees to participate in Medicaid coverage for individuals who are entitled to benefits under Title 18 and are simultaneously eligible for assistance under Title 19. The Federal government will not, however, "participate in meeting the costs of amounts expended as medical assistance for individuals aged sixty-five or over, if the amount would not have been expended if the individual had been enrolled under Part B of Medicare." This provision makes it almost compulsory for the State to "buy in" under Title 18, Part B, for its Title 19 eligibles. Some possible results of this amendment will be discussed later in this report.

Another interesting amendment to Medicaid is one that permits the State to vary the standards of eligibility based on the variations between shelter costs in urban and rural areas. The possibility of establishing differentials in income eligibility is receiving serious consideration. Hopefully, as the legislators recognize the validity of regional differences in cost of living, they will, at the same time, accept the same premise for the cost of rendering medical care.

Another Social Security amendment is one that guarantees Title 19 recipients free choice of physician and facility beginning on July 1, 1969, in the continental United States and in 1972 in its possessions and Puerto Rico. Since the free-choice privilege is now guaranteed by State regulation, further pursuit of State legislation now seems unnecessary.

A full discussion of the new Social Security amendments is beyond the scope of this report, but they do contain one more provision that will be of interest to the House of Delegates. At their own option, states may now grant the providers of services under Title 19 the option of direct billing. Although this has been one of the objectives of this House of Delegates, your chairman is not hopeful that the State law, as amended to meet the conditions imposed by Federal amendments to Title 19, will permit direct billing to recipients. It is extremely unlikely that the State will relinquish its control over costs and charges by making Medicaid a cash indemnity program. It seems more advisable for the Medical Society to press for improvements in administration and a fair fee structure than to pursue the will-o'-the-wisp of direct billing.

Your committee has been unsuccessful in its attempts to gain serious consideration for the "usual, customary, and prevailing" concept. The studies by the State Department of the Budget and the State Department of Health, that were either under way or proposed, have all been abandoned. It has been completely unavailing to point out that reimbursement on this basis would not result in an over-all increase in costs but would rather bring about a more equitable distribution of the monies available for payment. The high costs of Medicaid are certainly not attributable to medical fees, since these are governed by a low, fixed fee schedule, and there has been no unwarranted or unexpected increase in medical services. Nevertheless, the runaway costs of Medicaid have created a conditioned reflex in legislators and

State officials which brings about an automatic negative reaction at the mere mention of the term "usual, customary, and prevailing." Your chairman considers it most unlikely that the prevailing fee concept will be adopted in the near future.

As stated in the annual report, there has been an almost complete standstill on the part of the State in planning and developing Medicaid, pending, first, Federal legislation, and, now, State legislation on both Title 19 and universal health insurance. Since your committee had had no recent contact with the Departments of Health and Social Services, your chairman thought it desirable to meet with the commissioners of these departments to explore possible avenues of constructive action. A meeting was held on January 29, 1968. It was attended by Hollis S. Ingraham, M.D., State commissioner of health; the Honorable George K. Wyman, State commissioner of social services; I. Jay Brightman, M.D., deputy commissioner of health; Frederick A. Wurzbach, Jr., M.D., president; Edward C. Hughes, M.D., president-elect; Henry I. Fineberg, M.D., executive vice-president, and your chairman.

The Medical Society representatives were given a copy of a survey of the Medicaid program conducted by Peat, Marwick, Mitchell and Company, on behalf of the State. Among other observations, the report indicates that the program is not achieving its objectives because of administrative complexity and decentralization. It recommends simplification of forms and the adoption of centralized data-processing procedures. The report states that a cutback in eligibility is necessary and recommends the application of the principle of differential eligibility standards. A large increase in demand for services is noted, and the observation is made that the medical profession has neither the manpower nor the facilities to expand services in proportion to the increase in demand that already exists, let alone that which may be expected in the future. A crash program for increasing medical capabilities in the State is recommended in terms of better utilization of paramedical personnel to permit physicians to concentrate their efforts in the rendering of medical care and of an actual increase in the numbers of all health care professionals. The surveyors further advise the use of flexible guidelines to control the use of medical services and the granting of discretion to physicians and dentists within the broad limits of such guidelines. They also advocate the use of flexible fee schedules for doctors and dentists with the ultimate adoption of "modified customary and usual" fees. While reading the report, your chairman had the feeling that the State, in retaining this management advisory group to review Medicaid, was paying for advice and recommendations that the Medical Society has been offering gratis for the past eighteen months.

In general discussion, Commissioners Wyman and Ingraham reaffirmed their belief that reimbursement for services must ultimately be at the level of customary and prevailing fees. At the same time, they confirmed your chairman's belief that in the current political climate no increases in fees could be anticipated in the near future and that the usual and customary concept stood no chance of adoption. Commissioner Wyman indicated that his department was currently and actively engaged in developing simplified standard report forms and centralized data-processing procedures. He agreed that administrative expense was certainly a factor in the high total cost of the program. Parenthetically, in relation to these costs, it is interesting to note that only about 5.5 per cent of all payments in the Medicaid program are for medical services while 80 per cent go to pay for hospitals and nursing homes.

Discussion then turned to the use of intermediaries, and Commissioner Wyman indicated that he had no basic objection to this type of operation. He observed that it might be advisable to turn first to intermediary operation for those persons who are eligible for both Title 18 and Title 19, of whom there are between 500,000 and 1,000,000 in the State. This would eliminate a complicated billing procedure which is now an irritant to many physicians and would also make a substantial saving in administrative expense. In addition, the adoption of intermediary operation for these cases would serve the purpose of demonstrating or testing the capacity of the carriers to take on the load of Medicaid. This is a possibility that deserves further exploration since your committee believes that the longer the districts are permitted to administer their own programs, the less likely they are to accept carrier operation since they are making progressively more substantial commitments of equipment and personnel.

Your chairman then reintroduced the matter of establishing an adequate liaison between the Medical Society of the State of New York and the State Departments of Health, Social Services, and the Budget. He repeated his conviction that the advisory committees to the Departments of Health and Social Services, while they are necessary and useful, do not serve the Society's need for simultaneous contact with all three departments involved in Medicaid when negotiating conditions, policies, and fees. Dr. Brightman, who had been aware of your committee's position on this matter, handed your chairman a copy of a memorandum recommending a change in the Technical Advisory Committee which would perhaps give the Society less representation but clearly define its advisory capacity and the fact that it is a committee that the Health Department appoints to itself rather than a committee of the Medical Society of the State of New York. Your chairman has no wish to weaken the Technical Advisory Committee, but he and the committee have long been in agreement that the advisory and negotiating functions must be separated. The Commissioners seemed to accept this point of view and agreed to sound out Dr. Norman Hurd, Director of the Budget, on the possibility of setting up a group that could meet on call to negotiate policies and fees.

Recommendations. In the light of the observations made in this supplementary report and in the annual report, your chairman makes the following recommendations to the House of Delegates:

1. That the House of Delegates of the Medical Society of the State of New York reaffirm its support of the principle of Medicaid.
2. That the House of Delegates again express its disapproval of the manner in which the Medical Assistance to Needy Persons program is being administered and urge the Governor and the Commissioner of Social Services to develop and institute, with all possible speed, uniform billing and report forms and centralized data-processing procedures.
3. That the House of Delegates urge the Governor and the Commissioners of Health and Social Services to do everything in their power to promote the administration of Medicaid by intermediaries and that, as a first step, the administration of medical assistance to those persons who are simultaneously eligible for Medicare and Medicaid be turned over to the Title 18 carriers.
4. That the House of Delegates reaffirm its position that income eligibility levels for assistance under Medicaid must be reduced, but that it support a standard of approximately $5,300 per annum for a family of four, with possible upward revision when conditions require such revision and cost experience permits.
5. That the House of Delegates support the careful investigation of the principle of urban and rural differentials in income eligibility as a possible means of distributing the funds available for assistance more equitably than under a uniform standard.
6. That the House of Delegates reaffirm its support of deductible and co-insurance requirements for Medicaid recipients who are not receiving categorical assistance, as a means of controlling costs and utilization, with the proviso that proof of payment of such deductible and co-insurance amounts is not a prerequisite for payment to providers of services.
7. That the House of Delegates reaffirm its adherence to the principle of payment for medical services on the basis of the "usual, customary, and prevailing" concept, as being the most economical and equitable method of reimbursement.
8. That, in recognition of the fact that "interim fees" and a fixed fee schedule are now in effect and that they will become increasingly inadequate with the passage of time, thereby further limiting the availability of care to that portion of the public which relies on Medicaid for its medical services, the House of Delegates authorize the Society to negotiate interim fees in the basic fee schedule and the various specialty schedules.
9. That the House of Delegates, in recognition of the limitations imposed on the advisory committees to the Departments of Health and Social Services, recommend to the president of the Society that he appoint a "Policy and Negotiating Committee for Tax-Supported Programs" which is to be empowered to conduct discussions on matters of major policy with the departments and divisions involved and to negotiate interim fees. It is suggested that this new committee draw heavily on the personnel of the present Medical Advisory and Technical Advisory Committees.

Respectfully submitted,
GEORGE HIMLER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

Your reference committee has discussed this and listened to comments from members of the Society at the hearings. We urge that everyone read this in its entirety because of its extreme importance and because of its up-to-date, concise evaluation of the Medicaid program as it exists at this moment.

We wish not only to concur with the recommendations in the Technical Advisory Committee's supplementary report, but to recommend that the following conclusions be used as guidelines for future policy of the Medical Society of the State of New York:

1. That the House of Delegates of the Medical Society of the State of New York support the principle of Medicaid, despite the marked administrative problems.

The House voted to adopt this portion of the reference committee report.

2. That the House of Delegates again express its disapproval of the manner in which the Medical Assistance to Needy Persons program is being administered in New York State and urge the Governor and the Commissioner of Social Services to develop and institute, with all possible speed, uniform billing and report forms and centralized data-processing procedures.

The House voted to adopt this portion of the reference committee report.

68-50. Use of Fiscal Intermediaries for Patients Eligible for Both Title 18 and 19 Benefits

Introduced by Bronx County Medical Society

> WHEREAS, Present legislation permits the use of fiscal intermediaries in the Medical Assistance for Needy Persons program; and
> WHEREAS, Present experience with intermediaries for Title 18 has proved very successful and acceptable to both patient and physician; and
> WHEREAS, the present method of payment for services rendered to those eligible for both Title 18 and 19 benefits has proved both inadequate and to be of great confusion to both patients and physicians; and
> WHEREAS, Reimbursement due as a result of the patient's eligibility for Title 19 benefits cannot be made until Title 18 benefits have been paid by the intermediary, thus further

adding to the delay and confusion; now therefore be it

Resolved, That the Medical Society of the State of New York memorialize the Governor, the State Legislature, the Commissioner of Health, and the Commissioner of Social Services to turn over to the present Title 18 fiscal intermediaries, the payment of all medical claims resulting from services rendered to those eligible for both Title 18 and Title 19 medical care benefits.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

3. That the House of Delegates urge the Governor and the Commissioners of Health and Social Services to do everything in their power to promote the administration of Medicaid by intermediaries and that, as a first step, the administration of medical assistance to those persons who are simultaneously eligible for Medicare and Medicaid be turned over to the Title 18 carriers.

Resolution 68–50—"Use of Fiscal Intermediaries for Patients Eligible for Both Title 18 and 19 Benefits," covers this problem completely, and your reference committee recommends approval of this resolution.

The House voted to adopt this portion of the reference committee report.

4. That the House of Delegates reaffirm its position that eligibility levels for assistance under Medicaid must be reduced. However, we feel that the recent Federal corrective action was too harsh. Therefore, we feel that the State Society should support the eligibility requirements at or near the $5,300 income level and hope that this could be adjusted as need dictates. This position would indicate that the Medical Society of the State of New York has taken a positive action in the interest of the medically indigent of this State.

The House, after discussion, voted to adopt this portion of the reference committee report.

68–14. Uniform Fee Schedule for Medicaid Patients Regardless of Area

Introduced by Medical Society of the County of Orange

WHEREAS, The president of the Medical Society of the State of New York, in a communication dated June 26, 1967, to the county medical societies, indicated continued negotiations for reimbursement on customary and prevailing fees in respect to geographic area; and

WHEREAS, The New York State Health Commissioner, in a regional meeting at Kingston on September 7, 1967, stated that he felt the New York City doctors' expenses were higher in fact and implied that there should be a differential in fees between fees paid to New York City physicians and upstate physicians; and

WHEREAS, The usual reason for such differences in compensation is higher expenses; and

WHEREAS, The American Medical Association and the Medical Society of the State of New York dues are uniform throughout New York State and the cost of physicians' attendance at private school, college, and medical school was not based on geographic area; and

WHEREAS, The annual medical State registration and Federal narcotic license fees are uniform throughout New York State, and Federal and State income tax rates are uniform throughout New York State; and

WHEREAS, The cost of drugs, supplies, office materials, and automobile and life insurances are uniform throughout New York State; and

WHEREAS, The cost of food and clothing is as high, if not higher, in places other than New York City; and

WHEREAS, The cost of educating the physicians' children in private schools, colleges, and universities is not determined by the geographic location of the physicians; and

WHEREAS, Differentials in fees based on geographic location might tend to concentrate in New York City doctors who are desperately needed in suburban and rural areas; and

WHEREAS, Workmen's Compensation fees are uniform throughout New York State; now therefore be it

Resolved, That geographic differentiation in fees as proposed in the communication of the president of the Medical Society of the State of New York to the county medical societies, dated June 26, 1967, is divisive, false in principle, and false in fact; and be it further

Resolved, That the Medical Society of the State of New York go on record as being strongly opposed to the proposed geographic differentiation in fee schedule; and be it further

Resolved, That the Medical Society of the State of New York adopt a policy that Medicaid fees be maintained uniform throughout the State and negotiated on an updated, fair, and equitable basis for upstate and downstate physicians alike.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

5. That the House of Delegates support the careful investigation of the principle of urban and rural differentials in income eligibility as a possible means of distributing the funds available for assistance more equitably.

Resolution 68–14—"Uniform Fee Schedule for Medicaid Patients Regardless of Area," is concerned with this problem. Because of the conflicting testimony heard by the reference committee, because of the lack of definitive information concerning the problem, and because a survey group is beginning to work on this problem, we recommend that this matter be referred to the Council for its cognizance and its study.

The House voted to adopt this portion of the reference committee report.

6. That the House of Delegates reaffirm its support of deductible and co-insurance requirements for Medicaid recipients who are not receiving categorical assistance, as a means of helping to control costs and utilization, with the proviso that proof of payment of such deductible and co-insurance amounts is not a prerequisite for payment to providers of services.

We concur in this and urge its adoption.

The House voted to adopt this portion of the reference committee report.

7. That the House of Delegates reaffirm its adherence to the principle of payment for medical services on the basis of the "usual, customary, and prevailing" concept, as being the most economical and equitable method of reimbursement. We concur.

The House, after discussion, voted to adopt this portion of the reference committee report.

8. That, in recognition of the fact that "interim fees" and a fixed fee schedule are now in effect and that they will become increasingly inadequate with the passage of time, thereby further limiting the availability of care to that portion of the public which relies on Medicaid for its medical services, the House of Delegates authorize the Society to negotiate interim fees utilizing the basic fee schedule and the various specialty schedules.

A number of specialty groups have already been negotiating on their own for a more adequate fee schedule. We believe that this activity should continue, but that it be coordinated through a State Medical Society committee, authorized to negotiate "interim fees," with close consultation with all or any specialty groups.

The House, after discussion, voted to adopt this portion of the reference committee report.

It has also come to the attention of the reference committee that money has been authorized by the Council for a proposed study of the entire problem of fees in New York State. We urge that this be implemented immediately and with the highest priority, to afford the proper tools for negotiation.

The House voted to adopt this portion of the reference committee report.

9. That the House of Delegates, in recognition of the limitations imposed on the advisory committees to the Departments of Health and Social Services, recommend to the president of the Society that he appoint a "Policy and Negotiating Committee for Tax-Supported Programs" which is to be empowered to conduct discussions on matters of major policy with all departments and divisions involved and to negotiate interim fees. It is suggested that this new committee draw heavily on the personnel of the present Medical Advisory and Technical Advisory Committees, but that the Technical Advisory Committee continue its advisory functions. One of the problems that our Technical Advisory Committee has had is that it has been impossible to perform the duties of a negotiating and an advisory committee.

The House voted to adopt this portion of the reference committee report.

68-8. State Society Negotiation of Medicaid Fees

Introduced by Nassau and Suffolk County Medical Societies

WHEREAS, Fee negotiations with the State Departments of Health and Social Services for medical and surgical procedures have in the past been conducted by the various specialty groups; and

WHEREAS, There are many differences of opinion throughout New York State regarding fees for medical and surgical services; and

WHEREAS, The fragmentation of fee negotiations among specialty groups has deprived some specialties of representation because they are not organized on a State-wide basis; now therefore be it

Resolved, That the Medical Society of the State of New York appoint a body to assume the responsibility of conducting all fee negotiations for the Medicaid program on a uniform basis to replace the individual negotiations by specialty groups: and be it further

Resolved, That this body objectively and accurately reflect the concern and opinions of all specialty and general practice groups within the State of New York.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

As noted in the previous recommendations, your reference committee concurs wholeheartedly and moves adoption of this resolution.

The House, after discussion, voted to adopt this portion of the reference committee report.

68-41. Billing Procedures Under Title 19

Introduced by Medical Society of the County of Essex

WHEREAS, Recent revision of the billing procedures under Title 18 (PL 89-97) have made such procedures still more acceptable to both patients and physicians; and

WHEREAS, Failure of the recent revision to permit direct billing under Title 19 has resulted in (1) widespread efforts by HEW and the carriers to instruct patients not to pay either hospital or physician as the patient will not be reimbursed, leading to widespread misunderstanding among patients who do not distinguish between Title 18 and Title 19, and (2) leaving the physician to choose between the unhappy alternatives of being an unwilling agent of the Federal government without any effective voice as to his working conditions or of refusing to sign Federal forms; now therefore be it

Resolved, That the House of Delegates of the Medical Society of the State of New York in regular session February, 1968, declare current billing procedures under Title 19 unacceptable and urge both physicians and patients to work through their congressmen to correct this inequitable situation by making billing procedures under Title 19 the same as those under Title 18.

Report of Reference Committee on Medicare and Medicaid: The following report was presented by John L. Clowe, M.D., chairman.

We approve of this resolution in principle. However, in January of 1968, the Federal law was amended so that states, at their own option, could allow direct billing. It is not anticipated that this will occur in New York State, but since action by the House on this resolution is necessary, we recommend approval.

The House voted to adopt this portion of the reference committee report.

68-5. Availability of Nursing Home Beds for Medicaid Patients

Introduced by Medical Society of the County of Erie

> Whereas, Many private nursing homes refuse to accept Medicaid patients because they do not consider the nursing home rate paid by Medicaid to be adequate; and
>
> Whereas, Public nursing homes are unable to accommodate all Medicaid patients because of limited facilities; and
>
> Whereas, This situation results in many Medicaid patients occupying hospital beds when they should be in nursing homes; and
>
> Whereas, This increases the cost of Medicaid and creates a serious shortage of beds for the acutely ill patient; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York, in cooperation with appropriate State agencies and other interested parties, formulate an organized plan to make nursing home beds available to Medicaid patients promptly, when they no longer require hospital care; and be it further
>
> *Resolved*, That copies of this resolution be sent to the Governor, the leaders in the State Legislature, the State and county commissioners of health, and the State and county commissioners of social services.

Report of Reference Committee on Medicare and Medicaid: The following report was presented by John L. Clowe, M.D., chairman.

Your reference committee, as well as every physician in New York State, attests to the extreme shortage of Medicaid beds. However, we recommend the addition of a fifth Whereas to be inserted following the second Whereas, as follows:

> Whereas, The number of available nursing home beds in the State of New York is limited under the quota system: and

and two substitute *Resolveds* for the first *Resolved*, as follows:

> *Resolved*, That the quota system presently in effect be either completely abolished or revised sharply upward; and be it further
>
> *Resolved*, That approval of applications for additional nursing home beds be contingent on allocation of a reasonable proportion of beds to Medicaid patients; and be it further

The House, after discussion, voted to amend the report of the reference committee by the addition of a third Resolved following the second Resolved, as follows:

> *Resolved*, That allowances for Medicaid patients in nursing homes be at least equal to the costs of providing services for these patients; and be it further

and to amend the last Resolved by adding the words, "and to the Hospital Review and Planning Council."

The House then voted to adopt this portion of the reference committee report as amended.

68-21. Payment for Chiropractic Care by New York State Health Department

Introduced by Medical Society of the County of Allegany

> Whereas, The New York State Department of Health and the Medical Society of the State of New York have declared, both jointly and separately, on occasions too numerous to mention, their dedication to provide the highest quality medical care to all inhabitants of this State, regardless of any other consideration; and
>
> Whereas, The practice of chiropractic generally is recognized by informed and thoughtful persons, by the Commissioner of the New York State Department of Health and his subordinates, and by the Medical Society of the State of New York, in particular, as being positively dangerous to the health, well-being, and, indeed, the life of those subjecting themselves to it; and
>
> Whereas, A dedicated and courageous county health officer, namely, George E. Bender, M.D., has resigned his office in Cattaraugus County rather than approve payment of bills to chiropractors for services rendered to recipients of assistance under existing legislation; and
>
> Whereas, Dr. Bender's publicly given reason for his action is that regulations of the New York State Department of Health require approval of bills rendered by such practitioners; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York urge the Commissioner of the State Department of Health to recommend the discontinuance of payment for chiropractic care by any agency of this State, in view of his and his Department's declared concern for providing quality medical care; and be it further
>
> *Resolved*, That the Medical Society of the State of New York publicly declare its dissociation from any and all activity on the part of the Commissioner and his Department until such time as said Commissioner purge

himself publicly from the taint of the most remote acceptance of chiropractic as a healing art; and be it further

Resolved, That the Medical Society of the State of New York express its gratitude to and admiration for George E. Bender, M.D., whose action should serve, to physicians and public servants alike, as an example of courage, devotion to duty, and concern for human health of the highest order.

68–23. Exclusion of Chiropractors from Medicaid Program

Introduced by Cattaraugus County Medical Society

WHEREAS, The inclusion of chiropractic services in the Medicaid law exposes recipients to the health hazard of quackery; and

WHEREAS, The inclusion of chiropractic services seriously dilutes the quality of patient care which, under the provisions of the law, should conform to uniformly high standards; and

WHEREAS, The inclusion of chiropractic services in the benefit structure of the Medicaid program is based on an interpretation of paragraph 365–a, 2, (*a*) namely, "services of qualified physicians, dentists, nurses, optometrists, podiatrists and *other related professional personnel*"; and

WHEREAS, This interpretation, which qualifies chiropractors as "other related professional personnel," is a distortion of the intent of the law in addition to being against the public interest; now therefore be it

Resolved, That the Medical Society of the State of New York memorialize Governor Rockefeller and the New York State Legislature to amend paragraph 365–a, 2, (*a*), of Chapter 256, of the Laws of 1966, by specifying the professions that constitute "other related professional personnel" and by specifically excluding chiropractic practitioners from participation in the Medicaid program.

68–39. Exclusion of Chiropractors from Participating in Tax-Supported Programs

Introduced by Medical Society of the County of Monroe

WHEREAS, The government of the State of New York has included chiropractors as "providers of service" under the State's Medicaid program; and

WHEREAS, The House of Delegates of the American Medical Association at its meeting in November, 1966, has taken the following position:

1. Chiropractic is an unscientific cult whose practitioners lack the necessary training and background to diagnose and treat human disease;
2. Chiropractic constitutes a hazard to rational health care in the United States because of the substandard and unscientific education of its practitioners and their rigid adherence to an irrational, unscientific approach to disease causation;
3. Patients should entrust their health only to those who have a broad scientific knowledge of diseases and ailments of all kinds and who are capable of diagnosing and treating them with all the resources of modern medicine;
4. The delay of proper medical care caused by chiropractors and their opposition to the many scientific advances in modern medicine, such as life-saving vaccines, often end with tragic results; and

WHEREAS, In spite of the fact that all physicians practicing medicine in New York State must be licensed by the State, the State Commissioner of Health who is responsible for the "quality and availability of health care" is now developing standards for the purpose of certifying which physicians may treat patients under tax-supported programs; and

WHEREAS, The Medical Society of the State of New York and component county societies such as Monroe have formed committees to assist the State in studying present health services and in promoting the delivery of the best quality medical care to the citizens of the State; and

WHEREAS, The inclusion of chiropractors as providers of service in the Medicaid program negates all efforts of the State Health Department, the Medical Society of the State of New York, and its component county societies to upgrade the quality of medical care in this State; and

WHEREAS, The Congress of the United States has requested a study of the so-called healing arts so that the lay members of Congress may have a basis for evaluating the relationship of licensed practitioners to the various public programs; and

WHEREAS, The Medical Society of the State of New York has taken no official position as regards its attitude toward the inclusion of chiropractors under public health care programs; now therefore be it

Resolved, That the Medical Society of the State of New York adopt as its official policy opposition to the inclusion of chiropractors as "providers of service" in the State Medicaid program; and be it further

Resolved, That the Medical Society of the State of New York seek the introduction and passage of legislation excluding chiropractors from participation in Title 18, Title 19, and other tax-supported programs; and be it further

Resolved, That the delegates from the Medical Society of the State of New York to the American Medical Association be instructed to introduce a similar resolution at the next meeting of the House of Delegates of the American Medical Association in June, 1968.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

The reference committee recommends the adoption of the following substitute resolution, which encompasses all three resolutions in one:

> WHEREAS, The New York State Department of Health and the Medical Society of the State of New York have declared, both jointly and separately, on occasions too numerous to mention, their dedication to provide the highest quality medical care to all inhabitants of this State, regardless of any other consideration; and
>
> WHEREAS, The inclusion of chiropractic services seriously dilutes the quality of patient care which, under the provisions of the law, should conform to uniformly high standards; and
>
> WHEREAS, Chiropractic is an unscientific cult whose practitioners lack the necessary training and background to diagnose and treat human disease; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York adopt, as its official policy, opposition to the inclusion of chiropractors as "providers of service" in the State Medicaid program; and be it further
>
> *Resolved*, That the Medical Society of the State of New York seek the introduction and passage of legislation excluding chiropractors from participation in the Title 19 and other tax-supported programs.

The House, after discussion, voted to amend the report of the reference committee by deleting the first and second WHEREASES and by the addition of two new WHEREASES, as follows:

> WHEREAS, Chiropractic constitutes a hazard to rational health care in the United States because of the substandard and unscientific education of its practitioners and their rigid adherence to an irrational, unscientific approach to disease causation; and
>
> WHEREAS, The delay of proper medical care caused by chiropractors and their opposition to the many scientific advances in modern medicine, such as life-saving vaccines, often end with tragic results; now therefore be it . . .

The House then voted to adopt this portion of the reference committee report as amended.

The resolution as adopted is as follows:

> WHEREAS, Chiropractic is an unscientific cult whose practitioners lack the necessary training and background to diagnose and treat human disease; and
>
> WHEREAS, Chiropractic constitutes a hazard to rational health care in the United States because of the substandard and unscientific education of its practitioners and their rigid adherence to an irrational, unscientific approach to disease causation; and
>
> WHEREAS, The delay of proper medical care caused by chiropractors and their opposition to the many scientific advances in modern medicine, such as life-saving vaccines, often end with tragic results; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York adopt, as its official policy, opposition to the inclusion of chiropractors as "providers of service" in the State Medicaid program; and be it further
>
> *Resolved*, That the Medical Society of the State of New York seek the introduction and passage of legislation excluding chiropractors from participation in the Title 19 and other tax-supported programs.

We would like to commend George E. Bender, M.D., a dedicated and courageous county health officer, who has resigned his office in Cattaraugus County rather than approve payment of bills to chiropractors for services rendered to recipients of assistance under existing legislation.

The House voted to adopt this portion of the reference committee report by acclamation.

68-54. Qualification and Postgraduate Study Requirements for Physicians Participating in Medicaid

Introduced by Medical Society of the County of Queens

> WHEREAS, The House of Delegates of the Medical Society of the State of New York in 1967 disapproved of "secondary licensure" with respect to Medicaid; and
>
> WHEREAS, The 1967 Social Security Amendments will provide freedom of choice for Medicaid recipients; and
>
> WHEREAS, "Secondary licensure" is incompatible with freedom of choice; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York, to insure free choice for Medicaid recipients, demand the withdrawal of qualifications and postgraduate requirements imposed by the Commissioner of Health of the State of New York on physicians who wish to participate in the Medicaid program.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

Your reference committee is in sympathy with any measures designed to upgrade the quality of medical care. However, we are opposed to "secondary licensure" by government and feel that any qualifications and postgraduate requirements imposed by an administrative body should be replaced by an educational program of the Medical Society of the State of New York. Therefore, we recommend a substitute *Resolved*, as follows:

> *Resolved*, That the Medical Society of the State of New York, to insure free choice for Medicaid recipients, request the withdrawal of administrative regulations effecting "secondary licensure" and replace such regulations with educational programs of the Medical Society of the State of New York.

The House, after discussion, voted to amend the report of the reference committee by ending the substitute Resolved after the words "secondary *licensure," and then voted to adopt this portion of the reference committee report as amended.*

68-59. Rehabilitation Services in Extended Care Facilities Under Titles 18 and 19

Introduced by Section on Physical Medicine and Rehabilitation

WHEREAS, Under Medicare and Medicaid, nursing homes and extended care facilities are rendering rehabilitation services; and

WHEREAS, Such services, in many instances, are neither prescribed nor supervised by competent physicians; and

WHEREAS, Such unsupervised treatment is not in the best interest of the patient and is poor medicine; now therefore be it

Resolved, That the Medical Society of the State of New York urge the Commissioner of Health of the State of New York to require that all rehabilitation services rendered to Medicare and Medicaid beneficiaries in nursing homes and extended care facilities be ordered and supervised by either a physiatrist or an orthopedist.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

The reference committee assumes that the purpose of this resolution is to improve or upgrade medical care in our extended care facilities. We approve this principle wholeheartedly, but would like to change the last WHEREAS and the *Resolved* to read as follows:

WHEREAS, Such unsupervised treatment is not in the best interest of the patient and is poor medicine, and is wasteful of tax dollars; now therefore be it

Resolved, That the Medical Society of the State of New York strongly urge that all rehabilitative services rendered to Medicare and Medicaid beneficiaries in nursing homes and extended care facilities be ordered and supervised by a physiatrist, orthopedic surgeon, or other physician.

The House, after discussion, voted to amend the reference committee report by deleting from the Resolved the words "physiatrist, orthopedic surgeon, or other physician" and substituting the words "licensed physician" so that the Resolved then read:

Resolved, That the Medical Society of the State of New York strongly urge that all rehabilitative services rendered to Medicare and Medicaid beneficiaries in nursing homes and extended care facilities be ordered and supervised by a licensed physician.

The House then voted to adopt this portion of the reference committee report as amended.

Medicare

The Medicare program, in contrast to Medicaid, has been working quite successfully for the past three years. This has been apparent to your reference committee by the small number of resolutions submitted to it each year. We feel that its success has been due not only to efficient administration, but to adherence to the principles as proposed frequently by the American Medical Association and the State Medical Society. The continuing changes also seem to be improving the program.

68-33. Arbitration of Medicare Fees

Introduced by Thomas F. McCarthy, M.D., The Bronx, Treasurer

WHEREAS, Payment of physicians' fees under Medicare calls for usual and customary fees; and

WHEREAS, This concept is modified by the regulation that said fees must be reasonable for the community as determined by the intermediary or insurance carrier; and

WHEREAS, Such a reasonable charge is also limited for the individual by a so-called fee profile, established on the basis of a questionnaire or of previous payments made by the intermediaries to the physician; and

WHEREAS, Beyond the intermediaries themselves there is no appeal to their decisions on the fees payable to the physician; and

WHEREAS, Such a system is discriminatory and invites favoritism, and, more particularly, is contrary to the best interests of those physicians who accepted Blue Shield's inadequate fees as participating physicians as a matter of principle in the past; now therefore be it

Resolved, That the Medical Society of the State of New York request that the Medicare intermediaries, such as Blue Shield: (1) provide each physician with a schedule of what they consider to be the reasonable charge for each service provided by physicians in their respective communities, such as New York, The Bronx, and Westchester for example; (2) apply such reasonable fees equally to services rendered by all physicians in the community; and (3) establish a board of arbitration with appropriate representation from both organized medicine and the intermediaries to serve as an appeal mechanism; and be it further

Resolved, That the delegates from the Medical Society of the State of New York to the American Medical Association be instructed to introduce a similar resolution at the next meeting of the House of Delegates of the American Medical Association in June, 1968, in order that such a system be established nation-wide.

REPORT OF REFERENCE COMMITTEE ON MEDICARE AND MEDICAID: The following report was presented by John L. Clowe, M.D., chairman.

It has been ascertained that some physicians, whose fees, in their opinion, have been cut arbitrarily by the intermediaries, have no recourse for arbitration. Therefore, your reference committee recommends the following substitute resolution:

WHEREAS, Payment of physicians' fees

under Medicare calls for usual and customary fees; and

Whereas, This concept is modified by the regulation that said fees must be reasonable for the community as determined by the intermediary or insurance carrier; and

Whereas, Such a reasonable charge is also limited for the individual by a so-called fee profile, established on the basis of a questionnaire or of previous payments made by the intermediaries to the physician; and

Whereas, In some areas, beyond the intermediaries themselves, there is no appeal to their decisions on the fees payable to the physician; and

Whereas, Such a system is discriminatory and invites favoritism, and, more particularly, is contrary to the best interest of those physicians who accepted the intermediaries' inadequate fees as a matter of principle in the past; now therefore be it

Resolved, That the Medical Society of the State of New York request that the Medicare intermediaries (1) provide each physician with a schedule of what they consider to be the reasonable charge for each service provided by physicians in their respective communities, on request; and (2) establish a board of arbitration with representation from both organized medicine and the intermediaries to serve as an appeal mechanism; and be it further

Resolved, That the delegates from the Medical Society of the State of New York consider taking a similar resolution to the next meeting of the American Medical Association, in June, 1968, in order that a system may be worked out nation-wide.

The House, after discussion, voted to amend the reference committee report by deleting item 1 from the first Resolved, and by substituting in the last Resolved the words "on a local or regional basis" for the word "nation-wide."

After further discussion, the House voted to disapprove the substitute resolution of the reference committee as amended, and then voted to refer resolution 68–33 to the Council for further study.

The House voted to adopt this portion of the reference committee report as amended.

68–43. Payment for Services Rendered to Nonreferred Medicare Patients

Introduced by First District Branch

Whereas, Negotiations leading to agreements between hospital administrators and fiscal intermediaries of Medicare Part B for the professional care of nonreferred (nonreferred hospital patients being those who do not have a private physician on the staff of a hospital) Medicare patients at reduced professional fees have been undertaken in the City of New York; and

Whereas, Such arrangements are contrary to the Medicare law which specifically provides for usual, customary, and reasonable professional fees for services rendered; now therefore be it

Resolved, That the Medical Society of the State of New York insist on the legally required usual, customary, and reasonable professional fees for the care of all Medicare patients and that the Society take appropriate action to the end that the Title 18 intermediaries pay for services rendered to nonreferred Medicare patients on this basis.

Report of Reference Committee on Medicare and Medicaid: The following report was presented by John L. Clowe, M.D., chairman.

We approve this resolution because nonreferred hospital patients receive the same hospital care as referred hospital patients, and therefore the professional fee should be the same.

The House voted to adopt this portion of the reference committee report.

The House voted to adopt the reference committee report as a whole as amended.

Public Health and Education

Commission on Public Health and Education

To the House of Delegates, Gentlemen:

The Commission on Public Health and Education has the following membership:

Irving L. Ershler, M.D., *Chairman*	Onondaga
Franklyn B. Amos, M.D.	Albany
Norman J. Ashenburg, M.D.	Monroe
Peter S. Battaglia, M.D.	Niagara
William A. Bauman, M.D.	New York
Frederick Beck, M.D.	Tompkins
Charles A. Bertrand, M.D.	Westchester
Marvin A. Block, M.D.	Erie
Marvin L. Bloom, M.D.	Erie
Matthew Brody, M.D.	Kings
Irving Cramer, M.D.	Oneida
Leo Dobrin, M.D.	Queens
Arthur H. Dube, M.D.	Onondaga
James I. Farrell, M.D.	Oneida
Merton C. Hatch, M.D.	Onondaga
Milton Helpern, M.D.	New York
Edward C. Hughes, M.D.	Onondaga
Herbert A. Laughlin, M.D.	Chautauqua
Harry S. Lichtman, M.D.	Kings
James A. Moore, M.D.	New York
Jason K. Moyer, M.D.	Broome
Kenneth B. Olson, M.D.	Albany
Charles D. Sherman, Jr., M.D.	Monroe
Norman Simon, M.D.	New York

Each of the these members is a chairman of one of the Commission's committees.

Meeting with New York State Department of Health. The Commission met with representatives of the New York State Department of Health in Albany, on August 3. Eighteen of the Commission's 23 committee chairmen were present and gave reports. The other five chairmen submitted written reports.

Representing the Health Department were: Hollis S. Ingraham, M.D., commissioner; Granville W. Larimore, M.D., first deputy commissioner; Andrew C. Fleck, Jr., M.D., deputy commissioner; Robert P. Whalen, M.D., deputy commissioner; and the directors of bureaus of the State Health Department.

Also representing the Medical Society of the State of New York were: Henry I. Fineberg, M.D., executive vice-president; Norman S. Moore, M.D., director of scientific activities; and Edward C. Hughes, M.D., president-elect. Present by invitation were Mrs. James A. Moore, Albany, president, and Mrs. Granville W. Larimore, Albany, chairman, Public Health and Education, of the Woman's Auxiliary to the Medical Society of the State of New York.

This annual meeting serves to correlate the work of the Commission with that of the Health Department. It also coordinates the work of the committees and helps to eliminate duplication of effort. This year's meeting was particularly effective in achieving these aims. Dr. Ingraham stated that this annual meeting is eagerly anticipated by members of his Department because it is one of the most important contacts and means of communication between the State Medical Society and the Department of Health.

The work at the meeting was comprehensive and absorbing, occupying an entire day. It was suggested that in the future it might be well to plan a two-day session. A summary of the reports and plans discussed at the meeting has been prepared and may be obtained by interested persons on request.

Committees. The Commission's two new committees, Health Manpower and Data Processing in Medicine, have made progress. There will be an exhibit on data processing in medicine at the annual meeting in February. The Health Manpower Committee has been authorized by the Council to proceed with its proposed program concerning the serious and, in some instances, critical shortages in health manpower.

The Committee on Alcoholism and Drug Abuse has prepared "Criteria for Admission of Alcoholics to General Hospitals" and copies are being distributed by the Division on request. These have received favorable publicity in the press. At the suggestion of the Committee on Alcoholism and Drug Abuse, there has been appointed jointly with the New York State Bar Association an Ad Hoc Committee on Alcoholism and Drug Abuse. This joint committee is just beginning to work.

The Committee on Continuing Education has proposed a significant and progressive program. The details of this are outlined in the committee's report. The program has been approved in principle by the Council and will probably be implemented in early 1968.

The Committee on Aging and Nursing Homes met with representatives of the podiatry, optometry, and dental professions to discuss respective roles of each discipline in the care of patients in nursing homes of the State. Inasmuch as the quality of care of nursing home patients reflects conformity to the Nursing Home Code, under Article 28 of the Public Health Law, the first meeting, while sponsored by the Committee on Aging and Nursing Homes, was held under the auspices of the State Department of Health.

The next meeting also will be sponsored by this committee and will include, in addition to representatives of these groups, spokesmen for the nursing home industry.

Forensic Medicine Symposium. More than 75 physician-coroners, medical examiners, forensic pathologists, and others attended the fifth annual Symposium on Forensic Medicine, Saturday and Sunday, October 28 and 29, at the Office of the Chief Medical Examiner of New York City. Principal consideration was given to "Official Investigation of Medically Unattended, Unexpected, Sudden, Suspicious, and Violent Death." The symposium was conducted by Milton Helpern, M.D., chairman of the committee.

The Medical Society of the State of New York is represented on the New York State Interagency Committee on Hazards of Smoking by Norman S. Moore, M.D., director of the Division of Scientific Activities, and your chairman.

Your attention is called to the individual committee reports which outline in detail their activities during the past year and their plans for the future.

Your chairman takes this opportunity to acknowledge with gratitude the efforts of all committee members and especially the dedication and plain hard work of the committee chairmen. Norman S. Moore, M.D., as director of the Division of Scientific Activities, has been a tower of strength and has given freely of his wisdom, time, and energies to make our program a success. Samuel Pakula, our stenotypist, recorded our proceedings faithfully. Without him an accurate record would have been impossible. Last, but far from least, goes my personal gratitude to Gretchen Wunsch. It is really she who pulled the whole program together and kept it there. We will miss her, but our best wishes go with her to her new and more responsible position.

Respectfully submitted,
IRVING L. ERSHLER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of the Commission was reviewed and accepted. Dr. Ershler, chairman, elaborated on his report. He mentioned the continuing splendid cooperation given the Medical Society of the State of New York by Hollis S. Ingraham, M.D., and his staff at the New York State Department of Health.

The House voted to adopt this portion of the reference committee report.

68-36. Elimination of Job Discrimination Against Persons with Physical and Mental Handicaps by Amendment to the State Constitution

Introduced by Nassau and Suffolk County Medical Societies

WHEREAS, Physicians have always been dedicated to the concept that adequate medical care is directed toward the total restoration of the patient which, in addition to therapy, consists of prevention and rehabilitation, including economic rehabilitation, where possible; and

WHEREAS, Physicians have always advocated that all persons be given equal opportunity to be contributing members of society to the extent of their abilities regardless of physical or mental incapacity; and

WHEREAS, Physicians have always been dedicated to the principle that individuals should not be discriminated against because of considerations of age, sex, national origin, or physical or mental handicaps; now therefore be it

Resolved, That the Medical Society of the State of New York take appropriate action to bring about the amendment of the State Constitution to insure that individuals, in applying for work, are not discriminated against because of physical and mental handicaps provided that they are qualified to fulfill the duties and functions of the job for which they are applying and that they be considered on the same basis as applicants without such physical or mental handicaps.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-36 and recommends the adoption of this resolution.

The House voted to adopt this portion of the reference committee report.

68-49. State Area-wide Conferences on Regional Medical and Comprehensive Health Planning Programs

Introduced by Bronx County Medical Society

WHEREAS, Public Law 89-239, known as the Heart Disease, Cancer and Stroke Program (RMP), and Public Law 89-749, known as the Comprehensive Health Planning Act, are becoming more vitally important to the practicing physician and his medical society; and

WHEREAS, It is becoming increasingly evident that many physicians and their county medical societies need assistance in understanding these laws; and

WHEREAS, These physicians and medical societies need guidance in their participation in the planning for the implementation of these laws; now therefore be it

Resolved, That the Medical Society of the State of New York immediately call regional conferences on Public Laws 89-239 and 89-749, such conferences to include physicians involved with the Heart Disease, Cancer, and Stroke regional medical programs and those representing medicine on area-wide comprehensive health planning groups and appropriate local and regional medical society officers and committeemen; and be it further

Resolved, That the purpose of these conferences be to acquaint the conferees with the condition and provision of these laws and the proper role of physicians and medical societies in their implementation.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee also considered resolution 68-49. The committee recommends approval of the resolution with the addition of the word "practicing" in the first *Resolved* to read as follows: "such conferences to include *practicing* physicians involved with Heart Disease. . ."

The House voted to adopt this portion of the reference committee report.

Accident and Injury Prevention

To the House of Delegates, Gentlemen:

The members of the Committee on Accident and Injury Prevention are as follows:

Irving Cramer, M.D., *Chairman*	Oneida
James E. Holmblad, M.D.	Schenectady
Robert H. Kennedy, M.D.	New York
John D. States, M.D.	Monroe
Harold Brandaleone, M.D.	New York

The main business before the committee was action on the resolutions referred by the Council on March 23. The letter from Dr. Fineberg concerning the resolutions was read, and each resolution was acted on as follows:

1. *Resolution 67-2, "Basic Protection for the Traffic Accident Patient."* The committee approved this resolution and recommended that, with the approval of our Legal Counsel, the Medical Society of the State of New York propose and support legislation as indicated in the *Resolved* portion of this resolution.

2. *Resolution 67-11, "Legislation to Establish Motorcycle Safety Regulations."* The chairman reported that H. A. Fenner, M.D., New Mexico, chairman of the AMA Accident Prevention Committee, informed him that similar legislation was being recommended by the AMA. Dr. States pointed out that specifications have already been passed by the New York State Legislature requiring helmets and safety goggles, which were a little less than the standards set up by the American Standards Association. He also points out that rear view mirrors and tail lights are now required equipment for motorcycles. The committee supports resolution 67-11 in recommending legislation in New York State that will require motorcycle crash bars and will permit second riders only on motorcycles with adequate handholds, foot rests, saddles, and suspension systems.

3. *Resolution 67–12, "Establishment of Accident Investigation Teams (AIT) at Medical Centers."* The committee supports the portion of this resolution that the Medical Society of the State of New York ask the New York State Legislature to strongly support the establishment of Accident Investigation Teams at medical centers in New York State and to assist these centers in obtaining help from the State and Federal governments. There should also be provisions in the legislation granting immunity from legal action to members of accident investigation teams.

4. *Resolution 67–29, "Recommendation for Medical Advisory Board to Bureau of Motor Vehicles."* The committee recommends that the Medical Society of the State of New York recommend to the Legislature of the State of New York that a medical advisory board be created to advise the Bureau of Motor Vehicles on the physical examinations and the supervision and control of drivers with mental or physical defects which interfere with safe driving. Members of this board should also have immunity from legal action.

A letter was read from Henry I. Fineberg, M.D., to Irving L. Ershler, M.D., chairman of the Commission on Public Health and Education, which referred to a suggestion made by John H. Carter, M.D., regarding helicopter service which could pick up an accident victim on a highway or a patient in a rural area and transfer him to a hospital or perhaps to a large medical center. It was felt that the idea is a good one but is not practical at this time. However, continued studies should be made in this direction.

The committee reviewed procedures for licensing drivers with history of "seizures, spells, and blackouts." A copy of a speech on this subject, given by Norman S. Moore, M.D., while he was visiting Sweden, was read to the committee. The previously promulgated rules and regulations regarding these conditions were reviewed. The committee was unanimous in its reaffirmation of support for these principles and governing policies. The committee further recommended that copies of these rules and regulations be made available to all members of the State Medical Society and the method of distribution to be left to the discretion of the State Medical Society. Our committee feels that adequate safeguards for the patient and the public are built into these rules and regulations.

The next major topic to be discussed was ambulance service and the ambulance law. In this regard, the program described in resolution 67–35, "Education Program in First Aid and Transportation of Injured" was discussed. The reference committee approved the resolution to indicate endorsement of the program, and this agrees with the committee's action. In connection with this subject, the Council suggested that the committee discuss this with David N. Kluge, M.D., Rochester, and Dr. Kennedy, who is a member of our committee. Attention was called to the fact that the State Health Department now has courses to train ambulance personnel. The committee recommends the "Advanced American Red Cross First Aid Course," supplemented by additional courses in external cardiac compression, emergency childbirth, and handling of the mentally upset patient. It is recommended that the State Health Department be consulted in regard to coordinating their teaching programs with the Red Cross programs and that these training programs be made available to all voluntary ambulance personnel as well as to the funeral directors.

The committee noted that Chapter 620 of the Laws of 1967, together with the Governor's memorandum A–161, created a highway safety program for the State and empowered the Governor to do what was necessary to meet the specifications for Federal highway funds. The Governor's memorandum authorizes the Interdepartmental Commission, composed of the Commissioners of Health, Motor Vehicles, Transportation, Superintendent of Police, and the Commissioner of Education to head up this program. This commission has made the Department of Health responsible for emergency medical service plans in this State.

The committee strongly recommends that an informal advisory group be created with adequate medical representation to provide high quality emergency medical care on the highways. There is need for a better communication system for emergency vehicles, such as ambulances and helicopters, and for higher standards of medical service at reception points, such as hospital emergency rooms. Also, there is urgent need for advice on medical problems resulting from the projects involved in implementing the programs supported by the transportation bond issue which the voters approved at the last election.

The chairman of the committee attended a meeting of the Advisory Committee on Ambulance Services held at the State Health Department, under the chairmanship of Stephen C. Mahady, M.D., assistant commissioner for medical services. This meeting included representatives of the Ambulance Owners Association, the American College of Surgeons, New York State Police, and various other interested individuals. Considerable discussion was held and recommendations were made regarding implementation of the Ambulance Law and setting up standards.

Dr. States attended the meeting of the Committee on Medical Aspects of Automotive Safety of the American Medical Association as a representative from our committee. Dr. States has informed me that there is a uniformity in thinking on this subject at the AMA and State Medical Society levels.

It is anticipated that another meeting of this committee will be held prior to the February, 1968, meeting of the House of Delegates.

Respectfully submitted,
IRVING CRAMER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of the committee was reviewed and accepted. Dr. Cramer is to be commended for his excellent report.

The House voted to adopt this portion of the reference committee report.

68-22. Financial Support by U.S. Department of Transportation for Research, Production, and Testing of New York State Safety Sedan

Introduced by Medical Society of the County of Monroe

WHEREAS, New York State has spent $400,000 in the past three years on feasibility studies, design, and production plans for the New York State Safety Sedan; and

WHEREAS, The New York State Safety Sedan is the most advanced effort to incorporate occupant and pedestrian safety protection into automobile design; and

WHEREAS, The New York State Safety Sedan will be an extremely useful research tool and test bed for numerous safety designs for automobile construction: and

WHEREAS, Very little research on the design and effectiveness of automobile safety features is being conducted; and

WHEREAS, Automobile safety designs promise to be the most effective weapon yet available to reduce the increasing toll of automobile accidents; and

WHEREAS, The motoring public of the entire nation will benefit from the continued development and testing of the New York State Safety Sedan; now therefore be it

Resolved, That the Medical Society of the State of New York, through secretary Alan S. Boyd and William Haddon, Jr., M.D., director of the National Highway Safety Bureau, request the Federal Highway Administration to provide funds for the pilot production and research testing of the New York State Safety Sedan; and be it further

Resolved, That the delegates from the Medical Society of the State of New York to the American Medical Association be instructed to introduce this resolution at the next meeting of the American Medical Association House of Delegates in June, 1968.

The following explanatory memorandum was distributed with this resolution.

FINANCING OF NEW YORK STATE SAFETY SEDAN

There are many approaches to automobile safety which is now one of the nation's most pressing public health problems. Automobiles kill and disable the young of our society, those about to enter their life's work. The loss is at least as great as that from cancer and cardiovascular diseases which strike down the older and retired members of our society.

The introduction of safety designs and features into automobile construction has become one of the most effective means of reducing the toll of accidents. William Haddon, Jr., M.D., administrator of the National Highway Safety Bureau, says that the effects of the Federal Motor Vehicle Safety Standards are already evident in accident statistics for the last half of 1967.

These standards are based on the sum total of our knowledge of automobile safety design. Relatively little knowledge exists in this field because of a paucity of research. New York State recognized this in 1962 and began the development of the New York State Safety Sedan. In 1965, the New York State Legislature appropriated $100,000 for feasibility studies and preliminary designs. In 1966, $300,000 was appropriated for the development of the final designs and for limited production plans. The Fairchild Hiller Corporation, through its Republic Aviation Division, carried out the project. The final report was submitted in December, 1967.

Plans call for limited production of 15 Safety Sedans which are to be used for research crash testing to prove their many safety features. The cost of this limited production effort is estimated at $5 million, a small part of the nearly $200 million budget of the U.S. Department of Transportation. At this point the New York State Safety Sedan project is without funds. Further development depends on Federal financing.

During the 1966 hearings on the National Traffic Safety Act Congress clearly gave support to the New York State Safety Sedan; but, in spite of this, the U.S. Department of Transportation has refused to support the project.

The basic goal of the project is the construction of a car with safety features incorporated into its design. Development and exhaustive analysis of the proposed design has been completed. Construction and actual crash testing of the vehicle is now necessary to prove the many concepts used in the Safety Sedan design.

After the project is completed, it is expected that domestic manufacturers will use the safety features in their own designs. It is not expected that the car will be manufactured as now conceived but that its features will be integrated into the designs of future domestic manufactured models.

It is also expected that the Safety Sedan will furnish basic knowledge which the U.S. Department of Transportation desperately needs for the future development of Motor Vehicle Safety Standards. Basic research for these standards is slowly beginning; the Safety Sedan project will complement these efforts in many ways.

Some of the major safety features of the Safety Sedan are as follows:

1. Improved head-on collision protection—no injury in 50 miles per hour collision and no life-threatening injuries in 70 miles per hour collision;
2. Improved side impact protection—doors and frame construction of New York State Safety Sedan prevent intrusion of impacting vehicle into occupant space;
3. Improved rollover protection;
4. Improved visibility, flat glass windshield periscope for front and rear vision; and
5. Improved braking and traction.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee also considered resolution 68-22, because it is closely allied to the work covered by the Accident and Injury Prevention Committee. The committee approved the above resolution.

The House voted to adopt this portion of the reference committee report.

Aging and Nursing Homes

To the House of Delegates, Gentlemen:

The members of the Committee on Aging and Nursing Homes are as follows:

Peter S. Battaglia, M.D., *Chairman*	Niagara
Michael D. Buscemi, M.D.	Suffolk
Anthony LaRusso, M.D.	Broome
Margaret M. Loder, M.D.	Westchester

The committee had three meetings in 1967. At the first meeting, the following eight-point program was evolved and approved by the Council.

1. *Annual meeting of the State Medical Society.* The committee proposes to present a program on the problems of nursing homes and extended care facilities at the annual meeting of the State Medical Society. The purpose of this program is to give information to the county medical societies throughout the State and to initiate action at a local level with the committee acting as a focal point. The program will include panel discussions, speakers from the Department of Health, distribution of brochures and literature, and special meetings will be held with county medical society delegates.

2. *Increasing and upgrading quality of medical care in nursing homes.* The responsibility and primary function of this committee is to elevate the standards of medical care in nursing homes.

3. *Utilization review.* No formal activity will be carried on in this area since it is under the jurisdiction of the Utilization Review Committee, but the committee is requested to send progress reports to us concerning their work on nursing homes.

4. *Intraprofessional relationships.* The committee is to contact and work with the various professional groups, such as dentists, podiatrists, and optometrists, to establish mutual understanding and a more harmonious relationship regarding services rendered in nursing homes.

5. *Physicians visits to nursing homes.* Develop a method to correct the problems arising from physicians not making enough or making too many visits to patients in nursing homes.

6. *Death pronouncements.* Hold discussions on a State-wide level to help alleviate the delay in pronouncements of death to expedite the removal of the deceased from the nursing home.

7. *Aiding nursing homes in recruiting personnel.* Help nursing homes to recruit personnel by (*a*) improving the working conditions, and (*b*) preparing brochures and arranging for lectures to interest high school students in careers as nurses, therapists, dieticians, and others.

8. *State-wide shortage of nursing home beds.* The dissemination of data on the lack of space and the delay in admitting patients to nursing homes to various State government agencies and county medical society committees, and the investigation of certification standards of nursing homes. The committee desires to help in all possible ways and to do everything within its power to relieve the present situation.

Another meeting was held in October at which time implementation of our program was discussed. An exhibit in conjunction with the State Health Department was also discussed. It was determined, however, that since all scientific exhibit space was committed for the 1968 annual meeting, plans be made for an exhibit at the 1969 annual meeting.

On November 9 the committee met with representatives of podiatry, optometry, and dental professions to discuss the respective roles of each discipline in the care of patients in nursing homes throughout the State. Inasmuch as the quality of care of nursing home patients is the concern of the State Health Department, under Article 28 of the Public Health Law, the first meeting was held under the auspices of the New York State Department of Health in conjunction with this committee.

The next meeting also will be sponsored by this committee and will include, in addition to representatives of these groups, spokesmen for the nursing home industry.

Respectfully submitted,
PETER S. BATTAGLIA, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

This committee report was reviewed and accepted in its entirety.

The House voted to adopt this portion of the reference committee report.

Alcoholism and Drug Abuse

To the House of Delegates, Gentlemen:

The members of the Committee on Alcoholism and Drug Abuse are as follows:

Marvin A. Block, M.D., *Chairman*	Erie
William Antopol, M.D.	New York
Stanley E. Gitlow, M.D.	New York
Donald B. Louria, M.D.	New York

During the past year, the committee formalized the following suggestions to improve and facilitate its work. These were presented to the Council.

1. That a committee of physicians knowledgeable in the field of narcotic addiction be appointed to establish guidelines and policy regarding narcotic addiction; that the committee be authorized to utilize consultants from other disciplines; and that it be used in an advisory capacity to any group seeking its help, such as law enforcement agencies, social agencies, and so on.

2. That the State Medical Society encourage local medical societies in those counties where narcotic addiction is a major problem to appoint similar committees at the county level to provide guidelines and give advice not only to agencies but also to individual physicians who request such information.

3. That the State Medical Society sponsor a State-wide conference on the misuse and abuse of narcotics similar to the national conference which was held by the American Medical Association last January for the purpose of discussing the narcotic problem, and to include in such a conference representatives not only of medicine, but of law enforcement personnel, pharmacists, nurses, and other ancillary groups.

4. That the State Medical Society publicize to all physicians a request that breaches of confidentiality in the reporting of addicts be reported to the Society so that the Society may, in turn, report such breaches to the New York State Health Department, and that the Society help re-establish a system of reporting habitual users of drugs which insures confidentiality.

5. That the suitability of using triplicate narcotic prescription blanks be studied for the purpose of better control of narcotic prescriptions.

6. That to help implement these suggestions and carry out further applicable measures, the Committee on Alcoholism and Drug Abuse be authorized to establish a Joint State Medical Society and State Bar Association Committee on Alcoholism and Narcotics and that the chairman of the present committee be authorized to communicate with the State Bar Association regarding names of members for such a joint committee.

In addition, it is my suggestion that membership of the Committee on Alcoholism and Drug Abuse be augmented to include a number of physicians representing the various disciplines which I feel are important to increase the efficiency and value of our committee. Specifically, I should like to see a qualified pharmacologist, a qualified psychiatrist, and a qualified educator, all physicians, added to our committee.

The problem of alcoholism and drug abuse is becoming more and more important as more young people are beginning to use various kinds of drugs without proper information and background regarding the dangers involved. I feel that our committee and our State Medical Society have a responsibility to initiate and continue an ongoing educational program of sufficient intensity to keep before the public the growing importance of this increasingly dangerous problem. To this end, I also feel that our committee should have a full-time executive secretary who can devote himself or herself to the work which must be continually carried on in order to accomplish the ends which I have mentioned.

Respectfully submitted,
MARVIN A. BLOCK, M.D., *Chairman*

Alcoholism and Drug Abuse, Joint with New York State Bar Association

To the House of Delegates, Gentlemen:

The membership of the Joint Committee with the New York State Bar Association on Alcoholism and Drug Abuse is as follows:

Medical Society of the State of New York

Marvin A. Block, M.D., *Chairman*	Erie
Henry Brill, M.D.	Suffolk
M. Ralph Kaufman, M.D.	New York
Marvin E. Perkins, M.D.	Westchester

New York State Bar Association

Mrs. Hortense F. Mound	New York
Andrew C. Fleck, Jr., M.D.	Albany
Sol Schreiber, Esq.	Kings

This joint committee held a meeting on January 25, 1968, for the express purpose of discussing and setting up plans for the medical care of intoxicated individuals. In two circuit courts, in Washington, D.C., and in North Carolina, the courts have found that a person accused of public intoxication without having violated any other law is merely exhibiting the symptoms and signs of his illness, and, therefore, criminal prosecution and imprisonment constitute unusual and cruel treatment. The law in those areas, therefore, states that these people are to be treated as sick individuals and be given treatment rather than punishment.

There is presently a case before the Supreme Court of the United States which is to be heard at that level. Indications appear that the Supreme Court will find the same as did the circuit courts in North Carolina and Washington, D.C. Should this occur it will be necessary for all areas to institute new procedures for caring for those persons arrested for public intoxication. When this law is passed, it will be necessary for all areas to provide detoxification centers for those persons arrested for public intoxication to determine whether or not there might be some underlying medical reason for their public intoxication.

The following was read regarding detoxification centers:

> "Detoxification centers, all of which shall be located so as to be quickly and easily accessible to patients, to provide appropriate medical services for intoxicated persons, including initial examination, diagnosis, and classification. Each detoxification center shall be affiliated with, and constitute an integral part of, the general medical services of a general hospital: provides, that the center need not be physically a part of a general hospital."

Until these detoxification centers are set up patients will have to be admitted to a general hospital.

It is estimated that one out of every 10 people who drink alcoholic beverages becomes an alcoholic, and for early detection physicians would have to learn the early signs and symptoms of alcoholism so as to recognize such individuals in the people whom they treat or in the families with whom they come in contact.

The medical section of this joint committee requests permission to write to the county medical societies asking that they seek to establish joint committees with local bar associations to study the problem of alcoholism. Smaller county societies could be grouped together as a district committee. If each county medical society and each county bar association were to have such committees, the knowledge disseminated through these committees would be very helpful in aiding both physicians and lawyers in understanding the problem of alcoholism and the legal aspects involved. It would also give them the responsibility for disseminating such information and for informing the members of their organizations of their responsibilities.

Future meetings of this committee will be held in an effort to solve some of the problems that will arise. Immediate publicity should be

TABLE I. Comparison of film activities of medical and nursing films

Category	1967* Individual Shipments	1967* Films Used	1966 Individual Shipments	1966 Films Used
Private physicians	106	197	78	130
Medical staffs of hospitals	626	1,106	351	490
Medical schools	128	269	50	70
Pharmacy schools	0	0	1	2
Nursing schools	4,601	7,649	2,499	4,433
Public health staffs	477	895	383	584
Voluntary health agencies	111	244	46	75
Colleges—biosciences	971	1,756	821	1,224
TOTALS	7,020	12,116	4,229	7,007

* The above table is from the period November, 1966, through October, 1967.

given to the newspapers throughout New York State explaining the implications of this new law, if and when it is passed.

Respectfully submitted,
MARVIN A. BLOCK, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reports of these committees were reviewed with great interest and accepted. The reference committee feels that this is a step in the right direction in the treatment of alcoholics.

The House voted to adopt this portion of the reference committee report.

Audio-Visual Aids

To the House of Delegates, Gentlemen:

The members of the Committee on Audio-Visual Aids are as follows:

Kenneth B. Olson, M.D., *Chairman*	Albany
Wilbur M. Dixon, M.D.	Broome
James J. Quinlivan, M.D.	Albany

The committee did not meet during the year formally, but several films were reviewed. A demonstration of a cartridge-type film projector was made at the meeting of the Commission on Public Health and Education of the State Medical Society, and it was urged that more hospitals use this type of audio-visual aid.

The committee wishes to express its appreciation to James Quinlivan, M.D., and Joseph Avonovich of the New York State Health Department for their work in promoting the activities of the committee.

The growth of the combined libraries is indicated in the following totals for the past four years:

Year	*Films Shipped*	*Number of Times Films Shown*	*Attendance*
1964	25,983	48,603	2,836,001
1965	23,506	47,159	2,793,872
1966	26,229	47,665	2,046,239
1967	25,724	46,917	2,783,592

The largest number of film shipments for any one month was in April, 1967, when 2,680 films were shipped. During the year 120 new films were reviewed. Of this total, 41 were approved and added to the libraries. There are now 1,015 titles and 3,293 prints in the film library.

Table I shows a two-year comparison of the film activities of the medical and nursing films listed in the Professional Film Catalog and Supplement.

Respectfully submitted,
KENNETH B. OLSON, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted. The reference committee recommends that all physicians take advantage of the medical and nursing films available from the State Department of Health, which may be procured without cost.

The House voted to adopt this portion of the reference committee report.

Cancer

To the House of Delegates, Gentlemen:

The members of the Cancer Committee are as follows:

Charles D. Sherman, Jr., M.D., *Chairman*	Monroe
Richard D. Brasfield, M.D.	New York
Walter T. Murphy, M.D.	Erie
Kenneth B. Olson, M.D.	Albany
Herbert Volk, M.D.	Westchester

The committee held four meetings during the year.

A general session was organized by the committee on "Chemotherapy from the Practitioner's Viewpoint" and was presented at the Annual Meeting of the Medical Society of the State of New York in February, 1967.

Radiotherapy. The problem of increasing the number of well-trained specialists in radiotherapy was reviewed by the committee. The following "white paper" and resolution on increasing the opportunities for training was presented to and adopted by the Council. These are to be published in *Cancer*, the American Cancer Society's journal for physicians.

Memorandum on radiotherapy. Many of us in the cancer field are concerned about the extremely slow progress occurring in the field of radiation therapy as a specialty. Some of us feel that the major stumbling block has been the reluctance of those in power to effect a divorce between the fields of diagnostic radiology and radiotherapy. Yet, in reality, the training of the radiotherapist must be clinical and in the field of oncology. The radiotherapist gives major therapy to patients and needs clinical training and understanding of the pathology of cancer, general medicine, general surgery, chemotherapy, as well as some knowledge of radiobiology. The radiotherapist does not need specialist training in diagnostic radiology; on the contrary, his needs are in the fields noted herein.

It would seem that because of this situation, the other disciplines in clinical oncology must make an effort to aid the separation of diagnostic radiology and radiotherapy so that improved training programs and better radiotherapy departments can be developed in a greater number of centers. Only then, we believe, will our patients uniformly get the topnotch radiotherapy they deserve.

In general, the following resolution is aimed at improving the number of well-qualified, full-time radiotherapists in this country. We feel that all specialty groups interested in cancer should take similar action and actively support measures designed to accomplish this aim.

> WHEREAS, There is an acute shortage of trained radiation therapists in the United States; and
>
> WHEREAS, There are too few men and women training to be radiation therapy specialists; and
>
> WHEREAS, There is an increasing number of cancer patients who need irradiation; and
>
> WHEREAS, Most of the irradiation of cancer patients in the United States is done by general radiologists who are required by the American Board of Radiology to have only ten months of training in radiation therapy (very infrequently under a full-time specialist in radiation therapy); and
>
> WHEREAS, Surgeons and internists specializing in cancer diagnosis and management recognize this rather distressing situation; now therefore be it hereby
>
> *Resolved*, That medical students be given a curriculum opportunity to spend at least some elective time in a department of radiation therapy to become acquainted with the existence and function of the radiation therapy specialist; and be it further
>
> *Resolved*, That medical students be offered summer fellowships in selected departments of radiation therapy for more intensive briefing concerning this specialty; and be it further
>
> *Resolved*, That interns be given an elective opportunity to spend at least a few days in a department of radiation therapy for the same purpose; and be it further
>
> *Resolved*, That residents in radiation therapy be given "favored" compensation especially if financially distressed; and be it further
>
> *Resolved*, That surgical and medical residents with two years service be given at least one year training credit in a program of radiation therapy training; and be it further
>
> *Resolved*, That board qualified surgeons and internists, preferably the former, who enter a training program in radiation therapy be compensated on a "staff" basis during their training period. Such trainees should receive at least one year credit toward their radiation therapy training period.

Committee Functions. The following outline of the committee's functions was prepared, including suggestions for the future:

1. *Coordinating function.* The committee should act as a coordinating committee to help coordinate the activities of all cancer groups in the State to make them more effective. It should be a forum for these diverse groups where they can present their programs and receive constructive suggestions, as well as support, from other interested groups which may at times have differing viewpoints.

These groups which have important programs in the cancer field include the American Cancer Society, the Bureau of Cancer Control of the State Health Department, the American College of Surgeons, the regional medical programs, the "cancer coordinators" of our medical schools, and the newly formed Association of Tumor Clinic Directors.

There is an overlapping membership of the key men in many of these groups, but the Cancer Committee seems to be the one group which can have an over-all coordinating function.

2. *Advisory function.* We feel it is the responsibility of the committee in representing the medical profession to periodically review all cancer programs in the State and to give constructive criticisms as well as help identify gaps in the field of cancer control. We should then stimulate action (largely by other groups) to fill the needs. We should be willing to review not only the programs of various groups in the cancer field, but to help any local segment of the profession, or community, or local hospital in identifying its needs in the cancer field and help fill these needs. Since our committee functions partly as an "interlocking directorate" of groups with money and staff, we should be able to interest them in supporting local activities. We should be able to identify problems and programs that cross local lines and require State-wide development, action, and cooperation. We should be a forum even for individuals who wish to present ideas or programs to us.

3. *Miscellaneous functions.* (*a*) The com-

mittee should stimulate needed legislation in the cancer field (that is, quackery laws, better control of cigaret advertising) and changes in the public health field (for example, requiring Pap smear tests for certain hospital admissions).

(*b*) The committee should stimulate better programs of postgraduate education and do what it can to make them more effective in improving the care of the patient (that is, our sigmoidoscopy project). We should conduct programs and give exhibits at the annual meetings of the State Medical Society and should aid other groups, such as the regional medical programs, in developing methods of evaluating cancer control programs so that we have an effective means of comparing present care with future care.

(*c*) When any need in the cancer field is identified, we should institute a multifaceted program to fill that need (for example, our efforts to get more and better trained radiotherapists in New York State).

(*d*) We should identify physicians interested and willing to work at the local level and encourage and support them in their activities, bringing them together at suitable intervals for discussion and interchange of ideas (for example, our formation of an association of tumor clinic directors).

(*e*) Adequate means of communication of the committee's activities should be developed and continually improved. Perhaps a newsletter three or four times a year should be sent to all State Society members identified as having a special interest in cancer. (For example, such a newsletter could be sent to all members of the association of tumor clinic directors). In addition to reporting on the activities of the committee, it could include items from the various other agencies active in the cancer field. Selected articles from a newsletter of interest to the general membership of the State Society could be edited and published in the NEW YORK STATE JOURNAL OF MEDICINE.

Other activities. State Senator Edward J. Speno met with the committee in June for a joint discussion on the problem of smoking.

The committee went on record as being in favor of a change in the State Hospital Code which would require Pap smears to be taken on certain groups of women admitted to hospitals in New York State. This action was reported to the Council which approved a motion that this is desirable and that it be implemented, but that this procedure not be done if the patient disagrees or the physician feels it is not indicated.

The committee continued to urge coordination of the regional medical programs in New York State and participated in meetings designed to do this. It also set in motion plans to invite each program coordinator to discuss his cancer program with our committee; stimulated the formation of a group of physicians active at the local level in cancer, hoping to accomplish our goals through the activities of this group; and continued its liaison with the New York State Bureau of Cancer Control, the American Cancer Society, the American College of Surgeons, and other groups interested in cancer.

Respectfully submitted,

CHARLES D. SHERMAN, JR., M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

68-31. Committee of State Society on Cigaret Smoking

Introduced by Charles D. Sherman, Jr., M.D., Monroe, as an individual

WHEREAS, The House of Delegates of the Medical Society of the State of New York recognized the dangers to public health of cigaret smoking by adopting resolution 63-45 in 1963 affirming these dangers; and

WHEREAS, Since the adoption of the aforesaid resolution, the evidence demonstrating the breadth and scope of these dangers has become more compelling and convincing; and

WHEREAS, Surveys of physicians indicate that the majority accept the aforesaid scientific evidence as a guide for patient counseling; and

WHEREAS, Recent data surveys have demonstrated that over 80,000 physicians have themselves stopped cigaret smoking; and

WHEREAS, The Surgeon General of the United States Public Health Service, the American Cancer Society, and other responsible parties have issued numerous credible and cogent statements setting forth the dangers of cigaret smoking; now therefore be it

Resolved, That the Medical Society of the State of New York institute a program designed to bring about the voluntary cessation of cigaret smoking by all its members; and be it further

Resolved, That the president of the Medical Society of the State of New York appoint a committee whose purpose shall be to explore, develop, and publicize information on the health hazards of cigaret smoking and the means to assist physicians and laymen alike to break the habit; and be it further

Resolved, That the Council of the Medical Society of the State of New York be requested to appropriate the funds necessary for the committee's activities.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-31, because it is closely allied to the work covered by the Cancer Committee. The committee thanks Dr. Sherman for his personal discussion of this resolution.

The committee recommends approval of resolution 68–31.

The House voted to adopt this portion of the reference committee report.

Cardiovascular Disease

To the House of Delegates, Gentlemen:

The members of the Committee on Cardiovascular Disease are as follows:

Charles A. Bertrand, M.D., *Chairman*	Westchester
Joseph T. Doyle, M.D.	Albany
Marjorie H. Greene, M.D.	Nassau
David Greene, M.D.	Buffalo
Abraham Jezer, M.D.	Bronx
Irwin K. Stone, M.D.	Jefferson

The committee met on June 16 to discuss its program for the coming year. There was considerable discussion about the activities of the Coordinating Stroke Committee, which is integrating activities throughout the State and doing excellent work. Discussion was also held concerning the new publication, *Stroke*, which was well received.

The committee approved joint sponsorship of the Conference on Coronary Care to be held in Syracuse. Stewart W. Cooper, M.D., of the Bureau of Heart Disease, had interesting statistics relevant to the 553 hospitals in the State. As of the time of the meeting, 42 already had coronary care units and many others were in the planning stage. Dr. Moore said that he would look into the matter of coronary care training for nurses, and he did report that such courses are being held in the New York Hospital-Cornell Medical Center, under Thomas Killip, M.D. It is hoped that other such courses will be given within the State of New York.

The joint cardiopulmonary resuscitation program, which was originally set up by J. G. Fred Hiss, M.D., and James Greenough, M.D., has been reactivated, and retraining of groups has been started throughout the State. This seemed to be an excellent idea, and it was well received. It was thought that, in the main, such efforts should be concentrated within the limits of the hospital, since the chance of successful cardiopulmonary resuscitation is slight outside of a hospital.

In consideration of time involved and travel expenses, it was decided to give thought to the idea of having telephone conferences rather than meetings in person of the various members of the committee. It was thought that perhaps 2 or 3 telephone conferences could be held each year and one full committee meeting at the time of the annual meeting, when most of the members would be available.

Respectfully submitted,
Charles A. Bertrand, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Chronic Pulmonary Diseases

To the House of Delegates, Gentlemen:

The members of the Committee on Chronic Pulmonary Diseases are:

Frederick Beck, M.D., *Chairman*	Tompkins
Harry Golembe, M.D.	Sullivan
Frank Clay Maxon, Jr., M.D.	Albany
Carl Muschenheim, M.D.	New York
Marshall Henry Williams, Jr., M.D.	Bronx

The activities of this committee have been directed toward the extension of teaching and treatment facilities for chronic pulmonary disease throughout the State. Acting on instructions from the House of Delegates, the committee supported a bill in the Legislature to permit the State Department of Health to provide limited treatment facilities in its hospitals. The bill did pass in the Senate and had the endorsement of the Governor's office, but failed to pass in the Assembly.

This committee has been represented on the New York Tuberculosis and Health Association committees and has aided in the formulation and development of their programs in tuberculosis and chronic pulmonary disease.

We have also acted in a consultative capacity to the State Department of Health in its programs and at the present time are participating in an evaluation of its program and possible legislative proposals.

Our efforts have been directed to strengthening the teaching programs in the upstate medical schools, not alone for physicians, but for nursing and technical personnel as well. Committee members are impressed that statistics indicate a rising incidence in deaths as well as in numbers of patients with chronic pulmonary disease. It is our belief that we should do all we can to promote excellent care for this type of patient in local general hospitals as well as to stimulate research programs in the larger medical centers.

Respectfully submitted,
Frederick Beck, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Continuing (Postgraduate) Education

To the House of Delegates, Gentlemen:

The members of the Committee on Continuing (Postgraduate) Education are as follows:

Marvin L. Bloom, M.D., *Chairman*	Erie
Richard D. Eberle, M.D.	Onondaga
Robert Lee Patterson, Jr., M.D.	New York

Theodore J. Prowda, M.D..........Oneida
Leonard J. Schiff, M.D.............Clinton
Franklyn B. Amos, M.D............Albany

As one component of the Commission on Public Health and Education, the committee's mission has been stated as follows: "to study the need for and to develop a State-wide plan for continuing medical education in New York State."

The committee's primary function is to advise the Commission. In the present presentation, it is trying to suggest practical approaches to activate continuing education leadership from the Medical Society of the State of New York.

The committee wants to underscore the complexity of the present scene. There is a tremendous need for coordination of multiple offerings from diverse sources: various professional specialties; programs from Federally-mandated regional medical programs, New York State Department of Health, State University of New York, various academies, and so on. The job of guidance and selection must be done for physicians. At present, no really comprehensive approach to individual educational needs can be identified, despite almost innumerable miscellaneous programs offered. As in any other sound educational program there must be clear goals, proper focus, and continuity. New stress is needed on interprofessional programs so as to provide proper emphasis to the health-team approach in medical care and the leadership obligations of physicians.

The committee emphasizes the reality of a rapid change from purely voluntary postgraduate participation to a situation where formal attendance is becoming mandatory. All across the nation, there are visible signs of this trend. In our own State, there is a significant new contract between the Empire State Medical, Scientific and Educational Foundation and the New York State Department of Health. Under this arrangement, many physicians who provide services under Medicaid will be required to provide evidence of one hundred fifty hours of postgraduate education every three years.

The committee is anxious to dispel any notion that a unit of credit for postgraduate education must be based on a classroom-lecture structure. A vast flexibility in acceptable continuing education forms must be understood and accepted. Extremely effective continuing education can be accomplished in many ways, most of them far superior to the too often deadly atmosphere of the classroom-lecture. In the context of daily clinical practice, there are untapped resources for meaningful and carefully structured postgraduate education. The use of the proctosigmoidoscope, for example, even offers a tutorial dimension which could be applied to innumerable subjects. University centers must be encouraged to spread academic influence centripetally, as opposed to the older but still present centrifugal trend. Medical teaching itself is one of the best modes of continuing education. Television films and radio tapes have pointed the way to simultaneous exercises which can reach any remote part of the State. Programmed instruction has its place. Data-processing technics afford opportunity for new ways to retrieve information effectively and economically. A whole spectrum of educational forms is available, and the committee would like the Commission's support for its position that all imaginative educational possibilities be afforded proper place. There is a serious danger that, in the rush to force formal attendance, requisite "hours" or "credits" might be based on archaic and unsatisfactory center-based and classroom-lecture-structured "courses."

Last year the committee recommended that the work of the committee be expanded by means of the Empire State Medical, Scientific and Educational Foundation. The reference committee at the 1967 session of the House of Delegates recommended "that the State Society encourage the expansion of postgraduate education for general practitioners and specialists through the Empire State Medical, Scientific and Educational Foundation, and that the Society through the Foundation actively seek financial support from private and public agencies."

Another factor which coincided with this was the requirement that the State health commissioner, by law, has to establish the quality of care under Medicaid. His recommendations, through the Board of Social Welfare, included certain qualifications for the physicians, such as, if the physician is not a specialist, is not affiliated with a hospital, is not a member of the American Academy of General Practice, and so on, he is required to take at least one hundred fifty hours of continuing education courses every three years.

As a result, a contract has been entered into for a review and evaluation of existing continuing medical education programs for physicians; to establish criteria for courses, preceptorships, and other continuing education; to cooperate with appropriate representatives of the State Medical Society and other professional organizations to determine the areas of need for additional continuing educational opportunities for physicians; to arrange courses for physicians which will provide them with information concerning the most recent developments in the medical field, so that they can provide optimal medical care for their patients; to investigate the method by which information which will be most useful to practicing physicians can be made available to the greatest number of physicians; and to record and report to the Department of Health the amount of continuing education of physicians who require such education to qualify for participation in the program of Medical Assistance to Needy Persons. This contract has gone through all the necessary stages and is expected to become effective in the immediate future.

During the year the committee presented the following proposals to the Commission for its consideration and referral to the Council:

1. That an inquiry, in the form of a questionnaire, be initiated to find out what physicians

want in comprehensive continuing education programs.

2. That the inquiry be funded and implemented as a cooperative effort between the Committee on Continuing Education and the Empire State Medical, Scientific and Educational Foundation.

3. That the inquiry be considered officially by Norman S. Moore, M.D., of the Empire State Medical, Scientific and Educational Foundation and by the Medical Society of the State of New York.

4. That the inquiry be designed scientifically by competent experts and prepared for automated data processing.

5. That there be consideration of the following areas of cooperation with the NEW YORK STATE JOURNAL OF MEDICINE:

(*a*) Actual publicizing of the inquiry-questionnaire;

(*b*) Printing and circulation of the inquiry-questionnaire;

(*c*) Ultimate publication of the results from the inquiry-questionnaire;

(*d*) Creation of a continuing section in the JOURNAL, to be devoted to medical continuing education, in coordination with the Committee on Continuing Education. In this connection, the committee could strengthen its own advisory capability by recruiting a roster of consultants and help devise effective material for this section, by commissioning brief authoritative statements on every aspect of medical practice. These could be devised as a new kind of personal expression, without tedious detail or even bibliography, and might be called "guides to professional practice."

Respectfully submitted,
MARVIN L. BLOOM, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

68-60. Endorsement of Legislation on Diploma Schools of Nursing

Introduced by Westchester County Medical Society

> WHEREAS, Diploma schools of nursing graduate the greatest number of bedside nurses to care for the sick and injured; and
>
> WHEREAS, The house of delegates of the Woman's Auxiliary to the Medical Society of the State of New York in convention assembled in February, 1967, gave full support to the importance and value of diploma schools of nursing; and
>
> WHEREAS, Senator John Flynn of Yonkers has introduced a prefiled resolution setting up a mechanism whereby a graduate of a school of nursing registered with the New York State Department of Education could, on completion of two years of study in a State University, receive a baccalaureate degree in liberal arts; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York endorse and give full support to bill S. 900 as introduced by Senator Flynn which sets up a mechanism whereby graduates of hospital schools of nursing registered with the New York State Department of Education may complete their studies for a baccalaureate degree in a State University in two years.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-60, because it is closely allied to the work covered by the Committee on Continuing (Postgraduate) Education. The committee recommends approval of resolution 68-60.

The House voted to adopt this portion of the reference committee report.

Data Processing in Medicine

To the House of Delegates, Gentlemen:

The members of the Committee on Data Processing in Medicine are as follows:

William A. Bauman, M.D., *Chairman*	New York
William J. Burke, M.D.	Westchester
Ralph L. Engel, Jr., M.D.	New York
Arthur Shapiro, M.D.	Kings
Robert K. Ausman, M.D., *Adviser*	Erie

The committee held its organizational meeting in June, 1967. It was decided that the activities of the committee will be directed primarily toward informing the members of the State Medical Society concerning technics and applications of computers in medicine.

The members agreed to develop a seminar for the annual convention of the State Medical Society in February, 1968. There has been correspondence among the members concerning this program, but otherwise there has been little activity by the committee.

Respectfully submitted,
WILLIAM A. BAUMAN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee has been reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Diseases of the Eye

To the House of Delegates, Gentlemen:

The membership of the Committee on Diseases of the Eye is as follows:

James I. Farrell, M.D., *Chairman*	Oneida
John A. Kennedy, M.D.	Jefferson
Philip H. Landers, M.D.	Broome

There has been no formal meeting of this committee during the past year. However, we have held two telephone meetings and one by correspondence in order to give our opinion to the Society's executive vice-president on matters he referred to us.

The chairman did attend two executive committee meetings of the New York State Ophthalmological Society and the August meeting of the Commission on Public Health and Education.

Respectfully submitted,
James I. Farrell, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee has been reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Environmental Health

To the House of Delegates, Gentlemen:

The members of the Committee on Environmental Health are as follows:

Norman J. Ashenburg, M.D., *Chairman*	Monroe
Eric J. Cassell, M.D.	New York
Carl U. Dernehl, M.D.	New York
David W. Fassett, M.D.	Monroe
Thomas M. Gocke, M.D.	Kings

During the past year the chairman served as chairman of the New York State Action for Clean Air Committee representing the State Medical Society in this very active environmental health organization.

The chairman presented statements at the following hearings:

1. Interstate Abatement Action on Air Pollution in the New York–New Jersey Metropolitan Area—urging an effective cooperative interstate program with uniform air quality standards and comparable control legislation.
2. New York State Air Pollution Control Board—urging adoption of Parts 192 and 193 of its Rules dealing with automotive exhaust control and urging a redesign of our thinking about the larger questions of air pollution with regard to transportation.
3. New York State Air Pollution Control Board—urging adoption of rules for the prevention and control of air contamination and air pollution from general contaminant emissions and from incinerators.
4. New York State Air Pollution Control Board—endorsing proposed rules for fuel use in the New York metropolitan area in the interest of better health, but pointing out that a piecemeal approach to air pollution control is imprudent and that one must be fully aware of the impact of control measures on other sectors of society.

The chairman urged legislative support of S. 3424 permitting the Interstate Sanitation Commission to establish and enforce air-pollution standards in the New York metropolitan area.

The chairman represented the State Society at the American Medical Association's Congress on Environmental Health Management and presented a paper on the "Role of the Medical Society in Environmental Health."

Respectfully submitted,
Norman J. Ashenburg, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee has been reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Forensic Medicine

To the House of Delegates, Gentlemen:

The members of the Committee on Forensic Medicine are as follows:

Milton Helpern, M.D., *Chairman*	New York
Richard Ament, M.D.	Erie
Alfred A. Angrist, M.D.	Bronx
John F. Devlin, M.D.	New York
Valentino D. B. Mazzia, M.D.	New York
Robert M. Greendyke, M.D.	Monroe

It is the consensus of the committee that a medical examiner system throughout New York State is desirable and that it should be organized on a regional basis with grouping of counties into districts rather than as a State agency.

The committee requests the House of Delegates' approval to explore ways and means of replacing the coroner system with a medical examiner system, in general, throughout the State and asks permission to start discussion for a pilot study in the Rochester area in particular.

Inasmuch as Monroe County has an excellent medical examiner system in operation, the committee supports the use of the Rochester area for a pilot study of a district plan for a medical examiner system.

The State Department of Health is in a position to help in organization, since it is set up by districts. It is believed that financially the Health Department is prepared to underwrite part of the cost.

Each county would be eligible for a part—even up to 50 per cent of the cost—if it entered the medical examiner system.

Respectfully submitted,
Milton Helpern, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was discussed in great detail, particularly the recommendation that a medical examiner system throughout New York State is desirable and can be organized on a county or regional basis with a grouping of counties into districts.

The reference committee recommends that in the formation of a medical examiner system, autonomy must be retained by the local medical examiner's office. With the approval of Dr. Helpern, chairman of the Committee on Forensic Medicine, the reference committee recommends that the last two paragraphs of his report be deleted.

The reference committee recommends that the report be adopted with this deletion.

The House, after discussion, voted to adopt this portion of the reference committee report.

68-48. Establishment of Commission to Study Revised Laws Dealing with the Dead Human Body

Introduced by Medical Society of the County of Queens

> WHEREAS, The statutes governing the disposition of the dead human body and parts thereof are numerous, conflicting, inadequate, and scattered since they have been adopted over the years to meet specific problems as they arose; and
>
> WHEREAS, The Legislature has failed to clarify these statutes and resolve existing problems; and
>
> WHEREAS, Many new issues arise as a result of rapid medical progress; and
>
> WHEREAS, A commission to study the laws relating to the dead human body could make important contributions by suggesting correlations, revisions, and amendments of existing statutes and recommending new legislation where indicated: and
>
> WHEREAS, Appropriations for such a commission can be kept at a minimum because funds for such studies can be obtained from interested foundations; and
>
> WHEREAS, The need for such revision and amendment is urgent; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York petition the Governor of New York State to create a commission, with adequate physician representation, to study the laws and statutes relating to the dead human body and to make recommendations for revising, amending, or supplementing them in the light of present conditions; and be it further
>
> *Resolved*, That the Medical Society of the State of New York, on recommendations of this commission, seek the introduction and support legislation to modernize the laws pertaining to the dead human body and the parts thereof to meet the medical, ethical, moral, and religious problems raised by the unprecedented increase in the need for tissues and organs for transplantation.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-48 and recommends its adoption with a change in the title to read, "Establishment of Commission to Study Laws and Their Revisions Dealing with the Dead Human Body."

The House voted to adopt this portion of the reference committee report.

General Practice and School Health

To the House of Delegates, Gentlemen:

The members of the Committee on General Practice and School Health are as follows:

Herbert A. Laughlin, M.D., *Chairman* . . . . Chautauqua
G. Alex Galvin, M.D. . . . . Tompkins
Joseph F. Palmieri, M.D. . . . . Suffolk
Joseph B. Robinson, M.D. . . . . Albany
Samuel Wagreich, M.D. . . . . Bronx

The Committee on General Practice and School Health has not had a formal meeting. There has been, however, much interchange of correspondence among members regarding matters that should come up early in 1968 when the committee does meet.

One of these is the annual physical examination of all school children. This annual examination has been a matter of concern not only to the present committee but to predecessor committees as well. The reason that it is of so much concern is that physicians feel that school children, by and large, seldom get a good physical examination. A complete periodic examination perhaps three or four times between kindergarten and high school graduation would be more meaningful.

Another point of interest to the committee is the feeling that the cause of general or family practice can best be advanced by the incorporation of departments of general practice in our medical schools and clinical departments in the hospitals of the State.

The committee has received a memorandum from C. George Murdock, M.D., director of the Syracuse City School District, requesting that the Medical Society of the State of New York sponsor a symposium for school administrators on school health problems in 1968 and has suggested that the matter of annual physical examinations might be a major topic for this. Dr. Murdock believes, however, that such a symposium would be concerned primarily with giving insight to school administrators on the importance of school health education in the schools.

This symposium should receive priority on the agenda of the next meeting of the committee in order that Council approval and implementation of plans can get under way early in the year.

Respectfully submitted,
HERBERT A. LAUGHLIN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee reviewed and accepted this report. It noted that the Committee on General Practice and School Health recommended that a periodic, complete physical examination of school children, three or four times between kindergarten and high school graduation, would be sufficient. The committee recommended that the Medical Society of the State of New York sponsor a symposium for school administrators on school health problems in 1968 and asked that such a symposium receive priority on the agenda of the next meeting of the committee in order to secure Council approval.

The House, after discussion, voted to adopt this portion of the reference committee report.

Hard of Hearing and the Deaf

To the House of Delegates, Gentlemen:

The members of the Committee on Hard of Hearing and the Deaf are as follows:

James A. Moore, M.D., *Chairman*	New York
Alfred W. Doust, M.D.	Onondaga
Marshall Y. Soldineer, M.D.	Erie

There have been no formal meetings of the committee during the 1967–1968 period. However, the chairman has been active in attending meetings with the State Department of Health, the State Education Department, and various specialty groups concerned with the problem of hard of hearing. The committee in the past has been active in disseminating rules and regulations created by the Legislature or Compensation Board fiat regarding the hard of hearing and the deaf in industry.

The committee recommends Medical Society policy to the Council regarding activities in the field of the hard of hearing, both in prevention and treatment. Within the next few months, the committee will formulate some recommendations for Council action regarding Medical Society policy.

Respectfully submitted,
JAMES A. MOORE, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Health Aspects of Ionizing Radiation

To the House of Delegates, Gentlemen:

The members of the Committee on the Health Aspects of Ionizing Radiation are:

Norman Simon, M.D., *Chairman*	New York
Hendrik M. Rozendaal, M.D.	Schenectady

During 1967, the committee has maintained liaison with national and local organizations during a period of heightened interest in the hazards of medical radiation. Of particular importance has been a current investigation by a subcommittee of the Senate Commerce Committee originally designed to probe the problem of emission of excessive radiation from some color television sets. This investigation has branched out into a consideration of many electronic sources of radiation and extends itself into a restudy of exposure to population from medical x-ray equipment.

It is with pride that the Medical Society of the State of New York can point to the programs of the City and State of New York in implementing improvements in the use of radiation and in the inspection of radiation equipment, the state of which, in some regions of the country, has come under justified and unjustified critical attack. The Senate subcommittee continues its investigation, and your committee will continue its preoccupation with the status of the investigation and its advices.

The committee also continues its interest in the problem of hazards of radium, and its members have published in the *Journal of The American Medical Association* a new disclosure of the use for jewelry of spent gold radon seeds with resultant skin lesions.

Through the members of the committee, who belong to Federal, State, and City radiation organizations, the Medical Society of the State of New York is apprised of the aspects of ionizing radiation pertaining to the proper care of patients and protection of the public.

Respectfully submitted,
NORMAN SIMON, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee reviewed and accepted this report. After reviewing this report the reference committee recommended that this committee continue its interest in the problems of the hazards of radium, especially regarding the new disclosure of the use of spent gold radon seeds for jewelry, with resultant skin lesions. The Medical Society of the State of New York has been apprised of the aspects of ionizing radiation pertaining to the proper care of patients and protection of the public.

The House voted to adopt this portion of the reference committee report.

Health Manpower

To the House of Delegates, Gentlemen:

The members of the Committee on Health Manpower are as follows:

Franklyn B. Amos, M.D., *Chairman*	Albany
Benjamin Dinin, M.D.	Westchester
Eugene J. Hanavan, Jr., M.D.	Erie
Arthur Howard, M.D.	Fulton

This committee was created by the Council this year and has held one meeting to date. At that meeting, the following decisions were made:

1. The functions of the committee should be as follows:

(*a*) To obtain data on health manpower needs, including numbers and distribution of physicians, nurses, health technicians, and other health workers, and to tabulate and analyze such data.

(*b*) To find out what official agencies, such as Federal, State, and local, as well as professional and private agencies are doing in the field of health manpower in order to integrate the activities of this committee with those of other agencies.

(*c*) To serve in an advisory capacity to the State Medical Society and represent the Society as requested.

2. The committee recommended that the State Medical Society become active in recruiting high school and college students into the health professions and submitted the following suggestions:

(*a*) Printed material regarding the opportunities in the health field should be prepared with a general brochure on the over-all subject and supporting brochures in each field of endeavor for distribution throughout all schools in the State.

(*b*) Guidance counselors should be contacted to obtain their interest and to be supplied with information so that they may be adequately informed about the health professions.

(*c*) Health brochures and student discussion should be coordinated through guidance counselors.

(*d*) A speakers bureau should be established to visit schools—this to be done on the local level—to talk about education requirements and costs, training, over-all rewards, and so forth of a career in the health field.

(*e*) Guided tours through hospitals and other health facilities should be arranged for small groups of students.

(*f*) Courses in health should be taught as part of the science curriculum in schools.

(*g*) Student volunteers and paid workers in hospitals and other health facilities should be encouraged.

These recommendations were reported to the Council at its September 28 meeting along with a motion made by Dr. Ershler that the committee be authorized to prepare a specific program with a proposed budget. The Council approved this motion, and the committee is in the process of preparing this material.

3. There is a need for highly skilled medical and/or emergency medical personnel in rural areas. There are many areas in the State without a physician. Little progress has been made in providing this coverage. After study of these problems, the committee will make recommendations.

4. There is a shortage of allied health manpower including nurses, laboratory technicians, operating room technicians, and other types of technicians. Recommendations were made in the Kinsinger Report for the training of technicians in the health field in the community colleges. It was noted that the main problem in developing such associate degree courses is a lack of qualified teachers. No recommendation for action was made.

5. Consideration was given to the means for additional scholarship support for the training of nurses. It was believed that lack of this support was, at least, a partial reason for an inadequate number of young women entering the nursing profession.

No definite action was taken by the committee, at this point, but it was felt that the question of additional nursing scholarship support should be further explored.

Respectfully submitted,
Franklyn B. Amos, M.D., *Chairman*

Report of Reference Committee on Public Health and Education: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee reviewed the report of Franklyn B. Amos, M.D., and approved the steps being taken by his committee.

The House voted to adopt this portion of the reference committee report.

Maternal and Child Welfare

To the House of Delegates, Gentlemen:

The membership of the Committee on Maternal and Child Welfare consists of the following:

Merton C. Hatch, M.D., *Chairman*	Onondaga
Alfred E. Fischer, M.D.	New York
Robert M. George, M.D.	Oneida
Edward C. Hughes, M.D.	Onondaga
George J. Lawrence, Jr., M.D.	Queens
Curtis J. Lund, M.D.	Monroe
E. Jurgen Plotz, M.D.	Albany
Olaf J. Severud, M.D.	Otsego
Clyde L. Randall, M.D., *Adviser*	Erie

The Committee on Maternal and Child Welfare held a meeting in Syracuse on May 18. The work and responsibilities of this committee were discussed.

The proposed changes in the report forms for births, fetal deaths, and death certificates were discussed. Dr. Hughes reported our recommendations to Selig H. Katz, M.D., of the New York State Department of Health.

The proposed changes in the so-called abortion law were also discussed. This information will be conveyed to the Committee on State Legislation.

Dr. Hughes presented some ideas for a universal obstetric chart. This chart would be for use in the office of physicians. A carbon copy of this record would be sent to the hospital when the patient is admitted. This would then furnish a complete prenatal record which would become a part of the permanent hospital chart. We are continuing to work on this proposal.

The chief work of this committee is the supervision of the maternal and perinatal mortality studies which are conducted by the Central New York Maternal and Perinatal Mortality Study.

At the May meeting in Syracuse, the committee formed rather definite concepts on procedure which consisted of the following:

1. Collection of data and statistics for an analysis of maternal and perinatal mortality rates.

2. Continuing education for physicians because studies have pointed out certain defects in patient care. We felt that if we could further stimulate physicians to use established procedures, we would reduce the perinatal mortality rate. For example, there is a lack throughout the State of screening of pregnant women for diabetes or potential diabetes in order to give

them required specialized treatment. Another problem is the reporting of perinatal deaths. We have had difficulty in obtaining this information from certain areas of the State and are now working to rectify this situation. Still another problem is the timing of elective repeat cesarean sections. It results quite often in the premature loss of the baby, whereas better timing could have saved the baby. Investigation of these areas could be very helpful.

3. Public education on reproduction and the care of the pregnant woman. For a number of years, this committee has been responsible for the Central New York Maternal and Perinatal Mortality Study, which is sponsored by the Empire State Medical, Scientific and Educational Foundation. We are continuing in our efforts to compile data for this study as the cases are reported to us. The committee has done a lot of work in increasing and expanding these studies to include all of the State excluding New York City.

I want to thank the personnel of the State Health Department for helping us to find the cases and for sending us a computer data card, each month, which lists the causes of death.

Respectfully submitted,
MERTON C. HATCH, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee reviewed the report made by this committee and accepted it as presented.

The House voted to adopt this portion of the reference committee report.

68-26. Objection to New Certificates of Birth and Fetal Death

Introduced by Broome County Medical Society

> WHEREAS, The New York State Department of Health introduced a new certificate of birth and certificate of fetal death on January 1, 1968; and
>
> WHEREAS, The new certificates require the attending physician to provide substantially more information than was required on previous certificates; and
>
> WHEREAS, Examples of this newly required information include: education of both parents; date last normal menses began; dates of first birth, last live birth, and last fetal death; and duration of labor by stages; and
>
> WHEREAS, This is another example of physicians being required to serve as clerks, thus adding to their paperwork and diminishing the time they have available for patient care; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York urge the State Department of Health to revert to the old certificates of birth and of fetal death or delegate to Health Department personnel the responsibility of gathering the additional information required therein.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-26, because it is closely allied to the work covered by the Maternal and Child Welfare Committee.

The reference committee reviewed the original resolution and found it to be inadequate since it truly did not represent the intent of the resolution, and therefore, the following substitute resolution is recommended by the reference committee:

> WHEREAS, the New York State Department of Health introduced a new certificate of birth and certificate of fetal death on January 1, 1968: and
>
> WHEREAS, the new certificates of birth and fetal death require the hospital to provide substantially more information than was required on previous certificates; and
>
> WHEREAS, Examples of this newly required information include education of both parents; date last normal menses began; dates of first birth, last live birth, and last fetal death; and
>
> WHEREAS, Protection should be given to the patient's confidentiality, and the process of collecting pertinent statistical information should be consistent with the dignity of the patient; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York urge the New York State Department of Health to study and implement means by which potentially confidential information could be reported either without appearing on the record filed with the local registrar or reported without identifying the information with the patient's name.

The House, after discussion, voted to adopt this portion of the reference committee report.

Medical Aspects of Sports

To the House of Delegates, Gentlemen:

The members of the Committee on Medical Aspects of Sports are as follows:

Ralph S. Emerson, M.D., *Chairman*	**Nassau**
Frederick H. Grabo, M.D.	**Oneida**
Eugene J. Hanavan, Jr., M.D.	**Erie**
Arthur Howard, M.D.	**Fulton**
Joseph J. Kaufman, M.D.	**Wayne**
William B. Kintzing, M.D.	**Nassau**
Alexius Rachun, M.D.	**Tompkins**
Murle Laurens Rowe, M.D.	**Monroe**

The committee enjoyed a very active and fruitful year.

Our programs have received wide publicity through athletic and educational associations such as the National Federation of State High School Athletic Associations; New York State Public High School Athletic Association; Health, Physical Education, and Recreation Association; New York State Public High School Athletic Plan; New York State School Boards of Education; and the Eastern States Trainers Association. The sports writers, professional football clubs, and members of the Touchdown

Club have been most helpful in enhancing our athletic safety programs. We have also received requests from organizations such as the Public School Athletic League, and parochial and private schools for representation on our committee.

Our work was conducted primarily by telephone conferences. Reports and agenda were submitted prior to the conferences, and assignments were carried out by individual committee members. We received and approved the four-year study of "The Heel in the Cleatless Shoe," the continuation of the questionnaire on the helmet and face guard regarding fractures of the nose, and recommended that a set of "guidelines" be prepared for distribution to all football coaches. Plans were formulated at these telephone conferences for panel discussions, various symposia and the annual symposium to be held in conjunction with the annual meeting of the State Medical Society in February, 1968.

We are participating with the New York State Public High School Athletic Association in the following research projects involving about 125,000 high school athletes:

1. Junior high school modified football program.
2. Preseason experimental training study, the 5–10–5 program.
3. The cleatless shoe.

The committee members and other physicians participated in several Medical Aspects of Sports sectional programs as follows:

1. Health, Physical Education, and Recreation Association annual meeting, Concord Hotel, Kiamesha Lake, New York, January 21, 1967. Murle L. Rowe M.D., William Coleman, M.D., Philip M. Winslow, M.D., and Frank P. Smith M.D., Rochester, presented a panel discussion on heat exhaustion, knee injuries, the cleatless shoe, and head and spinal injuries. The proceedings of this meeting were published and distributed to coaches throughout the State through the courtesy of the Education Council for School Research and Development, Mineola, New York.
2. The New York State School Boards of Education held their annual meeting in Syracuse on October 23, and Alexius Rachun, M.D., was a panelist on a sports program, representing our committee.
3. Murle L. Rowe M.D., was moderator of a program in Rochester on September 11. This symposium consisted of four physicians, a lawyer, and "Dutch" Hafner of the New York State Public High School Athletic Association, with an attendance of about 250 guests.

Our first State-wide program is scheduled for February 10, 1968, the day before the opening of the annual meeting of the Medical Society of the State of New York at The Americana, New York City. It is being cosponsored by the New York State Public High School Athletic Association and the Health, Physical Education, and Recreation Association. It is an all-day program with outstanding specialists covering a wide variety of subjects, such as "The Long-Range Effects of Trauma in Athletes," "Heat Exhaustion" "The Wrestler's Ear," "The Cleatless Shoe," "Vital Insurance Injury Statistics," and an afternoon session on "The Knee Joint." This session includes panelists discussing: The anatomy with reference to the mechanics of injury, the significance of data and history of the injury, the proper physical examination with a demonstration movie, and the absolutes and relative indications of surgery. Among our distinguished panelists will be Anthony J. Pisani, M.D., orthopedic surgeon to the New York Giants, James A. Nicholas, M.D., orthopedic surgeon to the New York Jets, and Joseph D. Godfrey, M.D., of the Buffalo Bills. A luncheon is scheduled honoring our guest panelists with an attractive cast of outstanding sports personalities.

The program will have wide publicity through the State Medical Society communications media, the press, and our cosponsoring organizations. We hope physicians throughout the State will attend this important symposium.

Our committee wishes to thank the members of the State Medical Society staff with special thanks extended to Miss Alvina Rich Lewis, Guy Beaumont, Coleman Fineberg, Martin Tracey, Esq., and J. Richard Burns, Esq., for their invaluable assistance in arranging the symposium.

As chairman, I would like to extend my appreciation to the members of this committee and to Kenneth Hafner, New York State Public High School Athletic Association, for their dedication and wonderful spirit of cooperation during the past year.

Respectfully submitted,
RALPH S. EMERSON, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The committee noted that the first State-wide symposium sponsored by the Medical Society of the State of New York and cosponsored by the New York State Public High School Athletic Association and the Health, Physical Education, and Recreation Association was a huge success. This symposium was well attended and many favorable comments have been received. This reference committee hopes that there will be a similar symposium in the near future.

The committee report was reviewed and approved.

The House, after discussion, voted to adopt this portion of the reference committee report.

Mental Hygiene

To the House of Delegates, Gentlemen:

The Committee on Mental Hygiene has the following membership:

Matthew Brody, M.D., *Chairman*	Kings
Gurston D. Goldin, M.D.	New York
Allison B. Landolt, M.D.	New York
Herman B. Snow, M.D.	Dutchess
Reginald R. Steen, M.D.	Nassau

Your Committee on Mental Hygiene continued to maintain active liaison with the New York State district branches of the American Psychiatric Association, with the Department of Mental Hygiene, State of New York, with the Community Mental Health Board of New York City, and with the New York State Association for Mental Health.

In recent months we have been receiving increasing numbers of communications from committees on mental health of various state medical associations, all of whom present certain problems that exist within their own state and ask how we are handling these problems in New York State. It would seem that our State is recognized as a leader in the field of mental health.

The third annual New York Congress on Mental Health, sponsored by our Society, the New York State Society for Mental Health, and the New York State district branches of the American Psychiatric Association, was held on October 7, 1967, and was devoted to the topic, "Forces Affecting Family Structure: Constructive and Destructive." The papers presented were of unusually high order. We are flattered and grateful for the $500 grant allowed us by the AMA and by the presence of Joseph J. Baker, M.D., representing the AMA.

Your committee has been asked by different government agencies to establish panels of psychiatrists. The Judicial Department of the Second Appellate Division requested a panel of psychiatrists to be used in aiding in the enforcement of the new commitment law. This was turned over to the county medical society and district branch of the American Psychiatric Association of the nine counties involved. A similar request by the presiding justice of the First Judicial Department was responded to by the New York County Medical Society and the New York District Branch of the American Psychiatric Association. Requests for panels have also come from the Federal Attorney, Southern District of New York, and from the new reconciliation service to be used in divorce proceedings. The precedent set by the liaison committee of the Medical Society of the County of Kings and the Legal Aid Society was most helpful.

The Council has approved the appointment of a Subcommittee on Mental Retardation, Jack Diamond, M.D., chairman, Sam Feinstein, M.D., and Peter Berman, M.D., respectively member and adviser. This takes cognizance of the importance of this field to the medical profession.

Allan M. Levy, M.D., of the New York Community Mental Health Board, represented our Society at the hearing on the Speno-McCloskey Law.

Your committee has taken an active interest in various legislative matters. With reference to psychologists we are glad to report that, upstate, this sister profession behaves in a responsible and ethical manner. Most of the abuses that occur in unsupervised lay psychotherapy occur downstate, and your committee is anxious that these abuses are not to be made legal by the new laws being proposed regarding the different professions. In New York City, both the Prudential Insurance Company and the Metropolitan Life Insurance Company have issued policies which will permit payment for "medical services" to unsupervised nonmedical therapists. Since this is primarily a metropolitan area problem it has been referred to the Coordinating Council, First District Branch, which has obtained legal advice, and if necessary it will pursue this violation of the Medical Practice Act in the courts.

Your committee along with all mental health associations originally supported the stand of Professor Ralph A. Straetz, whose group sought to write into the law features which would strengthen the Community Mental Health Board. We are fearful that Mayor Lindsay's desire to coordinate city departments might affect the independence and efficiency of this agency. However, the city fathers were good enough to introduce amendments which allayed our anxiety.

Your chairman wishes to express his gratitude to the members and advisers of the Committee on Mental Hygiene, to Norman S. Moore, M.D., for his encouragement and support, to the Council who support most of our stands, and to Miss Gretchen Wunsch and Miss Dorothy Smith.

Your committee would be able to have more effective liaison with similar committees on a county level if, somehow or other, we could meet on Saturdays. It is difficult for psychiatrists to get away from their offices in the middle of a week.

Respectfully submitted,
MATTHEW BRODY, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee compliments the chairman of this committee, Matthew Brody, M.D., for his excellent report, which has been reviewed and accepted by the committee.

The House voted to adopt this portion of the reference committee report.

Metabolic Diseases

To the House of Delegates, Gentlemen:

The following are members of the Committee on Metabolic Diseases:

Arthur H. Dube, M.D., *Chairman*	Onondaga
Joseph B. Cortesi, M.D.	Schenectady
Charles Weller, M.D.	Westchester

The committee held a meeting in Syracuse on October 19.

A memorandum was sent to all county medical societies requesting information about the activities of their metabolic or diabetes committees and asking whether or not they participated in "Diabetes Detection Week." The role of the county medical society in the Diabetes

Detection Week program is to be studied and reevaluated.

Plans were made for participating in a scientific session, either alone or with other groups, at the 1969 Annual Meeting of the Medical Society of the State of New York. The chairman of the Convention Committee will be contacted at a later date.

A major effort will be made to have articles published in *Health News* for distribution to both physicians and laymen, according to that journal's new publication policy.

Respectfully submitted,
ARTHUR H. DUBE, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

68–52. Statement of Policy Regarding Weight Reduction Practices

Introduced by Bronx County Medical Society

> WHEREAS, The practices of physicians specializing in weight reduction are of increasing concern to the medical profession; and
>
> WHEREAS, A number of questions have arisen, both within the medical profession and among the public, with regard to ethical and therapeutic aspects of the treatment of obesity; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York recognize the ethical and therapeutic problems arising from the practices of physicians specializing in the treatment of obesity; and be it further
>
> *Resolved*, That the Medical Society of the State of New York adopt a "Policy Statement on Weight Reduction Practices" and disseminate the statement widely through its various communications media.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68–52, because it is closely allied to the work covered by the Committee on Metabolic Diseases.

The reference committee approved this resolution in principle and recommends it be referred to the Committee on Metabolic Diseases for further study.

The House voted to adopt this portion of the reference committee report.

Physical Medicine and Rehabilitation

To the House of Delegates, Gentlemen:

The members of the Committee on Physical Medicine and Rehabilitation are as follows:

Leo Dobrin, M.D., *Chairman*	Queens
Alexander F. Carson, M.D.	Otsego
William H. Georgi, M.D.	Erie
Leo Jivoff, M.D.	Onondaga
Milton B. Spiegel, M.D.	Kings

The committee met on October 27, 1967, to discuss the developments in rehabilitative care of disabled aged in nursing homes since the Medicare law came into effect. There was general agreement that more aged persons were receiving such care since this financial support was made available. However, the committee expressed concern about the quality of rehabilitative care being rendered in relatively unsupervised settings. It was apparent that there is an urgent need for clearer definition of standards of rehabilitative services and supervision if wasteful, inefficient, and indeed abusive practices are to be avoided so that more positive benefits may be obtained within the intent of the Medicare legislation.

The committee recommended that the following steps be taken:

1. The chairman to discuss this matter with the chairman of the Nursing Home Code Committee of the State Hospital Review and Planning Council.
2. Henry Fleck, M.D., delegate from the Section on Physical Medicine and Rehabilitation, be requested to present a more stringently worded resolution to the Society than 66–92 which was approved last year. This resolution "recommended" that a specialist in physical medicine and rehabilitation (a physiatrist), if available, be on the staff of each extended care facility. In actual practice little such supervision is now being recommended, requested, or available in proprietary nursing homes where thousands of patients have received rehabilitative care since Medicare.

Respectfully submitted,
LEO DOBRIN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committee was reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

Preventive Medicine (Annual)

To the House of Delegates, Gentlemen:

The members of the Committee on Preventive Medicine, which includes the chairmen of following subcommittees, are as follows:

Harry S. Lichtman, M.D., *Chairman*	Kings
COMMUNITY HEALTH	
Leonard L. Heimoff, M.D.	Bronx
HOSPITAL EPIDEMIOLOGY	
Max B. Milberg, M.D.	Kings
INFECTIOUS DISEASES	
Thomas S. Bumbalo, M.D.	Erie
TROPICAL DISEASES	
Howard B. Shookhoff, M.D.	New York

VENEREAL DISEASE

Bruce P. Webster, M.D. . . . . New York

At the request of your chairman, the Council approved the change in name of the Committee on Infectious Diseases to the Committee on Preventive Medicine, and at the same time the Subcommittee on Preventive Medicine became the Subcommittee on Infectious Diseases.

The chairman attended the annual meeting of the Commission on Public Health and Education in Albany on August 3, and outlined the goals of the committee for the coming year.

The committee met twice in the past year, April 31 and October 12. The following is a summary of the activities of the committee and its future plans.

Your chairman is pleased to report that he has received enthusiastic cooperation from the director of the Bureau of Epidemiology of the New York State Department of Health, Julia L. Freitag, M.D., in implementing the measles immunization program. Letters were sent to county medical societies and district health officers over the signatures of the State health commissioner and the president of the Medical Society of the State of New York, urging continuing efforts in reducing the incidence of measles through mass immunization. The education campaign directed at the public and utilizing all media has proved very effective, and the combined efforts of the State Health Department and the State Medical Society have resulted in increasing the distribution of the vaccine throughout the State. This has been accompanied by a precipitous drop in measles cases.

Vincent F. Guinee, M.D., director of the Immunization Activities Project for the New York City Health Department, has instituted a plan to send letters to mothers of all infants born in New York City who are one year of age, reminding them to seek measles immunization from their private physicians, health stations, or health centers of the Health Department. After an intensive advertising campaign using the slogan "Measles Bites the Dust," the distribution of measles vaccine more than doubled in the metropolitan area.

Subcommittee on Infectious Diseases. The following proposals were considered and acted on favorably:

1. To offer physical examinations to physicians attending the 1969 annual convention of the State Medical Society.

2. To promote family life education (sex education) programs at the local level. County medical societies will be expected to guide, plan, and help implement such programs in their respective communities. Voluntary and paramedical groups are to be solicited for their cooperation and active participation.

3. To encourage routine serologic testing for syphilis in areas of high priority.

4. To encourage routine glaucoma testing among the higher age groups as part of a complete physical examination. This will require an education program for physicians not oriented in ophthalmology.

5. To conduct an education program to encourage and clarify the new State laws requiring routine chest x-rays and cervical "pap" smears.

Subcommittee on Community Health. The Federal government, through the Department of Health, Education, and Welfare and the Office of Economic Opportunity, has recognized the need for revising our present methods for the delivery of medical care to the poor and the medically indigent population.

The State Medical Society should be active in this field of community health. Local medical societies guided by the State Medical Society should inform the proper government agencies, both on a local and national level, of their desire to help plan comprehensive medical care centers in medically deprived areas. Medical societies likewise should become involved in existing government-supported centers through constructive criticism, advice, and support. It is our present duty to study all plans for comprehensive medical care to insure quality care for all patients using these facilities before such plans are foisted on the profession with built-in weaknesses and reckless use of funds.

Subcommittee on Hospital Epidemiology. The increase of hospital infections during the past decade has been well documented. Federal legislation in recent years has resulted in a trend toward increased hospital utilization and increased use of hospitals as the primary resource of medical care. Those directly responsible for medical care as well as those administratively responsible to the community are concerned that such services be offered in a milieu where hospital-acquired infections are reduced to a minimum.

The program, "Hospital Epidemiology on a Community Level," conceived and implemented in New York City during the past five years, was the result of this concern by both organized medicine and the public health profession. Specifically the program was developed by the joint efforts of the Medical Society of the County of Kings and the New York City Department of Health.

The control of intramural infections is essential to each and every hospital in the community. This is best achieved within each hospital by a hospital epidemiologist, integrated at the community level by a coordinator, preferably a member of the local health department. The health needs of the community on a broad horizon would thus be served.

The committee seeks approval from the State Medical Society and the New York State Department of Health to sponsor similar programs throughout the State in areas with a single hospital, in communities with several hospitals, or in cities with many hospitals.

Subcommittee on Tropical Diseases. The function of this subcommittee is to stimulate interest and educate. We should like to present the following at an annual meeting:

1. An exhibit of color photomicrographs of intestinal parasites.

2. A color film with soundtrack showing all the common intestinal protozoa and other parasites.

3. A color film with soundtrack showing the mobility of the intestinal amoebae of man.

Subcommittee on Venereal Diseases. To bridge the gap between the practicing physician and the Federal and State syphilis control program, attempts have been made to establish a pilot project in which a county medical society might work closely with the State Health Department and the Communicable Disease Center of the United States Public Health Service. Efforts to interest an upstate county were not too fruitful. A fresh attempt will be made to gain the cooperation of a county medical society in the New York City area where the rate of venereal disease cases is high enough to warrant such a study.

Respectfully submitted,
HARRY S. LICHTMAN, M.D., *Chairman*

Preventive Medicine (Supplementary)

To the House of Delegates, Gentlemen:

The Subcommittee on Community Health of the Committee on Preventive Medicine wishes to present the following report.

Community Health. An inspection trip was made to the Neighborhood Medical Care Demonstration Unit, Bronx, New York, on February 2, 1968. This unit is founded by the Office of Economic Opportunity and administered by Montefiore Hospital, Bronx, New York. Harold Wise, M.D., is the director of the project. This project is multifaceted. It is attempting to not only render medical care to 50,000 people in Health District 24 and 26, in The Bronx, but is also running a training program for members of the community in the needed health care fields, including ambulatory and inpatient services. These trainees are paid about $55 per week while undergoing the training program. Of the 65 people now employed, 58 are employed in the Montefiore-Morrisania N.M.C.D. complex and only 7 in other locations. Of the remaining 44 people, only 5 left for school or better jobs and 6 are still in training. The idea and ideals behind the training program are excellent. There is a definite and growing need for trained people in the health professions and ancillary fields.

However, the key word here is "trained." Fortunately the N.M.C.D. unit and its allied hospitals have been able to absorb most of its own trainees, but soon they will be saturated and no longer able to hire them. At this point, unless they are properly trained, they will not be able to be hired by outside agencies. I would strongly recommend that at this time the training program be oriented at vertical training. This would necessitate the advancement of the qualified student, after completion of the core program, to a recognized school in his field of choice, that is, medical technician, x-ray technician, practical nurse, and so on. Once they have graduated and have a qualifying diploma they can enter the labor market anywhere they wish, and, once placed, will break their own poverty cycle. It is much more economical to place these qualified students in these schools and pay their tuition than to set up special schools, physical facilities, personnel, and teachers and to seek recognition of the schools. It may be necessary during the initial core program also to get qualifying high school certificates for those who seek to go on. There is still a great need for home health aides, homemakers, and housekeepers in many of our extended care units, and this type of training can be done through the N.M.C.D. Center.

I would therefore recommend that:

1. Training programs for paramedical personnel be geared to a vertical uplift program to and through recognized schools in this field. If accepted and placed in these schools, the graduate will truly have lifted himself out of the poverty cycle.

2. Continued stress be placed on training home health aides, homemakers, and housekeepers for placement with extended care groups such as visiting nurse service, home care units, nursing homes, and so on.

3. Re-evaluation of the aims and scope of the training programs be instituted. One must question whether it is wise to train large numbers of people inadequately for a short period of time and to find that they cannot be properly placed because of this type of training.

Health Centers. The need to bring medical care back into the "ghetto areas" has finally been established. The mass exodus of "middle class" population from these areas also included the professional men, that is, doctors, dentists, lawyers, pharmacists, and others. This almost always was due to the inability of the professional man to be adequately reimbursed for his services. Now, however, Medicare and Medicaid legislation have made possible the return of physicians to these deprived areas.

The N.M.C.D. unit has done a fine job in placing an attractive medical facility in mid-Bronx depressed areas. They are now seeing between 100 to 200 patients a day at the center. Medical services, however, are provided by some physicians from the local area and others from Morrisania Hospital on a part-time or full-time basis. Unfortunately, when these patients require hospitalization they are still sent back to Morrisania Hospital, which is one of the best of the municipal hospitals but woefully inadequate physically to provide the kind of care envisioned for our population. Likewise, the problem of medical staffing will become more and more acute as attempts are made to enlarge the facilities, and the unit then becomes merely an extension of an outpatient department that is woefully poor to start with.

I feel that another demonstration should be attempted. This would be the seeking of private physicians to set up groups in these areas. Since "seed money" is advanced to the N.M.C.D. it likewise could be advanced to these private groups under the sponsorship of the Medical Society of the State of New York or the local county medical society. Sufficient income from Medicaid and Medicare fees would certainly adequately care for all expenses and give the physician a fair return for his services. In addition, the patient would be exposed to the best of private medical care—a goal for which Medicare and Medicaid have strived. Hospitalization would be at hospitals far superior to our local municipal hospitals as now constituted. Patients would finally attain the goal of high quality medical care delivered to them in their own neighborhoods, in pleasant surroundings, by private physicians. Patient acceptance and patient satisfaction would be high and all would mutually benefit from this type of unit.

The Medical Society of the State of New York should review this subject carefully and sponsor or recommend acceptance of the view that private groups may be attracted to these deprived areas if proper arrangements can be worked out with the granting agencies, either Federal, State, or municipal.

Cooperation with Medical Schools. All too often the medical student is completely isolated from the private physician. The increasing tendency for full-time medical school staff has further increased the schism between the medical student and the practicing physician. This has created the "town and gown syndrome." The medical student, unfortunately, fails to benefit from the teaching of men who are rendering medical service to the community. Recently, however, the Community Health and Preventive Medicine Departments of Albert Einstein Medical School have begun to do something about this schism. First-year medical students are going to be placed in private physicians' offices as a preceptorship type of program. They will also make rounds in proprietary hospitals with private practicing physicians. The Bronx County Medical Society is cooperating in this project and helping to furnish physicians for this program.

I feel this is a giant step in the right direction. The nation needs many more physicians to actually engage in the delivery of health care. The private physician is and will continue to be, in the foreseeable future, the backbone of this delivery of care. It therefore behooves the medical schools to at least expose the student to this segment of medical practice.

I would, therefore, recommend to the Medical Society of the State of New York that further discussion be instituted with the New York State medical schools to widen this program and to firmly establish close liaison with the local county medical societies.—*Leonard L. Heimoff, M.D., chairman, Subcommittee on Community Health.*

Respectfully submitted,

HARRY S. LICHTMAN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The annual report of this committee was reviewed and accepted. A supplementary report, giving an interim report presented by Leonard L. Heimoff, M.D., chairman of the Subcommittee on Community Health, was accepted and approved.

The House voted to adopt this portion of the reference committee report.

68-9. Sex Education Programs

Introduced by Medical Society of the County of Erie

WHEREAS, The preparation of pupils for responsible roles in our modern, complex society is the avowed goal of our schools; and

WHEREAS, The attainment of this goal demands that the education program of our schools include formal instruction in sex and sexual behavior; and

WHEREAS, Sex education that is expertly directed toward constructive consequences and evaluated so as to stimulate the growth of the pupil and enrich his personal and social relations will contribute materially toward preparing the pupil for responsible roles in our society; and

WHEREAS, A program of sex education for parents of pupils and for those who do not attend schools is desirable and necessary to complement and reinforce the efforts of school programs on this subject; now therefore be it

Resolved, That the Medical Society of the State of New York go on record as being in favor of making sex education part of the education program of all of our schools beginning at the elementary level and continuing at increasing levels of comprehension throughout the secondary schools; and be it further

Resolved, That component county medical societies through their public health committees, either alone or in cooperation with appropriate community agencies, organize and implement public sex education in their communities.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68-9 because it is closely allied to the work covered by the Committee on Preventive Medicine. We recommend approval of this resolution with a change in the second *Resolved* by substituting the words "respective committees" for the words "public health committees."

The House, after discussion, voted to amend the report of the reference committee by adding a third resolved as follows:

Resolved, That the Commission on Public Health and Education of the Medical Society of the State of New York work in conjunction with the State Education Department and the State Health Department to help in implementing any programs in sex education in the public school systems of New York State.

The House voted to adopt this portion of the reference committee report as amended.

68–28. Approval of Fluoridation of Municipal Water Supplies

Introduced by Broome County Medical Society

WHEREAS, The benefits from fluoridation of municipal water supplies have been proved without doubt by scientific studies; and

WHEREAS, No harmful results have ever been shown from ingestion of fluoridated water containing the recommended 1 to 1.5 parts per million; and

WHEREAS, The New York State Department of Health is now sponsoring a bill to be considered by the New York State Legislature requiring State-wide fluoridation of community water supplies; now therefore be it

Resolved, That the Medical Society of the State of New York reaffirm its previous approval of the fluoridation of municipal water supplies; and be it further

Resolved, That the Medical Society of the State of New York go on record as favoring a State law requiring fluoridation of all community water supplies and notifying our State legislators of this action.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION. The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68–28 because it is closely allied to the work covered by the Committee on Preventive Medicine. The committee recommends approval of this resolution.

The House, after discussion, voted to adopt this portion of the reference committee report.

Rural Medical Service

To the House of Delegates, Gentlemen:

The Committee on Rural Medical Service has the following membership:

Edward C. Hughes, M.D., *Chairman*	Onondaga
LaVerne Campbell, M.D.	Erie
Irwin Felsen, M.D.	Allegany
Robert E. Westlake, M.D.	Onondaga
Stuart A. Winning, M.D.	St. Lawrence
Thurston Keese, M.D., American Academy of General Practice, *Adviser*	Onondaga
Hugh McChesney, M.D., American Academy of General Practice, *Adviser*	Oswego
James J. Quinlivan, M.D., New York State Department of Health, *Adviser*	Albany

The Committee on Rural Medical Service is continuing its study of health manpower and medical service in rural New York State. The committee wishes to reaffirm its debt of gratitude to the Avalon Foundation, its president, Charles Hamilton, Jr., and the board of directors for making available the funds which are enabling us to carry out this research. We also wish to thank The Sears-Roebuck Foundation, through Messrs. Norman H. Davis and Robert Buzbee, which is contributing $750 to help finance publication costs.

The plan of study was reported in the NEW YORK STATE JOURNAL OF MEDICINE, issue of January 15, 1967, pages 328–329. The study is being conducted by Community Medical Service (CMS), the Rural Medical Service Committee's research organization. The research staff of CMS is composed of the following members: Edward C. Hughes, M.D., director; A. Geno Andreatta, codirector and adviser to the Rural Medical Service Committee; Miss Nancy Cochrane, medical terminology with social service experience; Miss Donna Spencer, secretary, and two part-time coders, data tabulators, secretarial assistants (summer help).

The first phase of the study is now prepared for computer analysis. The following has been accomplished:

1. A brief card questionnaire was sent to 409 communities asking the status of the medical coverage in their area. Nearly 200 areas indicated that their communities needed coverage or additional coverage.
2. Physician questionnaires were mailed to over 1,200 practicing physicians in 19 counties in central New York. An excellent return of nearly 80 per cent was received from these doctors.
3. Families in three areas were interviewed regarding their medical coverage. The three areas included a total of 14 townships with a population in excess of 30,000. A formula which selected a 10 per cent random sampling of these families was used. This phase of the survey is completed.
4. In each area the citizens committee (comprised of community leaders) was also interviewed with regard to medical and socioeconomic information in their respective communities. This part of the survey is also completed.

Both the citizen and physician questionnaires have been coded, programmed, and prepared for computer analysis. Part of the data has already been analyzed and articles are being drafted for publication.

Some preliminary findings are as follows:

1. Comparing distribution of physicians by age reveals that over one half of the specialists are *under* age fifty while two thirds of the general practitioners are *over* age fifty. Of the physicians over age sixty-five, 13 per cent are specialists while 83 per cent are general practitioners.
2. There is an increasing trend from solo to group practice of medicine.
3. Patients are looking favorably toward group practice and indications are that there is an increased use of medical specialists.
4. Communities offer their full cooperation, from raising funds to providing facilities, in order to acquire the services of a physician.

Besides the data which we are accumulating—which has never been completed as extensively in any part of the United States—the presence of our research project in the rural communities and in cooperation with these communities has had the following results:

1. One area that participated in the study has acquired the services of a physician as a direct result of this project.

2. Another area (with four adjacent townships) has a citizens committee with a board of directors prepared to build a three-physician medical center. The site for the center has been selected utilizing our survey results, and we presently have commitments from two physicians to offer part-time medical service to this area. One other physician is contemplating moving into the center on its completion. This center, twenty minutes to one-half hour driving time from Syracuse, will provide medical service to an area of nearly 13,000 people. We might emphasize that prior to our efforts this area lost four physicians in as many years because each community attempted to acquire the services of one doctor for its own community. This new approach of offering comprehensive and coordinated medical service to a larger area and to more people seems to have great promise for improved medical care in rural areas.

3. The third area in which we conducted our study has also involved the cooperation of five townships. Their only physician has consented to enlarging the existing medical facility and accepting one or two additional physicians to practice as a group. We are all presently actively seeking a physician for this area.

Although these are some of the more immediate rewards which have resulted from the research project in these areas, data collected for future planning will be of even greater significance. The studies will accurately pinpoint the true needs of physicians in rural areas.

The extension of these studies will help provide some guidelines for a type of medical practice which will be necessary in these areas to keep pace with modern medical advances and furnish medical care to the depressed areas. By this method of study, increased need and support by the community will become an essential part in obtaining physicians for these areas, and it appears that this continued effort is a sound course to take in obtaining physicians.

By these studies accurate and comprehensive data can be obtained so that the Medical Society of the State of New York in turn can make reccommendations to the medical colleges and to the board of trustees of the State University, regarding effective efforts that must be made in these institutions to train students for future planning of medical service in rural New York. Data can be utilized in developing comprehensive health planning programs. Data can be shared with other health related agencies in this area. The committee is certain that these studies will have a profound influence in these areas.

The Rural Medical Service Committee, together with Community Medical Service, feels that the project is on the threshold of some important factual data, which is significant for long-range medical planning in our State. The results obtained in each area can be the influencing factor in the establishment of a new and modern type of medical practice in rural New York and will be an important factor in alleviating the shortage of medical services in these areas.

We are making every effort to expand the research to other parts of the State during the coming year.

Another project the committee presently has under consideration stems from the Council on Rural Health of the American Medical Association. The council has suggested a five-point program for improving emergency medical services in rural areas.

The committee strongly encourages the adoption of resolution 68–15, containing the AMA's five-point program, and the expediting of the implementation of this program.

Respectfully submitted,
EDWARD C. HUGHES, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The committee reviewed and accepted this report. The research that Dr. Hughes has provided can honestly be called a most significant contribution toward defining and solving the problem of rural medical service.

The House voted to adopt this portion of the reference committee report.

68–15. Programs for Rural Emergency Medical Service

Introduced by Edward C. Hughes, M.D., Onondaga, as an individual

WHEREAS, Several recent studies have shown that rural traffic accidents have resulted in mortality rates four times those of urban traffic accidents, despite less severe injury in many cases; and

WHEREAS, The higher rural fatality rate seems to be related to inadequate first-aid procedures and transportation; and

WHEREAS, The American Medical Association, the American Red Cross, the National Safety Council, and many farm organizations have gone on record recommending programs of first-aid instruction; now therefore be it

Resolved, That the Medical Society of the State of New York adopt and help to implement, through the county medical societies, the following five-point program:

1. That rural and urban communities coordinate their efforts with adjacent towns or urban centers in analyzing existing patterns of response to medical emergencies;

2. That rural and urban communities institute medical service area programs for medical emergency transportation, facilities, and health personnel;

3. That rural and urban communities, where possible, adopt standards for ambu-

lance equipment, personnel and operation, liability insurance requirements, maintenance of records, duties of regulatory agencies with penalties to be imposed by ordinance if these standards are not met;

4. That rural and urban communities provide a program of advanced Red Cross first-aid instruction for the nonmedical people most frequently called in rural emergencies, especially police, sheriffs, and ambulance crews;

5. That rural and urban communities develop a continuing campaign directed toward first-aid instruction for rural families, particularly young people, through the schools, youth organizations, and other education channels.

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The reference committee considered resolution 68–15. The committee approved a change in the first WHEREAS, so that it now reads:

> WHEREAS, Several recent studies have shown that rural traffic accidents have resulted in higher mortality rates than those of urban traffic accidents, despite less severe injury in many cases; and

The committee approves this resolution as changed.

The House voted to adopt this portion of the reference committee report.

Quackery

To the House of Delegates, Gentlemen:

The members of the Committee on Quackery are as follows:

Jason K. Moyer, M.D., *Chairman*	Broome
William P. Clark, M.D.	Westchester
Glenn E. Jones, M.D.	Niagara

The Quackery Committee has participated in a number of programs throughout the State this year, the most prominent being the Sixth Annual Governor's Conference on the Aging, in New York City, May 5, 1967. The chairman joined the Attorney General of the State of New York, the Honorable Louis J. Lefkowitz, and the president of Macy's, David Yunich, in a panel discussion entitled "The Older Person as a Consumer."

Unfortunately, last-minute weather conditions grounding the airlines left a meeting of Richmond County Medical Society's Woman's Auxiliary high and dry, with the chairman, who was scheduled to speak, stranded at an airport in upstate New York.

As a result of the very successful symposium on Health Quackery, sponsored by the State Medical Society and the State University College at Cortland, a number of follow-up programs have been presented. The chairman of the committee spoke at the Concord Hotel in January at a conference of the New York State Association for Health, Physical Education, and Recreation. He is also slated to speak on "Quackery Today, How to Deal with It" at the 122nd annual conference, Eastern Zone of the New York State Teachers Association, in Oneonta, on September 25. Numerous other local programs on the subject have been scheduled.

It has been noted that a definite interest in quackery has developed among the nurse-teachers group, and plans for a more sophisticated and extensive speakers bureau will, of necessity, have to be planned in the coming year.

Respectfully submitted,
JASON K. MOYER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC HEALTH AND EDUCATION: The following report was presented by Paul M. De Luca, M.D., chairman.

The report of this committe has been reviewed and accepted.

The House voted to adopt this portion of the reference committee report.

The House voted to adopt the report of the reference committee as a whole as amended.

Scientific Activities and Publications

District Branches

FIRST DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The annual meeting of the First District Branch was held at The Americana of New York, New York City, on February 11, 1967.

The minutes of the meeting held on February 13, 1966, were approved as distributed.

Leo Drexler, M.D., treasurer, presented his report covering the period May, 1966, to February, 1967. The report was accepted.

Respectfully submitted,
DAVID KERSHNER, M.D., *President*

Following is the report of the Coordinating Council, executive committee of the First District Branch, submitted by the chairman of the Council, George Himler, M.D., New York.

Coordinating Council. The past year has been an extremely busy and portentous one for the Coordinating Council and a very full one for its chairman.

Medicaid. Among the many trends and conditions that have exerted an adverse effect on the quality and delivery of medical care to the public in New York City, the chief one has continued to be the unsatisfactory status of the Medicaid program. A summary of the implementation of the program on a State-wide basis will be found in the annual report of the Technical Advisory Committee on Medical Care. Only those facts and data will be presented in this report that relate specifically to the operation of the plan in New York City.

Approximately nine months ago, the responsibility for the medical aspects of Medicaid was taken from the Health Services Administration and transferred to the Department of Health. This was shortly after Edward O'Rourke, M.D., was appointed city health commissioner. Prior to this, the Health Services Administration had prepared a bulletin, HSA 10–1, and distributed it to all the physicians in New York City. This bulletin set forth the rules and regulations that were to apply to physicians who treated patients under the Medical Assistance to the Needy program. It had a number of objectionable features, chief among which was an attempt to limit the procedures that generalists could perform and for which they would be paid. Many other regulations were contrary to those of the State Health Department and therefore invalid.

This bulletin was totally unacceptable to physicians and the medical societies, and its revocation was discussed with Dr. O'Rourke shortly after his appointment. After several meetings, the issues raised by bulletin 10–1 were resolved. The details of the agreement are beyond the scope of this report, but they were distributed to the five county medical societies by the chairman.

Early this year the chairman indicated to the Departments of Health and Social Services that he was not satisfied with the advisory committee that had been appointed to the Health Services Administration since actions were frequently taken before they were consulted, and their recommendations and opinions were more often ignored than accepted. The Commissioners agreed that they would set up a top level negotiating or policy committee with the Coordinating Council. This committee has met twice, and the Commissioners were present on each occasion. This is the most satisfactory and direct approach we have found to exerting the influence of the medical profession in solving the seemingly endless problems arising from Medicaid.

The Department of Health also established a professional relations committee under the chairmanship of Beatrice Bolan, M.D. On the recommendation of the presidents of the five county medical societies, the chairman has appointed a physician from each county to the committee.

Dr. O'Rourke also asked that a technical advisory committee from the Coordinating Council be appointed to advise the Department of Health on matters that do not constitute major policy. Your chairman reappointed those physicians who had served briefly but well on the advisory committee to the Health Services Administration. These committees should be useful in providing for a free exchange of ideas, opinions, and criticisms between the officials responsible for the Medicaid program and the physicians whose services are necessary to make it work. It begins to appear that as far as the purely medical problems of the program are concerned, a means has been established for solving them with patience and negotiation. The Health Department has generally exhibited a more understanding and cooperative attitude than we experienced when the plan was under the direction of the Health Services Administration.

The administration of Medicaid by the Department of Social Services, however, has been, and continues to be, a far different matter. The chairman has been unable to obtain reliable data on the number of beneficiaries enrolled, the number of physicians who have accepted Medicaid patients for private care, and the lag time in paying doctors. What information has been given by the Department of Health and the Department of Social Services has seemed to be unduly optimistic and has not been borne out by the statistics of the State Department of Social Services or by the every-day experiences of physicians who provide care to Medicaid patients. The difficulties that the Department of Social Services has encountered in administering the welfare or money assistance portion of its responsibilities do not augur well for Medicaid. The chairman has repeatedly called for administration of the program by the Title 18 intermediary, for which permissive legislation exists, but the Department of Social Services has insisted on retaining this function in spite of its rather obvious incapacity to do it efficiently.

In summary, the deficiencies of the divided responsibility between the Departments of Health and Social Services that have been so apparent at the State level are mirrored in New York City. After weighing the scanty data made available by City officials, and responses by physicians to his own inquiries, the chairman concludes that the Medicaid program in New York City is merely an extension of the previously existing welfare program. Patients who are eligible generally continue to receive their care in municipal or voluntary hospital clinics or at Health Insurance Plan clinics, exactly as they did before enactment of the law. For the most part, in-hospital care is still provided on the teaching services of hospitals so that these patients are usually deprived of the privilege of having a personal physician. It seems fair to say that this program, although it involves more beneficiaries and pays for more services than the old welfare program, has failed to achieve the objective, so often claimed for it, of bringing its recipients "into the mainstream of medical care."

Your chairman, in speaking for the Coordinating Council, has been outspoken in his criticism. This was done with the intention of offering constructive advice rather than in the hope of destroying the program. Admittedly, the criticism has often been publicly made and has been forceful to the point of harshness in order to gain for it the attention it merited. This was made necessary by the lack of adequate communications between the City and the physicians which, hopefully, has now been corrected. The five county medical societies, through the Coordinating Council when appropriate, will continue to cooperate with the authorities to make Medicaid function if they are taken into a reasonable partnership. In those instances when the basis for cooperation does not exist, their only alternative will be to bring the deficiencies of the program to the attention of the administration and the public in the hope of engendering enough pressure to bring about their correction.

The Coordinating Council, together with the Greater New York Hospital Association, sponsored two meetings with the New York State Department of Health and the Department of Social Services and two meetings with both these departments and representatives of the Governor's office. These meetings were called in an attempt to secure payment to physicians for services rendered to Title 19 recipients in hospital clinics and on teaching services.

The State Department of Health has certified a fee schedule for in-hospital surgical services that corresponds to the Maximum Fee Schedule promulgated unilaterally in July, 1966. Although these fees were not accepted by the Coordinating Council, the principle was accepted that the total fee paid to the physician rendering the service and the hospital for preoperative and postoperative visits to the clinic was not to exceed the scheduled fee. This was necessary to secure their agreement that patients could be admitted from a clinic directly to a teaching service and still be under the care of one physician. This stipulation also makes it possible for a surgeon to discharge his patient to a clinic for follow-up care and still charge for his services.

For in-hospital medical care, the Health Department is suggesting that a flat per diem payment of $5.00 be made to the physician in charge. He need not see the patient each day but must make an identifiable contribution to his care. The chairman wishes to emphasize again that these decisions have been made unilaterally by the Health Department after innumerable and heated discussions.

To clear up any possible confusion, it should be understood that these decisions regarding payments to physicians for clinic and in-hospital services apply to those physicians who are salaried and whose salaries do not include provisions for patient care. Where the physician's salary includes reimbursement for some patient care, his salary appears in the per diem rate to the hospital, and he cannot claim direct reimbursement. The regulations also apply to nonsalaried attending physicians who treat Medicaid patients in hospital clinics or on teaching services where the residents share heavily in patient care. They do not apply to physicians who admit Medicaid patients to the hospital as private patients and treat them personally.

In spite of the four meetings held with the State officials at which it was made abundantly clear by representatives of the Hospital Associations and the Coordinating Council that physicians had the right to payment for these services under the program, payment for treatment on teaching services has still not been authorized. The State, county, and local governments have enjoyed a subsidy from their physicians for the past eighteen months to which they have no right. This matter, as may well be imagined, is being hotly pursued.

Apropos of reimbursement, the chairman felt that a clarification was urgently needed on the relationships of salaried physicians to their hospitals and the fate of the payments that were made for the services they rendered. During the past year, several principles were developed which have been accepted by the Greater New York Hospital Association and which were adopted at the annual meeting of the New York State Hospital Association. In brief, these principles are:

1. The money earned by a physician, salaried or otherwise, accrues to that physician.
2. When, by mutual agreement, a hospital collects payments for services rendered by its staff physicians, the money so collected is to be put into a segregated fund and is to be disbursed only on the direction of the physicians who rendered the services. It may not go into the hospital's general operating fund.

The above two principles were included as regulations in the New York State Health Department's *Medical Manual*. It was further recognized, however, that these financial questions might give rise to friction and misunderstanding among voluntary staff physicians, salaried physicians, and their hospitals. The State Department of Health, understandably, did not wish to enter into these intramural relationships, but the chairman, having knowledge of the policies of many hospitals and of a number of individual controversies between physicians and hospitals, secured the agreement of the Hospital Associations to two additional principles:

1. That when a physician is paid a salary and his salary is partly or fully for patient care, his salary be diminished by the amount he earns from the various sources of reimbursement for patient care. Those amounts he earns that are in excess of his salary belong to him.

The requirement that such monies be kept segregated from the hospital's operating fund will help to enforce this principle and make for ready accountability.

2. That there will be no coercion of physicians into assigning the funds they earn.

The chairman concedes that the last principle may be difficult to enforce and he is under no illusion that it is an adequate solution to the problems that may arise. Nevertheless, the Hospital Associations, the State Medical Society, and the Coordinating Council, by agreement, will bring heavy moral suasion to bear when instances of coercion are brought to their attention. The Hospital Associations and the medical societies have found enough common objectives, in this era of publicly financed medical and hospital services, to stimulate them into establishing and further developing effective cooperation and strong mutual ties.

City hospitals. Another question of importance during the past year has been the immediate and ultimate fate of the city hospital system. Almost every day, the newspapers carry statements from the Health Services Administration setting out its latest policy on city hospitals. These statements are inconsistent and often conflicting. We hear on the one hand that the City will continue to operate its hospitals, upgrade them to the level of good voluntary hospitals, and make them available to the physicians of their respective communities for private patient care. Another statement has been that the City will turn its hospitals over to voluntary agencies consisting of community-based boards of trustees and autonomous medical boards. No sooner has this had time to sink in, than we are informed that the affiliation program will be strengthened and expanded but, at the same time, individual City hospitals will be given greater authority. These statements are disturbing because they indicate a lack of intelligent, coherent planning for what amounts to almost half of our City's total hospital facilities. Even more disturbing was the recent leasing of the James Ewing Hospital to Memorial Hospital for fifty years. This may or may not have been a good move, but neither the public nor the physicians of the community were given an opportunity to be heard before a step of this magnitude was taken.

The fact is that the direction of the municipal hospital system is in a state of utter confusion. Apparently the Health Services Administration is making most of the important decisions. The Board of Hospitals, on the other hand, which presumably is responsible for setting policy for the City hospital system, has never consented to make known what its long-range plans are, if it has any. There has never been a public accounting for the disastrous affiliation program or any evidence adduced that it has improved patient care by one iota. Nevertheless, the Board of Hospitals is permitted to continue to adhere to this discredited program and cannot even be drawn into public discussion of decisions and policies that vitally affect millions of New Yorkers. The chairman has made repeated protests to the Mayor regarding this situation and has made specific recommendations on the constitution of the Board of Hospitals and the tenure of its members. These have not been received with enthusiasm, but the chairman will persist in advancing them because it is extremely important to correct the conditions that have brought so valuable an asset as our municipal hospital system to its present inadequate and chaotic state.

When the chairman was asked to appear before the Piel Commission, he stated that, in his opinion, the City of New York had never demonstrated ability to administer a hospital system. In addition, the restrictions and burdens imposed by Civil Service with its pay limitations, strict seniority requirements, and lack of recognition of incentive, make it unlikely that it can improve on its record. The affiliation program, to put it kindly, was merely an abrogation of responsibility by the City and not a solution to the many problems affecting its hospitals. The City no longer has the responsibility of maintaining general hospitals for the care of the indigent since Medicare and Medicaid have presumably eliminated medical indigency.

The chairman therefore recommended that a five- to seven-year program be developed to phase out municipal ownership of hospitals and that they be turned over to voluntary agencies. The latter would have to be developed, hospital by hospital, over a period of time to permit an orderly transition and prevent loss of hospital accommodations which are already in short supply.

Physicians parking. The parking problems of physicians in active practice have undergone an acute exacerbation during the past year, although there seems to be a slight lull in hostilities at the time of this writing. Restrictions on physicians parking at hospitals and before their offices were suddenly and arbitrarily reduced from three hours to one. After strenuous efforts, the three-hour limit at hospitals was restored, but we have been unsuccessful in obtaining a relaxation of the ridiculously inadequate one-hour limit for physicians who are having office hours. Double-parking is not permitted even in extreme emergencies which is a hardship on physicians who are on emergency call in Queens, Kings, and The Bronx, where curbside space literally does not exist. The City officials, although they privately admit the justice of the practicing physicians' claim to parking privileges, have been adamant in refusing to grant them. Activity in this sector will continue.

Area-wide planning agency. The chairman testified at a Forum on Comprehensive Area-wide Health Planning which was held by the State Health Planning Commission in September, 1967. In his testimony, he strongly urged rejection of the plan submitted by the City of New York which would have allowed City officials to dominate or control completely the health planning effort for this area. At the same time, he opposed vesting this function in the Health and Hospital Council of Southern New York Inc., which also presented a plan giving it total control of health planning. He stated that although the Health and Hospital Planning Council had an organization which could possibly be expanded and modified to meet Federal requirements and to serve the comprehensive health planning purpose, it already had extremely broad powers over the construction and modernization of hospitals and long-term care facilities. He pointed out that reposing additional authority in the hands of this agency would be imprudent.

The chairman therefore recommended that the planning body called for in PL 89–749 be a new group, entirely separate from existing organizations, with broad representation of consumers, labor, management, the City government, the Health and Hospital Planning Council, and last, but certainly not least, the

Coordinating Council and the State Medical Society. In order to preserve existing skills and facilities, he further recommended that the Health and Hospital Planning Council's staff be the major research arm of the proposed new agency, although it could contract with other competent organizations for research and planning. The final decision rests with the State Health Planning Commission and has not yet been made, but the chairman intends that the Coordinating Council have adequate representation on the agency that is finally entrusted with comprehensive area-wide planning in New York City.

The chairman also testified before a Senatorial subcommittee headed by Senator George A. Smathers (Democrat, Florida) on the medical problems of the aged. Copies of this testimony have been distributed to the members of the Coordinating Council. In general, it described the impact that Medicare and Medicaid have had on the quality and availability of medical care for the aged. It contained a résumé of the Medicaid program to date. It stated that the problems of the entire population with regard to medical services and payment for them are essentially the same regardless of age or financial solvency. The fragmentation of the population into different groups for the purpose of financing medical services is destructive to the development of comprehensive prepaid health and hospital insurance for all. On this premise, the report deplored the establishment in New York State of the system of having the local welfare agencies administer the Medicaid program, which they do in a completely uncoordinated fashion. It was strongly urged that the State turn to intermediary administration or, even better, to the employment of the Title 18 intermediaries in a true carrier role for Title 19.

Future role of Coordinating Council. Before concluding, the chairman wishes to comment on the report of the Committee to Study the Structure and Function of the Coordinating Council which was chaired by Peter Gugliuzza, M.D. The committee did its work thoroughly, although its conclusions were far from heartening. The committee was of the opinion that at this time the five county medical societies do not wish to grant the Coordinating Council any power to act in their behalf but wish it to play a purely advisory role. As one with three years of rather rugged experience behind him, the chairman is convinced that, for the foreseeable future, the medical profession will have to deal with the municipal government on matters affecting medical practice. There is a distinct advantage to be gained from having a single organization, covering the same political subdivision, do all the negotiating with the weight of the five county medical societies behind it. Acting on this premise, the chairman asked the ad hoc committee to continue and to direct its attention to developing a formula by which the necessary authority could be vested in the Coordinating Council without infringing intolerably on the autonomy and prerogatives of the individual county medical societies. This may be difficult to achieve, but it is well worth the effort, because the stakes are high.

Conclusion. The chairman would like to thank those who have been the presidents and officers of the five county medical societies comprising the First District Branch during the past three years. They have given him their confidence and a wide degree of latitude in representing them during a most trying period. They have accepted his actions on their behalf without demur when the exigencies of the situation did not permit prior consultation with them. Sincere thanks are due for the unobtrusive but most competent support of the vice-chairman, Joseph F. Shanaphy, M.D., the secretary, William L. Wheeler, Jr., M.D., and the treasurer, Leo S. Drexler, M.D. The chairmen and members of the standing and special committees, too numerous to mention in this report, have all done yeoman service in their assignments.

Mrs. Alice Salter, after having served as recording secretary for almost two years, was forced to ask to be relieved of her duties, much to the regret of the chairman and the Council. Miss Phyllis Harris, New York County Medical Society, kindly consented to take over her duties on a temporary basis. She has been most efficient, and the chairman is grateful for her help.

Respectfully submitted,
George Himler, M.D., *Chairman*

SECOND DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The Second District Branch as of the date of this report, October 16, has not held any formal meetings. However, there have been many committee meetings held to discuss and make arrangements for the sixty-first annual meeting at the Dorado Beach Hotel, Puerto Rico, on November 9 through 16.

A total of 150 members, their wives, and guests are expected to attend. Edward C. Hughes, M.D., president-elect of the Medical Society of the State of New York, will be the honored guest and the principal speaker at the meeting. Two other honored guests will be Congressman John J. Wydler, Fourth Congressional District, Nassau County; and Jose E. Sifontes, M.D., University of Puerto Rico Medical School.

Among the scientific sessions which have been planned for the five-day meeting, three days will be devoted to discussions of scientific papers of general interest; the program for one session will be presented by the medical faculty of the University of Puerto Rico Medical School; and on another day, a special scientific program will be presented by the medical school faculty at the medical school in San Juan.

In addition to the comprehensive scientific sessions, an outstanding program for recreation, relaxation, and entertainment has been planned.

Respectfully submitted,
R. R. Steen, M.D., *President*

THIRD DISTRICT BRANCH

To the House of Delegates, Gentlemen:

Under the guidance of the Ad Hoc Committee to Explore All Aspects of the District Branches, the Third District Branch of the Medical Society of the State of New York has joined with the Fourth District Branch in a pilot project to provide more effective action through the combined districts. A meeting was held on June 3 at the Holiday Inn, Saratoga, presided over by Arthur Howard, M.D., president of the Fourth District Branch, and certain recommendations were made for the betterment of the combined districts. This report will be presented to the House of Delegates at its meeting in February, 1968.

It is hoped that the reorganization envisioned by the administrators of the pilot project will work to the advantage of both districts.

It is with deep regret that I must report that the annual meeting which was to be held at Lake George, September 9 and 10, had to be postponed because of lack of response from the district membership.

Respectfully submitted,
SAMUEL BAER, M.D., *President*

FIFTH DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The Fifth District Branch has been very active during the past year. All component societies have met their financial obligations and have sent representatives to the combined meetings with the Sixth District Branch.

The problems of Medicaid and Medicare have caused fairly frequent discussion, and communications on these subjects have been sent to all State and national representative government officials. Compulsory health insurance is another legislative problem on which the executive committee has formulated an opinion and has passed this on to the State Society. Revisions in the Education Law have also been brought to our attention and some counties have returned conclusions concerning them to the State Society.

At the combined meetings during the year the more pertinent developments consisted of a review of the student AMA contribution, with the result that in the future the students will know that it is a combined Fifth and Sixth effort.

Medicaid was thoroughly discussed and, with Hollis S. Ingraham, M.D., present, the branch was able to present questions and suggestions to the commissioner personally. Although it was made clear that many phases of the program are not palatable to the profession, it must be admitted that apparently pressure from the State Society has brought about some more agreeable results.

At the annual meeting at Shawnee Inn, the following officers were reelected:

President—Felix Ottaviano, M.D., Madison
First Vice-President—Theodore J. Prowda, M.D., Oneida
Second Vice-President—Bernard J. Hartnett, M.D., Cayuga
Secretary—William R. Carson, M.D., St. Lawrence
Treasurer—Robert B. Bryant, M.D., Onondaga
Delegate—Marvin Brown, M.D., Oswego

In summary, the branch does try to keep its constituents informed, and assuredly both the Fifth and Sixth District Branches have made a point of having the best informed delegates in the State. It is assumed that all information is passed on to all members of the component societies, at least to those who attend county meetings.

At the annual meeting, the Fifth District Branch met with the Sixth at Shawnee-on-Delaware, Pennsylvania, September 8 to 10. The three-day meeting was the greatest ever held by the two district branches. The attendance of close to 300 was the largest turnout, by far, ever at this annual meeting. The golf tournament had the largest number of participants with prizes appropriate for such an event over a course well-named "The Monster." The caucus meeting was well attended as were all the affairs, especially the midnight poolside picnic with appropriate dunkings and diving exhibitions.

The Saturday morning scientific meeting with R. Bruce Sloane, M.D., of Temple University, who took us on a psychedelic trip, drew the largest attendance we have ever had and no one left before it was over. This was followed in the evening by another demonstration of psychic phenomena (ESP) by Dr. Henry Gerald, and while this may appear to have been overdoing it a bit, it did not go to anyone's head and everyone seemed to enjoy it. Milton Helpern, M.D., gave his usual informative and instructive Sunday morning lecture which surprised us only with respect to the good attendance for a Sunday.

The banquet in the packed dining hall was tastefully prepared and beautifully served by the Fred Waring entourage. Socially this had to be, and was, the finest meeting of all time. I am sure that the guests of honor, MSSNY President and Mrs. Wurzbach, Executive Vice-President and Mrs. Fineberg, and Mr. and Mrs. J. Richard Burns were not just being gracious when they so stated.

The officers who spoke were complete in their remarks and yet not lengthy, affording the main speaker, the Reverend Dr. Alexander Carmichael, ample time to put the frosting on the cake, which he did in his humorous discourse on the "Worry-go-round."

I am extremely grateful to Andrew Adams, M.D., and other members of the Sixth District Branch for their assistance; to Steve Leech and Mike McManus for their help with the social amenities, and my especial thanks to Russ Feltus, executive director of the Medical Societies of the Counties of Oneida, Herkimer, Madison, and Chenango, for his diligence and general direction of the meeting. I should be remiss if I didn't mention all the ladies who helped in an affair which all district branches would do well to copy.

Plans have already been firmed up for 1968 and 1969 joint meetings. Why not plan to join us on our traditional date, the weekend following Labor Day, in 1968 at the Sagamore Hotel, Lake George, and in 1969 at Buck Hill Falls, Pennsylvania.

Respectfully submitted,
FELIX OTTAVIANO, M.D., *President*

SIXTH DISTRICT BRANCH

To the House of Delegates, Gentlemen:

During the past year the Sixth District Branch has continued to enjoy its affiliation with the Fifth District in cosponsoring the annual meeting and miscellaneous projects.

The Fifth District Branch was 1967 host for the annual meeting which was held September 8 to 10 at Shawnee-on-the-Delaware, Pennsylvania. An outstanding scientific program was presented, and we were privileged to have several State Society officers and Hollis S. Ingraham, M.D., commissioner, New York State Department of Health, as our guests.

At our annual Sixth District Branch business meeting on September 9, new officers were elected. They are as follows:

President—Henry B. Marshall, M.D., Chemung
First Vice-President—Jason K. Moyer, M.D., Broome
Second Vice-President—Paul M. De Luca, M.D., Broome
Secretary—Cornelius F. Ryan, M.D., Otsego
Treasurer—Robert E. Good, M.D., Chemung
Delegate—Jason K. Moyer, M.D., Broome

Component counties of the Sixth District Branch continue to financially support the Syracuse Medical School chapter of the Student American Medical Association. We have also initiated an investigation to study the feasibility of sponsoring a three-day regional cancer symposium in 1969.

Our executive committee met during the year to study such matters as Sixth District Branch sponsored insurance programs, and so forth. Many members at large attended the State Society's area conference in Cortland on May 11. We found this to be a very worthwhile session and commend the State Society for bringing rank and file members up to date on the changing picture of medicine.

Respectfully submitted,
HUGH BLACK, M.D., *President*

SEVENTH DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The Seventh District Branch was extremely active during this past year with the president and officers participating in a number of committee and organizational meetings. The president of the Seventh District Branch felt that the organization needed to be improved to meet the challenges of the day, to improve communications, and to realistically meet its responsibilities and obligations. To begin this program, dues were raised to $10, and a committee was appointed to study the reorganization of the Seventh District Branch. The president's newsletters and minutes of key committees of the Monroe County Medical Society, such as Blue Shield, Legislation, Public Relations, Medical Economics, Utilization, and Public Health, are now regularly distributed throughout the Seventh District Branch, plus whatever other reports that may be of value to members on an area-wide basis. This project will continue to be studied and evaluated.

Progress on the Regional Utilization and Insurance Claims Review Project was reported by Carmen Cristo, M.D., revealing the participation of 22 hospitals and 49 nursing homes. The *Handbook on Extended Care Facility Utilization* and the activities of this project have been reported throughout the nation, and some features have been adopted by various state and other societies for implementation in their own areas.

The activities of the Seventh District Branch were marred by the death of First Vice-President M. Edgerton Deuel, M.D., on August 20, 1967. This was a great loss, both personally and to the District. Dr. Deuel had been nominated for the presidency of the Seventh District Branch at the time of his death.

The Seventh District Branch proposed and supported resolutions discussed at the annual meeting of the Medical Society of the State of New York which opposed the secondary licensure of physicians in the State of New York through the Medicaid program and opposed the inclusion of chiropractic under the Medicaid program. The Seventh District Branch also approved a resolution to support the aims and objectives of AMPAC (American Medical Political Action Committee).

The annual meetings of the Seventh and Eighth District Branches which have been held jointly for the last five years are now taking on a distinctive pattern.

This year the meeting was held at White Face Inn, Lake Placid, on September 30 through October 3. Due to the illness of Vincent I. Bonafede, M.D., president, Seventh District Branch, Lynn R. Callin, M.D., second vice-president, was presiding officer.

The scientific program featured Andrew C. Fleck, Jr., M.D., deputy commissioner, New York State Department of Health, and James R. Kimmey, M.D., regional health director, U.S. Department of Health, Education, and Welfare, who spoke on "Comprehensive Health Planning." Members of the Seventh District Branch were invited to attend the scientific program of the Eighth District Branch dealing with "Aspects of Drug Addiction" featuring Henry Brill, M.D., vice-chairman, New York State Narcotics Addiction Control Commission; Robert J. Campbell, M.D., Department of Psychiatry, St. Vincent's Hospital and Medical Center, New York City; and Marvin A. Block, M.D., vice-president, National Council on Alcoholism.

At the business meeting on October 2, the following officers were elected for a two-year term:

President—Lynn R. Callin, M.D., Monroe
First Vice-President—Wayne Templer, M.D., Steuben
Second Vice-President—Erich Hirsch, M.D., Ontario
Treasurer—David Koch, M.D., Seneca
Secretary—James M. Flanagan, M.D., Wayne
Delegate—Charles M. Smith, M.D., Seneca
Past President—Vincent I. Bonafede, M.D., Livingston

A total of 247 physicians, wives, and guests attended the annual dinner on October 3 which featured Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, as the principal speaker.

The Seventh District Branch was invited to attend the excellent area program of county medical societies held in Batavia on June 15, sponsored by the Commission on Public and Professional Affairs and the Public Relations Committee of the Medical Society of the State of New York. The Medical Society of the State of New York is to be commended for arranging this forum which deserves the support and cooperation of all of its members.

A special meeting of the Seventh and Eighth District Branches was held on June 15 to discuss problems of common interest dealing with Medicaid, fee determinations, physician qualification for hospital services, compulsory health insurance, and planning.

The advisory councils of the Seventh and Eighth District Branches also met on June 15. The program for the annual meeting was finalized with emphasis on the necessity for planning and scheduling annual meetings four to five years in advance in order to assure accommodations. It was agreed to hold meetings in foreign countries on alternate years. Plans were made to hold next year's meeting at Dorado Beach, Puerto Rico, with the Eighth District Branch acting as host.

A recommendation was made to send a representative, as an observer, to the meetings of the Council of the Medical Society of the State of New York. It was also recommended that the Medical Society of the State of New York be advised that when any evaluation of economic conditions and future consideration of such problems are made, all component medical societies of the Seventh District Branch shall be included in the discussions.

Among the actions taken by the Seventh District Branch during the current year was the endorsement of a statement made by the Monroe County Medical Society on the subject of compulsory health insurance which urged the establishment of a universal system of health insurance administered by health insurance companies and providing comprehensive medical coverage. Support for proposed legislation was withheld since it did not meet the standards set forth in the statement.

At the annual meeting in White Face Inn, the subject of comprehensive health planning received a considerable amount of time and discussion. A resolution was adopted to the effect that approval of an organization for regional comprehensive health planning should be based on adequate representation of all agencies and organizations concerned and approval should not be granted until policies are established to protect the health of the public and preserve the health resources of the regions involved.

It has been a distinct honor to be of service to the Seventh District Branch during the past two years, and I am extremely grateful and appreciate the excellent dedication and cooperation of all who have helped. Specifically, I would like to cite and thank the officers of the Seventh District Branch; Donald M. Irish, executive secretary, and his staff; Harry J. Dexter, regional representative of the Medical Society of the State of New York; and the Medical Society of the State of New York.

Respectfully submitted,

VINCENT I. BONAFEDE, M.D., *President*

EIGHTH DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The 1967 annual meeting of the Eighth District Branch was held at the Whiteface Inn, Whiteface, jointly with the Seventh District Branch.

The four-day session got under way October 1 with registration and a social period at the Whiteface Inn. On October 2, a symposium on "Comprehensive Health Planning" was presented. The moderator was Lynn R. Callin, M.D., program chairman and vice-president of the Seventh District Branch. The panelists were James R. Kimmey, M.D., regional health director, New York City, U.S. Department of Health, Education, and Welfare; and Andrew C. Fleck, Jr., M.D., deputy commissioner, New York State Department of Health.

On Tuesday, October 3, a symposium on "Aspects of Drug Addiction" was moderated by Herbert A. Laughlin, M.D., program chairman and secretary of the Eighth District Branch. The panelists were Henry Brill, M.D., vice-chairman, New York State Narcotics Addiction Control Commission; and Robert J. Campbell, M.D., Department of Psychiatry, St. Vincent's Hospital and Medical Center, New York City.

The business meeting of the Eighth District Branch was held on October 2, convening at noon. The report of the treasurer, Thomas S. Bumbalo, M.D., was approved.

Correspondence was read from Henry I. Fineberg, M.D., executive vice-president, Medical Society of the State of New York, dated June 12, 1967, in which Dr. Fineberg stated that the Council voted approval of our request of April 24 for permission to elect the district branch president for a one-year term at our next annual meeting. Proposed changes in the bylaws were approved which would change the term of officers from two years to one year with the exception of the district delegate who remains elected for a two-year term, and the office of president, which remains a two-year term but which can be a one-year term subject to the approval of the Council of the Medical Society of the State of New York.

The report of the nominating committee,

consisting of Eugene J. Hanavan, M.D., chairman; James Durkin, M.D., and John D. Naples, M.D., was presented. The following officers were elected for 1968:

President—Paul A. Burgeson, M.D., Wyoming
Vice-President—Herbert A. Laughlin, M.D., Chautauqua
Secretary—Thomas S. Bumbalo, M.D., Erie
Treasurer—David R. Harrington, M.D., Genesee
Delegate—John T. Donovan, Jr., M.D., Niagara

The report of the president for 1966, published in the May, 1967, *Branch Bulletin;* the report on the joint meeting of the Seventh and Eighth District Branches, held June 15, 1967, at Batavia, previously distributed to members, and the report on the meeting of the Eighth District Branch delegates held March 9, 1967, at Williamsville, previously distributed to members, were accepted. The report of the 1966 annual meeting held September 28 through 30 at Bermuda, previously distributed to members, was approved. The Executive Committee report of a meeting held September 7, 1967, also was approved.

The following resolution, presented by Kenneth Eckhert, M.D., as proposed by the Seventh and Eighth District Branch delegates at their meeting on October 3, 1967, was approved.

> WHEREAS, The medical societies of the Seventh and Eighth District Branches of the Medical Society of the State of New York are vitally interested in comprehensive health planning councils; and
>
> WHEREAS, No existing agency in our communities now meets the requirements for a comprehensive health planning group, and, therefore, none can be endorsed at this time; now therefore be it hereby
>
> *Resolved*, That approval of the final plan be based on adequate representation of all agencies and organizations and the establishment of policies to protect the health and preserve the resources in our area.

Herbert E. Joyce, M.D., Erie, and Eli A. Leven, M.D., Monroe, both members of the Ad Hoc Committee on Compulsory Health Insurance of the Medical Society of the State of New York, reported that the committee had polled the county medical societies, and the returns indicate an overwhelming vote against compulsory health insurance coverage as presently proposed. It was also reported that there will be new proposals for this type of legislation, and legislative hearings will be scheduled throughout New York State. Members of the Eighth District Branch voted to participate in any hearing held in its area.

Mr. Harry Dexter, MSSNY field representative, invited members to attend the nineteenth Regional Conference of the Medical Society of the State of New York in Olean, on October 19.

The three-day meeting was climaxed with the annual dinner on October 3, at which Frederick A. Wurzbach, Jr., M.D., president of the Medical Society of the State of New York, was the honored guest and the principal speaker.

The registration totalled 247.

I should like at this time to acknowledge with thanks the work of the program committee consisting of Herbert A. Laughlin, M.D., chairman, Paul A. Burgeson, M.D., Robert J. Collins, M.D., John Godfrey, M.D., and James R. Nunn, M.D., of the Eighth District Branch; and Lynn R. Callin, M.D., chairman, Ralph C. Parker, Jr., M.D., David L. Koch, M.D., and Vincent I. Bonafede, M.D., of the Seventh District Branch, in arranging this excellent program.

I should also like to acknowledge with gratitude the assistance of two very capable executive secretaries, Richard F. Treccase of the Eighth District Branch, and Donald M. Irish of the Seventh District Branch. I wish to also acknowledge the excellent cooperation extended to us throughout the year by Harry J. Dexter, field representative of the Medical Society of the State of New York.

Respectfully submitted,
JOHN T. DONOVAN, JR., M.D., *President*

NINTH DISTRICT BRANCH

To the House of Delegates, Gentlemen:

The annual meeting of the Ninth District Branch was held at The Americana on February 13, 1967. Arthur H. Diedrick, M.D., called the meeting to order and introduced Mrs. Alice Davis, regional representative.

The minutes of the February, 1966, meeting were read and accepted.

The following officers were elected:

President—Arthur H. Diedrick, M.D., Westchester
First Vice-President—Sidney Miller, M.D., Dutchess
Second Vice-President—Irving Wiener, M.D., Orange
Secretary—Michael P. Lefkowitz, M.D., Rockland
Treasurer—Garrett W. Vink, M.D., Putnam

Dr. Diedrick pointed out that the president of the district branch usually serves as a delegate to the State Society House of Delegates. However, he requested that since he was already a delegate from Westchester County, James Jones, M.D., of Westchester, be appointed a delegate from the Ninth District Branch instead. Dr. Jones was designated the delegate. (Dr. Jones is a past president of the Westchester County Medical Society and president of the Westchester Academy of Medicine.)

George T. C. Way, M.D., Dutchess, stated that a suggestion had been made that Dutchess, Orange, and Rockland Counties form a mediation board. Dr. Way suggested that a mediation board be formed for the entire Ninth District Branch. After some discussion, Dr. Diedrick appointed a committee to explore this suggestion. The committee, chaired by Dr. Way, will have as members Garrett W. Vink, M.D., Putnam, and Ralph Greenberg, M.D., Rockland.

Dr. Way was asked to tell of the work he did as chairman of the Committee to Explore All Aspects of the District Branches. Dr. Way said that the entire report of the committee was published in the January 15, 1967, issue of the New York State Journal of Medicine. However, he did say that it was important to change the old judicial areas, on which district branches are based, to the more modern concept of areas such as those followed by the Hospital and Planning Council. He pointed out that more and more the Federal government is dealing with regions rather than state organizations and therefore a different alignment of district branches would be in a better position to deal with government agencies on a regional basis.

Robert E. Healey, M.D., Westchester, chairman of the 1967 House of Delegates Reference Committee on Scientific Activities and Publications, which discussed the report of the Ad Hoc Committee on District Branches, reported on some of the conclusions of his committee. He also said that, as an experiment, the Third and Fourth District Branches were combining.

Waring Willis, M.D., Westchester, past president, State Medical Society, talked about the ways and means of implementing resolutions passed by the House of Delegates.

Charles M. Brane, M.D., Westchester, made a motion that Dr. Way's committee be empowered to set up a mechanism to make the mediation committee work. He also spoke of the inequities of the fixed fee schedule. He pointed out that 40 per cent of United Medical Service fees of 140 million paid out was by assignment.

Mrs. Davis offered the services of the State Society to the Ninth District Branch. Mrs. Davis resigned as field representative in June, 1967, and Coleman M. C. Fineberg was appointed field representative in September. On April 4, 1967, Michael P. Lefkowitz, M.D., found it necessary, because of reasons of health, to resign as secretary of the Ninth District Branch.

Respectfully submitted,
Arthur H. Diedrick, M.D., *President*

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

Your reference committee received and has reviewed the reports of the district branches with interest.

The House voted to adopt this portion of the reference committee report.

To Explore All Aspects of the District Branches

To the House of Delegates, Gentlemen:

The committee consists of the following members:

George T. C. Way, M.D., *Chairman*	Dutchess
Carl Goldmark, Jr., M.D., *First*	New York
Reginald Steen, M.D., *Second*	Nassau
James A. Moore, M.D., *Third*	Albany
Arthur Howard, M.D., *Fourth*	Fulton
Felix Ottaviano, M.D., *Fifth*	Madison
George G. McCauley, M.D., *Sixth*	Tompkins
Joseph J. Kaufman, M.D., *Seventh*	Wayne
John D. Naples, M.D., *Eighth*	Erie
Arthur H. Diedrick, M.D., *Ninth*	Westchester

The Ad Hoc Committee to Explore All Aspects of the District Branches met on November 10 in the conference room of the Medical Society of the State of New York. Joining the committee in its deliberations were Henry I. Fineberg, M.D., and Norman S. Moore, M.D., together with various staff members of the State Medical Society.

The report of this committee for last year, as accepted by the House of Delegates, was reviewed, and it was pointed out that the initial three recommendations were never executed: (1) constitution and bylaws for the district branches are to be standardized; (2) State Society regional meetings are to be mediated under the aegis of the district branches; and (3) annual workshops for the district branch officers are to be held at the time of the annual convention of the State Society.

This committee feels that these recommendations are still valid and should be put into practice.

The committee then devoted the major portion of the meeting to a review of the pilot project, namely, a concentrated effort utilizing the field representative and a subcommittee in the area, to revitalize the Third and Fourth District Branches. As a basis for the discussion, two reports were reviewed: (1) a very detailed blow-by-blow chronologic report from Guy Beaumont; and (2) a report from the chairman of the subcommittee, Arthur Howard, M.D.

On the basis of these reports, it was obvious that the project was a total flop. Various factors contributed to this: (*a*) apathy of certain members of the subcommittee; (*b*) inadequate long-range planning; and (*c*) administrative and top-level apathy in the county societies. Of great interest was a brief report given by James Moore, M.D., president, Third District Branch, which listed certain basic truths and principles for running a successful medical get-together. It was obvious that practically all of these were violated in the planning. Moreover, a debt of $1,400 was incurred by this project, and it is to be recommended by this committee that the State Medical Society assume the responsibility for this amount.

Dr. Howard, chairman of the subcommittee, made the following observations:

1. Neither of the District Branches has as yet held a meeting in 1967.

2. The delegate from the Third District Branch has resigned from this subcommittee.

3. Both District Branches, as separate entities, have accomplished very little over the past several years with the exception of holding an annual meeting.

4. Other than its report of the June 3 meeting, the pilot study project has produced little in the way of meaningful accomplishments. It is

now only in the stage of submitting this report to the Ad Hoc Committee.

Because of these observations, the following recommendations were approved by the Ad Hoc Committee: (*a*) that a three-man executive committee be appointed to carry out the tasks outlined in the pilot project, and (*b*) that this committee should consist of physicians vitally interested in district branch affairs. Moreover, before this new group gets started, the Ad Hoc Committee feels that their activities should be worked out by the State Medical Society staff under the direction of Norman S. Moore, M.D.

The chairman of the Ad Hoc Committee briefly outlined the organization of Comprehensive Regional Health Planning as mandated under the Federal Public Health Services Amendments of 1966. Since these regional organizations will be the omnipotent agency that will deal with all phases of health and health services, it is with these regional agencies that organized medicine must deal. Also since their distribution is regional, it must be at the district branch level that organized medicine must assert its role in the practice of medicine. On this basis, alone, it is felt that the district branch concept cannot be abandoned.

A letter was read from Edward C. Hughes, M.D., president-elect of the State Medical Society, in which he introduced the concept of a three-level organization consisting of all standing and some ad hoc committees. For example, in legislation, there would be a State Medical Society Committee on Legislation, consisting of 9 members, each one being the chairman of the committee on legislation of his own district branch. The committee on legislation of each district branch would be composed of the chairmen of the legislation committees of the respective county medical societies. This would tie in completely all activities on legislation that were being carried out at the three levels of organized medicine.

The problem of district branches having meetings outside their districts was discussed. It was noted that the meeting of the Second District Branch held on Long Island was a failure with practically no attendance, while the meeting held in Puerto Rico was very successful. Other district branches have reported similar experiences. On this basis, the Ad Hoc Committee feels that the Council should not condemn this practice but rather should look with favor on it.

In conclusion, the Ad Hoc Committee feels that there is a tremendously important role for the district branches in the future of medicine. If inertia and apathy continue to plague the district branches, then the regional planning agencies will control and organize all health services without the voice of organized medicine. And when the individual physician finds himself without a voice in his profession, he will have no one to blame but himself.

Respectfully submitted,
GEORGE T. C. WAY, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON SCIENTIFIC ACTIVITIES AND PUBLICATIONS: The following report was presented by Edgar P. Berry, M.D., chairman.

Your reference committee endorses the opinion of the ad hoc committee that the district branch concept cannot be abandoned in view of regional comprehensive health planning as mandated under the Federal Public Health Service Amendments of 1966. We also support the principle that organized medicine shall have to assert its role along regional lines in the planning and development of health and health services.

Your committee approves the concept of three-level committee structure introduced by Edward C. Hughes, M.D., president-elect. This would strengthen the relationship between district branches and the State Society and county medical societies.

Your committee has taken note of the attendance problems experienced by some district branches meeting inside their districts. We endorse the concept that meetings be held in areas where there would be maximum participation.

Your committee supports the ad hoc committee in the statement that there is a tremendously important role for district branches in the future of medicine. Your reference committee adds its voice to the warning that if inertia and apathy continue to weaken the district branch structure, then regional planning agencies will control and organize all health services without the voice of organized medicine.

The House, after discussion, voted to amend the reference committee report by recommending to the Ad Hoc Committee to Explore All Aspects of the District Branches that it draw up suitable amendments to the Constitution and Bylaws in order to redistribute the counties comprising the district branches in order to make these district branches conform to the regions of the State established for area-wide comprehensive health planning.

The House then voted to adopt this portion of the reference committee report as amended.

Publication

To the House of Delegates, Gentlemen:

The Publication Committee consists of the following members:

George Himler, M.D., *Chairman*	New York
Philip J. Cantor, M.D.	Kings
Reuben M. Cares, M.D.	Suffolk
Robert E. Healy, M.D.	Westchester
John W. Hirshfeld, M.D.	Tompkins
Granville W. Larimore, M.D.	Albany
William Hammond, M.D., *Editor*	Westchester
Henry I. Fineberg, M.D., *Adviser*	Queens

During 1967, your Publication Committee held two meetings and also received reports by mail. The 1966–1967 committee met on January 25 and the 1967–1968 committee on September 27. At each meeting reports were received from the editor, the business manager, the comptroller, and the managing editor.

The NEW YORK STATE JOURNAL OF MEDICINE continued to occupy a dominant position among state medical journals during 1967 and maintained a gratifying level of scientific excellence. Your editor, William Hammond, M.D., has mastered the technic of attracting outstanding material to the JOURNAL. The assurance of prompt publication and the provision of skilled and tactful editorial assistance by the staff are further inducements to contributors.

Dr. Hammond, who, incidentally, completed a distinguished term as president of the American Medical Writers' Association, is to be complimented on his sound editorial policies and the contacts he has established for sources of material.

While on the subject of the American Medical Writers' Association, it seems fitting to announce that the managing editor of the JOURNAL, Alvina Rich Lewis, is now a consultant to that organization after having served for ten years as board member, secretary, and treasurer. Miss Lewis is justifiably proud of the presidential citation she received for her contributions to the association.

Your chairman is happy to report that these triumphs have not noticeably diminished her customary devotion to the JOURNAL or her competence in its management.

The members of the editorial staff, consisting of Elizabeth C. Smith, manuscript editor, Frances E. Casey, Mary T. Politano, Mrs. Jana Lipinski, and Mrs. Olga Mielke, form a closely knit, congenial group who perform their duties with great competence and deceptive ease.

Since the Business Division, which is under the direction of J. Richard Burns, Esq., assistant executive vice-president, will report on the financial condition of the JOURNAL in some detail, your chairman will content himself with stating that this is much improved. At the moment it appears that we are safe from the cliff-hanging episodes of former years, God and Goddard willing! The improved financial status the JOURNAL now enjoys is due in large measure to the sound administrative policies of the Business Division.

Your chairman's thanks are due to Henry I. Fineberg, M.D., executive vice-president, and to Mr. Burns for their advice and their keen understanding of the problems attendant on publication.

Much credit is also due to Joseph A. Mullaney, our advertising representative, who has assiduously and successfully pursued new accounts with a resulting increase of heartening proportions in advertising income. He is assisted in this task by Melvin B. Tyler, our West Coast representative.

Finally, Robert W. Miller of advertising production, Mrs. Camille M. Cunningham, advertising secretary, and Melvin Fine, circulation, have all contributed substantially to the smooth operation of the JOURNAL.

Your chairman would also like to express his appreciation of the good relationship existing between the editorial staff and our printer. The fine cooperative spirit and helpfulness shown by the Mack Printing Company have done much to eliminate the minor crises which are almost a daily feature of any publication.

The following reports of the editor and the business manager will set forth the operations of the JOURNAL in greater detail.

Editor's Report (William Hammond, M.D.). During 1967 the NEW YORK STATE JOURNAL OF MEDICINE was published regularly twice a month, on the 1st and 15th, for a total of 24 issues.

Included in these were the following: January 1, Convention Issue; June 1, Minutes of the 1967 House of Delegates; June 15 and December 15, Semiannual Indexes.

For 1967, the total number of pages in the 24 issues, including covers and inserts, was 3,390, of which 988 were advertising pages, including covers, and 2,402 were text pages, including covers. Of these text pages, 449 were devoted to official MSSNY matters. Excluding these, the ratio of editorial pages to advertising pages was 69 per cent editorial to 31 per cent advertising.

As of the date of this report, 573 manuscripts have been submitted during 1967, of which 273 were accepted, 197 rejected, 231 referred to consultants, 31 returned for revision, and the remainder are still under consideration.

A total of 262 manuscripts were published, representing the work of 495 authors. These included submitted manuscripts, annual meeting papers, and solicited departmental material, as follows: scientific articles 104, case reports 59, clinicopathologic conferences 22, special articles 10, Recent Advances in Medicine and Surgery 14, Correlation Conferences in Radiology and Pathology 11, Nutrition Excerpts 4, Clinical Anesthesia Conferences 10, Billsbord 7, History of Medicine 3, Medical Arts and Letters 7, Proceedings of New York Allergy Society 2, Brief Preliminary Reports 3, Electrocardiograms of the Month 5, and Abstracts of Proceedings of New York Society for Thoracic Surgery 1.

This year we have continued our endeavors to make the JOURNAL an outstanding scientific publication, as directed by the House of Delegates. The papers presented at the annual meeting are becoming of increasing importance, and increased interest of those planning the scientific sessions is of great benefit. We have published some outstanding papers this year; for example, the Rochester area audit reports, the symposium on "The Adolescent's Crisis Today," and Wiener's articles on "External Chemical Messengers" have had wide comment from the press, university faculties, and the profession generally.

We now have three sources for the clinicopathologic conferences, Knickerbocker, Lenox Hill, and Beekman-Downtown Hospitals, all in New York City. A new series, "Electrocardiograms of the Month," from Montefiore Hospital has been started.

In cooperation with the MSSNY Communications Division and C. Stewart Wallace, M.D., chairman of the Public Relations Committee, a press release system for articles appearing in the JOURNAL has been developed. These are selected by the editor, the copy is developed by the Communications Division, and then reviewed by the editor and the author or authors of the article before release to the press. These releases have been featured prominently in the *New York Times* and *Time* and *Newsweek* magazines on several occasions. Other media are beginning to pick them up and as a result some of the authors have been on radio and television discussing their subject as presented in the JOURNAL.

We receive unsolicited manuscripts from all over the country and some from abroad. The veterans hospitals and the armed services contribute quite regularly. This is a comparatively new development and we hope indicates increasing stature of the JOURNAL.

This year we have been officially designated the publisher for the Wadsworth Lecture, given annually in honor of Augustus B. Wadsworth, M.D., former director of laboratories of the New York State Department of Health. These lectures are often of considerable scientific importance.

Redway Medal. The sixth annual Laurance D. Redway Award for Medical Writing, established in memory of the late editor of the JOURNAL, was presented at the 1967 House of Delegates to Milton Helpern, M.D., New York City, for his article, "Deaths from Narcotism in New York City," which appeared in the September 15, 1966, issue of the JOURNAL. The seventh annual award will be presented at the 1968 House of Delegates.

Distinguished Service Awards. Continuing a feature inaugurated at the 1965 House of Delegates, awards for "distinguished service to the NEW YORK STATE JOURNAL OF MEDICINE" were presented by President James Blake at the 1967 House of Delegates. Certificates were given to Paul Bunn, M.D., Syracuse, for ten years of valuable service on the associate editorial board and the editorial council; to Granville W. Larimore, M.D., Albany, for his long and continuous service as a member of the associate editorial board, the editorial council, the Publication Committee, and the Ad Hoc Committee to Study the Journal; and to Lester C. Mark, M.D., New York City, for his contribution as editor of the Clinical Anesthesia Conferences, provided to the JOURNAL by the Study Committee of the New York State Society of Anesthesiologists.

American Medical Writers' Association. Members of the JOURNAL staff participate in both national and chapter activities of the American Medical Writers' Association. The editor, as chairman of the AMWA board of trustees, the managing editor, as treasurer, and the manuscript editor attended the annual meeting in Chicago in September, at which Miss Lewis received the AMWA President's Award for "contributions to medical journalism." All have been active also in activities of the Metropolitan New York Chapter; Mary T. Politano, of the editorial staff, serves as chapter secretary, and Robert W. Miller, JOURNAL advertising production manager, serves this year as chapter treasurer. At the AMWA Chapter 1967 awards dinner, Mr. Miller received an award for "meritorious service to AMWA–NY."

The JOURNAL, again in cooperation with the local AMWA chapter, sponsored the seventh annual Medical Communications Day program, on Friday, February 17, following the close of the MSSNY annual convention, at The Americana, New York City. This is a fruitful contact for the JOURNAL and appears to be gaining in strength.

Editors Dinner. In appreciation for their contributions to the JOURNAL, the associate editorial board, department editors, members of the Publication Committee, and officers of the MSSNY were feted at the annual editors dinner, held December 13 at the Canadian Club of the Waldorf-Astoria, New York City. William F. Martin, Esq., MSSNY legal counsel, was guest speaker.

MSSNY Convention. The January 1 issue of the JOURNAL is the Convention Issue, with programs for the scientific sessions, exhibits, motion pictures, and other activities, and annual reports from officers, commissions, and committees for action of the House of Delegates. A tremendous amount of staff work goes into the preparation of this issue. In addition, the editorial staff, using the material from the Convention Issue with additional information received too late to be included in that issue, publishes the convention program book and the delegates handbook, thereby effecting a considerable saving by using standing type.

At the House of Delegates, Miss Lewis served as coordinator, Miss Politano as assistant coordinator, and Mrs. Mielke as workroom secretary. The MSSNY booth, combining the JOURNAL and the *Medical Directory of New York State*, was staffed by Miss Smith and Mrs. Lipinski of the editorial office, while Miss Casey kept up the production schedule at headquarters.

Staff. Beginning the first of the year, Miss Mary T. Politano, formerly publications manager for the Medical Society of the County of Kings, joined the editorial staff as a copy editor, with the additional assignment of working as a coordinator for the House of Delegates. Miss Jana Moor became Mrs. Howard Lipinski on April 22; otherwise there have been no staff changes.

The editor joins the chairman of the Publication Committee in expressing his sincere appreciation for the efficient work of the editorial department and the staff's continuing interest shown in the JOURNAL's progress.

Advertising Sales (J. Richard Burns, Esq., Assistant Executive Vice-President and Business Manager). For the second consecutive year the total gross advertising billings of the JOURNAL have increased substantially. In 1967 the gross advertising billings were approximately $357,891.59 as contrasted with 1966 when they totalled $293,900.90 or an increase of $63,990.60 in gross billings.

On the negative side we must call to your attention that in our present inflationary economy we face a continued upward spiral in the costs of printing, paper, and mailing. In anticipation of this rise in production and distribution costs we have substantially revised our advertising rate schedule upwards, effective January 1, 1968. Notice of increase in rates was sent to all advertising agencies, pharmaceutical houses, and others, in April, 1967, and to date have been generally well received and accepted. Of course, you must all be aware of the fact that the JOURNAL would be hopelessly "in the red" if it had to depend on advertising income alone to operate. The application of a portion of the membership dues to underwrite its costs is an essential element in its continued operation.

Competition for advertising continues unabated with the national and regional medical journals, the specialty journals, and the so-called "throw-away" publications. It is heartening to know that the JOURNAL has continued to more than hold its own, due in large part to its superior scientific and editorial qualities, as well as the energetic efforts of Joseph A. Mullaney, our East and Midwest advertising representative; Melvin B. Tyler, our Pacific Coast advertising representative; Robert W. Miller, our skilled production manager, and Mrs. Camille M. Cunningham, our advertising administrative secretary, who ably doubles as manager of technical exhibits.

Announcement. As announced in the report of the executive vice-president, Alvina Rich Lewis, who has been managing editor of the NEW YORK STATE JOURNAL OF MEDICINE for the past twenty years, will leave that post to become a research assistant in your Society's new Division of Research and Planning. This assignment to an equally important but somewhat less hectic and demanding position was made at Miss Lewis' request. In spite of the fact that the JOURNAL has a very competent replacement, her services will be badly missed. The entire staff regrets her leaving the JOURNAL but your chairman is gratified that her unique talents will not be lost to the Society.

Conclusion. In concluding this report, your chairman wishes to comment on the future role of the Publication Committee. The functions of the committee diminished considerably when the Business Division assumed responsibility for the noneditorial portion of the JOURNAL'S operation. Editorial decisions, on the other hand, have been left almost completely in the hands of the editor, assisted by the associate editorial board. It has been neither desirable nor practical for the Publication Committee to exercise control in this area.

As a result, there is little business for the committee to transact except to receive reports and to make occasional suggestions. It is an imposition on the committee members, busy as they are with their own affairs, to call them in from all over the State for these limited purposes.

Your editor and your chairman therefore suggested to Dr. Fineberg that the need for a Publication Committee be re-evaluated. Since it is necessary that there be a direct liaison between the publication and the Council, it was suggested that that function might better be served by an adviser to the JOURNAL, responsible to the Council and the House of Delegates, rather than by a full committee.

Accordingly, at the meeting of the Council on November 16, the Council approved the recommendation that the Publication Committee as a regular committee of the Council be abolished as of February, 1968, the end of its present appointment, and that in the future a member of the Council be appointed as liaison with the NEW YORK STATE JOURNAL OF MEDICINE.

Respectfully submitted,
GEORGE HIMLER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON SCIENTIFIC ACTIVITIES AND PUBLICATIONS: The following report was presented by Edgar P. Berry, M.D., chairman.

The NEW YORK STATE JOURNAL OF MEDICINE, under the able leadership of William Hammond, M.D., editor, continues to rank as one of the finest scientific publications in the country. Under the direction of J. Richard Burns, Esq., assistant executive vice-president, the JOURNAL continues to operate on a sound financial basis.

Your committee wishes to commend both George Himler, M.D., and Alvina Rich Lewis on receiving the Distinguished Service Award. The efforts of George Himler, M.D., as chairman of the Publication Committee, enabled the JOURNAL not only to survive during difficult economic times, but also to maintain a steady advance toward excellence.

Your committee wishes to express its appreciation to Alvina Rich Lewis, managing editor of the JOURNAL, who is retiring from the JOURNAL after twenty years of loyal and outstanding service to the JOURNAL as well as to the State Society. We are pleased to note that she will continue on as a research assistant in the Division of Research and Planning and wish her success in her new venture. Miss Elizabeth Craig Smith will assume the position of managing editor as of April 1, 1968.

Your committee recommends that the Ad Hoc Committee to Study the JOURNAL, in existence from 1963 to the present, having accomplished its purpose, now be dissolved with thanks for their excellent work in this area. In view of the dissolvement of the Publication Committee by the Council in February, 1968, your committee strongly recommends a liaison be continued between the JOURNAL and the Council.

The House voted to adopt this portion of the reference committee report.

What Goes On

To the House of Delegates, Gentlemen:

In this, its ninth year, *What Goes On* has undergone some changes. The number of issues was cut from twelve to ten, combining the summer months into one issue for May and June and one for July and August, since experience has shown that there is a drastic reduction in programs during these months.

The number of meetings and courses listed in 1967 amounted to approximately 1,750—including many more radio and television programs for physicians.

The circulation has risen to 51,985 which includes the following:

Physicians, staff, residents, and interns in New York and New Jersey	48,522
Osteopaths	1,463
Miscellaneous (hospitals, libraries, medical schools, radio, television and newspaper science writers, medical societies, free-lance writers, nurses, and others)	2,000

Lederle Laboratories, the sponsors of *What Goes On*, conducted a readership survey in May, 1967. Some of the findings may be of interest. In the New York—New Jersey area, doctors answered questions as follows:

1. Are you familiar with *What Goes On?* 85.3 per cent answered yes.
2. How useful is it to you? 54 per cent answered useful and very useful.
3. Do you know who advertises in *What Goes On?* 11 per cent named Lederle Laboratories.

This is only a sampling of the many questions asked. In order to acquaint more physicians with the fact that Lederle sponsors the booklet, we decided to put the Lederle name and emblem on the cover, starting with the November, 1967, issue.

If you read the lead editorial in your New York State Journal of Medicine for November 1, 1967, and the November issue of *What Goes On*, page 4, you will have observed the new role of *What Goes On* in connection with the New York Medical Assistance Program (Medicaid).

Another feature introduced in the December, 1967, issue was the Physicians' Placement Opportunities appearing in the back of the booklet. There is such a need for doctors in our upstate communities that we felt the contribution of space to this project was worthwhile. Each month as many of these free ads will be run as is feasible in the hope that some of our physician-readers will be made aware of the opportunities available in many attractive communities outside of the large cities.

Negotiations are underway for continued support by Lederle Laboratories for the costs of publishing *What Goes On*.

During the 1967 convention of the Medical Society of the State of New York, a booth was assigned to *What Goes On*. The February issues, handed out at the booth, carried a special pull-out insert of the convention, and many of the physicians remarked on how handy it was. Others found it a good source for locating other meetings during their stay in New York City. We hope that many more of our members will take time to visit our booth at the 1968 convention to give us ideas and suggestions—even complaints—concerning *What Goes On*.

Great credit for the success of this publication is attributable to Mrs. Evelyn Clark, the dedicated editor of *What Goes On* for the past five years.

Respectfully submitted,
Norman S. Moore, M.D., *Director*
Division of Scientific Activities

Physician's Placement Bureau

To the House of Delegates, Gentlemen:

The Physicians' Placement Bureau received in 1967 about 150 requests from physicians seeking placement. Individual letters, enclosing our lists of opportunities and questionnaires, were mailed out and followed up. To date, we do not know how many physicians have actually started practicing in areas noted on our lists. Many requests come from other states and from men entering the Armed Services who want to establish contacts for the time when they will be getting out of service and entering private practice.

Beginning in December, 1967, 41 communities were listed in *What Goes On* and more will be listed as they come in. Letters and return post cards were sent to 90 contacts on our previous lists, and 47 answers have come in as of November 8, giving permission for the announcement to be published free of charge in *What Goes On*. Because this bulletin goes to approximately 50,000 physicians, residents, interns, and others, we felt this contribution was worthwhile and might help some of our upstate communities get the doctors they need.

We will report on the outcome of this venture at a later time.

Respectfully submitted,
Norman S. Moore, M.D., *Director*
Division of Scientific Activities

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

Your reference committee is pleased to note that Lederle Laboratories continues to underwrite the cost of this valued publication and wishes to commend J. Richard Burns, Esq., for his efforts in this direction. The committee further commends Norman S. Moore, M.D., director of the Division of Scientific Activities, for the technical excellence of this publication, and thanks Mrs. Evelyn Clark, the dedicated editor of *What Goes On* for the past five years. It is noted that there are two innovations—"Physicians' Placement Opportunities" which now appears as a regular feature of *What Goes On*, and for the benefit of those physicians who wish to qualify for participation in the New York Medical Assistance for Needy Persons program (Medicaid) by means of the continuing postgraduate medical education program, *What Goes On* will endeavor to designate all courses which will qualify for category I credits as M–I courses. Most meetings not marked by M–I will qualify in credit toward category M–II.

The House voted to adopt this portion of the reference committee report.

Archives and History

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

Your committee notes that the Collection of Regional History and Archives by Cornell University in Ithaca continues as a depository for the archives of the State Society.

The House voted to adopt this portion of the reference committee report.

Prize Essays

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

The special committee, under the chairmanship of Alfred A. Angrist, M.D., again offered no prize this year. Your committee wishes to recommend that:

1. The prize for essays be instituted every three years;
2. Essayists be limited to interns and residents from all hospitals within the State of New York;
3. Suitable announcements of the awards be circularized to all hospitals.

The House, after discussion, voted to adopt this portion of the reference committee report.

Disaster Medical Care (Annual)

To the House of Delegates, Gentlemen:

The members of the Committee on Disaster Medical Care are as follows:

Irving G. Frohman, M.D., *Chairman*	Queens
James D. Bradley, M.D.	Clinton
Harold T. Golden, M.D.	Herkimer

Prior to the reactivation of this committee, an editorial was placed in the New York State Journal of Medicine summarizing the "Role of the Physician in Disaster Medicine." An urgent conference with representatives of the Division of Health Mobilization, Department of Health, Education, and Welfare, was held on March 3, relative to the new Packaged Disaster Hospital (PDH) program and the Hospital Reserve Disaster Inventory (HRDI) program. A summary report was sent to the State Medical Society for publication.

After reactivation, local representatives of the Division of Health Mobilization met with your chairman on August 2. This conference was designed to assess the degree of local governmental medical civil defense interest and cooperation. It was reported that, at least in downstate counties, the early discernible disaster emphasis was placed with hospitals, and not with the physicians, in or out of hospitals, who provide actual medical services.

A prime function of this committee is to furnish liaison between the American Medical Association's Committee on Disaster Medical Care and the physicians of New York State through their county society committees. Currently a determination is being made as to which of the counties already have such a committee. Thereafter, efforts will be made to insure that all counties do incorporate this medical responsibility. Apart from ever-present natural disasters, the advent of the orbital bomb with its ubiquitous potential should serve as a catalyst. Officers of county medical societies who have doubts on the matter are urged to read the special article, "I Was in the Middle of the Atomic Blast in Hiroshima," by Lt. Col. T. Matsumoto, (MC) USA, in *Military Medicine*, September, 1967. It narrates the observations of a high school student in a classroom, less than one-half mile from ground zero.

The upgrading of emergency ambulance services and medical instruction of ambulance attendants is the subject of nation-wide emphasis and is an appropriate target for the counties. A pilot program has been launched in Queens County with the New York State Volunteer Ambulance and First Aid Association. The course attendants have all completed advanced Red Cross first aid courses and are qualifying for a certificate to be issued by the New York State Department of Health. A major deterrent to this program, especially in nonmetropolitan areas, is a Health Department specification that some of these lectures to lay people are to be given by board-qualified physicians.

Distance, late committee reactivation, and the development of meaningful objectives have not made it practical to have committee meetings to date. A breakthrough from caretaker status to positive activity is envisaged in the field of disaster medicine, to combat the apathy that exists between catastrophic events. The October issue of *News of New York* carried an item on local preparation for riots.

Respectfully submitted,
Irving G. Frohman, M.D., *Chairman*

Disaster Medical Care (Supplementary)

To the House of Delegates, Gentlemen:

Thirty-two replies have been received from county medical societies relating to disaster medical care committees. Twenty-four of these counties have civil defense or disaster medical care committees. Only ten report cooperation or coordination with local civil defense officials.

Disaster medical plans limited solely to hospitals disregard the fact that physicians, in and out of hospitals, provide the essential medical skills and direction. In any extensive disaster situation, out-of-hospital care of casualties can be of significance. In recent years, there has developed a tendency to bypass county medical societies and their physician members in disaster medical planning by local responsible agencies.

Respectfully submitted,
Irving G. Frohman, M.D., *Chairman*

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

Your committee recommends that disaster medical care planning should utilize all physicians within the community and that the concept of cooperation between local medical societies, local government, and civil defense officials be strongly supported.

The House adopted this portion of the reference committee report.

Liaison with National Aeronautics and Space Administration

To the House of Delegates, Gentlemen:

The members of the Liaison Committee with the National Aeronautics and Space Administration are as follows:

Constantine D. J. Generales, Jr., M.D., *Chairman*	New York
William Antopol, M.D.	New York
Albin V. Kwak, M.D.	Erie
Nathaniel Reich, M.D.	Kings
Harry Dan Vickers, M.D.	Herkimer

There has been no meeting of the committee during 1967–1968. The chairman was of the opinion that there was no need for a committee meeting until the successor to Dr. W. Randolph Lovelace, Director of Space Medicine of NASA, had been appointed.

The liaison committee was formed for the purpose of continual interchange between the technical and biomedical groups of NASA and the Medical Society of the State of New York. Both groups, working in the field of medicine and interested in all allied professions, are concerned with the health and welfare of mankind as he studies, experiments, and projects himself into realms beyond his own planet.

The physician is the pivot since life itself in an alien environment is the point. Our scope of responsibility as the oldest and second largest medical body and the only state medical society to be farsighted enough to have formed a Section on Space Medicine is of primary importance. More and more physicians, particularly the "newer generation," are preparing for the all-permeating medicine in space. Such organizations as ours have a great responsibility toward the medical practitioners by increasing the knowledge of medicine through extension, that is, guidance and education.

Respectfully submitted,
Constantine D. J. Generales, Jr., M.D., *Chairman*

Report of Reference Committee on Scientific Activities and Publications: The following report was presented by Edgar P. Berry, M.D., chairman.

Your committee notes the continued liaison between the National Aeronautics and Space Administration and the Medical Society of the State of New York.

The House voted to adopt this portion of the reference committee report.

Convention

To the House of Delegates, Gentlemen:

1967 Convention. The Convention Committee consisted of the following:

Bernard J. Pisani, M.D., *Chairman*	New York
Frank LaGattuta, M.D.	Bronx
Joseph G. Zimring, M.D.	Nassau
George Himler, M.D., *ex officio*	New York
Norman S. Moore, M.D., *ex officio*	Tompkins
William Hammond, M.D., *ex officio*	Westchester

The 161st Annual Convention of the Medical Society of the State of New York was held February 12 through 16, 1967, at The Americana in New York City.

Registration figures are as follows:

Physicians	2,784
Allied professions (dentists, nurses, medical technicians, and others)	865
Guests	601
Technical exhibitors	939
Total	5,189

The total attendance was approximately the same as for 1966.

House of Delegates, George Himler, M.D., Speaker. The House of Delegates was called to order on Sunday, February 12, at 2:00 p.m., in the Georgian Ballroom of The Americana, and functioned through Thursday, February 16, until about 12:00 noon. Dr. Himler entertained 82 resolutions for consideration and action.

Scientific Program, Bernard J. Pisani, M.D., Chairman. For the 1967 Convention, there were no combined section meetings; each of the 23 sections presented an independent program. There were four General Sessions on interesting and timely subjects. Again the American Therapeutic Society sponsored one of the General Sessions, "Management of the Failing Liver." The American Academy of General Practice gave credit to its members for attendance at the General Sessions and at the meeting of the Section on General Practice. The Section on Internal Medicine was presented in cooperation with the New York State Society of Internal Medicine.

The meeting rooms in Albert Hall were somewhat improved but are not ideally suited for our section meetings.

The following attendance was recorded:

Section Meetings—Allergy 112, Anesthesiology 114, Chest Diseases 156, Dermatology and Syphilology 110, Gastroenterology and Proctology 125, General Practice 100, Industrial Medicine and Surgery 50, Internal Medicine 171, Medical-Legal and Workmen's Compensation Matters 200, Neurology and Psychiatry 50, Obstetrics and Gynecology 70, Ophthalmology 93, Orthopedic Surgery 122, Otolaryngology 104, Pathology, Clinical Pathology, and Blood Banking 60, Pediatrics 65, Physical Medicine and Rehabilitation 100, Plastic and Reconstructive Surgery 88, Preventive Medicine and Public Health 200, Radiology 45, Space Medicine 96, Surgery 75, Urology 55.

General Sessions—Monday 164, Tuesday 150, Wednesday 150, Thursday 150.

Scientific Exhibits, Albert H. Douglas, M.D., Chairman. Dr. Douglas and his committee chose close to 50 exhibits from the applications received. About 20 were rejected since they did not come up to the committee's standards for acceptance. Many complimentary comments were made by the viewers about the high caliber of the exhibits. They were well displayed and well attended. Attendance, as taken by a uniformed guard, was as follows: Monday 898, Tuesday 832, Wednesday 1,008, Thursday 535, for a total of 3,273.

Again the figure was higher than the total doctor-attendance, indicating that the scientific exhibits are a popular facet of convention activities.

The Department of Health of the State of New York had a large area for a glaucoma screening program. The following is an excerpt of activities in this clinical exhibit from the report of Dale E. Harrow, M.D., assistant commissioner. "There were 327 physicians screened, 25 of whom were reported as positive (having an intraocular tension of 22.4 millimeters of mercury and over). Of these 25, one was previously known to have glaucoma. There has been one new case confirmed; there is one case suspected; there are eight definitely negative; two are still undergoing diagnostic workup and 12 have not reported what follow-up action they have taken. Of the 13 who have reported then, we have two known cases, one suspect, two in the process of being diagnosed. If these figures were extrapolated to the 25, it would seem likely that the experience for the State Medical Society group is not unlike that of the general public—approximately two per hundred screened."

Your Scientific Exhibits Committee chairman wishes to extend appreciation to Miss Mollie Pesikoff for her help in handling the details involved in the work of this committee.

Scientific Exhibits Awards, James Q. Haralambie, M.D., Chairman. The committee studied the exhibits carefully and chose three exhibits in each of two categories for special recognition, as well as the winner of the Aesculapius award given by Mead-Johnson. The award-winning exhibitors were presented with certificates at the House of Delegates by Dr. Haralambie.

It was suggested at a meeting of the Scientific Program Committee that, for 1968, the Scientific Exhibit Awards be presented at the sites of the winning exhibits by the chairman of the Awards Committee.

Scientific Motion Pictures, Kenneth B. Olson, M.D., and James J. Quinlivan, M.D., Cochairmen. Over 50 films chosen by the committee were shown in the Motion Picture Theatre in Albert Hall, under the supervision of a staff member of the State Department of Health, Mr. John J. Tiley, who reported that several doctors who saw the films asked to borrow them for use at other medical meetings.

Technical Exhibits, William B. Rawls, M.D., Chairman. Mrs. Camille Cunningham reported 126 booths sold. All members and guests were urged to visit the technical exhibits to acquaint themselves with new pharmaceuticals and equipment and to support the technical exhibitors who underwrite a good part of the convention costs.

Dinner Dance, Arthur H. Diedrick, M.D., Chairman. The reception and dinner dance, in honor of the retiring president, James M. Blake, M.D., was held on Wednesday evening of convention week in the Imperial Ballroom. A cocktail party was followed by an excellent dinner, at which Henry I. Fineberg, M.D., served as toastmaster. Charles L. Hudson, M.D., president of the American Medical Association, was guest speaker. Entertainment and dancing was provided by the well-known Ben Cutler and his fine band. About 250 guests attended.

Miscellaneous. The Woman's Auxiliary held its convention concurrently with ours. The members expressed their thanks for the facilities and assistance given by the State Society.

Facilities were provided also for luncheons and meetings for some of the sections and for outside medical groups. Several medical schools had desks for registration for their alumni functions.

A fine art exhibit was arranged, drew excellent attendance, and also enhanced the appearance of Albert Hall. It consisted of paintings and sculptures by physician-members of the Society as well as by colleagues from other states.

Thankful acknowledgements were sent to all participants in the scientific activities and to the medical assistants who contributed their services when called on.

To save time for exhibitors and participants in the scientific program, advance registration was provided. Registration cards were sent to all participants in advance, and when these were returned, preregistration badges were prepared and held at a special area of the main registration desk until called for. This extra courtesy was appreciated.

Ribbon badges, as special identification, were provided for the chairmen of sections and of the Convention Committee subcommittees. This made for instant recognition and identification, which proved quite helpful for all attendees.

1968 CONVENTION. At this writing, all plans for the 1968 Annual Convention have been made and implemented. The scientific program promises to be a fine one. There are many outstanding speakers, interesting symposiums, and panel discussions. Fifty exhibits have been chosen from more than 80 applications.

To promote better attendance at the technical exhibits, it has been decided to set up the scientific exhibits in Albert Hall, approximate to the technical exhibits. This will eliminate the need to build temporary meeting rooms in Albert Hall. Instead all meetings of sections and the General Sessions will be held in the hotel's regular meeting rooms on the second floor. Proper notices and directions to the Scientific and Technical Exhibits area will be posted throughout the meeting area.

For the first time, the motion picture program and the scientific and technical exhibits will open on Sunday at noon. This will give physicians who find it difficult to attend during the week a chance to view the exhibits. The exhibits will be closed on Thursday, after 12:00 noon.

Also for the first time, a symposium on the "Medical Aspects of Sports" will be held on Saturday, February 10, from 10:00 a.m. to 5:00 p.m. A panel discussion on geriatrics, "Implications of Aging," which is being arranged by the American Geriatrics Society and the Medical Society of the State of New York under the direction of William Hammond, M.D., will be conducted on Thursday afternoon, February 15.

ACKNOWLEDGMENTS. Grateful acknowledgment is expressed to the entire staff of the Medical Society of the State of New York for their willing cooperation, interested participation, and helpfulness.

Respectfully submitted,
BERNARD J. PISANI, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON SCIENTIFIC ACTIVITIES AND PUBLICATIONS: The following report was presented by Edgar P. Berry, M.D., chairman.

Your committee wishes to commend Bernard J. Pisani, M.D., and his committee members for the over-all direction of the convention and for the excellent technical and scientific programs.

In the hope of stimulating a larger attendance at the technical exhibits this year, the scientific and technical exhibits have been amalgamated on one floor. Two additional symposiums have been added to the program, "Medical Aspects of Sports" under the chairmanship of Ralph S. Emerson, M.D., and "Implications of Aging" under the chairmanship of William Hammond, M.D.

Because the judging of the scientific exhibits is a full-time job, and upon consultation with James Q. Haralambie, M.D., chairman of the Scientific Exhibit Awards Committee, your committee recommends that no member of the awards committee be placed on a reference committee.

The House voted to adopt this portion of the reference committee report.

The House voted to adopt the reference committee report as a whole as amended.

Public and Professional Affairs

Public and Professional Affairs

To the House of Delegates, Gentlemen:

The Commission on Public and Professional Affairs is composed of the following members:

Solomon Schussheim, M.D., *Chairman*	Kings
John H. Carter, M.D.	Albany
Joseph J. Kaufman, M.D.	Wayne
C. Stewart Wallace, M.D.	Tompkins

The year 1967 marked the fourth year for this commission. Your chairman believes that a great deal of progress was made not only by the committees as individual groups but in their teamwork activities sponsored by the commission. The achievements of the three committees making up the commission are spelled out in reports submitted to this House under Public Relations, Federal Legislation, and State Legislation.

Led by C. Stewart Wallace, M.D., chairman, the Public Relations Committee successfully inaugurated and carried out several projects, notable among which were the area conferences, the establishment of a Department of Information, the distribution of Ad Rem bulletin boards to hospitals, and the "hot line" system of communications.

Our State Legislation Committee, headed by John H. Carter, M.D., also had an action-packed year. The continuing problems of Medicaid, the resurgence of compulsory health insurance as a major issue at the State level, and other matters were capably handled by our committee.

Continuing its enthusiastic spirit of 1966, the Federal Legislation Committee, under the chairmanship of Joseph J. Kaufman, M.D., kept pace with the ever-changing scene in Washington. Principal attention was focused on the amendments to the Medicare law and the extension of the Comprehensive Health Planning and Public Health Service Amendments of 1966.

As head of the commission, your chairman has continuously urged, and worked for, cooperative endeavors by the three committees. As a step in this direction, a precedent-setting joint meeting of our Federal and State Legislation Committees was held for the purpose of providing a forum through which the members of both groups might understand and study mutual problems. At the time this report is being prepared, both the Federal and State Legislation Committees, for the second consecutive year, will participate in the Annual Conference of County Medical Society Legislation Chairmen, scheduled for December 7 in Syracuse. In these endeavors, our Public Relations Committee has played, and will continue to play, a vital role through the attendance of its chairman at these conferences.

The implementation of the activities of the three committees of our commission was ably and successfully carried out by our Division of Communications, directed by Guy D. Beau-

mont. The legislative activities of our committees were coordinated by Martin J. Tracey, Esq. The work of the regional representatives and secretarial staff contributed largely to the success of our projects. To all, we are most grateful.

On behalf of the commission we wish to thank all who assisted us, particularly Henry I. Fineberg, M.D., executive vice-president, and J. Richard Burns, Esq., assistant executive vice-president.

As chairman of the commission, my personal expression of appreciation goes to our three hardworking committee chairmen: John H. Carter, M.D., State Legislation; Joseph J. Kaufman, M.D., Federal Legislation; and C. Stewart Wallace, M.D., Public Relations.

Respectfully submitted,
SOLOMON SCHUSSHEIM, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

This commission was established four years ago to coordinate the efforts of the State Society in three related fields: namely, Federal legislation, State legislation, and public relations. The commission has been led, and indeed its activities expanded by the much experienced Solomon Schussheim, M.D., to whom the respect of this Society must be cordially extended. To assist him on the commission have been the capable chairmen of the respective committees in the areas concerned.

This year, for the first time, a joint meeting was held between the Committees on Federal and State Legislation, wherein there was an exchange of thinking on the coordination of activity, methods of action, and the dissemination of information. We are sure that each committee was strengthened by the knowledge of the activities of the other. Such a meeting, now that it has occurred, is so natural and so logical that one easily asks as to why it was never done before.

While it has been true in the past that the field of activity on a Federal legislative level has been the primary responsibility of the AMA, and that as far as the State Society is concerned, Albany has been the place "where the action is," it appears that more and more Federal activity in the field of health will bypass the State level and go directly from Washington to the regional area of its application. This is best demonstrated by the Federal program in Heart, Cancer, and Stroke. Organized medicine must deal with these Federal programs on a regional basis. We therefore predict increased activity and responsibility for this commission, for the Committee on Federal Legislation, and for the regional representatives of organized medicine, the district branches. All physicians who may become involved in these various programs, either in an advisory role or as a participant, must look to the State Medical Society for knowledge and guidance.

In respect to this last, we wish to emphasize to the commission and to this House of Delegates the increasing need of organized medicine to deal with government health programs on a regional basis. It is essential, for example, that medicine take an aggressive and constructive role in the Federal Program for Comprehensive Regional Health Planning.

On the basis of a suggestion by our president-elect, Edward C. Hughes, M.D., we draw attention to the echelon concept of legislation action which incorporates the district branches, as an integral part of the legislation team. Direct Federal programs do not approach a single county, but rather groups of counties. Our Albany legislators do not represent a single county but rather a group of counties. It therefore behooves organized medicine to participate in and deal with all these matters on a regional basis. And we envision this commission as the coordinating State body for this ambitious and necessary program.

The reference committee wishes to commend the commission in general and its members in particular for a fine job during the past year.

The House voted to adopt this portion of the reference committee report.

Federal Legislation (Annual)

To the House of Delegates, Gentlemen:

The committee consists of the following members:

Joseph J. Kaufman, M.D., *Chairman*	Wayne
Burton Allyn, M.D.	Rockland
Robert H. Cross, M.D.	Oneida
John T. Donovan, Jr., M.D.	Niagara
George Liberman, M.D.	Kings
James A. Moore, M.D.	Albany
George M. Saypol, M.D.	New York
Lester R. Tuchman, M.D.	Queens

Throughout the year, your committee kept abreast of developments in Washington concerning pending Federal legislation and took action whenever necessary. Through memoranda from your chairman and materials supplied by the AMA and our coordinator, legislation activities, the members of your committee were kept informed through a practical workable system of communications. Your committee participated in a precedent-setting conference when it held a joint meeting with our State Medical Society's Committee on State Legislation at the request of Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs, for the purpose of providing a forum through which the members of both committees might understand and study mutual problems.

At the time this report is being written, in late October, your committee plans to participate in the annual conference of county medical society legislation chairmen slated for December 7, 1967, at the Country House, North Syracuse. Your committee, therefore, intends to submit to the House a supplementary report which includes developments between the date of this report and the time the House meets in February, 1968.

Joint Meeting. On May 19, your committee met at State Society headquarters. As previously mentioned, this meeting was held in conjunction with the Committee on State Legislation at the request of Dr. Schussheim. Since your chairman was out of the country at that time, John T. Donovan, M.D., committee member, presided at the meeting. Other members of the committee who took part in the meeting were Drs. Allyn, Cross, Moore, Tuchman, and Liberman. Dr. Saypol was excused.

The agenda for the meeting was based on a report which your chairman had sent to the committee prior to the meeting so that they might know his thoughts concerning (*a*) the actions of the 1967 House of Delegates, (*b*) the items submitted to the committee by this House, (*c*) pending Federal legislation, and (*d*) a committee meeting in Washington, D.C.

Among the principal items considered by the members was a review of major bills before Congress at that time. In the course of this review, there was a great deal of discussion on the then proposed law (H.R. 6418) "Partnership for Health Amendments for 1967" which would amend PL 89–749 "Comprehensive Health Planning and Public Health Services Amendments of 1966." Following this discussion, the committee voted to present a resolution on this subject to the AMA House of Delegates. This resolution, in substance, reiterated the previous objections advanced by the AMA to the original proposals and also included additional suggestions.

Your chairman is pleased to report that this resolution was submitted to the Council at its June meeting. After amending the resolution, the Council approved it for submission to the AMA House of Delegates at its June, 1967, meeting in Atlantic City. At the AMA meeting, the reference committee commended the New York delegation for its interest in this important bill and suggested that the Board of Trustees may wish to review materials contained in the resolution in preparation for future presentation before Congress. The AMA House of Delegates voted to refer the resolution to its Board of Trustees.

At our May 19 meeting, in addition to the "Partnership for Health Amendments of 1967" (H.R. 6418), the committee discussed five other Federal bills of primary importance. These included: (*a*) Social Security Amendments of 1967; (H.R. 5710); (*b*) Appalachian Regional Development Act (S. 602); (*c*) Medical Restraint of Trade Act (S. 602); (*d*) Generic Drugs, Part B, PL 89–97 (S. 1303); and (*e*) Corporate Tax Treatment of Professional Associations (H.R. 5315). Since the status of some of the bills required no follow-up at the time the meeting was held and the committee decided to await data from the AMA, no action was taken on these bills by the committee.

Concerning the items from the 1967 session of the House of Delegates referred to our committee by the Council, the members joined the State Legislation Committee in voting to refer back to the Council, for clarification, resolution 67–1 "Proposed Changes in Title 19, Income Eligibility." The committee took no action on three other resolutions, since they had already been communicated to designated legislators and government officials by our president, Frederick A. Wurzbach, Jr., M.D. These three resolutions were: 67–6 "The Right of the Practitioner to Contract with Patients"; 67–33 "Direct Billing Under Title 19"; and 67–50 "Direct Reimbursement to Patients Under Title 19."

The committee also discussed a proposal by your chairman that a special business meeting of the committee be held in Washington, D.C. The purpose of the meeting would be to confer not only with Federal legislators but with representatives of the Federal government agencies. The meeting would differ from past trips in that it would be on a strictly preplanned business basis with no "social hour" and restricted to committee members only. After the members had discussed this proposal, the committee voted to approve the proposal in principle. The committee also recommended that such a meeting should be held only after Council approval, whenever the chairman and members believe that legislative or government proposals were important enough to warrant the trip and that such proposals could be handled in the best interests of the State Medical Society by personal contact in Washington.

At this meeting there was also a great deal of discussion about the proposed Internal Revenue Service regulations concerning unrelated business income tax. These regulations would consider the activities of soliciting, selling, and publishing of commercial advertising as a taxable business even though such advertising was published in a tax exempt organization's periodical, such as the NEW YORK STATE JOURNAL OF MEDICINE. Two bills (H.R. 8765 and H.R. 9691) which would provide, in general, that income from such activities would not be taxable also were brought to the attention of the committee. The committee voted that they would endorse whatever action was taken by our State Medical Society and the AMA concerning this matter.

At the June, 1967, Council meeting, your chairman presented a report of our May 19 meeting, which was accepted as amended. The amendment concerned the resolution on the "Partnership for Health Amendments of 1967" which has been acted on by the AMA.

Medicare. On July 20, your chairman sent a telegram to all county medical society legislation chairmen urging them to protest the inclusion of chiropractors under H.R. 5710 (Medicare), then pending before Congress. Included in the memo was a copy of the telegram sent by our executive vice-president, Henry I. Fineberg, M.D., to all county medical society presidents and executive secretaries. Our memo urged the legislation chairmen to implement Dr. Fineberg's request by sending personal letters and telegrams to their congressmen and by enlisting the support of their patients, local chambers of commerce, and other civic and service organizations. Copies of all communications were requested to be forwarded to Wilbur D. Mills, chairman, House Ways and Means Committee. At the time this report is being written, the bill had passed the House and did not include chiropractors.

Health Planning. On September 15, your chairman alerted members of our committee to the fact that a "sleeper" had been added to H.R. 6418 (Staggers), the "Partnership for Health Amendments of 1967," which would extend PL 89–749, the "Comprehensive Health Planning and Public Health Service Amendments of 1966," until 1972. This "sleeper," known as section 12, was tacked on to the bill by the House Commerce Committee. In brief, the new section would provide "emergency grants to hospitals" and would bypass the Hill-Burton program. Thirteen Republican members of the House committee had opposed the new section and had voiced their opposition in "minority views," published in the committee report. Because of the "minority views," the House Rules Committee granted a rule on H.R. 6418, which permitted the House to vote on a motion to delete section 12 before voting on the entire bill. Your chairman requested that the committee advise him of their views on this matter. Responses favored the deletion of section 12. As a result of this memorandum, messages were sent to Congress urging the deletion of section 12. By a vote of 155 to 81, the House deleted section 12 and sent the bill to the Senate, where it was at the time this report was prepared.

Legislation Information Center. Your committee is grateful for the assistance rendered by our State Medical Society's Legislation Information Center in supplying materials and answering questions concerning Federal legislation. Our State Society's Committee on State Legislation is submitting a detailed report on this valuable service.

Your Federal Legislation Committee, however, wants to underscore the point, that the center is providing a most important service not only to physicians but to the public and deserves the wholehearted and continuing support of all our members.

Your committee has continually maintained that we need the cooperation of more physicians in our legislation programs in order to obtain our goals. Physicians who are knowledgeable about Federal legislation are more inclined to exert their efforts on our behalf. We, therefore, strongly recommend that more physicians be encouraged to utilize the facilities of our Legislation Information Center so that they may be inspired to participate in our efforts.

Your committee also wishes to recognize the fact that our legislative bulletin, *Capitol News*, carried items on Federal legislation from time to time. Since we feel that this publication is influential with our members, we recommend that, whenever feasible, more items pertaining to Federal legislation be published in this worthwhile bulletin.

Acknowledgments. Your chairman once again wants to thank particularly the members of his committee who have worked so well with him in his endeavors to make the committee an effective group. Likewise, he also expresses gratitude to all who have aided him and the members of his committee. Among these are: Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs; John H. Carter, M.D., chairman, Committee on State Legislation; C. Stewart Wallace, M.D., chairman, Committee on Public Relations; Henry I. Fineberg, M.D., executive vice-president; and J. Richard Burns, Esq., assistant executive vice-president.

The committee deeply appreciates the work carried on by our State Medical Society staff, especially the Division of Communications. These include: Guy D. Beaumont, director; Martin J. Tracey, Esq., coordinator, legislation activities, who devoted considerable time and effort to our activities; and the regional representatives and secretaries of the division.

Respectfully submitted,
JOSEPH J. KAUFMAN, M.D., *Chairman*

Federal Legislation (Supplementary)

To the House of Delegates, Gentlemen:

The following supplementary report is submitted on behalf of the committee.

The committee met at the Country House, North Syracuse, December 6, 1967. Your chairman presided at the meeting in which the following members participated: Robert H. Cross, M.D., John T. Donovan, M.D., James A. Moore, M.D., George M. Saypol, M.D., and Lester R. Tuchman, M.D.

Your chairman reviewed the actions of the committee to the date of the meeting including several memoranda which had been distributed, the committee's annual report to the House of Delegates and a detailed explanation of the functions of the committee which had been submitted to our executive vice-president, Henry I. Fineberg, M.D. All these activities were approved by the committee.

The members of the committee were brought up to date on medical legislation in the 90th Congress by Paul R. M. Donelan, Esq., legislative attorney, AMA, Washington Office. Maurice Kramer, AMA field representative, discussed the implementation of Federal laws after they have been enacted.

There was a great deal of discussion concerning the Federal "Partnership for Health Amendments Law" involving comprehensive health planning in New York State, in which our president-elect, Edward C. Hughes, M.D., outlined plans in his area. As a result, the committee unanimously adopted the following resolution sponsored by Dr. Tuchman:

"The Committee on Federal Legislation recommends that the New York State Health Planning Commission, established by the Governor's Executive Order, dated May 23, 1967, implementing Federal Public Law 89–749, ensure that in every local region there be representation by nomination of the Medical Society of the State of New York. No fewer than one sixth of the total number of members should be actively engaged in the private practice of medicine."

This resolution was submitted to the Council at its January 25, 1968, meeting for approval, which was voted.

Following the adoption of this resolution and further discussion of the recent report of the National Advisory Commission on Health Manpower, your chairman appointed a subcommittee to study comprehensive health planning and the Medical Manpower Commission report. The committee is composed of Dr. Tuchman, chairman, and Dr. Cross. The committee is scheduled to meet in early February, 1968.

Your committee devoted much time to preparations for the Annual Conference of County Medical Society Legislation Chairmen which was scheduled for the following day, December 7, at the Country House. At the conference, your chairman presided over the afternoon session which was concerned with Federal legislation. Your chairman reviewed the activities of the committee and its decisions of the previous evening. The members of your committee took a very active part in the conference through their pertinent comments and replies to questions from the floor.

Both the committee meeting and the conference were progressive steps forward in our Federal legislation endeavors, and your chairman thanks the members of his committee and all those who participated in the conference for their constructive efforts.

Respectfully submitted,
JOSEPH J. KAUFMAN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

The reference committee has reviewed the original and supplementary reports of the Committee on Federal Legislation as submitted by its chairman, Joseph J. Kaufman, M.D.

Of particular interest to us was the resolution prepared by this committee in December, 1967, and subsequently approved by the Council in January, 1968, wherein it was recommended to the New York State Health Planning Commission that implementation of the Federal Public Law 89–749 include the requirement that in every local region there be representation by nomination of the Medical Society of the State of New York, and that no fewer than one sixth of the total number of members be physicians actively engaged in the private practice of medicine.

Your reference committee heartily endorses this concept. There is entirely too much serious and momentous health planning taking place today with a total disregard for the practitioner who must participate in and execute the care of the sick. For example, the Regional Health and Hospital Council of Southern New York, with a board membership of around 50, has thereon only five physicians in private practice. And yet this group makes decisions that affect vitally the nature of private practice within this geographic area.

However, the reference committee wishes to point out that organized medicine, through its participation in these regional comprehensive health planning groups, should show initiative and, for a change, provide the leadership for intelligent and sane long-range recommendations. And we wish to suggest, while the State Medical Society may make the nominations for appointments to these regional groups, that the district branch be the functional group in comprehensive health planning.

The reference committee feels that the Committee on Federal Legislation has done an excellent job and deserves the commendation of this House of Delegates.

The House voted to adopt this portion of the reference committee report.

State Legislation (Annual)

To the House of Delegates, Gentlemen:

The Committee on State Legislation is composed of the following members:

John H. Carter, M.D., *Chairman*	Albany
John C. Brady, M.D.	Erie
Matthew Brody, M.D.	Kings
James P. Casey, M.D.	Bronx
E. Yale Clarke, M.D.	Warren
Andrew W. Lawrence, M.D.	Suffolk
George G. McCauley, M.D.	Tompkins

Pressed for time by the April opening of the Constitutional Convention, the 1967 session of the New York State Legislature adjourned after a short three-month work period. During this comparatively curtailed session, there was a great deal of activity both on the part of the Legislature and your committee, particularly concerning the issue of compulsory health insurance. Reports of your committee's activities have been presented regularly to our Council.

At the time this report is being prepared, in late October, your committee's plans for 1968 have not been completed since they are scheduled to be finalized in connection with the Annual Conference of County Medical Society Legislation Chairmen scheduled for December 7 in Syracuse. A supplementary report, therefore, covering activities between this date and February, 1968, will be submitted to the House at that time.

The following is a brief review of the highlights of your committee's activities listed under several categories.

Final Legislative Action, 1967 Session. Your committee was vigilant and watchful for all bills affecting the medical profession during the 1967 session. Hundreds of bills were reviewed by our legislative counsel, the coordinator, legislation activities, and the editor of *Capitol News*. Particular attention was paid to the major issues involving compulsory health insurance and revision of the State Education Law. A list of more than 100 bills and their final disposition was compiled and is on file in our Legislation Information Center.

As part of its 1967 State legislation program, our Society sponsored or supported seven key bills. We are pleased to report that the bill providing that the membership of the Medicaid Advisory Committee be increased with at least seven physicians, passed both Houses and was signed by the Governor. The other six bills, however, did not fare as well. The bill on free choice was passed by the Senate, but died in the Assembly. The bill on usual, customary, and prevailing fees was lost on a vote call in the Senate. The bill on body donations was passed by the Senate, but died in the Assembly. The other bills were killed in committee.

The following is a detailed report on the final status of these bills:

1. *Medicaid Advisory Committee* (*S. 3052—Lent—Social Services; A. Int. 5518; Pr. 5804—Blumenthal—Health*). Provides that the medical advisory committee for medical assistance for needy persons shall consist of not more than 20 members, instead of exactly 15 members, and that at least 7 shall be licensed physicians, with the Governor to consider osteopathy and podiatry in appointing members, as well as considering other professions therefore. The Senate bill passed both Houses and was signed by the Governor, (Chapter 611, Laws of 1967).

2. *Free Choice of Physician and Facility* (*S. 4183—Lent—Social Services; A. Int. 5676; Pr. 5962—McCloskey—Health—Rules*). Requires the Health Department, in administering and supervising medical care and health services for needy, to provide for free choice by applicant or recipient of licensed physicians, dentists, nurses, optometrists, podiatrists, and medical institutions or facilities consistent with quality and availability of medical care. The Senate bill was passed. The Assembly bill died in committee. Another bill (*A. Int. 1140; Pr. 4762—McCloskey—Social Welfare*) was amended, recommitted, and finally killed in committee.

3. *Body Donations* (*S. 1408—Lent—Health; A. Int. 2801; Pr. 2837—Turshen—Health*). Allowed surviving spouse and, if none, all children of legal age, to make a gift in writing for scientific, educational, or therapeutic use, of any tissue, organ, structure, or blood, from the body of a deceased person, unless there is reason to believe that decedent left instructions otherwise or expressed objection thereto. The Senate bill was passed. The Assembly bill was defeated in committee.

4. *Usual, Customary, and Prevailing Medicaid Fees* (*S. 3055—Lent—Social Services; A. Int. 5471; Pr. 5757—Stephens—Health*). Requires that payments made to physicians and dentists for medical care to the needy, shall be at least equal in amount to that which would be determined to be a reasonable charge under Title 18 of the Federal Society Security Act in the locality where such care is rendered. The Senate bill lost on a vote call. The Assembly bill was killed in committee.

5. *Use of Title "Doctor"* (*S. 2965—Gioffre—Education; A. Int. 3937; Pr. 6211—Rose—Education—Rules*). Would prohibit a person, in connection with practice of a profession or business having for its purpose, diagnosis, treatment, correction, or cure of any human ailment, condition, disease, injury, or infirmity, from holding himself out as doctor, or use title thereof, unless he was actually graduated and holds doctor degree from school, college, university, or institution authorized to confer such degree. Both bills died in committee.

6. *Hypnosis* (*S. 2071—Stafford—Education; A. Int. 4655; Pr. 4863—Cullen—Education*). Restricts inducing of hypnosis, to physicians, doctors of osteopathy, and dentists, licensed to practice in State, and teaching thereof, to educational institutions chartered by New York, all hospitals approved by Social Welfare Department or maintained or operated by government agency or under jurisdiction of New York City Department of Hospitals. Senate bill was amended several times but died in committee. The Assembly bill was defeated in committee.

7. *Therapeutic Abortion* (*S. 349—Paterson—Health; A. Int. 1489; Pr. 1489—Browne—Codes*). Would permit physician or surgeon to lawfully perform therapeutic abortion under certain conditions, in hospital approved by State Health Department, subject to approval by committee composed of hospital medical staff members, and fixes qualifications for such members. Both bills died in committee.

In regard to the highly publicized bill on therapeutic abortions, which was the subject of much controversy, (*A. 2568, Pr. 2584—Blumenthal*), our State Medical Society pointed out where the bill varied considerably from the norms set forth in the position statement adopted by our House of Delegates. While we did not oppose the bill, we stated we could not endorse the proposed law since it was not in conformity with our State Medical Society's official position.

Compulsory Health Insurance. On the issue of compulsory health insurance, your committee took quick and decisive action. Because of the urgency of the situation, two telephone conferences of the committee were held and our recommendations were submitted to the executive committee. The following is a brief timetable of events.

On February 27, the Senate Committee on Rules introduced the bill, known as S. 4268. Shortly thereafter, the Joint Legislative Committee on the Problems of Public Health and Medicare held four public hearings on the measure in various parts of the State, commencing on March 6 and ending on March 15. Because of the speed and urgency with which the State Legislature was acting, our State Medical Society likewise took speedy action. Our first step was to alert all of our 61 county medical societies by sending them copies of the bill, with an urgent request for their comments and suggestions.

Prior to the first public hearing, our committee studied and evaluated the bill. To weigh our recommendations as well as the replies received from the county medical societies, our

State Society's executive committee held two emergency sessions.

At the first public hearing, conducted by the State Legislature's Joint Legislative Committee in Albany, your chairman advised the committee that our State Society would have a statement before the final public hearing. At the final public hearing, our president-elect, Edward C. Hughes, M.D., presented the statement which our executive committee had approved two days previously. The statement was to the effect that our State Medical Society had consistently advocated voluntary health insurance and, therefore, was in agreement with the concept of utilizing private insurance carriers. The statement also pointed out that we could not approve the proposed law in its then present form, but that we would reconsider the bill if amended. The statement also urged additional study and that action be deferred.

On March 23 our Council enlarged on this statement by the executive committee when it expanded the recommendation of further study and urged the appointment of a commission with an adequate representation by the physicians of this State to study the matter in depth.

As you all know, the bill failed to emerge from the committee, and to all intents and purposes the action recommended by your State Society was followed.

Fully aware that the 1967 defeat simply meant that the issue was dormant but not dead, our Council, at its May meeting, approved the appointment of an Ad Hoc Committee on Compulsory Health Insurance, headed by Ralph S. Emerson, M.D., Nassau, appointed by our president, Frederick A. Wurzbach, Jr., M.D. As you know, this committee has been actively studying this matter, and a report is being submitted by the committee to this House.

Revised Education Law. While your committee has been keeping a watchful eye on the introduction and progress of the study bill, S. 4415, the detailed analysis of this bill, which is necessary for recommendations concerning this complicated statutory revision, has been carried on by the special Ad Hoc Committee to Study the Revision of the Education Law, chaired by Walter T. Heldmann, M.D. A report by this committee will be submitted to the House of Delegates.

Joint Meeting. At the request of Solomon Schussheim, M.D., chairman, Council Commission on Public and Professional Affairs, your committee met jointly with the Council Committee on Federal Legislation at State Society headquarters on May 19 so that members of both committees might understand and study mutual problems.

Included on the agenda were two directives from the 1967 session of the House of Delegates which had been referred to both committees by the Council. These items were resolution 67–1, "Proposed Changes in Title 19, Income Eligibility" and resolution 67–10, "Legislation to Establish Income Levels for Medicaid." Your committee joined with the Federal Legislation Committee in voting to send both resolutions back to the Council for clarification, particularly in regard to criteria for income ceilings and for further instructions.

Also included on the agenda were several directives from the 1967 session of the House of Delegates which had been referred to our committee by the Council. The following is a summary of the disposition made of these items by the committee. Attention is called to the fact that the items marked for action at the 1968 session of the State Legislature were not acted on in 1967 because of the short session of the State Legislature.

(*a*) Resolution 67–9, "Repeal of Provisions of Charter 795 of Laws of 1965," which allows Blue Cross Plans in New York State to cover medical services. Since this problem is being studied by the Commission on Standards of Medical Care, no action was taken.

(*b*) Resolutions 67–11, "Legislation to Establish Motorcycle Safety Regulations," and 67–12, "Establishment of Accident Investigation Teams (AIT) at Medical Centers." Your chairman noted that similar bills were killed at the last session of the Legislature, but stated that we would endorse them at the next session.

(*c*) Resolution 67–14, "Legislation to Eliminate Prior Authorization for Hospitalization." Although it is no longer necessary for doctors to obtain prior authorization, with a few exceptions, such as crippled children, action on this resolution will be considered at the 1968 session.

(*d*) Resolution 67–16, "Right of Medicaid Patients to Select Own Physicians." This proposal will be actively supported again next year.

(*e*) Resolution 67–25, "Legislation to Require Seat Belts in Taxicabs, Rental Cars, and Limousines." This bill will be introduced next year as a State Society-sponsored bill.

(*f*) Resolution 67–27, "Support for McCloskey Bill to Guarantee Free Choice of Physician and Facility." This bill was supported by the Medical Society of the State of New York but failed to pass.

(*g*) Resolution 67–37, "Legal Immunity for Members of Hospital and Nursing Home Utilization Committees." This resolution was the subject of considerable comment. It was pointed out that (1) many physicians are unwilling to serve on utilization review boards without immunity from legal action; (2) the patient's need for protection, and (3) responsibility lies with the hospital for any malpractice suits. The committee decided that further investigation was required and that a bill would be considered for introduction next year.

(*h*) Resolution 67–38, "Opportunity to Study Pending Health Legislation." The members discussed the fact that this proposal cannot be written into law. The problem has been brought to the attention of State government officials who indicated they will cooperate with us.

(*i*) **Resolution 67–62, "Revision of Laws** Concerning Autopsy and Dead Human Body." This proposal has been annually considered and will be taken up again in 1968.

(*j*) Resolution 67–65, "Disapproval of Legislation Outlawing Nondisposable Hypodermic Syringes and Needles." This was introduced at the 1967 session of State Legislature but died in committee.

(*k*) Resolution 67–66, "Disapproval of Mandatory Semiannual Physical Examinations for Food Handlers." This proposal is to be followed up with the Health Department.

A report on our May 19 meeting, submitted by your chairman to the Council at its June meeting, was accepted.

Legislation Information Center. For the third successive year, the Legislation Information Center, inaugurated in 1964 at State Society headquarters, proved that it is a most effective medium for not only disseminating news about legislation, but likewise for supplying answers to questions concerning Federal and State legislation. As a means of supplying up-to-the-minute data concerning proposed laws at both the Federal and State levels, the Center maintains an up-to-date filing system which features copies of important pending bills.

While the Legislation Information Center reaches its peak load of activity during the session of the State Legislature, requests for assistance are continuously received throughout the entire year. Recent trends have been not only for pending bills but for information and copies concerning bills which have been enacted into law both on the State and Federal levels. During the past year, the services of the Center included not only the furnishing of "instant information" by answering numerous inquiries immediately over the telephone, but the sending out of numerous quantities of literature in the form of pamphlets and copies of statutes.

A special service rendered by the Center was the supplying of background data and other related information concerning proposed laws and enacted statutes, copies of which were also supplied. Most of the requests for information came from county medical society legislation chairmen, executive secretaries, health organizations, hospitals, individual physicians, and State Medical Society division directors. During the year, also, there was a growing number of requests from other state medical societies, not only for copies of bills and laws, but for extensive related information requiring a great deal of research which the Center was able to supply.

Requests received by the Center from staff members of the New York State Legislature were filled, whenever feasible, but were referred to legislative counsel, when necessary. Numerous requests for assistance from the public on general topics pertaining to both State and Federal legislation also were handled.

The publication of our State Society's legislation bulletin, *Capitol News*, continues to be one of the principal and growing functions of the Legislation Information Center. Fourteen weekly issues of the bulletin were published. A strong indicator of the effectiveness of the publication was the growing number of requests received by the Center not only from physicians but from hospital administrators and others to be included on the mailing list. We regret to report that shortly after the midway mark of the 1967 State Legislature session, we lost the services of our very able and capable editor, Ralph D. Semerad, Esq., due to a sudden illness. Martin J. Tracey, Esq., coordinator, legislation activities, assumed the duties of editor until the end of the session.

A popular and effective innovation in the makeup of *Capitol News* during the past year was the incorporation of a sheet entitled "Legislation Opinion Report." Through this special sheet, readers were able to express their views concerning bills which were reported in the publication. They had an excellent opportunity to recommend that the State Medical Society should support, oppose, or take no action on these bills. Both the individual opinions of the readers on bills reported in the publication were invited as well as the official opinions of the county medical societies. We are pleased to report that numerous individuals and many county medical societies took advantage of this opportunity, and we look forward to receiving similar expressions of opinion during the 1968 session of the State Legislature.

The Center also continues to function as a clearing house for the distribution of reports on pending State legislation, notices of public hearings by committees of the State Legislature, as well as reports on hearings which the coordinator attended and monitored.

Beginning on April 4, the date on which the Constitutional Convention convened, the Center undertook another project. This project involved the watching of developments during the sessions of the convention. In order to accomplish this purpose, the services of the Legislative Index Company, which supplies us with the data concerning pending bills and other matters during the regular sessions of the State Legislature, were contracted for by our State Medical Society. Through this service our coordinator, legislation activities, was able to keep abreast of developments and to advise the proper parties concerning matters involving the medical profession.

Continuing the practice of previous years, a close liaison was maintained between the office of the legislative counsel in Albany and the coordinator, legislation activities, in New York City. Through the cooperative efforts of both parties, a successful system of communications was maintained.

Your committee wishes to call to the attention of the House that we are making every effort to bring the latest complete legislation information to our State Medical Society officials and to the members of our component medical societies. We are doing this particularly through the Legislation Information Center and our publication, *Capitol News*. We strongly feel that both these media are vital toward the furtherance of the work of our committee and very strongly urge that all our medical society officials at the county level and the members of the societies utilize to the full the facilities of our Center. Both the *Capitol News* and the Center are worthwhile activities and deserve the continuing and wholehearted support of our State Medical Society.

Committee Cooperation. In preparation for the 1968 session of the New York State Legislature, your committee has contacted the Council committees of our State Medical Society. On September 18, your chairman addressed a memorandum to the chairmen of these committees. This memorandum asked them for assistance and guidance in the preparation of our 1968 State legislation program. We invited the committee chairmen to send us their suggestions concerning State legislation. We requested that they give us specific data concerning bills which they wish us to support, oppose, or introduce on their behalf during the coming session. We hope, through this method, to be able to obtain the benefit of the opinions of our State Medical Society's Council committees in conducting our future legislation activities.

Acknowledgments. Your chairman, acting on behalf of the committee and personally, wants to convey a vote of thanks to all those who have been helpful to us during 1967. We wish to voice particular gratitude to: Solomon Schussheim, M.D., chairman, Commission on Public and Professional Affairs; Joseph J. Kaufman, M.D., chairman, Federal Legislation Committee; C. Stewart Wallace, M.D., chairman, Public Relations Committee; Henry I. Fineberg, M.D., executive vice-president, and J. Richard Burns, Esq., assistant executive vice-president.

A considerable amount of effort and time has been expended on behalf of our committee by the staff of the Division of Communications. For the work done and the cooperation demonstrated, we are grateful to Guy D. Beaumont, director; Martin J. Tracey, Esq., coordinator, legislation activities, who directs the Legislation Information Center and supervises the production of *Capitol News*, as well as Ralph D. Semerad, Esq., who was editor of our *Capitol News*. We wish to express a singular vote of thanks to Mr. Semerad for the work he has done over the years for the benefit of our committee.

During the past eventful year, the office of our legislative counsel in Albany has been particularly helpful to your committee. We, therefore, wish to extend a very special vote of thanks, once again as in the past, to our legislative counsel, George W. Foy, Esq., and the members of his staff, Harry W. Albright, Jr., Esq., and John C. Rice, Esq.

Respectfully submitted,
John H. Carter, M.D., *Chairman*

State Legislation (Supplementary)

To the House of Delegates, Gentlemen:

Your chairman submits the following supplementary report on behalf of the committee.

On December 6, 1967, your committee met at the Country House, North Syracuse. Your chairman presided. The following committee members participated: Matthew Brody, M.D.; James P. Casey, M.D.; E. Yale Clarke, M.D.; Andrew W. Lawrence, M.D.; and George G. McCauley, M.D. After a thorough discussion of our 1967 program and the mandates of the 1967 House of Delegates, an 8-point program of action was agreed on and was submitted to the Council for approval at its January 25, 1968, meeting. The Council approved this 1968 State Legislation program, which, in brief, includes bills on (1) free choice of physician and facility under Medicaid; (2) body donations; (3) usual, customary, and prevailing Medicaid fees, (4) use of term "Doctor"; (5) restricting inducing of hypnosis to physicians, doctors of osteopathy, and dentists; (6) authorization by one of next of kin for autopsy; (7) legal immunity for members of hospital and nursing home utilization and review committees; and (8) elimination of prior authorization under Medicaid.

At the time this report is being written, five of these eight bills have been introduced in the 1968 session of the State Legislature. They are:

A. Usual, Customary, and Prevailing Fees (*S. 1562-Lent*)—Would assure physicians and dentists providing medical assistance for needy, payments at least equal to the reasonable charges under Title 18 of the Social Security Act. The bill went to the Social Services Committee.

B. Free Choice (*S. 1563-Lent, A. 2234-McCloskey*)—Would give the needy applicant for, or recipient of, medical care and health services a free choice of physician, dentist, nurses, and so forth, as well as medical institutions or facilities. The bills went to the Social Services Committee in Senate and Health Committee in Assembly.

C. Body Donations (*S. 1606-Lent, A. 2134-Margiotta*)—Would permit the surviving spouse or, if none, a competent child of legal age to give all or any part of a deceased person's body for scientific, educational, or therapeutic use. The bills, which would also simplify the legal form of consent, went to Health Committees in both houses.

D. Hypnosis (*S. 1798-Stafford*)—Would restrict the inducing of hypnosis to physicians, doctors of osteopathy, and dentists, and its teaching to certain specified institutions. The bill was referred to the Education Committee.

E. Term "Doctor" (*S. 2092-Gioffre*)—Restrict use of the title "Doctor" in medical practices to those who have actually graduated, and hold such degrees from institutions authorized to confer them. This bill was referred to the Senate Education Committee.

Your committee also recommended that the following bills should be acted on in the manner indicated and the Council approved these recommendations at its January 25, 1968, meeting:

1. Legislation to establish motorcycle safety

regulations, establish Accident Investigation Teams at medical centers, and require seat belts in taxicabs, rental cars, and limousines. If such bills are introduced, State Society will sponsor such bills. Several bills have been introduced at the current session.

2. Oppose bills of the following type, if introduced: (*a*) mandatory semiannual physical examination for food handlers, and (*b*) the outlawing of nondisposable hypodermic syringes and needles.

3. Appropriate action will be taken to carry out the wishes of the House of Delegates concerning the repeal of the State law which allows Blue Cross Plans in New York State to cover medical services. (Chapter 795, Laws of 1965.)

On December 7, 1967, your chairman presided over the morning session, which was devoted to State legislation, of the Annual Conference of County Medical Society Legislation Chairmen, held at the Country House, North Syracuse. We are pleased to report that your committee took an active part in the deliberations of the conference which we feel was one of the best conducted to date. Our legislative counsel, George W. Foy, Esq., was present and assisted in answering questions. Solomon Schussheim, M.D., chairman of our Commission on Public and Professional Affairs, performed very ably in his role as presiding chairman of the all-day meeting, which also involved Federal legislation, as reported elsewhere to this House, in which 42 county medical societies participated and some 90 physicians and medical society executives played active roles.

During the question and answer period, lively interchanges of comments sparked the discussion. While there were many individual comments by the physicians participating, there were very few official recommendations from county medical societies. We hope that in the future the local societies will advise us in writing before the conference what their opinions are regarding State legislation. This year such comments were invited but none were received prior to the meeting.

Your chairman participated in two important public hearings conducted by the Joint Legislative Committee on the Problems of Public Health, Medicare, Medicaid, and Compulsory Health and Hospital Insurance, of our State Legislature. On December 4, 1967, testimony was presented on the subject of universal health insurance on behalf of our State Medical Society at the public hearing held in Albany. Your chairman stated that, "as of this moment... organized medicine in this State stands in opposition to universal health insurance. However, we stand ready to give serious consideration to any such legislation along these lines that may be introduced next year." Such legislation, he emphasized, would have no hope of broad support unless it was similar to Part B, Title 18, P.L. 89–97 (Medicare) and included several specified items. A copy of our State Society's statement is attached.

On January 30, 1968, your chairman testified before the same Joint Legislative Committee again in Albany. On that occasion, he presented our State Medical Society's views on the restructuring of the Medicaid law. At the time of his appearance, the bill embodying the Governor's four proposals had just been introduced and is known as S. 1697–Budget Bill. In brief, the provisions of this bill are as follows:

1. Reduction of income eligibility levels in accordance with recently enacted Federal mandates, with provision for differing standards in upstate and downstate areas. The present State-wide level of $6,000 for a family of four, for example, would be cut in the Metropolitan New York area to $5,500 for the period of April 1 to December 31, 1968, and to $5,300 beginning January 1, 1969. (A further reduction to $5,100 in the Metropolitan area as of July 1, 1969, is called for by Federal standards but is not treated in this State budget because the action will come in another fiscal year beginning April 1, 1969.) The reduction for the remainder of the State would be to $4,900 beginning April 1, 1968.

The Metropolitan New York area is defined as the City of New York and the counties of Nassau, Putnam, Rockland, Suffolk, and Westchester.

2. Limiting Medicaid benefits for those between twenty-one and sixty-four years of age who do not qualify for them under Federal assistance programs to inpatient care in medical institutions.

3. Reducing from 50 to 25 per cent of annual income the savings permissible for a family qualifying for Medicaid under the income-eligibility standard. For example, presently a family of four with a $6,000 net income is allowed $3,000 in savings. Under the Governor's proposal only $1,500 would be allowed.

4. Requiring those not receiving public assistance to pay 20 per cent of the cost (co-insurance) for all medical services except inpatient hospital care.

Your chairman's testimony was based on instructions given by the Council at his request at its January 25, 1968, meeting. A copy of this statement presented to the Joint Legislative Committee is also attached.

In brief, four recommendations were submitted to the committee: (1) income eligibility levels should be lowered; (2) the principles of co-insurance and deductibles should be applied to Medicaid benefits; (3) opposition to proposal that Medicaid benefits for persons between twenty-one and sixty-four years of age, who are not otherwise eligible for public assistance programs, should be limited to inpatient hospital coverage only; and (4) private insurance carriers should be utilized in the implementation of the program, as in Medicare, with a view to eliminating many administrative problems of Medicaid.

In addition, your chairman urged favorable legislative action on the Society's proposals for:

1. Free choice of physician and medical facility for all patients;

2. Usual, customary, and prevailing fees for services rendered by physicians;

3. Direct billing by all physicians, including hospital-based physicians, and

4. Elimination of the requirement of prior authorization for hospital outpatient visits and inpatient admissions.

At the time this report is being prepared, the 1968 session of the State Legislature is well under way, but no significant actions have yet been taken. Although the Governor's proposals in regard to the amending of the Medicaid law have been introduced, and have been spelled out heretofore, the administration's proposal concerning universal or compulsory health insurance has not yet been introduced.

Many bills of interest to the medical profession have been introduced, such as those on abortion, malpractice statute of limitations, and others, which have been reported weekly in our *Capitol News.* Your committee is keeping a watchful eye on all developments and will take appropriate action wherever necessary.

Respectfully submitted,
John H. Carter, M.D., *Chairman*

Statement of the Medical Society of the State of New York to the Joint Legislative Committee on the Problems of Public Health, Medicare, Medicaid, and Compulsory Health and Hospital Insurance

Gentlemen, my name is Dr. John H. Carter, of Albany, New York. I am chairman of the Legislation Committee of the Medical Society of the State of New York, and am here as a representative of the Medical Society. Our membership of over 26,000 appreciates and thanks you for this opportunity to give our views on the matter of compulsory or universal health insurance.

Anticipating the reintroduction of a Compulsory Health Insurance bill in the 1968 legislative session, the Medical Society, shortly after the close of the last session, created a special ad hoc committee under the chairmanship of Ralph S. Emerson, M.D., of Nassau County, to study in depth the subject of compulsory or universal health insurance and to determine the attitude of the members of the State Medical Society in regard to this important subject.

This ad hoc committee conducted an extensive survey of all the county medical societies in the State and reported that a majority of the New York State physicians are opposed to the philosophy of compulsory or universal health insurance.

The principal reasons for opposition are the individual physician's traditional dislike of government interference with the practice of medicine, and his distaste for anything that is compulsory. The recent experiences of most of these physicians with Medicaid have intensified these feelings.

Other physicians oppose universal health insurance, not so much because of disagreement with the principle involved but because of intense fear that the actual bill enacted might distort the principle and be detrimental to the public and the profession alike. Again, this feeling has been intensified by recent experiences of physicians with Medicaid.

As of this moment then, organized medicine in this State stands in opposition to universal health insurance. However, we stand ready to give serious consideration to any such legislation along these lines that may be introduced next year.

Any such legislation would have no hope of enlisting a broad base of support among physicians unless it was similar to Part B, Title 18, P.L. 89–97, and included the following specific items:

1. Free choice of physician and medical facility for all patients;

2. Usual and customary and prevailing fees for services rendered by physicians;

3. The program to be administered by a commission within the State Health Department at least one member of which shall be a licensed physician who shall be appointed from a list of not less than five nominees, submitted by the Medical Society of the State of New York, and further provide for adequate representation of the practicing physician at policy-making levels of any enacted program;

4. Direct billing by hospital-based physicians such as pathologists, radiologists, anesthesiologists for professional services rendered;

5. Full utilization of private insurance carriers.

In addition, there are other important but more technical and detailed provisions which for the sake of saving time are being submitted separately in writing.

Let me make one thing crystal clear. The Medical Society of the State of New York can take no position on any proposed legislation until it is introduced in the New York State Legislature and the Society has had a reasonable opportunity to study and discuss its contents. The vote of our membership to which I have alluded earlier establishes that the Medical Society of the State of New York opposes any program of compulsory or universal health insurance. The fact that I have outlined specific subject matter which, if included in the legislation, might result in what I have chosen to call a "broad base of support" for it should in no way be construed as tacit endorsement of such a bill.

We hope that this committee and other members of the legislative and executive branches of State government will keep us informed and continue to seek our advice and counsel if and when a program of compulsory or universal health insurance begins to take definite shape. You gentlemen of the Legislature can pass a compulsory or universal health insurance law, but you cannot legislate that such a law be successful, without the cooperation of the medical profession.

The task should not be an impossible one since, in the final analysis, our goal, like yours, is to insure long-range quality medical care for all the citizens of New York State.

Addendum to Statement of Medical Society of the State of New York on Proposed Health Insurance Law

Additional requirements in any proposed health insurance law that might have any hope of enlisting a broad base of physician support include:

1. Option of direct billing of patient by physician for services rendered;

2. (*a*) Utilization of co-insurance principle, and
   (*b*) Elimination of double coverage;

3. The State of New York to pay insurance premiums for the indigent or low-income category patient, and this insurance to be utilized before the patient is eligible to receive Medicaid assistance for medical services;

4. The law provides for local grievance committees to be set up, preferably at a county level, to provide local quality medical control of the program, to approve formation of all group plans in the respective area, and to prevent abuses in utilization of physicians fees within the involved area;

5. Program shall not be a paid-in-full service benefit type plan.

Statement by the Medical Society of the State of New York Presented at the Public Hearing Conducted by the New York State Joint Legislative Committee on the Problems of Public Health, Medicare, Medicaid, and Compulsory Health and Hospital Insurance, Albany, New York, January 30, 1968

Gentlemen, my name is Dr. John H. Carter. As chairman of the Council Committee on State Legislation, Medical Society of the State of New York, it is my pleasure to represent our State Society before this committee and to make suggestions in regard to changes and amendments to the Medicaid law and its implementation.

For a great many years, the Medical Society of the State of New York has had an active and vital interest in the problems of government and medical care. At the national level and at the State level, it has advocated quality medical care for all, regardless of ability to pay. Our State Medical Society has also recognized and supported the basic principle that the government should assist in paying the cost of necessary medical care for the medically needy or indigent.

The Society, therefore, submits to this committee the following recommendations concerning the restructuring of the Medicaid program in New York State:

(1) The governing bodies of this Society, in light of the obvious fiscal problems involved, have agreed that income eligibility levels should be lowered. However, we profess no expertise in respect to this general problem and accordingly we leave the determination to those best qualified to make it, in short, to the Legislature and the Governor.

(2) The principles of co-insurance and deductibles should be applied to Medicaid benefits. We endorse these principles. Among other things, they would cut down the over-all cost, and increase the recipient's concern about the use and abuse of medical services and give him a feeling of responsible participation in the program. We urge that an appropriate deductible be continued and that co-insurance provisions be added. These provisions should only apply to the so-called "medically indigent" but not to those who are receiving cash assistance.

(3) We oppose the proposal that Medicaid benefits for persons between twenty-one and sixty-four years of age, who are not otherwise eligible for public assistance programs, such as Welfare, Aid to Dependent Children, the blind and disabled, should be limited to inpatient hospital coverage only. Such a limitation is economically unsound, because it tends to force patients into the more expensive hospital care facilities. It is medically unsound because it defies a basic principle of good medical care, in that it discourages the patient, for economic reasons, from seeking early medical advice and treatment that could prevent serious and often fatal diseases.

We recommend, therefore, that this program, which was instituted by the State and is not directly affected by recent Federal cutbacks, be continued.

(4) We reaffirm our steadfast position that many of the administrative problems of the Medicaid program would be eliminated if private insurance carriers were utilized in the implementation of the program, as under Medicare. In 1966, the Medical Society of the State of New York successfully sponsored legislation which now permits local areas to utilize Blue Cross, Blue Shield, and private insurance carriers in the administration of the Medicaid program. Although this permissive legislation was enacted unto law, no community, to our knowledge, has taken advantage of this opportunity. We strongly urge that the responsible authorities clearly take whatever steps may be required to implement the intent of this law, which was designed to improve administration of Medicaid.

I have attempted, up to now, to address myself to the agenda provided by the committee. Patently, there is an interrelationship between the proposals under discussion here and other legislative proposals urgently advanced by this Society to improve the quality of medical care afforded to the citizens of this State. Some of these proposals have already been incorporated in the recent Federal amendments and we earnestly hope that the Legislature of this State will act favorably, not only to make similar changes in the State law, but to enact the other bills which constitute part of our legislation program. That program, as it relates to the subject matter of this hearing, is as follows:

1. Free choice of physician and medical facility for all patients;
2. Usual, customary, and prevailing fees for services rendered by physicians;
3. Direct billing by all physicians, including hospital-based physicians;
4. Elimination of the requirement of prior authorization for hospital outpatient visits and inpatient admissions.

These, then, are the recommendations the Medical Society of the State of New York has to make at this time.

The Society, and its 61 component county medical societies, recognize their responsibilities in the policing of their own profession. We stand ready, through our grievance and mediation committees, boards of censors, as well as through utilization and audit committees, to investigate any alleged misuse or abuse of the Medicaid program by our members, and, in proved cases, to take appropriate disciplinary action.

We appreciate the opportunity you have given us to appear before you today with some suggestions for changes in the Medicaid program which will benefit all the citizens of this State.

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

Your reference committee has reviewed the original and supplementary reports of the Committee on State Legislation as submitted by its chairman, John H. Carter, M.D. Without a doubt, State legislation is the arena in which we face our greatest challenge and in which we must expend our greatest efforts.

While the initial impression of our success may be misleading—only one of the seven bills which we sponsored was passed—much valuable effort in legislative achievement never showed. Personal contacts made and undesirable legislation opposed, held in committee, or defeated on the floor are also achievements that must be appreciated.

We respect the tremendous effort and time expended by Dr. Carter and his associates. We wish to point out that the demands in this area are going to increase and that vital changes are indicated if we are to execute the State legislation program that is needed. We make the following recommendations to the Council:

1. Composition of the State Legislation Committee to include chairmen of legislation in all district branches.
2. District branch participation in the legislative effort by personal contact with the local representatives between Election Day and the subsequent holidays in an effort to explain to them the legislation program of the State Medical Society before the convening of the Legislature in January.
3. A much closer coordinated effort with the

Association of Blue Shield Plans whose knowledge and effective legislation program could mutually benefit our Society.

4. The employment of a retired, prominent exlegislator as an adviser to our State Legislation Committee, not in competition with, but supplementary to our current arrangement with the Albany legal firm.

The reference committee wishes to extend to Dr. Carter and his associates our expression of deep appreciation for executing this most difficult task.

The House voted to adopt this portion of the reference committee report.

Public Relations

To the House of Delegates, Gentlemen:

The members of the Committee on Public Relations are as follows:

C. Stewart Wallace, M.D. *Chairman*	Tompkins
John L. Clowe, M.D.	Schenectady
Paul M. De Luca, M.D	Broome
Herbert E. Joyce, M.D.	Erie
Stanley Stark, M.D.	Kings
Saul Zucker, M.D.	Bronx

General. During 1967, numerous important activities were sponsored by your committee with the cooperation of the Division of Communications. Of particular note were nine area conferences, the establishment of a Department of Information, the distribution of Ad Rem bulletin boards to hospitals, and the institution of the "hot line" system of communication.

Keeping our State Society members as fully and quickly informed as possible continues to be one of your committee's primary goals. Our basic communication has been maintained through our regional representatives, *The News of New York*, letters, memoranda, bulletins, and area conferences.

News also has been transmitted to both physicians and the public through our Speakers Bureau, which has supplied many speakers for radio and television programs as well as some for live presentations to lay organizations. Press releases and other materials prepared and distributed through our media relations office have helped to keep the public informed on health matters and Society activities.

Committee Meetings. Your committee held four meetings during 1967. Many and varied projects were discussed and acted on. In addition, your committee studied the philosophy and mechanics of present-day methods of communication and took steps to insure that both our philosophy and our methods would continue to meet current needs. Among innovations approved were the Ad Rem bulletin board and the "hot line" communication plans. Reports of your committee's activities were regularly submitted to the Council for information and approval.

Your chairman and the director of the Division of Communications continue to maintain a system of close communication. Your chairman also held several meetings with the communications staff.

Brief reports on some of the outstanding projects sponsored by your committee follow.

Area Conferences. During 1967, your committee sponsored a series of nine highly successful area conferences, instead of the usual regional conferences. Year after year, the regional conferences seemed to be attended by the same individuals and those mostly from metropolitan areas. Therefore, in order to attract new faces and physicians from the more rural areas of the State we tried to shorten the travel distances. The more localized area conference was developed. These conferences, well dispersed, were held in the following areas:

Cortland	May 11
Garden City	May 31
Alexandria Bay	June 1
Batavia	June 15
Kingston	September 7
Plattsburgh	September 21
Utica	October 12
Olean	October 19
Saratoga Springs	November 2

The innovation did not produce good attendance until we intensified our promotional efforts and modified our program. As a result, the meetings held in the Fall were consistently successful. Both attendance and participation were excellent and of greatest importance approximately 80 per cent of those who attended were members who had never before attended a State Medical Society meeting! The comments by these physicians were highly laudatory and complimentary to our State Medical Society.

Your committee feels that these area meetings must be continued. In 1968, we expect to increase them in number in an effort ultimately to reach the members in all parts of our State.

Audio-Visual Presentation. The audio-visual presentation entitled "Your State Medical Society," which has been in the process of preparation for some time, has been completed. This presentation, graphically depicting the services rendered by our State Medical Society to its members, was prepared by our Communications Division. It has received the approval of our Public Relations Committee. At the present time, it is being used at county medical society meetings. Our plans call for its use in 1968 at area conferences and, if possible, in hospital staff meetings.

Speakers Bureau. Another major undertaking during the year was the revitalization of our State Society's Speakers Bureau in many sections of the State. As part of this revitalization program, your committee produced a new pamphlet, *Your Doctor Speaks*, which was designed by our Communications Division. This pamphlet is strikingly illustrated with the snake (from the staff of Aesculapius) coiled around the gavel (symbolic of public speaking). Periodically, the pamphlet will be mailed throughout the State, offering the services of our Speakers Bureau and suggesting nine health subjects and 34 individual discussion topics ranging from allergies to diets, sex education, and physical fitness.

A special feature of the new pamphlet is that it is designed to be used either by our State Medical Society or the county medical societies. This feature has been very well received by the county medical societies. Although the program has been in operation only a short time, more than 2,500 copies have been ordered by county medical societies.

President's Citation Certificate. For a long time, your Public Relations Committee has felt that the certificates awarded to the recipients of our President's Citation did not satisfactorily reflect the high honor it conferred. We found a great deal to be lacking in regard to form and design. The committee, therefore, directed the redesign of this certificate. It will be used for the first time at our 1968 annual meeting.

Information Department. In recent years, the number of requests received by our State Medical Society for various information has been continuously increasing through the mail and by the telephone. Your committee, therefore, sponsored the establishment in May of a Department of Information within the Communications Division. The department centralizes, for the first time, the dissemination of general information from MSSNY headquarters. Specific questions of a technical or scientific nature are routed to appropriate State Medical Society departments or committees. The new service also assists county medical societies in filling requests for and in tracking down vitally needed information

In the short time this project has been in operation, it has achieved great success and much commendation. Innovations are already being made to make the department even more valuable to both physicians and the public.

Annual Convention. In keeping with its policy to continuously improve facilities to get the best possible news media coverage, our Communications Division has developed a press room which we feel produced, in 1967, the best results ever. The news medias made extremely good use of the facilities provided. Excellent news coverage was given to our convention by New York City newspapers, radio and television stations, and also by the upstate press and electronic media. The wire services and national magazines covered the meeting effectively. Numerous convention speakers were interviewed and extensive photographic coverage was arranged.

One of the principal reasons for the outstanding 1967 news coverage was the preconvention preparation by the Division of Communications. Prior to the meeting, many announcements and news releases were sent to the press, radio, and television.

Empire State Awards. As in past years, your committee cooperated with the State Health Department in the presentation of the Empire State Awards for Excellence in Medical Reporting. These awards, given jointly by our State Medical Society and the New York State Department of Health, were established to encourage development of sound medical reporting and to recognize significant contributions to public knowledge of health made by reporters and newspapers in New York State.

Ad Rem Bulletin Boards. Stepping up its campaign to keep physicians better informed, your committee directed the installation of Ad Rem bulletin boards in over 400 hospitals throughout the State. The boards, light blue in color and measuring 10$^1/_2$ by 14 inches, were designed by our Communications Division. They are used to display important communications from our State Medical Society. These boards are receiving high praise from physicians. The cooperation of the hospital administrators has been so exceptional, that your committee strongly advises that additional cooperation with this group should be encouraged in future communication projects.

"Hot Line" Communications Concept. One of your committee's progressive moves during 1967 was the initiation of a communication distribution method called "hot line." The primary function of the "hot line" is the transmitting of priority information to members of our State Medical Society as quickly as possible.

The reaction to this innovation has been notable. Members, verbally and in letters, have praised the "hot line" as another step in the direction of improved communication with the members of our State Society. Your committee plans to use it as a regular medium of communications during 1968.

Environmental Health Congress. Your committee worked closely with the AMA in conducting the Congress on Environmental Health Problems in New York City, April 24 through 26. Our State Society was one of the sponsors of the Congress, the purpose of which was to explore concepts, functions, and responsibilities involved in the development of integrated research programs and full utilization and effective coordination of professional, administrative, and technologic resources. Emphasis was placed on regional operations and the application of imagination and advanced technology.

MSSNY Handbook. For some time, your committee has had under development a new handbook which describes the services of our State Medical Society to its members. All the preliminary preparations have been completed, and we hope to have this handbook ready for distribution in 1968.

Communications Institute. Your chairman and the director of the Communications Division participated in the AMA's Communications Institute held August 24 and 25 at the Drake Hotel, Chicago. Your chairman attended the panel discussions. Mr. Beaumont was invited to explain our Ad Rem bulletin board and our "hot line" communications system. We were very proud of the excellent reception which these two new projects were given by those attending this important meeting.

It was one of the best conferences on communications that we have had the privilege of attending. Your chairman was encouraged by the fact that five New York State physicians, representing their county medical societies, participated in this meeting. Your chairman feels that many more physicians should participate in these AMA communication conferences.

News of New York. Our monthly publication, *The News of New York*, continued to improve in both format and content during 1967. Innovations for improvement will be noticed in 1968. Your criticisms will be appreciated.

Field Service. One of our State Medical Society's most effective methods of communications continues to be the personal contact and the direct services to the county medical societies and to the individual physician rendered by our regional representatives. In addition to their basic duties of visitation with societies and members, during the past year each regional representative planned and conducted the area conferences in his own region. Another of their projects was the installation of the Ad Rem bulletin boards in hospitals throughout the State.

Many commendations on the work of the regional representatives have been received by them and by your committee. Evidence that the field service is a successful MSSNY service is the ever-increasing number of requests for their assistance.

Mr. Coleman Fineberg joined our field service in mid-September as regional representative for the First, Second, and Ninth District Branches, replacing Mrs. Alice Davis, who had resigned in July, 1967.

Medical Assistants Association. Your chairman continues to serve as an adviser to the New York State Medical Assistants Association with Irving M. Pallin, M.D., and Walter F. Harrison, Jr., M.D.

The Communications Division staff cooperated with the Medical Assistants Association in many ways including the production of their publication, *Reflex*. Your committee wishes to express its gratitude to the medical assistants for the extensive assistance they have rendered the State Society by helping with the registration of guests at our area conferences.

Proposed Program–1968. Public and professional relations projects for 1968 are underway. The VD Education Test Program in the schools of Buffalo and the greater Utica area is a study which will determine the feasibility and advisability of our Society's attempt to bring, forcefully, to high school students information regarding venereal diseases.

Our members will begin to see around the State, a billboard poster publicizing the fact that 200 medical career opportunities are available and encouraging those interested in careers to contact your State Medical Society.

As its new effort for 1968 and 1969, your Public Relations Committee has launched its exciting program for the development of the MSSNY Mobile Medical Show. The basis of this program is a self-contained, traveling exhibit and theatre which will eventually tour New York State parks, playgrounds, and beaches, bringing to the people factual health messages regarding a great variety of subjects such as immunization, first aid, personal hygiene, "old wives tales," and quackery.

This project represents a significant departure from our past normal projects, and it is a substantial undertaking. In selecting this means of reaching the public, your Public Relations Committee is demonstrating its attitude that with local and Federal governments so actively and munificently bidding for the attention and good will of the public in all areas of public health and safety, your State Society should tailor its future activities to avenues of contact and influence which will be as unique and stimulating as possible. We believe the Mobile Medical Show, which you will hear more about during 1968, will provide us the opportunity to relate directly and effectively to the public in our public and professional efforts of the future.

Acknowledgments. Your committee, and especially the chairman, is grateful to all who assisted us during 1967. Our thanks are extended to the many officers of the State Society who participated in our area conferences: The chairman of our Commission on Public and Professional Affairs, Solomon Schussheim, M.D.; executive vice-president, Henry I. Fineberg, M.D.; and to the staff of the Division of Communications under the direction of Guy D. Beaumont.

Respectfully submitted,
C. STEWART WALLACE, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

As we review the many and varied activities of the Committee on Public Relations, it is obvious that a more appropriate title would be "Our Relations Both Public and Private"; public, because it is this group that establishes a source of authentic and reliable information to all individuals and groups outside organized medicine; private, because a major portion of their efforts have been directed in establishing lines of communication with our own members. This latter facet of their activities has been remarkably intensified in recent years.

The reference committee wishes to report that this dedicated group, headed by C. Stewart Wallace, M.D., chairman, have executed their responsibilities in an admirable manner and should receive a grateful expression of appreciation from this House.

The reference committee feels that the field representatives in the Division of Communications should be required to attend all Council meetings for the purpose of conveying Council action and feelings to all lower echelons, that is, by attending county society and district branch meetings thereafter.

We wish to endorse Dr. Wallace's compliments about the Division of Communications, when he says that their performance during the past years has been outstanding.

We have reviewed the contemplated expansion of the Public Relations program for the coming year and endorse the three new projects that are outlined therein: (1) a VD education program; (2) a billboard poster program; and (3) a mobile medical show. We hope that the latter will not become known as a traveling medicine show. Be that as it may, each of these tentative projects demonstrates an aggressive and dynamic approach to the public by organized medicine.

Your reference committee heartily approves this aggressive approach to the public and recommends that this hard-working committee continue to receive the enthusiastic approval of this House.

The House voted to adopt this portion of the reference committee report.

To Study Revision of Education Law

To the House of Delegates, Gentlemen:

The Ad Hoc Committee to Study the Revision of the Education Law is composed of the following members:

Walter T. Heldmann, M.D., *Chairman*...... ....Richmond
John M. Galbraith, M.D............Nassau
Francis A. Stephens, M.D..........Albany
Victor J. Tofany, M.D.............Monroe
William L. Wheeler, Jr., M.D.....New York

At the 1967 session of this House, your committee reported that it had presented, on behalf of our State Medical Society, a statement concerning recommendations on the proposed revision of the Education Law, at a public hearing conducted by the Joint Legislative Committee to Revise and Simplify the Education Law in January, 1967, in Albany. In our report we spelled out the highlights of this statement, which was approved by the House, and at the same time submitted several additional recommendations concerning the proposed revision for inclusion in a supplementary statement, which also were approved by this House.

Shortly following the adjournment of the 1967 session of this House, your committee filed with the New York State Legislature's Joint Legislative Committee a supplementary statement concerning the Fourth Working Draft, Revision of Title VIII—Education Law (Professional Practice) which contained the recommendations approved by this House. For the information of the delegates, the following are some of the highlights of the supplementary statement.

Supplementary Statement Highlights.

1. *Board of Medical Examiners.* Strongly reiterated recommendation that a separate medical board for licensure and discipline of doctors of medicine be established outside Education Department.

2. *Practice of Medicine.* Re-emphasized our position that the proposed definition of the practice of medicine include the addition of the word "mental" so that the new statute would cover both mental and physical conditions.

3. *Mental Illness.* Strongly recommended: (*a*) the deletion of the entire complicated formula with respect to insanity spelled out in the proposed new law; (*b*) modification of the proposed language in the new law to state as a broad ground that incurable insanity shall be the only reason for revocation of licenses, not only for medicine, but for all other professions; and (*c*) formation by the State Society of its own committee made up of three psychiatrists who would serve in an advisory capacity to control any possible problems within the profession, thereby providing a safeguard to the public and at the same time an appellate body for the physician confronted with charges of insanity.

4. *Advertising.* Suggested that proposed law be amended to include as grounds for revocation, suspension, or annulment of license, unprofessional conduct as defined by the Regents, including, but not restricted to, advertising in *any media of communication* and fee splitting.

5. *Chiropractic.* Reiterated uncompromising opposition to the licensure of chiropractors and urged that every possible step be taken to insure that not only the new provisions of the statute, but future regulations, properly safeguard the health and welfare of the people of the State, and that all such statutes and regulations be strictly enforced.

6. *Podiatry.* Reiterated original opposition to proposed section expanding the definition of podiatry. Strongly opposed the inclusion of major surgery and the prescription and use of general anesthesia and narcotics in podiatry.

7. *Psychology.* Emphasized State Medical Society's position that the practice of psychotherapy is the practice of medicine and should not be practiced by persons, such as psychologists, who are not licensed to practice medicine.

Study Bill S. 4415. The attention of the House is called to the fact that the two statements, previously mentioned in this report, which had been submitted on behalf of our State Medical Society to the State Legislature's Joint Legislative Committee to Revise and Simplify the Education Law, were directed to working drafts of proposed changes in the law. At the time they were prepared and submitted, no formalized bill was before the State Legislature. Subsequent to the filing of our supplementary statement, a study bill was introduced in the State Legislature, known as S. 4415, an Act to amend the Education Law in relation to the professions. While some of the recommendations made in our two statements concerning the working drafts were included in the 1967 study bill, the proposed statute also contained several new provisions which were not in the previous drafts and which were objectionable to our State Medical Society. Adapting itself to the new situation, your committee concentrated its efforts on S. 4415.

As a major step in our activities, copies of our State Society's supplementary statement, as well as a copy of S. 4415, were sent to all county medical society presidents, secretaries, legislation chairmen, and executive secretaries. In our communications to these officials, we strongly urged that they study very carefully both the supplementary statement and S. 4415, and requested that they submit specific comments to our committee. As a result of this endeavor, 25 replies were received from county medical societies. A great number of these responses endorsed the actions which had already been taken, as set forth in the two statements which had been submitted to the State Legislature's Joint Legislative Committee. Many of the responses contained specific and constructive suggestions which were given very careful consideration.

Further Developments. In order to evaluate and utilize the data which had been assembled, your chairman met in late June with J. Richard Burns, Esq., assistant executive vice-president, and Martin J. Tracey, Esq., coordinator, legislation activities. At this meeting, a list of amendments to, and comments on, S. 4415 were drawn up as the basis for discussion with the legal counsel of the State Legislature's Joint Legislative Committee, Brainard Prescott, Esq.

In mid-July, the participants in the late June meeting conferred with Mr. Prescott in Albany. Henry I. Fineberg, M.D., our executive vice-president, and John C. Rice, Esq., from the office of our legislative counsel, George W. Foy, Esq., joined in this conference. Progress was made at this meeting, since Mr. Prescott looked with favor on many of our recommendations and assured us that many of them would be accepted by the Joint Legislative Committee. On the other hand, there were several points that Mr. Prescott advised us to present formally in a written statement to the committee. These included mental illness, laymen on grievance committees, and unanimous vote by grievance committees. Following up these suggestions, Mr. Foy and Mr. Rice met again with Mr. Prescott in late July.

After these meetings had been held, a written statement was drawn up which was sent to each member of the committee for his evaluation and comment. In order to obtain committee agreement before submitting the statement to the Council, your committee met at State Society headquarters, on September 12. Your chairman presided. Members present were Francis A. Stephens, M.D., and Victor J. Tofany, M.D. Members excused were John M. Galbraith, M.D., and William L. Wheeler, Jr., M.D. Both Dr. Galbraith and Dr. Wheeler, however, sent word that they approved the statement sent to them by mail and also approved inclusion in the statement of additional provisions concerning mental illness. Mr. Burns, Mr. Tracey, and Mr. Rice also participated in this meeting.

The main point of discussion at the meeting involved the portion of the written statement which reiterated our State Medical Society's opposition to the provisions concerning mental illness. In discussions with Mr. Prescott, we had been advised that the committee of the State Legislature would not accept our outright opposition and that the final bill would include provisions concerning mental illness. We had also learned that they would be receptive to language involving mental illness, less objectionable to medicine as long as reasonable safeguards were provided. The dilemma facing the committee was either to stand firm on outright opposition, or to reiterate our opposition with a statement to the effect that if the committee was going to reject our stand and include a provision on mental illness, we suggest that more acceptable language be included.

The committee decided on the latter course, which was concurred in by Dr. Galbraith and Dr. Wheeler.

The committee reviewed the written statement most carefully, made certain changes and added a provision concerning the voluntary admission of licensees to mental institutions. This statement was submitted by your committee to the Council at its September 28 meeting and was unanimously approved.

Third MSSNY Statement. In order that the House may be aware of the numerous recommendations made by our State Medical Society, along with the reasons therefore, the following is the complete text of the third statement made on behalf of our State Medical Society to the State Legislature's Joint Legislative Committee to Revise and Simplify the Education Law.

> On two previous occasions, the Medical Society of the State of New York has submitted statements to this committee concerning the proposed revision of the Education Law in New York State. On January 25, in Albany, Walter T. Heldmann, M.D., secretary of the State Medical Society and chairman of the Ad Hoc Committee to Study the Revision of the Education Law, testified in person at the public hearing conducted by this Joint Legislative Committee and submitted a statement on behalf of the State Medical Society. Following the annual session of the Medical Society of the State of New York House of Delegates held February 12 through 16 at The Americana, New York City, a supplementary statement was filed with this committee. Since the filing of this supplementary statement, our representatives have been working closely with Brainard Prescott, Esq., legal counsel to your Joint Legislative Committee, in regard to S. 4415 which was introduced during the 1967 session of the Legislature after the filing of our reports. We are grateful to Mr. Prescott for his cooperation, and we wish to thank the committee for the time and effort he has given to us.
>
> The primary purpose of this memorandum is to focus the attention of this committee on the principle portions of the proposed revisions of the Education Law as now spelled out in S. 4415, which are of major concern to us, while at the same time reiterating our urgent request that the recommendations made in our two previous statements as well as in suggestions made to your legal counsel be again reviewed by this committee and acted favorably on by the members.
>
> *Independent Licensing Agency.* We note with deep regret that one of our major recommendations made in both our statements has not, thus far, been accepted by the members of your committee. We had strongly recommended that an independent agency

for the licensure of doctors of medicine be established outside the Education Department.

For the third time we specifically recommend that the licensing be an independent entity within the executive branch of government, consisting of ten members who are residents of New York State, to be divided into three classes: (1) seven doctors of medicine, nominated by the Medical Society of the State of New York; (2) one doctor of osteopathy, nominated by the New York State Osteopathic Association; and (3) two public members.

We repeat, briefly, some of the reasons already submitted to this committee for our position. Only three states within the United States now license the medical profession through an education department. (A survey on this subject was submitted to your committee's legal counsel.) Precedent already exists in New York State for such a transfer, since members of the legal profession are not licensed and disciplined by the Education Department but by the courts. Only doctors of medicine are properly equipped to judge who is qualified to practice medicine and only doctors of medicine have the experience and training necessary to evaluate with objectivity whether or not a doctor of medicine should be disciplined. Under the present system, the lay-oriented group must, of necessity, call on doctors of medicine for advice concerning both licensing and disciplining. We repeat—our proposal would strengthen, not weaken, the present outdated mechanism.

In the event that this, our third, appeal for an independent licensing agency outside of the State Education Department is not granted, we wish to point out that the proposed revisions for the continuance of the present system in the State Education Department, as set forth in S. 4415, are not entirely acceptable to the Medical Society of the State of New York.

In regard to provisions concerning the boards responsible for examinations and for disciplining, we should like to call to the attention of the committee some fundamental principles in which the State Medical Society firmly believes and strongly advocates. Proposed boards responsible for examinations and for disciplining of the medical profession should be manned solely by members of the medical profession. When disciplinary action must be taken we firmly believe that this action should be done only by unanimous consent.

We note with satisfaction that the principle of having only members licensed in their professions on a board has been carried out in the provisions of S. 4415 concerning the State Board of Medical Examiners as set forth in Section 6505, page 10.

Grievance Committees. We commend the committee for restricting the Board of Medical Examiners to members of the medical profession. We note, however, that the provision concerning the committees on professional practice does not restrict membership to members of the profession but mandates a number of laymen as members.

In Section 5411, Subdivision 2, page 21, S. 4415 requires layman representation on professional practice committees. We recommend the deletion of this paragraph and the substitution of the following new paragraph:

"The composition of each committee on professional practice shall be set forth in each article relating to each profession. The members of such committees shall be appointed by the Regents. The members of the medical committee on professional practice shall all be duly licensed physicians. For every four licensees appointed to every other committee, the Regents shall also appoint one member who is not licensed in that profession, so that there shall be one unlicensed person for every four licensed persons."

As we have repeatedly maintained, only doctors of medicine have the experience and training necessary to evaluate with objectivity whether or not a doctor of medicine should be disciplined. Lay-oriented persons, no matter how competent, are not qualified by training or experience to form sound judgments on matters involving the disciplining of physicians.

We, therefore, respectfully request that the above amendment to S. 4415 be adopted by the committee. In order to comply with the limitation of members of the medical committee on professional practice to physicians, related sections, such as Section 6724, page 85, would also have to be amended, and we so recommend.

We should also like to call to the attention of the committee that the Board of Regents, which has a veto power over the committees on professional practice, consists chiefly of laymen. If the committee feels that laymen must be involved in the disciplining of members of the medical profession, there is adequate provision already contained in the law through the member-composition of the Board of Regents. Representation of the lay public in the disciplining of doctors is also provided through the involvement of the Attorney General's office in any disciplinary proceedings.

In Section 6512, Subdivision 5, page 25, provision is made for the composition of subcommittees as well as for a four-fifths rule for arriving at disciplinary decisions. We recommend the deletion of the present paragraph in S. 4415 and strongly recommend the substitution of the following new paragraph:

"A committee on professional practice shall conduct an initial hearing through a subcommittee thereof. Such subcommittee, after hearing, shall make a written report of findings and recommendations and the same shall be forthwith transmitted together with a transcript of the evidence to the full committee on professional practice.

"Said committee on professional practice may thereupon act upon the recommendation of its subcommittee as it shall deem appropriate, or take further testimony, if the same shall seem desirable in the interests of justice. If by the unanimous vote of the members present and voting the respondent is found guilty of such charges, or any of them, such committee shall make findings and recommendations which shall include the vote of each member of such committee and their recommendations, and the committee shall transmit to the Director of the Division of Professional Conduct a transcript of the hearing, findings, and determinations wherein such respondent has been found guilty."

The two changes proposed by the State Medical Society in the suggested language for insertion in the proposed law involves the omission of laymen on subcommittees of the professional practice committee and the substitution of a unanimous vote for the suggested four-fifths vote. Our State Medical Society is very strongly opposed to the four-fifths proposed rule for disciplining doctors of medicine and reiterates its strong recommendation that a unanimous vote be included in the proposed law.

We maintain that a review of the records of the actions taken by the present Medical Grievance Committee will show conclusively that a unanimous vote, which is currently the law, does not prevent disciplinary action, since there have been numerous such actions taken under the current unanimous vote rule. The records also will show that the unanimous consent rule has not been detrimental in the application of strict disciplinary measures. On the contrary, under the unanimous consent rule, the committee has been more stringent than the Board of Regents which operates under a more liberal rule.

In order for an individual to become a licensed practitioner of medicine, he must not only attend a medical school approved by the State of New York, but must take a most comprehensive and difficult licensing examination. Before such an individual is deprived of the opportunity to practice, which was most difficult to obtain, the State Medical Society maintains that great care be exercised in the process of revoking this privilege. We believe, therefore, that unless his fellow physicians, who are by far his most critical judges, unanimously agree, he should not be deprived of the opportunity to practice his profession.

Two Boards. We understand that the committee is considering combining the Board of Examiners with the committees on professional practice in regard to some of the professions governed by the State Education Law. We voice strong objections to this procedure being used in regard to the medical profession. We believe that the two boards should be kept separate and distinct and not combined into one board.

Our reasons are that the Board of Medical Examiners is primarily concerned with the educational qualifications for licensure, while the professional practice committee is primarily concerned with the conduct of the profession in accordance with the laws of the State.

We, therefore, respectfully suggest that if a definition of the word "board" is included in S. 4415 in its amended form, that language along the lines of the following should be included:

"A *board* is used to designate the state board established for one or more professions coming under the regulatory provisions of this title, except that in respect to the professions of medicine and accountancy, the term "board" shall mean one of the two boards established for each of such professions under this title, as the context may require."

Committees on Professional Practice. Another matter which we would like to call to the attention of the committee is subdivision 6 of Section 6511 in S. 4415. This section refers to committees, and we suggest the following revision of the language of this particular subdivision:

"6. Each committee shall elect from its members a chairman and a vice-chairman annually and shall meet on call of the department. At any meeting a majority of the membership shall constitute a quorum. *The chairman shall appoint the members of each subcommittee, subject to the approval of the whole committee.*"

The underscored new language provides for control of the subcommittees by the committees which is the usual procedure.

Mental Illness. Although we note that S. 4415 contains changes in the proposed law, set forth in the Fourth Working Draft, concerning mental illness, these changes do not meet the recommendations made in our supplementary report to this committee, which was based on the actions of our governing body, the House of Delegates of the State Medical Society, at its 1967 annual meeting.

Before reiterating the action taken by our House of Delegates, we should like to ask this committee to consider several important factors. The House of Delegates of our State Medical Society represents almost 27,000 physicians from all parts of the State of New York. When the House acted in February, 1967, on this proposal, they were reflecting the views of the physicians of this State. When they acted, they were taking a position in an area in which they were well qualified. The proposition before them was one basically of a medical nature, namely, mental illness. They were not taking action on an economic subject or some other nonmedical proposal but on a proposal that physicians are qualified to act on as expert witnesses. We respectfully request, therefore, that the position taken by the House of Delegates in regard to a medical matter should be carefully considered by this committee before a final decision in regard to mental illness is taken by your committee.

We wish, therefore, to reiterate that at its February, 1967, session the State Medical Society's House of Delegates studied the section involving mental illness as set forth in the Fourth Working Draft and made specific recommendations for the consideration of this committee. The first recommendation was that Section C6510, Subdivision 3 (Insanity and Mental Illness), should be deleted in its entirety. In taking this position, the delegates stated:

"This proposal is wholly and totally unsatisfactory. We object to it primarily because such a law would serve as a deterrent to members of *all* of the professions from seeking psychiatric assistance, for fear that it might cause the revocation of one's license to practice his profession."

In other words, in our supplementary statement, we stressed that individuals who could be helped in the early formative stages of mental illness might forego treatment and might continue working in their professions until beyond help, with resulting harm to their clients or patients, rather than risk suspension and to avoid the stigma of mental incapacity. You will recall that we recommended in our supplementary statement that Section C6510, Subdivision E, be amended to read:

"Habitual drunkenness; addiction to the use of morphine, cocaine, or other drugs having similar effect *or incurable insanity*."

The recommendation of the addition of the words "or incurable insanity" was intended to recommend to the committee that incurable insanity be the sole reason for suspension or revocation of license because of mental illness.

In connection with this entire problem, the State Medical Society believes that there is a misconception among the laity about mental illness and mental incompetency. The language in the bill seems to be based on the philosophy that any kind of mental illness necessarily involves mental incompetency and should be handled as such. We strongly maintain that most mental illnesses are of a temporary nature which do not involve mental incompetency and should not be dealt with as harshly as under the proposed revision of the Education Law.

We should like to call to the attention of the committee that in our judgment the proposed revision will create more problems than it will solve. In addition to being a great deterrent to those people who might be considering treatment, the suspension of a license will put an unjustified stigma on the person involved and also unjustifiably deprive him of the means of his livelihood. It would appear that the proposed law could readily be circumvented. Patients afflicted will simply not go into an institution for the mentally ill in New York State but will go outside the State and will be admitted and discharged within the proposed time sequence and thus thwart the law.

While we are adamantly opposed to the routine reporting of mental illness included in the bill and the philosophy of equating mental illness with professional incompetency, which the bill implies, in the event that the committee decides to retain such provisions in the final proposal, and in order to minimize the difficulties that might ensue following enactment, we propose that the present language be changed.

We suggest that paragraph 3b, Section 6510, page 19, be deleted entirely and that the following new paragraph be substituted:

"Upon the voluntary admission of a licensee to a state mental hospital or other mental institution, and. if such licensee shall remain as a patient therein for more than thirty days, and if no formal adjudication of incompetency or insanity is rendered by a court of record of this State, it shall be the duty of the attending physician to certify, and the institution to report, to the department, only when in the attending physician's opinion, the condition of such licensee is such as to render him incompetent to practice his profession. Such report and certification shall be referred to the committee on professional practice of the profession in which such person is licensed. If the attending physician certifies that the condition of such licensee is such as to render him incompetent to practice his profession, then it shall inquire into the facts and circumstances and thereupon if such committee shall consider it to be in the public interest that such person be temporarily suspended from the practice of his profession, the committee shall recommend to the Regents that such license shall be suspended and the Regents after review may suspend the same, if it deems such suspension in the public interest."

Mental Illness: Re-examination. We strongly oppose all references to the suspension or revocation of licenses on the grounds of mental illness as emphasized previously in this statement. We feel, however, that it is necessary to call to the attention of your committee language in S. 4415 which stands in great need of clarification. We refer specifically to Section 6510, subdivision 3C, page 20. The specific language states:

"The department may require such person to pass such *examinations* as it deems appropriate to determine the present fitness to practice."

This language could be interpreted to mean technical ability and subject the applicant to another examination similar to that which he took when he applied for his original license. The language should be clarified to specifically involve his mental and physical condition and not his technical ability.

We, therefore, suggest that the word "psychiatric" be inserted before the word "examinations" in the above quoted sentence so that the new sentence will read:

"The department may require such person to pass such *psychiatric examinations* as it deems appropriate to determine the present fitness to practice."

Injunctive Relief. Under Section 6514 of S. 4415 we note with appreciation that the provision concerning injunctive relief has been retained. While the section rightfully provides for injunctive relief on application of the Attorney General, we feel that such injunctive relief should be extended to professional groups.

The following amendment, therefore, is recommended so that the first sentence of Section 6514, Injunctive Relief, will be changed to read as follows:

"1. The Attorney General or *any duly organized professional association or society consisting of authorized practitioners of the profession involved* may apply to the Supreme Court within the judicial district in which a violation of this title is alleged to have occurred, for an order enjoining or restraining commission or continuance of the acts complained of."

Definition—Practice of Medicine. In our previous statements we complimented the committee for including the word "mental" in the definition of the practice of medicine in the drafts previous to S. 4415. We were greatly surprised and disappointed to note that in spite of the fact that the House of Delegates of the Medical Society of the State of New York endorsed the improvement made in the proposed revision of the statute by the inclusion of the term "mental," it has been dropped in the version now known as S. 4415.

Despite the number and kind of objections that may have been raised to the inclusion of the word "mental" in the proposed new statute, we in the medical profession strongly maintain that the inclusion of the word is necessary not only to clarify the definition of the practice of medicine but also to reveal to the layman what the practice of medicine embraces. By such an omission, the entire field of psychiatric medicine is being ignored. In spite of the fact that a great portion of the hospital beds in New York State are occupied by the mentally ill who are diagnosed and treated by doctors of medicine practicing in the field of psychiatry, this entire field is not specifically included in the proposed definition of the practice of medicine in the new statute. This significant omission can be interpreted as an attempt to further divorce the practice of medicine from the mental health field. We strongly urge, therefore, that the word "mental" be reinserted in the definition of the practice of medicine as spelled out in Section 6721, page 76.

Construction of Article. In regard to Section 6723, Construction of Article, page 79, we should like to make two recommendations in regard to improvement in the language of said section.

For purpose of clarification we suggest that Section 6723, subdivision b(1), be revised to read as follows:

"The practice of medicine by unlicensed physicians employed in hospitals, clinics, or other institutions operated by the State or any other political subdivision thereof *while practicing within such institutions.*" The suggested new language is italicized.

We further suggest that the language of Section 6723, subdivision D, page 81, should be changed to read as follows:

"D. Any lawfully qualified physician in other states or countries meeting legally registered physicians in this State, in consultation or *who are conducting lectures, clinics, or demonstrations in a duly accredited hospital or medical school for the purpose of advancing medical education.*"

The purpose of the additional language is to cover situations which apparently were intended under the original language and a practice which is now common in the United States. In other words, the section would protect visiting physicians who are here for the purpose of advancing medical education in the United States.

Unprofessional Conduct. We note with satisfaction that S. 4415 contains a revision of Section 6510, Subdivision 2n, pages 18 and 19, which states, "Unprofessional conduct as defined by the regents, including but not restricted to, advertising in any media of communication and fee splitting." We had suggested the addition of the words "in any media of communication." We are grateful to the committee for accepting this recommendation.

We should like to point out, however, a further clarification of this particular subdivision which would be beneficial. We feel that the term "fee splitting" should be further defined as it now is under the present law. Under present Section 6514, revocation of certificate—annulment of registrations, subdivision 2f spells out in detail what "fee splitting" is. At the same time, it also details exceptions to the condemned practice of fee splitting. It contains such language as:

"Nothing contained in this chapter shall prohibit physicians from practicing medicine as partners nor in groups nor from pooling fees and money receipts." and

"Nothing contained in this chapter shall prohibit a medical expense indemnity corporation pursuant to its contract with the subscriber from prorating a medical expense and indemnity allowance among two or more physicians in proportion to the services rendered by each such physician at the request of the subscriber."

We respectfully request that language similar to that contained in the present law be inserted into the proposed revision of the State Education Law concerning fee splitting.

Secretary, Board of Examiners. We also note with regret that the committee has not seen fit to accept our recommendation that the secretary of the Board of Medical Examiners be a member of the medical profession. In S. 4415, Section 6505, Subdivision 6, permits a person who is not a member of the medical profession to be secretary of the Board of Medical Examiners. The State Medical Society restates its original recommendation that the secretary of the Board of Medical Examiners be a doctor of medicine. The scientific nature of the duties involved, including the supervision of technical examination for candidates applying for licenses and the decisions, requiring medical knowledge and background, which must be made, necessitate that the secretary be a doctor of medicine.

Registration. In Section 6509, Registration, of S. 4415 we also observe that no provision has been made to carry out the suggestion made by us that registration be brought up to date, in some manner, every two years. We respectfully suggest that even if this provision is not written into the law that it should be made mandatory on the administrators of the act to see that such a procedure is followed.

Revocation of Licenses. We should like to call attention to a subdivision of section 6510, Revocation of Licenses and Registration, namely, subdivision 2G, page 18, which states "practice beyond the legally authorized scope of a profession." We believe that this language is ambiguous and that the phrase "legally authorized scope of a profession" be clearly defined and delineated.

Title "Doctor." Primarily for the protection of the public, we repeat our request that a provision be included in the revision of the Education Law that would require the proper use of professional titles. We firmly believe that no person should be allowed to use the title "Doctor" or "Dr." in connection with the practice of medicine, surgery, osteopathy, dentistry, psychology, or any other profession or business unless he actually has graduated and holds a valid doctor's degree from a school, college, university, or institution, authorized by its governing board to confer such a degree and recognized by the State of New York. Moreover, a person who legitimately holds a doctorate degree should not be permitted to use the phrase "doctor" in any letter, statement, card, prescription, or any other writing, without affixing suitable words or letters designating the particular doctorate degree held by such person. This is self-evident in order to protect the public from deception and confusion. Such a provision in the proposed revision of the State Education Law would be a material improvement over the present situation.

Podiatry. On the subject of podiatry, we are pleased to note that the committee has retained the present wording of Section 7001, Subdivision 2C, of the State Education Law. We strongly urge the committee to retain this language in the final version of the proposed revision of the law. We call to your attention, again, that at the recent session of our State Medical Society's House of Delegates the members went on record as being strongly opposed to the inclusion of major surgery and the prescription and use of narcotics in podiatry in the proposed revision of the State Education Law.

We reiterate that we strongly oppose the use of narcotics by podiatrists and maintain that the prescribing of narcotics by them could not be conceivably in the public interest in this present day and age. We believe that, particularly in view of the Governor's program on narcotic addiction and the special efforts of the Federal government in this field, the authority for the extension of these dangerous drugs by podiatrists would be inexcusable.

At the present time, podiatrists are limited to the use of local anesthetics for therapeutic purposes, and no more. We maintain that we should continue the restrictions currently provided under existing law since the administration of anesthesia is a facet of medical practice most fraught with danger.

We urge you to maintain your present position of allowing them to use only local anesthetics for therapeutic purposes as well as for anesthesia and to use only non-narcotic postoperative sedatives.

Optometry. Concerning the subject of optometry, we note that our recommendations concerning this field have not been included in S. 4415. We therefore repeat our suggestions with the desire that they be included in the final proposed revision of the bill.

We had recommended that the phraseology "students in a school of optometry in this State" be deleted from the proposed revision. This language is now found in Section 6763, Construction of Article, Subdivision 1, of S. 4415, page 97.

We also recommend the addition of the following paragraphs in the appropriate place in S. 4415:

A. "Every optometrist shall, within ten days after completion of an optometric refraction, refer to a physician for a medical eye examination every person whose visual acuity the optometrist does not improve to at least twenty over forty Snellen in each eye and every person whose field of vision is found subnormal. The optometrist shall not thereafter prescribe, provide, furnish, or adapt lenses, prisms, or ocular exercises for such person unless and until the optometrist receives written approval from a physician."

B. "Nothing in this article shall be construed to authorize or permit any optometrist to diagnose or treat any disease of the human eye.

"Nothing in this article shall be construed to authorize or permit any optometrist to prescribe or fit contact lenses to any patient unless there is delivered to such optometrist a certificate signed by a physician stating that a medical examination of the eyes of such patient, made within three months prior to the fitting, reveals no medical reason why such patient should not use contact lenses."

Psychology. Although the Fourth Working Draft of the proposed revision of the State Education Law included therein Article 56, Psychology, under Section 7604, the wording "nothing herein shall authorize any person to engage in any manner in the practice of medicine as defined in the laws of this State," we note with great regret that this same language has been omitted from S. 4415. We respectfully request that this language be reinserted in the final revision of the Education Law. We underscore the fact that at the recent session of our State Medical Society's House of Delegates, the members emphasized their position that psychotherapy is the practice of medicine and should not be practiced by persons not licensed to practice medicine, such as psychologists.

We further recommend that the following language be added to the proposed revision:

"The practice of psychology, as herein defined, is hereby declared not to be the practice of medicine within the meaning of the laws of New York defining the same, but nothing in this article contained shall be construed to restrain or restrict any licensed physician in the practice of the profession."

Pharmacy. We are pleased to observe that the committee has favorably considered our request that certain changes be made in regard to the article on Pharmacy in the Fourth Working Draft of the revised law, since S. 4415 has been reworded in some areas involving this profession.

There are, however, additional observations we should like to submit to the committee concerning Article 141, S. 4415.

Under the present law, Section 6816, Construction of Article, Subdivision 1, reads as follows:

"This article shall not apply to the practice of a physician who is not the proprietor of a pharmacy, drug store, or registered store, or who is not in the employ of such a proprietor. Except as to the quality of drugs dispensed, it shall not prevent physicians from supplying their patients with such drugs as the physician deems proper; provided, however, that all such drugs be dispensed in a container the label of which bears the name and address of the dispenser, the name and address of the patient, directions for use, and the date of delivery."

In S. 4415, Section 6823, Construction of Article, Subdivision 1, deletes the first sentence exempting the practice of a physician but adds the words "when necessary" to the provision that "this article shall not prevent physicians from supplying their patients *when necessary* with such drugs as the physician deems proper."

Since the present section has worked satisfactorily both in the interests of patients and physicians for many years, we submit that the present language should be retained. We believe that the exemption is proper and has been justified by experience. We further maintain that the words "when necessary" are unnecessary and redundant since the language contains the words "physician deems proper."

Conclusion. For the third time, the Medical Society of the State of New York has been privileged to submit its views to your committee in regard to the proposed revision of the State Education Law. We again express our thanks to you for the opportunities which you have afforded us. The recommendations we have presented have been based not only on our State Medical Society's attitudes as expressed principally by our House of Delegates, but on suggestions requested from, and furnished by, our component county medical societies. The statements, therefore, presented by our State Medical Society have been carefully researched and documented and represent an authoritative expression of opinion expressed by the medical profession in this State. We are grateful for the favorable consideration you have given some of our suggestions but at the same time strongly urge you to reconsider the other matters we have brought to your attention and have reiterated herein and to act with approval on the new proposals we have made.

In a vast undertaking such as the over-all revision of the Education Law, your committee has the responsibility of weighing very carefully the merits of suggestions made by the various professions and groups affected.

We trust that you will give the proper relative weight to the views of the Medical Society of the State of New York, which has spoken on behalf of the medical profession, the group primarily responsible for the health of the people of our State.

Following unanimous approval by the Council, the statement was officially transmitted by a letter from Henry I. Fineberg, M.D., executive vice-president, to Senator D. Clinton Dominick, III, committee chairman. Your chairman also sent copies of the statement to the presidents, secretaries, legislation chairmen, and executive secretaries of county medical societies. Copies of the statement also were sent to each member of the New York State Joint Legislative Committee, accompanied by a letter from the office of our legislative counsel.

At the time this report is being prepared in late October, your committee anticipates that a new bill embodying suggestions made by the various physicians and, hopefully, those made by our State Medical Society, will be introduced at the 1968 session of the State Legislature. Such a bill may be filed before the first of the new year, 1968. In view of this anticipated introduction and of other circumstances which may arise, a supplementary report will be submitted to the House in February, if necessary.

Your committee feels, to date, that we have been able to present a representative cross section of the views of our members throughout the State to the members of the New York State Legislature's Joint Legislative Committee in regard to the proposed revision of the Education Law. This accomplishment is due, in great part, to the fine cooperative spirit that has prevailed among the county medical societies. We commend the county medical societies for their efforts and urge them to carry on their good work throughout the 1968 session of the State Legislature.

Your committee, and especially your chairman, wishes to thank all who have assisted us, including Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president; George W. Foy, Esq.; John C. Rice, Esq.; and particularly Martin J. Tracey, Esq., coordinator, legislation activities, for the time and effort expended on behalf of our committee.

Respectfully submitted,
WALTER T. HELDMANN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

Your reference committee has reviewed in detail the voluminous report, both large and small print, of the Ad Hoc Committee to Study the Revision of the Education Law, as submitted by its chairman, Walter T. Heldmann, M.D. This has been supplemented by a detailed oral report presented to our committee as of yesterday. We wish to report that the multiple problems are a long way from being solved.

After all the work that was expended in this area, a completely new study bill has been presented. Of the various recommendations approved by this House last year, several major objections still remain: (1) the failure to include mental conditions as being part of the practice of medicine; (2) the lack of restriction of psychologists from practicing psychotherapy; and (3) the proposed arrangement of the discipline committee to report directly to the Board of Regents.

Our recommendation that incurable insanity be the only mental indication for revocation or suspension of a medical license was totally unacceptable and a compromise measure, approved by the Council, was utilized. A failure to do this would have resulted in the persistence of the original and most objectionable provisions.

As yet, the new study bill does not spell out the details as they might apply to medicine. It is extremely doubtful as to whether or not this project will be satisfactorily completed during the coming year.

Your reference committee wishes to compliment Dr. Heldmann and his associates for the tremendous time and effort expended in this vital area and to urge vigilance and persistence until this problem be solved.

The House, after discussion, voted to adopt this portion of the reference committee report.

Medicine and Religion

Report of Reference Committee on Public and Professional Affairs: The following report was presented by George T. C. Way, M.D., chairman.

No report was submitted by the committee because of personal and unfortunate circumstances.

However, the reference committee feels that this area of medicine should not be forgotten in the undertakings of this House. The senior resident physician, totally involved with the bulk of scientific medical knowledge which he must absorb, and physically burdened by the responsibilities of hospital commitment, a growing family, and of making ends meet, all too frequently relegates recognition to the demands of his wife on Easter or Yom Kippur.

Then, during the next thirty years, he gradually recognizes that there are religious forces in existence, which greatly bear on the well-being of his patients and which can, favorably or unfavorably, affect his success in maintaining the health of those patients. And at this stage of his practice, he realizes that there is a real and dynamic role which the clergy can play in the care of the sick.

The reference committee recommends the continuation of the Committee on Medicine and Religion.

The House voted to adopt this portion of the reference committee report.

Advisory to New York State Medical Assistants Association

To the House of Delegates, Gentlemen:

The Advisory Committee to the New York State Medical Assistants Association has the following membership:

Irving M. Pallin, M.D., *Chairman*......Kings
C. Stewart Wallace, M.D.........Tompkins
Walter F. Harrison, Jr., M.D........Warren

The New York State Medical Assistants Association has grown steadily since its inception eight years ago. Its educational aims are rapidly being realized as it attains a growing membership and maturity.

Elsie Adams, the president for 1966–1967, appeared before the House of Delegates last year and outlined the advances and programs of this association for the previous year.

In March, 1967, the association held a seminar for medical assistants on drug addiction in New York County. It attracted an unusually large attendance, well over 200.

The New York State Medical Assistants Association held its annual meeting at Lake George, April 21 to 23, 1967, with 155 medical assistants attending. It was noteworthy that many more of the younger medical assistants were present. Unfortunately, Frederick A. Wurzbach, Jr., M.D., president, and Henry I. Fineberg, M.D., executive vice-president, were both ill and unable to attend; however, Dr. Wallace, Dr. Harrison, Dr. Pallin, and Guy Beaumont, director of the Communications Division, were present from the State Medical Society. A very ambitious program was presented by the incoming president, Mrs. Ivy Reade. The projected program, a very lofty undertaking, has produced positive results.

On August 1 and August 8 meetings were held with representatives from Blue Shield and the Health Insurance Council and Mrs. Reade, Mrs. Vollmert, Mr. Beaumont, and Dr. Pallin. An insurance seminar was instituted as a pilot project, entitled "Patients, Patience, and Paperwork." Its first presentation was held at the auditorium of the Medical Society of the County of Nassau. Nassau and Suffolk County medical assistants, numbering 250, attended. It was enthusiastically received. This insurance seminar received high praise in the *Medical Tribune* and in our own *News of New York*.

On September 17, 1967, 75 members attended a leadership training seminar in New York City.

On October 24, 1967, a seminar on insurance forms was held in Westchester County.

These insurance form seminars have been further extended to include the support of and participation by the Department of Health and the Department of Social Service of the City of New York. These programs are being presented in each of the five boroughs on January 24, 31, February 1, 21, and 28, 1968. The experience gained will result in formulation of guidelines for all other regions in the State of New York.

The next annual meeting is scheduled for Rochester, April 26 to 28, 1968. A very ambitious educational program has been planned as follows: (1) medical record-keeping, (2) emergency set-up in a doctor's office, (3) new telephone equipment, (4) new laboratory technics, and (5) microfilm in the physician's office.

The education committee has been active in cooperation with regional educational institutions, colleges, and community colleges for guidance in preparing courses of study for medical assistants.

Three of the medical assistants have this year passed the examinations for certification. This is an indication of the trend for improvement.

The medical assistants have been most cooperative in providing staff assistance at the annual meetings and the regional conferences of our State Medical Society. Many expressions of gratitude for this gratis service have been tendered to them. Further recognition has been attained by the fact that Smith Kline & French has printed their membership brochures free of charge with no advertisement.

Members of the New York State Medical Assistants Association have been well recognized at the national level, the American Association of Medical Assistants. One is a member of the board of trustees, two have been appointed chairmen of standing committees, and two have become members of standing committees. One served as chairman of a reference committee, and one served on a reference committee at the last annual meeting in October in Los Angeles. Dr. Pallin was elected and served as adviser to the American Association of Medical Assistants, representing the American Medical Association. It is also noteworthy that our New York State Medical Assistants Association received from the American Association of Medical Assistants an award for *The Reflex*, the State publication, and another for obtaining high numerical increase in membership.

The Medical Society of the State of New York provides the following services for the New York State Medical Assistants Association:

1. Use of the facilities of the mail room; postage paid by the association;
2. Reproduction of their journal, *The Reflex;*
3. Storage in the sub-basement;
4. Exhibit space at our annual conventions;
5. Advice and counsel from our headquarters staff and advisers. The association is particularly grateful to Guy Beaumont, Harry Dexter, Gerald Sullivan, Alvina Rich Lewis, and Charles Struzinski.
6. The use of the office address as their mailing address;
7. Travel expense for the advisers from the budget of the Communications Division.

The medical assistants provide the first and last approach to the patient in the doctor's office. It is important to us that our medical assistants improve themselves for our own benefit. Therefore it is the recommendation of this committee that physicians encourage their medical assistants by allowing them time to attend meetings and by paying their dues, which are $20 per year.

This committee recommends that the Medical Society of the State of New York continue to provide the services as enumerated above.

Respectfully submitted,
IRVING M. PALLIN, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

Every practicing physician knows the rare joy of a capable and responsible office assistant. Too often, replacement of such individuals, lost through the various channels of normal attrition, is a frustrating and unsatisfactory experience. The scarcity of such individuals is both apparent and real.

The New York State Medical Assistants Association, sponsored and nurtured by the State Medical Society, has survived its incubation period and now approaches the stage of puberty with its indicated growth phase, and there is much that we, as a House of Delegates and as individual practitioners, can do.

First, we can recognize that this organization has given stature and public recognition to a very highly specialized and desirable field of professionalism.

Second, this organization can afford a continuing educational and training program to meet the ever-changing needs and demands imposed on this group in their individual jobs.

And third, we can recognize the initiative of the medical profession as reported in *The News of New York* wherein the Dutchess County Medical Society established and sponsored a two-year medical assistants course in the regional Dutchess Community College.

Last, as individual physicians, we can encourage participation in this organization by all those who assist us. To employ a very common phrase of today, we can consider participation in this organization by our employes as a "fringe benefit," and the small liability that this may impose will be returned to us many times by increased capability and responsibility. We will also encourage regional splinter groups to become associated with the State organization.

The reference committee looks on this organization and all those who advise and guide it as an outstanding example of practical activity and for which we invoke the active support of each individual member of the State Medical Society.

The House voted to adopt this portion of the reference committee report.

68-29. Adjudication of Legality of the Practice of Medicine by Hospital Corporations

Introduced by Medical Society of the County of Kings

> WHEREAS, The practice of medicine by hospital corporations has been accepted by the courts of the State of New York without a determination of the legality of such practice; and
>
> WHEREAS, The Medicare, Medicaid, and the affiliation-hospital programs adopted by the City of New York for municipal hospitals have resulted in a marked and rapid increase in the number of hospital-employed physicians; and
>
> WHEREAS, The practice by hospital corporations of employing and controlling licensed physicians and charging paying agencies for medical services rendered by such physicians is, de facto, the corporate practice of medicine which is prohibited by the State Education Law; and
>
> WHEREAS, The legality of this practice has not been formally challenged; now therefore be it
>
> *Resolved*, That the Council of the Medical Society of the State of New York forthwith appropriate the necessary funds and retain special legal counsel to seek a final and authoritative adjudication of the legality of the practice of medicine by hospital corporations.

REPORT OF REFERENCE COMMITTEE ON PUBLIC AND PROFESSIONAL AFFAIRS: The following report was presented by George T. C. Way, M.D., chairman.

The discussion evoked by this resolution almost exceeded the sum total of all the other activities of our committee. It is most obvious to the reference committee that behind the presentation of this resolution lies a deep concern for many gross inequities and injustices between hospitals and the lower echelon of hospital-based physicians. It is also apparent to our committee that this resolution does not begin to approach the solution to this State-wide problem. On this basis, the reference committee recommends disapproval of this resolution, but also urges prompt and in-depth studies by the Medical Society of the State of New York of this increasingly serious situation.

The House, after discussion, voted to table resolution 68–29 until resolution 68–56, referred to the Reference Committee on Standards of Medical Care, was considered (see page *1536*).

68–38. Legislation to Permit Group Practice with Corporate Benefits

Introduced by Medical Society of the County of Monroe

> Whereas, The formation of groups or associations is considered by an increasing number of physicians to be a desirable means of providing health services; and
>
> Whereas, A corporation has many advantages as a form of organization for such groups or associations; and
>
> Whereas, Although 34 states of these United States have laws enabling the formation of professional corporations, the State of New York does not allow professional corporations; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York, in order to promote and foster a creative atmosphere for the growth and development of innovations in the health delivery systems, be recorded as favoring the passage of legislation which would enable duly licensed physicians to incorporate in the State of New York for the purpose of practicing medicine; and be it further
>
> *Resolved*, That the Medical Society of the State of New York take the necessary steps to secure the introduction and passage of legislation to this effect in New York State.

The following explanatory memorandum was distributed with this resolution.

1. A corporation of physicians formed for the purpose of providing health services can meet all of the criteria of a corporation that Congress has set forth in the Internal Revenue Code.
2. The purpose in forming a professional corporation may be the seeking of a tax advantage but it need not be and, indeed, such an aspect may simply be an advantageous by-product.
3. The formation of multidisciplined groups adjacent to community hospital complexes should not be impeded by laws which would prevent the most efficient or financially most profitable organizational pattern.
4. In view of the fact that hospitals in the State of New York are corporations and are to an increasing extent practicing medicine, the State should allow the same opportunities to physicians.
5. Problems of limited liability, physician tee sponsibility, and impersonalization by corporarstructure are more apparent than real and can be resolved with intelligent and studied legislation.
6. The absolute necessity of improving the efficiency of physicians in the State of New York as an immediate step in improving the health delivery system requires an imaginative approach by the Legislature of the State of New York and the Governor.
7. We refer the House of Delegates of the Medical Society of the State of New York to the report of the National Advisory Commission on Health Manpower, to the White House Conferences on Costs of Medical Care and on Private Health Insurance for information dealing with this subject.

Report of Reference Committee on Public and Professional Affairs: The following report was presented by George T. C. Way, M.D., chairman.

The desirability and advantages of such legislation as this are well known. The reference committee recommends approval.

The House voted to adopt this portion of the reference committee report.

68–40. Medical Committee for Human Rights

Introduced by Medical Society of the County of Essex

> Whereas, The Medical Committee for Human Rights ran an advertisement in *New York Times* on December 10 entitled "We Challenge the AMA"; and
>
> Whereas, This advertisement and other statements made by the Medical Committee for Human Rights claimed to be the spokesman for the humanistic element of our profession, stating that health is a human right and that charity and discrimination must be eliminated and charging that the AMA is still based on the capitalistic philosophy "make money for doctors"; and
>
> Whereas, The House of Delegates of the Connecticut State Medical Society answered this challenge by stating that the policies of the American Medical Association and of its constituent state medical associations are determined by action of their member physicians through representative process and not through the statements of individuals in the public press; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York in regular session February, 1968, commend Milford O. Rouse, M.D., president of the American Medical Association, for his repeated and continuing defense of capitalism; and be it further
>
> *Resolved*, That the Medical Society of the State of New York condemn the socialistic stand of the Medical Committee for Human Rights as not representative of the views of most American physicians; and be it further
>
> *Resolved*, That the Medical Society of the State of New York commend the Connecticut State Medical Society for its official answer to the Medical Committee for Human Rights.

Report of Reference Committee on

Public and Professional Affairs: The following report was presented by George T. C. Way, M.D., chairman.

The reference committee wishes to modify this resolution as follows: In the last Whereas eliminate that portion immediately after the words "representative process," and eliminate all the *Resolveds* and substitute the following:

> *Resolved*, That the Medical Society of the State of New York reaffirm the position that it has always maintained, namely, that it has always endorsed human rights, equal care, nondiscrimination, and human dignity as applied to both patient and physician.

The House voted to adopt this portion of the reference committee report.

68–42. Opposition to Federal Role in Medical Care

Introduced by Medical Society of the County of Essex

> Whereas, Congressman Benjamin Rosenthal (D., N.Y.) has held a news conference at which he alleged the need for increased Federal participation in medical care in contradistinction to medical research; and
>
> Whereas, At this conference he advocated the abolition of the fee-for-service system and stated that private, nongroup practice is out of date; now therefore be it
>
> *Resolved*, That the House of Delegates of the Medical Society of the State of New York in regular session February, 1968, express its opposition to the views expounded by Congressman Rosenthal at his news conference advocating the abolition of fee-for-service system and alleging the need for increased Federal participation in medical care in contradistinction to medical research, and make this opposition known to all Senators and Representatives from New York State in the Congress of the United States.

Report of Reference Committee on Public and Professional Affairs: The following report was presented by George T. C. Way, M.D., chairman.

The reference committee wishes to endorse this resolution even though it is perhaps misnamed. We espouse the time-proved fee-for-service system of medical care and decry any decrease in assistance to medical research.

The House, after discussion, voted to amend the reference committee report by substituting for the Resolved the following:

> *Resolved*, That this House of Delegates of the Medical Society of the State of New York urge that the appropriate Federal agency study the proportion of graduating physicians who enter the field of medical research and the extent to which Federal support encourages duplication of research and diverts needed manpower from medical practice.

The House voted to adopt this portion of the reference committee report as amended.

The House voted to adopt the reference committee report as a whole as amended.

Organization, Policies, and Legal Matters

Malpractice Insurance and Defense

To the House of Delegates, Gentlemen:

The members of the Malpractice Insurance and Defense Board are as follows:

David Kershner, M.D., *Chairman*	Kings
Thomas M. d'Angelo, M.D., *Vice-Chairman*	Queens
Raymond S. McKeeby, M.D.	Broome
A. L. Loomis Bell, M.D.	Kings
Arthur J. Mannix, Jr., M.D.	Westchester
John J. Della Porta, M.D.	Monroe
Frank H. Peters, M.D.	New York
Walter T. Heldmann, M.D., *ex officio*	Richmond
Thomas F. McCarthy, M.D., *ex officio*	Bronx
William F. Martin, counsel, *ex officio*	New York
James M. Arnold, indemnity representative, *ex officio*	New York

Because data concerning loss experience for the current year is not available either at the time its annual report is prepared or prior to the meeting of the House of Delegates, the Board must make a special report each year to the Council so that timely action on rate schedules or other changes may be taken. Such a report was made this year on April 20, was approved by the Council on May 25, and was published in the July 1 issue of the New York State Journal of Medicine. The report reads as follows:

> In its annual report last year, the Board pointed out that a substantial increase in professional liability insurance premiums for the year commencing September 1, 1967, must be anticipated. Because of the marked increase required, we believe that a detailed explanation of the reasons therefore should be given to the Council and to members insured in the State Society program.
>
> For the ten-year period 1956–1965, while many revisions were made on the basis of both county and specialty experience, the *average* State-wide premium for basic ($5,000/$15,000) limits increased by only $8.00—from $111 in 1956 to $119 in 1965. During the same period, the *average* premium paid by insured members increased from $199 to $247, a large part of which was due to decisions of most insureds to raise their limits of coverage.
>
> As of the end of 1965, the Company noted an upward trend in loss experience of such severity that an over-all increase of 25 per cent in total premium income seemed to be warranted. In order to modify the effect of such a large increase, and also in the hope of some improvement in the near future, only one half of the indicated increase was made. Instead of an improvement, a further deterioration during 1966 was noted, adversely affecting nearly all past policy years including the few that had previously shown an acceptable loss ratio.
>
> While it is possible that the experience of

TABLE I. Percentage changes

Premium Class	Territory			
	Metropolitan	Suburban I*	Suburban II†	Upstate
1A (Otolaryngology including cosmetic plastic surgery, orthopedic surgery, neurosurgery)	40	40	40	40
1 (Anesthesiology, surgical specialties other than those listed under 1A and 2)	39	27	40	20
2 (Ophthalmology, proctology, general practice including major surgery)	35	23	40	16
3 (General practice including limited major surgery)	40	32	40	25
4 (Radiology, general practice, and specialties including only minor surgery)	37	25	40	19
5 (Internal medicine, pathology and/or hematology, pediatrics, general practice, and specialties that do not include surgery)	26	13	40	6
6 (Physical medicine, preventive medicine, public health, psychiatry and/or neurology)	11	−2	40	−10

* Westchester and Orange Counties.

† Suffolk, Rockland, Sullivan, and Ulster Counties.

TABLE II. Old and new rates for $100,000/$300,000 limits

Premium Class	Metropolitan		Suburban I		Suburban II		Upstate	
	Old	New	Old	New	Old	New	Old	New
1A	$834	$1,168	$665	$931	$724	$1,013	$440	$617
1	742	1,029	595	754	645	902	394	472
2	454	615	368	454	400	561	245	285
3	360	505	287	380	314	438	191	239
4	217	297	185	231	203	283	117	139
5	173	217	137	155	149	209	96	103
6	129	143	107	105	117	163	78	70

Additional Charges (State-wide)

	Old	New
Superficial x-ray therapy	$ 50	$ 64
Deep and superficial x-ray therapy	80	105
Electroshock therapy	141	183

more recent years will improve should outstanding cases be closed for less than present reserves, it is apparent that the older policy years have resulted in losses to the Company even when reserves are not taken into account. This means that losses as they developed from year to year were greater than those anticipated at the time premium rates were computed.

The following comparison of the cost of closed cases during the past few years illustrates the marked trend toward higher disposal costs. These figures are the result of dividing the total cost of all closed cases during the year shown by the number of suits closed plus the number of claims settled, thus eliminating reported events that did not develop into suits or claims, as well as claims that were closed with no payment to the claimant. The figures are as follows:

1963	$4,740
1964	5,760
1965	6,790
1966	8,810

The simplest answer to why closing costs have increased is inflation. A survey of suits closed during 1966 shows that the policy year in which the alleged malpractice occurred preceded the year of closing by an average of more than five years. This means that premium rates, if they are to be adequate, must take into account future inflation, which it is generally conceded will amount to from 3 to 5 per cent a year, provided it is kept within "acceptable" limits.

In addition to payments for pain and suffering and for lost wages, both of which are increased by inflation, a jury verdict or settlement demand includes the cost of doctor and hospital bills, whether or not these have been paid by the plaintiff. These costs too are subject to inflation. An article in the *AMA News* of March 20, 1967, states that hospital daily charges during 1966 increased 16.5 per cent and that the average annual increase from 1960 to 1965 was 5.8 per cent.

Based on the loss experience of the last three expired policy years, an over-all rate increase of 30 per cent is indicated. For the reasons outlined above, the Company feels that nothing less than this is acceptable. Commencing September 1, 1967, however, the Company has agreed to decrease its expense loading to a new low of 20 per cent, which means that 80 cents of every premium dollar will be available for losses.

Having decided on the amount of the overall increase, the next problem was how best to allocate the increase among the premium classes and territorial divisions of the State. Unfortunately, the heaviest losses continue to be in the same specialties and areas that bore the brunt of last year's increase. By a formula worked out by the Company's actuaries and approved by the Society's consulting actuary and the New York State Insurance Department, percentage changes have been allocated as shown in Table I. This formula takes into account the general trend toward increased costs and the relative severity of losses among the territorial divisions and premium classes. The maximum increase is 40 per cent, even though in certain instances this is less than that indicated by losses.

The old and new rates for $100,000/$300,000 limits of insurance are shown in Table II.

The Board recommends that the Council approve the new rate schedule as proposed.

In its report to the Council, the Board pointed out that it takes an average of over five years from the date of alleged malpractice to dispose of a suit. To further illustrate this delay, the following shows the number of suits and claims closed during 1966 and the policy years to which they were charged:

Closures	Policy Year
12	1949–1956
13	1957
26	1958
30	1959
43	1960
58	1961
59	1962
67	1963
65	1964
53	1965
17	1966

The significance of these figures is that premium rates are based on past experience while disposal costs are based on dollar values existing at the time of closure. In a period of continued inflation, it is increasingly difficult to determine accurately future costs.

Underwriting. In its 1966 report the Board noted that our insurance carrier would assign an underwriter to examine loss records and make suggestions to the Board regarding acceptance of applications and continuation of insurance. The Board now has the assistance of a company underwriter, who brings to our attention situations that indicate a greater than normal risk and, if the Board agrees, proposes a special rate. At present, over 40 insureds are paying rates ranging from $1^1/_2$ to 5 times the filed rate for their specialty or type of practice. Before the higher rate can become effective, it must be accepted by the insured and approved by the New York State Insurance Department. The higher rate is for a period of one year, at the end of which it may be continued under the same procedure, or increased or decreased depending on whether the insured's loss experience becomes worse or better.

The Board is occasionally called on to consider applications from members of the State Society who have been insured elsewhere and to whom renewal has been refused for no apparent reason except age. While the Board has adopted no hard and fast rule in dealing with these applications, we believe that somewhat stricter standards should be applied in approving new insurance than in continuing insurance for a member who has been insured in the Society's program for many years. There has never been nor is there now any age limit for insurance in the State Society program.

Partnerships. During the past year the Board has on several occasions been asked about insurance coverage for partnerships. We take this opportunity to call attention to the copartnership laws of New York, which make each partner liable for the debts and obligations of a copartnership incurred by any partner acting within the scope of the partnership practice. Membership in a copartnership, therefore, introduces a malpractice liability beyond that which a doctor would have in the individual practice of medicine. Many companies require an extra premium charge to cover this liability. However, the policy contract used in the State Society program provides automatic coverage for this additional liability provided that each partner is individually insured by Employers Mutual Liability Insurance Company of Wisconsin.

Aside from the requirement of the policy itself, it is generally conceded to be in the best interest of a partnership to have each member insured with the same company in order to solidify the defense of a malpractice action. The Board has been told that many partnership agreements now being drawn up contain a provision that all partners carry their professional liability insurance in the same company.

The office of the Indemnity Representative tries to keep track of the names of the doctors comprising a particular partnership so that the partnership can be notified in the event that the insurance for any one partner is canceled because of nonpayment of premium or for any other reason. However, the responsibility for seeing that each partner is insured rests with the partnership itself. The Board strongly recommends that the senior partner or the administrator keep an up-to-date record of any changes in the composition of the partnership and notify the office of the Indemnity Representative of these changes.

We have been informed by the office of the Legal Counsel of the State Society that within New York State it is a misdemeanor not to notify the county clerk's office of any changes in the partnership arrangement on file. Thus, in addition to the incentive of keeping proper insurance in force, partners can avoid the possibility of fine by setting up a workable system for reporting changes in the composition of their partnerships.

Conclusion. It is encouraging to note that during 1966 the State Society program reached its high point of participation with 18,414 physicians, or 70 per cent of the membership, insured. We believe that this indicates a realization of the importance of quality and stability of protection. It is also an expression of confidence in and appreciation of the services provided by the offices of our Legal Counsel and of our Indemnity Representative and by our insurance carrier, Employers Mutuals of Wausau.

Respectfully submitted,
DAVID KERSHNER, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

In consideration of the report of the Malpractice Insurance and Defense Board, the committee wishes to commend the Board. The members of your reference committee were privileged to attend a meeting of the Malpractice Insurance and Defense Board on February 11, 1968. The work load of the Board, increased by the rising tide of malpractice actions, was augmented by the action of the professional insurance company's reduction in limits of coverage available on renewal on and after January 1, 1968. This imposed a sudden and almost overwhelming burden upon the already hard pressed Board. However, within a short space of time, 990 applications for insurance in the State Society's program were received and processed. For the most part policies were issued promptly, but many of them required reference to the Malpractice Insurance and Defense Board for evaluation.

This committee meets monthly and considers problems in an important and delicate area. The over-all increase in premium rates was necessitated because of rising awards and less than indicated increases made in previous years. In 1966, the State Society reached its highest point of participation with 70 per cent of the membership insured through the Society's program. We recommend close study to every member of the House of Delegates of the report of the Malpractice Insurance and Defense Board. The brochure entitled "Malpractice Insurance Is Too Expensive," is recommended as required reading. A copy will be forwarded to every member in the State Society's program.

The House, after discussion, voted to adopt this portion of the reference committee report.

Legal Counsel

To the House of Delegates, Gentlemen:

This is my twenty-fifth annual report as counsel for the State Medical Society. When I graduated from Columbia University School of Law in June of 1928, I entered the office of Lloyd Paul Stryker, who was then counsel, and when he resigned, I continued with his associate, Lorenz J. Brosnan, who succeeded him. It was on the untimely death of Lorenz Brosnan that I was appointed counsel so that this spring represents my fortieth year of association with the Society.

Robert J. Bell, the attorney for the Society, has been with the office continuously since 1933 except for a period of time he spent in the Navy as a lieutenant in World War II. This year he is president of the Brooklyn-Manhattan Trial Lawyers Association.

When I first entered the practice of law, Harold Shapero was in the same office. When Mr. Stryker decided to resign as counsel for the Medical Society, Harold went along and assisted him for many years in the preparation and trial of some of the most important civil and criminal trials in this country. Several years before Mr. Stryker's death, when he was becoming comparatively inactive, we all talked things over and Harold decided to come back to this office. Both he and Bob Bell are fellows of the American College of Trial Lawyers.

John J. DeLuca has been with us for twenty-seven years. He has attended thousands of depositions and pretrial hearings. His research and appellate work are of great help to us. He has managed much of the office detail.

An endless number of doctors have told me of the great consolation that they find in the kind, efficient service given them by Bob Bell, Harold Shapero, and Jack DeLuca.

Donald J. Fager, who resides in DeWitt and manages our Syracuse office, has demonstrated his capacity to handle any legal problem that confronts us. He prepares and tries most of our upstate cases. He has argued cases in the Court of Appeals and the Appellate Divisions of all four departments. The location of the upstate office enables him to confer on short notice with our upstate clients.

Anthony Louis Schiavetti, Francis P. Bensel, and Daniel Boone, Jr., are actively engaged in the trial of cases before the Supreme and Civil Courts and all do their share in the vast amount of work such as depositions and pretrial hearings, preparation and argument of motions, and handling the correspondence that we are constantly faced with.

George van Setter and Robert G. Harley help in preparing the cases for trial. Each has tried a number of Civil Court cases, and they appear practically every day in one court proceeding or another.

Frances C. Cassebaum, now in her second year with us, assists with the office work and attends at depositions.

We have two young law graduates, Walter G. Alton, Jr., Yale College and Columbia Law School, and Steven Mandell, New York University and St. John's Law School, in the office. Just as I write this report, the bar examination results were published, and I am delighted to say they both passed.

The legal work of the State Society embraces a great deal more than the management of malpractice litigation. We attend all meetings of the Council, Board of Trustees, and House of Delegates and many of the committee meetings of the Society. We also participate in the meetings of the Malpractice Insurance and Defense Board and apportion among the lawyers in the office the duty of attending county malpractice committee meetings. With relation to these county malpractice meetings, a lawyer is assigned to a particular county and regularly attends the meetings so that there may be continuity to the discussions.

In addition, we have appeared at and lectured to many organizations over the past year. Some of these include the quarterly conference of the French Hospital staff; the Caducean Society of New York University; the New York Dental Society of Anesthesiologists; the clinical conference at Methodist Hospital of Brooklyn; the Chautauqua County Medical Society; the Long Island Dermatological Society; World Meeting on Medical Law at University of Ghent, Belgium; State Medical Society's regional conference in Plattsburgh; Northern New York Association of Medical Societies of Oneida, Herkimer, Madison, and Chenango; Delaware County Medical Society; New York Regional Society of Plastic Surgeons; and a meeting of the inhalation therapists at St. Luke's Hospital.

Current Problems Which Have Led to Increased Premiums for Malpractice Insurance. The problems are nation-wide, and this is illustrated by a quote from a recent article by the attorney for the Alaska State Medical Society.

> What is the problem that the medical profession faces in Alaska, and what is its background? In 1956 and again in 1963 the Law Department of the American Medical Association took a nationwide survey on various problems in the professional liability field. In 1956, 7,577 questionnaires went out to physicians, not including any doctors in Alaska. In 1963 the sample was increased to 20,000, and Alaska was included. The 1963 survey showed that nationwide 17.8 per cent of all physicians had had one or more claims for malpractice made against them. South Carolina was low, where 7.7 per cent of the doctors polled indicated that claims had been made. California was high with 29.2 per cent. In Alaska 25.8 per cent of the physicians reported claims. Since the percentage in the District of Columbia was 27.3 per cent Alaska was third nationwide in the number of physicians who had been subject to one or more claims. The report concluded that the problem areas include California, the District of Columbia, Alaska, Minnesota and Oregon, since these were the jurisdictions in which more than one out of four doctors were reporting claims.

To demonstrate the almost morbid interest the legal and medical profession has in this problem, the Institute of Continuing Legal Education at the University of Michigan conducted a seminar on medical malpractice that was attended by 2,500 doctors and lawyers. The foreword to the case material that was presented at the course stated:

> The ever-increasing number of medical malpractice cases has aroused the concern of the medical and legal professions, as well as the general public. The Institute of Continuing Legal Education has long felt that an objective critical analysis of medical malpractice actions will increase the equitable dispositions of such cases—dispositions that are fair to both plaintiffs and defendants. That is why we have made Medical Malpractice the topic of our Fifteenth Annual Advocacy Institute.

Bernard D. Hirsh, director of the Law Division of the American Medical Association, has devoted a great deal of time to the study of this problem, and I quote in part some of his observations:

> A malpractice claim is a harrowing experience for a physician. He will have to spend hours with the investigators and attorneys employed by his professional liability insurance carrier explaining to them what he did and why he did it, recalling every detail that may have even a remote bearing on the case.
>
> To a physician untrained in the law, the legal basis of malpractice liability may be difficult to comprehend. Some physicians feel that a charge of malpractice implies irresponsible and inexcusably poor treatment. Malpractice does involve such conduct but it also includes the mistakes that dedicated, diligent, and competent physicians sometimes make just because they are human beings.
>
> During the past twenty years medical malpractice liability has become a matter of grave concern to the medical profession due to the increasing tendency of the public to seek compensation for real or imaginary damage, more frequent and higher jury awards, and inflation necessitating larger payments for claims, judgments, and legal defense.
>
> Unfavorable articles in the lay press dealing with increased costs of medical care and books aimed at degrading the image of the physician have further engendered antagonism toward the medical profession.
>
> How can a physician avoid being sued for malpractice? Liability is an occupational hazard, but there are a number of ways to minimize the risk. The cardinal rule is to treat each patient as one would want a member of his immediate family treated. A physician should practice only one brand of medicine—the best within his capabilities—and should not encourage the patient to anticipate better results than are reasonably obtainable and not hesitate to call a consultant—someone with independent judgment who won't hesitate to disagree.
>
> Well-kept medical records are essential both to good practice itself and to the proving of it. Judges and juries have been patients and they know, from their own experience, that diligent doctors are guided not by memory but by the patient's written history. The malpractice defendant who is aided in his testimony by detailed records has a great advantage.
>
> Ultimately, avoidance of malpractice claims demands more than ethical practice and good intent on the part of physicians. It requires complete physician-patient communication. The patient must believe that he is getting the best possible treatment from a physician personally concerned about his welfare. From such a relationship and faith, malpractice claims will rarely ensue.

The report of the Malpractice Insurance and Defense Board will demonstrate the financial impact of malpractice claims and cases on the medical profession in New York State. It states that the average cost of disposing of a case in 1963 was $4,740, and by 1966 this figure had risen to $8,810. While the frequency of claims and cases has a lot to do with the poor experience, it is interesting to note some of the larger settlements and verdicts that have contributed to the situation this year.

1. There was a verdict in California of $1,238,514 mentioned in the *Citation*, published by the Law Department of the American Medical Association, as follows: "A woman was paralyzed from the waist down as a result of an operation in 1965 to correct a spinal cord condition. The suit was against a hospital and seven physicians and charged that they were negligent in the performance of the operation and in their postoperative care. The patient has undergone two operations since the one from which her paralysis resulted."

The *News Letter* of the American Trial Lawyers Association, a plaintiffs' bulletin, commented on this case as follows: "Complex action on behalf of plaintiff, who underwent surgery at suggestion of orthopedic surgeon and consulting neurosurgeon to alleviate painful C5–C6 cervical bar defect, was instituted against operating orthopedic surgeon on theory of professional negligence; against associate orthopedic surgeon, who negligently failed to respond to telephone call regarding plaintiff's postoperative paralysis; against consulting neurosurgeon for negligently failing to recommend that operation (Cloward procedure) should be performed by neurosurgeon and not orthopedic surgeon; against radiologist for negligently reporting postoperative x-rays as normal and failing to note subsequently discovered bone plug protruding into spinal canal; against hospital for negligently noting plaintiff's progressive paralysis and against anesthesiologist who participated in original surgery. Various defendants settled out at different stages: $125,000 from original orthopedic surgeon; $200,000 paid by the single insurer who insured radiologist, hospital, and anesthesiologist. Judgment was rendered in favor of consulting neurosurgeon and judgment was rendered against associate orthopedic surgeon. Plaintiff, who had approximately thirty-year life expectancy, was expected to incur $30,000 per year in future medical expenses."

2. In Florida there was a verdict of $1,500,000. A brief press note referred to the damages as caused by the medical negligence of two surgeons and a hospital leading to paralysis of a woman from the neck down. The plaintiff was a thirty-three-year-old mother of three sons, ages ten, eleven, and seventeen years, at the time of the operation in 1959. She went into the hospital for minor elective surgery on varicose veins and for hemorrhoids. Two days after the operation she slipped into a coma, the result of overdosage and excessive medication of pain-killing drugs from which she never recovered. Rumor has it that one of the troublesome things about this case was that the two doctors concerned only had $5,000 coverage each at the time of the claimed acts of malpractice.

3. Recently in New York State there was a case settled in the total sum of $280,000. In 1963, a thirty-three-year-old father of four children, in the course of a routine physical at his place of employment, was told that he had an inguinal hernia. It was operated on by a family doctor, and within two days obstructive symptoms led to a consultation with the chief surgeon at the hospital. Both doctors agreed that a further exploratory operation was necessary. No intravenous pyelogram was done. A large mass was exposed and thought to be a kidney tumor. A call then went out to a urologist who reached the scene in one-half hour. He agreed that it was a tumorous kidney and removed it. Only when the patient had no urinary output and was rushed to a large medical center did it develop that he had been born with only one duplex kidney. Pathologic examination revealed the organ was not diseased. The patient after a very precarious period during which his life was despaired of, responded to repeated dialysis and then had a transplant operation. Suit was brought against the hospital where the kidney was removed, the family doctor, the chief surgeon, and the urologist.

4. In New York State a settlement in the sum of $175,000 was effected where at the close of an operation to remove a lower lobe of the lung a cautery knife was used which ignited cyclopropane still in the lung causing death instantaneously. While the patient was seventy-eight years of age, he had been retired with a guaranteed income of $85,000 a year. He had a life expectancy of seven years, and while his first wife had died and his children are well to do, he is survived by a comparatively young second wife.

5. Not all the settlements involved surgery. A family doctor in a suburban community, wishing to save a small quantity of formaldehyde, poured the liquid into a small bottle which unfortunately was labeled "saline." A few days later a new assistant working for him put the "saline" bottle on the treatment table, and the doctor, cleansing the eye of an injured workman, applied the formaldehyde causing almost total loss of vision and scarification of the lens. Liability was conceded, and settlement before a judge was effected in the sum of $65,000. Fortunately, the union to which the plaintiff belonged had been able to keep him on the job at almost his full salary.

6. In Illinois recently there was an award of $134,520 against two physicians and a hospital for the death of a wife eighteen months after negligently administered spinal anesthesia, which caused her heart to stop beating for seven and one-half minutes on the delivery table, resulted in irreparable brain damage to both the wife and the undelivered child. The child is not expected to live past five years of age.

7. If you read my report last year, you will recall that I mentioned a $200,000 verdict which subsequently was settled for about half that amount. A private mental institution and the doctor in charge were sued because they had released a violent patient whose final discharge note read "unimproved." Six months later the patient, in an argument about his marital status, bit off the nose of a lawyer, who was the plaintiff in the case.

A suit with overtones of this case was recently brought against the United States Government for negligently releasing a homicidal mental patient who foreseeably murdered his wife. There was an award of $200,000 for the death of the mother, which was put in trust for her three children.

8. We settled three cases involving claimed negligent thoracic disk surgery for a total of over $250,000. In two of these cases, we were very embarrassed because the surgeon had operated and within a day or so left on vacation. While in each case the doctor claimed that he had made it perfectly clear that he was going away, the patients denied this. The lesson to be learned is that when a doctor is going away on vacation he should either postpone elective surgery or turn it over to another surgeon, or, should he operate, have a written consent which spells out in detail the patient's understanding of the situation.

9. There are malpractice claims being brought today which one would not have conceived of a generation ago involving failure to diagnose and treat phenylketonuria, improper administration of oxygen causing retrolental fibroplasia, and mismanagement of an incompatible Rh factor causing erythroblastosis.

10. As an illustration of the inflationary cycle in which we live today, there was returned in Kings County a verdict of $105,000 for the death of a five-year-old asthmatic child. The award was divided as follows: $55,000 for wrongful death and $50,000 for conscious pain and suffering. Because of the inflammatory nature of the summation of the plaintiff's attorney, the verdict for pain and suffering was cut to $3,500 and the verdict for wrongful death was cut to $25,000; however, the case will still be appealed. While the judge reprimanded plaintiff's counsel for his conduct, he did not declare a mistrial. In setting the verdict aside, he called attention to some of the remarks made by plaintiff's counsel, as follows; "Is this what medicine has come to, folks? Is this what we are going to condone medically in our community when a member of our family is deathly sick for a doctor to say to himself 'I'm too big to visit you, I'm a specialist.' Well, if that is the specialty of medicine, then maybe we have had enough of it." The judge then said that "such wholesale castigation was indefensible because such alleged conduct constituted the very gravamen of the malpractice cause. It is common knowledge that there has been a considerable reduction in house calls due to the present-day dearth of doctors and the increase of medical specialization. The indictment, thus, had the effect of putting the defendants in the dock, so to speak, for the sins of others, and to hold them vicariously responsible therefore." Then the plaintiff's attorney went on to say: "We have another item of damage, the damage of Mindy's taking care of her mother as the years pass." Mindy (the deceased infant plaintiff) had two older brothers, and plaintiff's counsel commented that boys get married and move away but that daughters take care of their mothers, and should the mother have to go to a senior citizen's home at a rate of $100 a week the daughter would have to take care of her. The judge said this was "fantasy."

These cases are illustrative of some of the adverse results that have taken place. However, not in every case with a bad result does the jury find against a doctor and/or hospital. We have tried many cases where the jury has been able to appraise the situation objectively and find that the patient's plight was not due to any fault of the doctor.

Whether a claim never goes to suit, and then whether it goes to suit and is won or lost, a great amount of expense is incurred which runs up the cost of the insurance premiums. There are of course settlements which are effected in relatively smaller amounts, but in the aggregate add up to a considerable sum. There is the expense of investigation, preparation, and trial. Stenographic minutes are a constant expense as these usually cost about a dollar a page and half again as much when daily copy is ordered, and when an appeal is taken, the record must be printed. It is a fact that we have won cases and have incurred thousands of dollars in disbursements for investigation, stenographic minutes, travel expenses, witnesses, and so on. Very often today, when a case is tried some five years after the events which are the subject matter of the lawsuit, you will find that the doctors and some of the nurses have departed for other parts of the country, and they must be brought back and maintained while the case is on trial. One interesting fact is that years ago if, for instance, a resident in a hospital did something which was the cause of complaint and then left for another part of the country, he could not be sued unless he returned to the state. Now, under the so-called "Illinois Long-Arm Statute" which has been adopted in New York State, service on such a person anywhere is sufficient to grant jurisdiction to a New York court.

Rest assured that while the two verdicts mentioned in this report which exceeded a million dollars are really unique, verdicts in six figures are not uncommon, and I have given only a sample of some of the verdicts we have heard about recently.

Further Comments on the Doctrine of Informed Consent. In my report last year I dwelt at length on this doctrine, which the plaintiff's bar is pushing for all it is worth. This doctrine does away with all necessity of proof of wrongdoing other than that there was an unexpected complication, the possibility of which had not been explained before the treatment or operation. A number of cases seem to lend credit to this theory. I have mentioned a shock therapy case where neither the patient nor relatives were told there might be fractures of the long bones, and actually both hips were broken.

Treatment for chronic arthritis by gold therapy resulted in a massive exfoliative dermatitis. The defense offered was that this could happen with the best of care and skill, but the judge held that the patient should have been told about this risk in order to make an informed decision whether or not to have the treatment.

There was a recent case in Pennsylvania involving disk surgery resulting in paralysis. The surgeon testified that with the best of care and skill there is a 20 per cent chance of this happening. The court said if that is so, and no emergency existed, the risk should have been explained to the patient.

In the main, however, exaggerated attempts to apply this doctrine have been frustrated by sensible court appraisal. One of the classic decisions was handed down by the Appeals Court in California in the famous *Salgo v. Leland Stanford, Jr., Hospital* case, which reads in part as follows:

> The physician must place the welfare of his patient above all else, and this very fact places him in a position in which he sometimes must choose between two alternative courses of action. One is to explain to the patient every risk attendant upon any surgical procedure or operation, no matter how remote; this may result in alarming a patient who is already unduly apprehensive and who may as a result refuse to undertake surgery in which there is a minimal risk; it may also result in actually increasing the risks by reason of the physiological results of the apprehension itself. The other is to recognize that each patient presents a separate problem, that the patient's mental and emotional condition is important and in certain cases may be crucial, and that in discussing the element of risk a certain amount of discretion must be employed consistent with the full disclosure of facts necessary to an informed consent. . . . Moreover, and for a different reason, policy militates against imposing liability upon the hospital. For to do so would tend to discourage hospitals from permitting physicians to use their facilities to perform novel medical procedures or would induce hospitals to discourage patients from undergoing them.

There is further language on this problem of informed consent. In a Delaware case, decided in 1959, involving hepatitis resulting from a blood transfusion, the Court adopted the view of a doctor who testified as follows: " . . . it is not my practice or the practice generally within the medical profession in this locality to advise patients of the risk of such infection, since the psychological and psychosomatic effect of the alarm which would be produced by such advice would run counter to the beneficial effect sought to be produced by the transfusion itself."

This whole subject of informed consent was discussed in an article which appeared in the *New York Times*, July 2, 1967, entitled "Doctors Must Experiment on Humans, But What Are the Patient's Rights?" One interesting paragraph reads as follows:

> Deciding what constitutes informed consent, however, can be a complicated and unsatisfying quest. In explaining an experiment a researcher, by his choice of words, his emphasis, his manner, may quite innocently raise a patient on the wings of euphoria or drive him into a panic. Patients have an understandable tendency to believe what they want to believe. It is, for example, possible to transplant an organ, say a kidney, from an identical to his sibling, and we may assume that no sane physician would perform such an operation unless the healthy twin or his parents expressed an unconditional willingness to sacrifice a kidney to save the brother's life. But asks an experienced researcher, "what words do you choose to explain what it means to live for the rest of your days with one kidney instead of two? You can make it sound fairly innocuous or pretty grim." If an experiment will not help the patient whose consent is being requested, that fact should assuredly be impressed on him. But suppose a new drug offers a remote chance of success along with an established risk? At what point does the patient cease being a patient and become just the subject of an experiment? There are several drugs in existence that have proved of use in fighting leukemia; unfortunately, all have adverse effects on bone marrow. Can a layman be expected to make a judgment about the possible effects and side effects of a new drug over which the physician himself is still puzzling? Dr. Moore thinks not and cautions that "an experienced lawyer could successfully attack any such consent, written or oral, on the basis of a lack of understanding by the subject."

An important case was recently tried by Mr. Bell of this office which led to a dismissal by the trial court, which dismissal was affirmed by the Appellate Division, and leave to go to the Court of Appeals was denied. In this case a distinguished surgeon had referred to him a young boy who had previously been operated on for the removal of a large tonsil which was later diagnosed as lymphosarcoma. The defendant doctor submitted the patient to radiotherapy treatment which extirpated the malignancy but caused a partial destruction of the jaw bone. While the father knew that the boy was going to be subjected to radiotherapy, it was his contention that the effects of the radiotherapy on the jaw had never been explained and that he would not have consented to the treatment had he known of it. The father was an attorney. The defendant and several other doctors testified that the extensive radiotherapy was necessary to save the boy's life. The main issue was: when the father gave his consent, was it an informed one?

There was a verdict within the last year or so against a surgeon and a hospital where it was claimed that the surgeon did a spine jack operation of a type that was his own invention. He inserted a type of metal prosthesis into the spinal region to correct scoliosis. There was testimony that this was not in accordance with any generally accepted type of practice in the field of orthopedics. The case against both defendants was appealed to the Appellate Division and affirmed as to both defendants. The case against the doctor was not appealed to the Court of Appeals; however, the hospital appealed to the Court of Appeals. (A verdict was returned against the hospital because it had allowed the operation to take place.) The Court of Appeals reversed the Appellate Court. The opinion by Judge Breitel of the Court of Appeals reads as follows:

> A private proprietary hospital does not have an obligation to a patient and his family using its facilities to make certain that they have given an informed consent to an unusual, dangerous operation performed by their privately retained surgeon. . . . Where a professional person provided (employed) by the hospital commits an act of malpractice the hospital may be liable derivatively under the doctrine of *respondeat superior*. But this of course does not apply where the malpractice is performed by a physi-

> cian retained by the patient himself. Where the treatment is provided by independent physicians, the hospital, and this is especially true of a private proprietary hospital, serves the function only of a specialized facility, not a direct service healing institution. . . . Moreover, it would not be just for a court, having the benefit of hindsight, to impose liability on a hospital for its failure to intervene in the independent physician-patient relationship. That relationship is always one of great delicacy. And it is perhaps the most delicate matter, often with fluctuating indications, from time to time with the same patient, whether a physician should advise the patient (or his family), more or less, about a proposed procedure, the gruesome details, and the available alternatives. Such a decision is particularly one calling for the exercise of medical judgment. In the exercise of that discretion, involving as it does grave risks to the patient, a third party should not ordinarily meddle.

When I recently spoke at the First World Meeting on Medical Law in Belgium, I was preceded by Page Keeton, dean of the University of Texas Law School, who read a very interesting paper in which he cautioned the courts to be extremely circumspect in applying this doctrine. He read with approval the decision in the Texas case of *Bell v. Umstattd*, which I quote in part as follows:

> Plaintiff brought an action against an anesthesiologist for injuries sustained in the administration of an anesthetic during an aortic graft. Plaintiff claimed that the specialist should have informed her of the process contemplated. The lower court sustained defendant's motion for an instructed verdict. The appellate court affirmed, holding that the anesthetic was incidental to the main operation and that, barring injury, the defendant was under no duty to disclose the method either he or the surgeon would select in administering the anesthetic. The court noted that it would be both unreasonable and undesirable to place a burden of full and complete disclosure upon each and every specialist involved as to the specific methods intended to be used in an operation and all of the possible risks involved in each step of an operation.

A number of other jurisdictions have discussed this problem. A North Carolina court, in a case involving a complete abductor paralysis of the vocal cords following a subtotal thyroidectomy, held that the surgeon's primary duty is to do what is best for his patient, and any conflict between that duty and that of a frightening disclosure should be resolved in favor of the primary duty.

A Missouri court exonerated a psychiatrist, even though he did not fully explain the risk involved in electric shock and insulin therapy, because the plaintiff was "real shook."

An Arizona Appeals Court found that an ophthalmologist who performed a cataract operation and failed to disclose the possibility of hemorrhage was relieved of liability. The court recognized that all reasonable people must understand that there is some risk inherent in surgery, and in view of the psychosomatic problems involved in disclosure by the doctor, it would be too great a penalty to inflict on a surgeon to hold him liable when he withheld risks because of therapeutic reasons.

Recent Decisions Relating to Blood Transfusions. One of the cases, mentioned in my discussion of informed consent, refused to apply that doctrine to blood transfusions which later resulted in hepatitis. There is some interesting new law in this field. Some years ago the New York Court of Appeals decided by a 4 to 2 vote that there was no implied warranty of fitness for use, and that blood supplied by a hospital is not a sale but merely the rendering of a service. Several Florida decisions, however, have led a committee of the American Medical Association to recommend legislation absolving a hospital from warranty obligations for blood furnished to a patient. I do not read these Florida decisions to impose any warranty obligation, but at least one case, *Hoder v. Sayet*, calls attention to some precautions, which, if not taken, might expose a hospital to liability. The usual routine in checking on a donor consists of asking questions which have as their purpose the elimination of those who have a history of jaundice or any other condition that might expose a donee to undue risk. I would suggest that the blood bank have the prospective donor fill out the answers to a written questionnaire and sign his name. This should then be signed by a witness and dated. The language in the Sayet case, which I again say does not impose warranty but rather an obligation to take all known precautions in obtaining blood, involved the death of a patient from homologous serum hepatitis. A report of the decision reads in part as follows:

> A hospital cannot escape liability for use of impure blood for transfusion when it or its agent had reason to know that minimum standards in selection of donors and the processing of blood were not being followed by the blood bank from which the blood was obtained by the hospital asserting that its sole duty was to obtain blood from a licensed blood bank. . . . It appears that the blood used in the Hoder transfusion was obtained by the blood bank from two donors, one of whom gave a fictitious name and address and was never located. The other donor was located and deposed concerning the procedures followed by the blood bank in the taking of his blood. A blood bank, in order to be accredited by the proper authorities, is required to ask certain questions concerning the donor's general health, well-being, diseases, and other relevant matters before taking his blood. He testified by deposition that he was asked none of these questions prior to the taking of his blood by the blood bank. Even though he stated that he would have answered any such question in the negative, a jury might reasonably infer that there had been a similar failure to screen the other donor at the time his blood was taken and that this amounted to a breach of the blood bank's implied warranty to take necessary precautions to minimize the risk of obtaining impure blood. . . . Dr. Sayet acted in the dual capacity of hospital pathologist and owner-operator of the blood bank. A jury might reasonably have found that the hospital entrusted him with a measure of responsibility in selecting the supply source for the blood acquired by the hospital. Any purchase then by the hospital from a blood bank which Dr. Sayet knew or should have known to be operating below minimum standards of care would have constituted a breach of the hospital's duty to use due care in the acquisition of blood for its patient.
>
> We do not presently hold that there has been any

breach of implied warranty or act of negligence or that the plaintiff is entitled to recovery. We hold merely that the movant for summary judgment has not conclusively shown the nonexistence of any material issues of fact and that there is possible evidence from which a jury might find for the plaintiff if this evidence is proven and credible. We reverse and remand, for further proceedings consistent herewith, on the issues of negligence against both the hospital and the blood bank, as well as on the issue of a breach of an implied warranty by the commercial blood bank.

Compensatory and Punitive Damages. In a number of recent decisions there have been awards for both compensatory and punitive damages particularly in actions against drug companies where it is charged that the company callously disregarded the results of its testing procedures or misrepresented the same and sold the drug in large quantities to the injury of a great number of people. One particular product has led to a large number of suits against the manufacturer, and in some of these suits, the physician who prescribed the medication has been named as a codefendant. Usually the doctor is only charged with damages actually sustained, and it is not claimed that he should be punished for deceit, but in some cases, the doctor has also been accused of participating in the deceit.

In Westchester County, a drug manufacturer and a doctor were sued by a young married couple. It was charged that the wife took the drug which was supposed to inhibit cholesterol production and that it actually caused cataracts, exfoliative dermatitis, and hair loss. The exfoliative dermatitis and hair loss were of a temporary nature, but it was necessary to perform cataract surgery, following which, by the use of corrective lenses, she was able to see quite well. The jury, having heard much about the drug's history including the fact that an $80,000 fine had been levied against the company by the Federal government for erroneously reporting data, brought in a verdict of $375,000 for compensatory damages and $800,000 for punitive damages. Mr. Shapero of this office represented the doctor, and the case against him was dismissed. The Court in a long opinion displayed great concern about the punitive damage award. The Court realized that the company could be repetitively punished almost to the point of confiscation of its assets; however, it still felt there was a precedent for punitive damages and cut the verdict from $800,000 to $100,000.

In a similar case in California, where it was proved that the drug had been placed on the market without adequate and proper warning, an award was returned in the sum of $175,000 for compensatory damages and $500,000 for punitive damages. On a rehearing the punitive damages were cut to $250,000.

Again, there was an action brought against the same drug company in the United States District Court for the Southern District which resulted in a verdict of $17,500 for compensatory damages and $100,000 for punitive damages. In this case the small amount of compensatory damages was based on the fact that the cataracts did not cause any permanent loss of vision. The Circuit Court of Appeals for the Second Circuit then considered the matter, and Judge Friendly, in a long and most interesting opinion, reversed the award of punitive damages in this case. One interesting fact is that two of the executives of the company had been using the drug themselves at the same time the patients were. The Circuit Court found that while some of the results of tests should not have led to exaggerated claims on the part of the company, there was no evidence of a wilfull attempt to deceive; the company already had been fined $80,000 by the government and there was available to injured parties adequate recompense for the harm done them. It, therefore, felt it would be most unfair to the stockholders to destroy their investment in a reputable company for an unfortunate mistake which came about through no evil intent. This decision has been characterized by a plaintiffs' lawyer in *News Letter* as: "A three judge panel narrowly concluded, with one dissent, that the record contained insufficient evidence to submit question of punitive damages to the jury."

This is an incorrect statement of what the court decided. The court went at great length into the proof and did not find there was "insufficient evidence" to submit to the jury, but rather that the total picture did not in their opinion spell out the necessity to impose this harsh type of relief. Judge Hays, who did not join with the majority of the Court, did not write any opinion which disagreed with their fundamental reasoning. All he said was that he preferred to wait until he read what the Court of Appeals in New York did with the Westchester County case.

The Need for All Physicians to Have Malpractice Insurance. Many times I have cautioned doctors to make sure that their temporal assets are protected by adequate insurance. Mr. Shapero just tried a case for a number of days involving events which occurred many years ago, and in which our defendant, an elderly physician, had forgotten to renew his insurance. The plaintiff demanded a very substantial figure to settle. While there was an excellent chance that the doctor would prevail and although the codefendants were offering a substantial amount in settlement, the doctor's family finally decided that his remaining assets would be imperiled if he took a chance, and they added to the settlement a modest amount on his behalf.

I call attention again to the $1,500,000 Florida verdict where I mentioned that rumor has it that the two physician-defendants had a $5,000 policy each.

Doctors call me to complain that their hospitals insist that they carry insurance in a six-figure amount. Since hospitals no longer have immunity and the institution may be involved in a suit along with a doctor, it seems sensible to me that all members on the staff be required to carry adequate insurance.

Acknowledgments. Again, I wish to pay

tribute to James Arnold and Frank Appleton of H. F. Wanvig, Inc., who so successfully manage the insurance program and who are so helpful to us in organizing the original receipt of the legal papers and tabulating the statistics of the program. We are most grateful to the members of the Malpractice Insurance and Defense Board who spend many hours considering applications for insurance and interviewing doctors who have had a heavy or special type of loss experience.

I again wish to acknowledge my appreciation for the cooperation extended to us by John Linster, vice-president of the Claim Department, Employers Mutuals of Wausau, the insurance carrier, and his associates who have acquired much knowledge in this field and are ever helpful to us, and to Messrs. Marx, Hanner, Gordon, Bourbeau, Andreotta, Aversa, and Vitacco, of the New York City office, who continue to furnish us with efficient claim and investigation services and consult with us on a daily basis as to the management of our cases. Upstate this fine work is carried on by Messrs. Bollman, Duggan, and Byrne of the Syracuse office. We were all very saddened this year by the death of Carl Rogge, one of the staff of the Employers, who for many years played an important role in the company's management of our cases.

Respectfully submitted,
WILLIAM F. MARTIN, *Legal Counsel*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

The report of legal counsel speaks for itself. Your committee recommends careful study of this report by the Society membership and wishes to thank the Society's counsel for the continuing standard of excellence which he has maintained on our behalf for the past quarter of a century.

The House voted to adopt this portion of the reference committee report.

Judicial Council

To the House of Delegates, Gentlemen:

The members of the Judicial Council are as follows:

A. W. Martin Marino, Sr., M.D., *Chairman*	Kings
Gerald D. Dorman, M.D.	New York
William P. Reed, M.D.	Westchester
William L. Wheeler, Jr., M.D.	New York
Joseph G. Zimring, M.D.	Nassau

As required by Section 1, Chapter VI of the Bylaws, the Judicial Council held an organizational meeting immediately at the close of the annual meeting of the State Society on February 16, 1967, in New York City. A. W. Martin Marino, Sr., M.D., was elected chairman.

Walter T. Heldmann, M.D., secretary; William F. Martin, Esq., legal counsel, and J. Richard Burns, Esq., assistant executive vice-president, also attended the meeting.

The Council is happy to report that no appeals were presented during the year and, therefore, no further meetings were held.

Respectfully submitted,
A. W. MARTIN MARINO, SR., M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

The Judicial Council reported that no appeals were presented during the year. The committee recommends approval of this report.

The House voted to adopt this portion of the reference committee report.

Constitution and Bylaws (Annual)

To the House of Delegates, Gentlemen:

The members of the Council Committee on Constitution and Bylaws are:

John E. Lowry, M.D., *Chairman*	Queens
Marvin Brown, M.D.	Oswego
Leo S. Drexler, M.D.	Kings
William F. Martin, Esq., *ex officio*	New York

At the March Council meeting the committee reported that the proposed revised version of the constitution and bylaws of the Medical Society of Jefferson County was not in conflict with the Constitution and Bylaws of the State Medical Society but that several changes were considered desirable. The Council adopted the committee's recommendation that the revised constitution and bylaws be approved and that the desired changes be transmitted as suggestions to the county medical society.

At the recommendation of the committee, the Council, in September, approved proposed changes in the bylaws of the Medical Society of the County of Schenectady.

Changes in the bylaws of the Eighth District Branch are now under consideration. Action which may be taken by the Council in November or January regarding these proposals will be included in a supplementary report.

Respectfully submitted,
JOHN E. LOWRY, M.D., *Chairman*

Constitution and Bylaws (Supplementary)

To the House of Delegates, Gentlemen:

At its January meeting the Council adopted recommendations of its Committee on Constitution and Bylaws that amendments to the bylaws of the Eighth District Branch, the Broome County Medical Society, and the Nassau County Medical Society be approved.

Respectfully submitted,
JOHN E. LOWRY, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

Your committee reviewed the annual and supplementary reports on Constitution and Bylaws. We note recommendations on changes in bylaws of four counties and one district branch. We commend the work of this committee.

The House voted to adopt this portion of the reference committee report.

New York Delegation to the AMA (Annual)

To the House of Delegates, Gentlemen:

The members of the delegation participated in the 116th annual convention of the American Medical Association in Atlantic City, New Jersey, June 18 to 22, where they attended the meetings of the House of Delegates.

Twenty-seven delegates represented the State Medical Society (two were excused because of illness; and alternate delegates were appointed to take their places). Others present were: two alternate delegates, our AMA trustee, the delegate to the Section on Proctology, and a New York past president of the AMA.

Since the convention was held close to "home" 11 members of the staff were with us, at varying times, also a few county medical society executives.

The delegation held six meetings, including three breakfast sessions. Matters coming before the House were discussed at length. We acted on some of the issues. Also, several candidates for offices of the AMA appeared briefly and addressed the delegation.

Seven members of our delegation served on reference committees. Also, we assigned delegates to each reference committee conference, so that the views of the Medical Society of the State of New York would be heard.

Three former delegates who had died during the past year were among the group of deceased AMA delegates who were honored by a moment of silence. They were: Walter P. Anderton, New York City, who served as a delegate from 1945 to 1960; E. Dean Babbage, Buffalo, who served in 1966 and would have served in 1967 except for his untimely death; and Cary Eggleston, New York City, who served as delegate in 1924, 1925, 1931, 1935, and 1937.

Resolutions. Five resolutions were introduced by the New York delegation. Actions taken by the AMA House were as follows:

1. *Resolution 24* (*New York resolution 67–63*)—"Hospital Staff Tenure," introduced by Dr. Rawls, referred to Reference Committee D (Hospitals).

Action: The reference committee amended the resolution as follows:

> *Resolved*, That the AMA urge hospitals, hospital medical staffs, hospital associations, and medical societies to consider procedures similar to the following when a physician who has completed a probationary period is not recommended for reappointment to his hospital staff position or it is recommended that his staff privileges be curtailed; (for "following" see original resolution)
>
> *Resolved*, That this House of Delegates instruct the Board of Trustees to direct the AMA Commissioners to the J.C.A.H. to strongly urge the J.C.A.H. to incorporate the principle of "due process" in its Standards of Accreditation, and further to require evidence that medical staff bylaws, rules, and regulations set forth specific procedures that serve to insure "due process."
>
> The House adopted this resolution as amended.

2. *Resolution 25* (*New York resolution 67–32*)—"Policy on Insurance Payments for Services of 'Hospital-Based' and Salaried Physicians," introduced by Dr. Himler, referred to Reference Committee D (Hospitals).

Action: The reference committee amended the resolution as follows:

> *Resolved*, That the American Medical Association reaffirm the principle that payment, however rendered, for the services of "hospital-based" physicians regardless of their contractual arrangement with the hospital or institution be separated from the charges made by hospitals and that payments to hospitals and physicians not be intermingled.
>
> The House adopted this resolution as amended.

3. *Resolution 26* (*authorized by the Council of the Medical Society of the State of New York at its meeting, May 25, 1967*)—"Recommendation to Manufacturers of Disposable Hypodermic Syringes," introduced by Dr. Pisani, referred to Reference Committee E (Scientific and Public Health). The text of the resolution follows:

> Whereas, The Medical Society of the State of New York has received reports that physicians frequently discard disposable hypodermic syringes leaving the needles intact; and
>
> Whereas, Such intact devices may be picked up and reused by narcotic addicts; and
>
> Whereas, Failure to break these disposable hypodermic needles may contribute to more widespread use of narcotics by addicts; and
>
> Whereas, Reminder warnings to destroy such equipment may be helpful to physicians and their office personnel; now therefore be it hereby
>
> *Resolved*, That the American Medical Association request manufacturers of disposable hypodermic needles and syringes to include, in the packaging of these, clear directions for their correct disposal, so that reuse by narcotic addicts may be prevented.

Also with the approval of the Council (June 8), Dr. Moore suggested to the reference committee that manufacturers of disposable hypodermic needles and syringes adopt designs to prevent reuse of such syringes.

Action: The reference committee found the intent of this resolution to be commendable, made some changes for clarification, and presented the following substitute resolution:

> Whereas, It is alleged that physicians sometimes discard disposable hypodermic syringes leaving the needles intact; and
>
> Whereas, Such intact devices may be

picked up and reused by narcotic addicts, children, and others; and

WHEREAS, Reminder warnings to destroy such equipment may be helpful to those who use disposable hypodermic syringes; now therefore be it hereby

Resolved, That the AMA request that manufacturers of disposable hypodermic needles and syringes adopt designs to prevent reuse, and include in the packaging clear directions for their correct disposal.

The House adopted the substitute resolution.

4. *Resolution 27* (*New York resolution 67–41*)—"Surveys of Physicians' Qualifications by State Licensing or Regulatory Bodies," introduced by Dr. Schussheim, referred to Reference Committee G (Miscellaneous).

Resolved, That the American Medical Association recommend to appropriate licensing or regulatory bodies of the states that, when surveys on physician qualifications are made, the questionnaires have space for the listing of all information pertinent to physicians' qualifications, certification, and training.

Action: The reference committee reported as follows: "Your reference committee is in sympathy with the intent of this resolution. However, we feel that this is primarily a matter of concern for the individual state medical associations and question whether the American Medical Association should be involved in these local matters. Accordingly, your reference committee recommends that this resolution not be adopted."

The House voted not to adopt the resolution.

5. *Resolution 105* (*authorized by the Council at its meeting June 8*)—"H.R. 6418 entitled 'Partnership for Health Amendments for 1967,' " introduced by Dr. Pallin, referred to Reference Committee A (Insurance and Medical Services). The text of the resolution follows:

WHEREAS, Federal Public Law 89–749 (S. 3008) 89th Congress, entitled "Comprehensive Health Planning and Public Health Services Amendments of 1966," was enacted on November 3, 1966; and

WHEREAS, Prior to the enactment of this Federal law, the American Medical Association submitted objections and constructive proposals concerning the proposed law (S. 3008) at public hearings conducted by the Committee on Interstate and Foreign Commerce, House of Representatives, October 11, 1966; and

WHEREAS, The House of Delegates of the Medical Society of the State of New York, at its February, 1967, session, approved, with some modifications, these amendments; and

WHEREAS, There is now before Congress a bill, known as the "Partnership for Health Amendments of 1967" (H.R. 6418), which would, among other provisions, extend for a period of four years PL 89–749; and

WHEREAS, The basic objections and constructive proposals concerning S. 3008, submitted by the AMA in October, 1966, and endorsed by the Medical Society of the State of New York in February, 1967, apply with equal force to the present proposal, H.R. 6418; now therefore be it hereby

Resolved, That the American Medical Association present to Congress a statement of objections and constructive proposals concerning H.R. 6418 similar to the statement presented to the Committee on Interstate and Foreign Commerce, House of Representatives, October 11, 1966, concerning S. 3008, 89th Congress; and be it further

Resolved, That the AMA include in said statement the following principles:

1. The operation of any service center shall not infringe on the private practice of medicine;
2. Health services shall be rendered at a cost to the patient commensurate with his level of need;
3. There shall be adequate medical representation on all national, state or local bodies having supervision or jurisdiction in the development and operation of these health service projects; and
4. Projects shall in no way be developed, operated, or influenced in a manner which could lead to a government-controlled system of medical practice.

Action: The reference committee commended the New York delegation for its interest in this important bill and suggested that the Board of Trustees may wish to review material contained in the resolution in preparation for future presentation before Congress.

The House voted to refer Resolution 105 to the Board of Trustees.

One of the important controversies in the House was the question of where the annual convention of 1969 should be held. There was opposition to the report of the AMA Board of Trustees that the meeting, as scheduled, be convened in New York City.

The reference committee declared that this meeting be scheduled for Miami Beach and that the clinical convention be held in St. Louis, Missouri, December 1 to 4, 1969. After considerable discussion, the House voted to adopt the report of the Board of Trustees, thereby disapproving the recommendation of the reference committee. *The 1969 convention will be held in New York City.*

Elections. The New York delegation voted to use the unit rule in voting and to support certain candidates in office who, we believed, were best qualified. Thurman B. Givan was re-elected to the Council on Constitution and Bylaws.

Hospitality. Under the chairmanship of Dr. McClintock, the New York hospitality suite in the Garden Room of the Haddon Hall Hotel was open according to the following schedule: Monday, Tuesday, and Wednesday, from 12:00 noon to 2:00 p.m.; Monday and Wednesday, from 5:00 p.m. to 7:00 p.m.

As usual, we are grateful to our delegates who attended the meetings. We thank the wives for all they did for us, and we are grateful to the staff and others who participated in our activities.

AMA Report. **The following is a summary of the actions of the House of Delegates, as prepared by F. J. L. Blasingame, M.D., executive vice-president of the American Medical Association.**

ATLANTIC CITY, June 22—Between the speaker's call to order at 10:00 a.m. Sunday in the Pennsylvania Room of Haddon Hall and the last voice vote at 1:12 p.m. Thursday afternoon, the American Medical Association's House of Delegates set two records.

One was attendance. After 95 per cent of the authorized delegates attended Sunday's opening session, 100 per cent—242 delegates out of 242—were in their seats for both the Tuesday and Wednesday deliberations. Thursday, the final day, attendance still stood at 240.

The other was accomplishment. All told, the House was presented with 151 items of business on which action had to be taken, including a record total of 123 resolutions from state medical associations; 18 reports from the Board of Trustees, 3 of which were nominations to fill Council positions; 4 reports from the Council on Medical Service; 3 reports from the Council on Constitution and Bylaws, one produced during the convention in order to implement an adopted resolution; 2 reports from the Council on Medical Education; and 1 report from the Judicial Council nominating affiliate members of the Association.

Dwight L. Wilbur, M.D., San Francisco, California, was elected president-elect. Dr. Wilbur has been a member of the Board of Trustees since 1963. He will serve in his new capacity for one year and will be installed as the Association's 123rd president at its annual convention in his home city in June, 1968.

Malcom E. Phelps, M.D., El Reno, Oklahoma, who has been field director of the Volunteer Physicians for Vietnam program, was elected vice-president of the Association.

Walter C. Bornemeier, M.D., Chicago, Illinois, was re-elected speaker of the House, and Russell B. Roth, M.D., Erie, Pennsylvania, was re-elected vice-speaker of the House.

Four Trustees were elected to succeed themselves: Wesley W. Hall, M.D., Reno, Nevada; Irvin E. Hendryson, M.D., Denver, Colorado; Alvin J. Ingram, M.D., Memphis, Tennessee; and Robert C. Long, M.D., Louisville, Kentucky.

Edward R. Annis, M.D., Miami, Florida, was elected to complete the term on the Board of Trustees vacated by the death of Homer L. Pearson, M.D., Miami, Florida; and Burt L. Davis, M.D., Palo Alto, California, was elected to complete the term as Trustee vacated by the resignation from the Board of president-elect Wilbur.

Thurman B. Givan, M.D., Brooklyn, New York, was elected to succeed himself on the Council on Constitution and Bylaws.

Earle M. Chapman, M.D., Boston, Massachusetts, (succeeding himself), and Vernon E. Wilson, M.D., Columbia, Missouri, were elected to the Council on Medical Education.

George W. Slagle, M.D., Battle Creek, Michigan, was elected to succeed himself on the Council on Medical Service.

On the nomination of President Rouse, Elmer G. Shelley, M.D., North East, Pennsylvania, was elected to succeed himself on the Judicial Council.

The American Medical Association's Distinguished Service Award was presented by the House of Delegates to E. W. Alton Ochsner, M.D., of New Orleans, Louisiana.

At Sunday's opening session, the House heard outgoing president Charles L. Hudson, M.D., Cleveland, Ohio, urge physicians of the United States to "take the initiative and apply local solutions to local problems" in order to "persuade people that the proper function of government is to confine its activities to the support of private enterprise rather than to act as a competitor." Dr. Hudson stressed that it remains a continuing charge of physicians "to seek out and meet any discovered needs for health care" and observed that "one of the greatest challenges facing the medical profession now and in the immediate future. . .is the organization of community health care."

At his Tuesday evening inauguration as the Association's 122nd president, Milford O. Rouse, M.D., Dallas, Texas, followed a similar theme in pointing out that "the federal government is making its moves into areas where, to its own satisfaction at least, it is able to demonstrate unfilled needs for health care or health care planning. If we are alert to our responsibilities for filling all of the apparent vacuums in communitywide health programs, we can eliminate areas which may seem to demand government involvement.

"Leadership will be provided," Dr. Rouse said, "in these areas of community planning and the provision of community health services for all people. The only undefined factor is the source of that leadership. If it is not the physicians of the community, it will be government in one of its many forms."

President Rouse listed some of the many problems now facing the medical profession, asserting however that "this is a time not for despair, but for a clear recognition of crises that are approaching; a time not for anger and frustration, but for unswerving determination to face our problems and solve them; a time not for philosophy alone, but for action to make our philosophy a reality."

In his report to the House, President Rouse elaborated on that theme and listed what he considers to be some of the solutions to the problems facing medicine. Among the items he included were more unity within the medical profession; greater interprofessional harmony with all other elements of health care; better communications between physicians and their societies at every level, and between physicians and the public; increased participation by physicians in the deliberations and programs of the medical associations; more activity by physicians in the political and civic affairs of their communities; and the development of citizen interest in matters of over-all health.

"As we have done in the past," the president told the House, "we shall gladly respond to requests from government or from any other source for advice on health matters. . . But, as in the past, we shall insist that we be approached in good faith, with the assurance that our freedom of judgment and freedom of action will be preserved.

"Our future," he concluded, "will not be determined by those who oppose us, but by our own willingness to accept the responsibilities which are naturally ours."

Actions of the House. Of the 10 reports from councils considered by the House, all were adopted in their presented form except two from the Council on Medical Service which were amended and adopted. Of the 18 Board of Trustees reports, 13 were adopted as presented; two were amended and adopted; two were accepted for information; and one was referred back to the Board along with state resolutions on the same subject.

After many hours of reference committee hearings and additional debate on the floor of the House, 27 of the 123 state resolutions were adopted; another 25 were amended and adopted; 27 were referred to the Board or to one or more councils; 22 were combined with one or more others into substitute resolutions; 8 were replaced by substitute resolutions; and 14 were not adopted.

The will of the House was expressed on a great variety of subjects.

Therapeutic Abortion. One subject that has generated interest not only in the profession but among legislatures and the public is therapeutic abortion.

The House updated the Association's 1871 policy on the subject which, according to the reference committee report which was adopted, was not only antiquated but lacked even the rudiments of adequate safeguards to prevent abuse. The updated policy, the House agreed, is in keeping with modern scientific knowledge, contains necessary safeguards, and permits the physician to exercise his personal conscience and medical judgment in the best interest of his patient, over-riding objectives in any medical decision.

The following was established as policy of the American Medical Association:

> "...Recognizing that there are many physicians who, on moral or religious grounds, oppose therapeutic abortion under any circumstances, the American Medical Association is opposed to induced abortion except when:
>
> "(1) There is documented medical evidence that continuance of the pregnancy may threaten the health or life of the mother, or
>
> "(2) There is documented medical evidence that the infant may be born with incapacitating physical deformity or mental deficiency, or
>
> "(3) There is documented medical evidence that continuance of a pregnancy, resulting from legally established statutory or forcible rape or incest may constitute a threat to the mental or physical health of the patient;
>
> "(4) Two other physicians chosen because of their recognized professional competence have examined the patient and have concurred in writing; and
>
> "(5) The procedure is performed in a hospital accredited by the Joint Commission on Accreditation of Hospitals.
>
> "It is to be considered consistent with the principles of ethics of the American Medical Association for physicians to provide medical information to State Legislatures in their consideration of revision and/or the development of new legislation regarding therapeutic abortion."

Health Care Cost. "Today...the ability of the physician to serve his patient is being handicapped by the rapidly rising prices of the various components of health care." That is a statement from the Board of Trustees report adopted by the House with the provision that it be widely disseminated for study and evaluation as to its applicability in local areas.

"Indeed," the report continued, "if the price of health care continues to outrun slower increases in consumers' income, the problem of medical indigency will assume alarming proportions."

Basic problems in the over-all design of the nation's health care system, as shown in the adopted report, include inadequate numbers of new physicians and shortages of other individuals trained to function as part of the health care team; the present organization and management of the nation's hospitals, with respect to their "privilege of automatically translating all higher costs into higher prices" which "must now be questioned;" diagnostic and therapeutic care outside of a hospital; and legislation in the health field.

A number of actions were taken to outline possible solutions to the problems of higher health care costs. One important one was the adoption of a progress report on strengthening and improving voluntary health insurance programs, submitted by the Council on Medical Service. The House accepted the Council's statements that it would "continue to study the scope and patterns of benefits, public demands for coverage, the performance of health insurance and prepayment programs and accumulation of data for future use;" and that the Council would "proceed to develop guiding principles for health insurance and prepayment programs."

As further efforts in this direction, the House referred to the Board and to the Council on Medical Service a resolution that the AMA "consult with insurers in an effort to change their policy of insurance coverage so that payment can be made for diagnostic procedures and minor surgery performed in the physicians' office and/or in the hospital outpatient department"; adopted a resolution that the Association petition Congress to remove the restriction on first-dollar deduction from income tax laws for health care expenditures; and adopted the over-all policy that "physicians... continue to do everything possible to help the public conserve its health care dollars."

Government Health Programs. As might be expected, a great many reports and resolutions dealt directly or indirectly with the Association's relationships with government and with the multitude of government programs existing or proposed in the health field.

The House reaffirmed Association policy that "the medical profession has long and consistently held to two basic positions concerning personal health care and its financing: that no one should go without needed care because of inability to pay, and that responsibility for payment rests first on the individual himself and then, to the extent that he is unable to pay, on his family, the community, the county, the state, and, to the extent that lesser levels of government are unable to finance the care, the Federal government."

Regarding the Title 19 program, the House made it policy that "the medical profession should now take a firm stand in support of the Title 19 approach in improving the health and the delivery of health care services to the needy of the nation."

Recommendations adopted by the House are that the medical profession take a strong stand in support of implementation of Title 19 "while still seeking such changes in the Federal legislation and/or regulations as will improve this program; that it urge organized medicine to take a leading role in formulating and directing Title 19 programs at the state and local level...and that it incorporate in such planning the use of existing voluntary mechanisms and private insurance carriers, wherever feasible, utilizing the usual and customary fee principle, thus bringing within the mainstream of present medical care systems the provision of quality health care for all Americans."

Appalachian regional health programs were the subject of a number of resolutions, and the House adopted the following guidelines for setting up any such programs: (1) demonstrated need for the proposed project; (2) local control; (3) participation of a significant proportion of local physicians in planning and development of the project; (4) the operation of any regional, area, or county health service facility shall not infringe on the private practice of medicine; (5) all health services, whether preventive, prophylactic or therapeutic, shall be rendered at a cost to the patient commensurate with the social and economic status of the patient; (6) there shall be adequate medical representation on all national, state, and local bodies having supervision or jurisdiction in the development and/or operation of such health service facilities; and (7) these health service projects shall in no way be developed, operated, or influenced in any manner which could lead to a government-controlled system of medical practice.

More generally, in connection with any and all government medical care programs, guidelines were adopted by the House:

"The medical profession in any community is best represented by the local medical society and its officers. They should be consulted initially, and during the process of planning of any and all projects for the care of the sick and the preservation of health."

In proposing any new facility, "It shall be first determined that existing facilities are so inadequate that only a completely new facility will provide a solution.

"The responsibility for the health needs of a community basically resides at the community level, and all the local resources. . .shall be examined before the community accepts government monies.

"If it is deemed advisable to operate a government-financed facility in a community, it shall in no way be binding on a physician to refer his patients there; to coerce a physician to service the facility; and this facility must in no way infringe on the private practice of medicine.

"These projects should not be developed or operated in such a manner as to establish a precedent that could lead to a government-controlled medical care system in this country."

Physician Control Over Collection and Disbursement of Professional Fees. In adopting a report of the Council on Medical Service regarding collection and disbursement of professional fees, the House reaffirmed past action and provided clear, consistent policy statements reflected in these thoughts which are elaborated in the full report:

1. It is proper for the physician to establish the fee he charges to any patient for professional service rendered, with the recognition that a duly constituted committee of his peers may appropriately review and pass on the equity and justice of his charge.
2. It is proper for third-party agencies to make payment of professional medical fees for patients.
3. It is proper for a physician to work with other physicians in a team approach to the provision of medical service, recognizing that each is entitled to compensation according to the value of his services and that charges attributable to each physician's service shall be made clear to the patient.
4. It is proper for a physician who provides personal supervision and direction for a physician-in-training to charge for the professional medical service rendered.
5. A physician should not enter into a contract or agreement with a hospital whereby the hospital acts as the agent for him unless it is with the consent of the physician and of the medical staff.
6. Physicians, collectively in hospitals, may properly establish special medical staff funds, wholly under their own control, which they may support as they see fit and disburse as they may agree.
7. Fees for professional medical services are properly paid only to the responsible physicians and may not be appropriated by any other person or agency.
8. The physician is the sole arbiter as to the ways he may dispose of his professional income, without duress, consistent with the laws of the land and the *Principles of Medical Ethics of* this Association.

Millis Commission and Commission on Research. Because the contents of the Millis Commission report (Citizens Commission on Graduate Medical Education) relate so specifically to the roles of the Councils on Medical Education and Medical Service, the two councils have assumed responsibility for assembling critiques and information. At a later date, they will bring to the Board, and subsequently to the House, recommendations for implementation of parts or the whole of the report. The House urged all interested members of the Association or groups to submit comments, suggestions, or recommendations for consideration by the two councils.

With respect to the Commission on Research, the Board has established a Committee on Research to review reports on the subject from the Councils on Medical Education and Medical Service; refer portions of the report to other councils and committees; and confer with those groups in addition to receiving their reports.

Again, the House urged any interested individuals and groups to forward comments and suggestions to the executive vice-president for transmittal to the committee.

Medicine and Osteopathy. The House adopted the following recommendations of the Board regarding the medical profession's relationships with osteopathy:

1. Authorize the Board of Trustees to begin promptly negotiations directed toward beginning official change of schools of osteopathy to schools of medicine. (It is understood that from the American Medical Association funds will be required to conduct these negotiations, and assistance in identifying and securing additional funds from other sources to support efforts toward changing the schools.)
2. Authorize the Council on Medical Education to undertake negotiations to establish means by which selected students with proved satisfactory scholastic ability in schools of osteopathy may be considered by schools of medicine for transfer into medical school classes.

The primary issue in the relationship of medicine and osteopathy, as recognized by the House, seems to be not that of cultism as opposed to science. Rather the issue appears to be one level of medical education and practice as opposed to another and lower level of education and practice. The extensive and growing licensure of osteopathic physicians for the unrestricted practice of medicine and the nature of osteopathic education strongly indicate that time alone will resolve shortly the problem of cultism in relation to osteopathy.

Medical Manpower. The House accepted for information a report from the Board which pointed out that "the production of well-qualified physicians in adequate numbers is necessary to meet effectively both social and economic demands for health care." It reviewed some of the activities of the Committee on Health Manpower and concluded that "the AMA should continue to study the effect of new roles for health personnel and new interrelationships and interdependencies between health professionals, as well as the impact of innovative concepts on the organizational structure evolving in the general system of health care delivery. . . .

"In any event, our resolve should always be as it is now: to use the best tested and most forward looking measures to provide excellent health care for all of our citizens through an ample number of able, educated, and highly skilled physicians."

The House also referred to the Board, for consideration by the committee, a resolution that "deliberations include strong emphasis on sound ays of accelerating medical education in all its phases, including post-M.D. and graduate education, and of increasing the supply of physicians in all categories."

In addition, the House adopted reports calling for revision of the *Essentials of Approved Residencies* in radiology, obstetrics, and gynecology; adopted a resolution calling for the promotion of better practices in inhalation therapy; and adopted a resolution that the AMA reaffirm its support of all forms of nursing education; that hospitals which conduct diploma schools of nursing be commended; that such hospitals be urged to continue their schools and increase enrollment; and that the AMA take appropriate action in consultation with professional nurses' associations and the American Hospital Association to encourage increasing enrollment in diploma schools and at the same time improve educational standards.

Committee on Planning and Development. At the June, 1966, convention of the House, the Board announced the appointment of a committee to study planning and development technics within the Association. The report of the committee was received, and the Board submitted its final report to the House at this convention.

The Board voted to (1) establish a permanent Committee on Planning and Development and (2) select seven active members of the AMA as members. The following charges were established for the committee:

1. Study and make recommendations concerning the long-range objectives of the Association and the resources, programs, and organizational structure by which the Association attempts to reach them.
2. Serve as a focal point for the planning activities of the Association and stimulate and coordinate planning activities throughout the organization.
3. Study, or cause to be studied, medicine and the environment in which the Association must function and transmit the conclusions of these studies to the Board.

In the report adopted by the House, the Board earnestly solicited nominations to the committee from delegates, constituent associations, component societies, and other interested groups and individuals.

Two resolutions on the subject were referred to the Board.

It is noteworthy that in his report to the House, President Rouse stated that "we now have an established Committee on Planning and Development at the AMA level. I hope that every county and state association will likewise make use of a comparable committee, to plan wisely and develop properly the policies and programs needed in the decades ahead—far beyond just the next year."

Members' Disability Insurance Program. The House adopted the report of the reference committee on this subject, and referred to the Board a number of resolutions pertaining to it.

The committee's report, as adopted, recommended that the House authorize the Board to make every effort to continue the AMA Members Group Disability Insurance Program with the same premium-benefit structure. It also recommended the following guidelines to aid the Board in negotiating and executing the necessary contracts and in the future operation of the program:

1. The contract should provide ample assurance that disability claimants will be treated equitably and justly.
2. The carrier should guarantee benefits and premiums for a period of at least five years in order to assure the stability of the program.
3. Promotional literature should be approved in advance by the Board or its designee. All measures within the bounds of dignity and ethics should be utilized to promote the program.
4. A continuous ongoing review of the entire program should be maintained. The insureds and other members should be made aware that such a review may reveal in the future the necessity for a revision of the program at the end of the five-year period.
5. Information regarding the operation of the program, its financial aspects, and the processing of claims should be available to the Board for review at any time.
6. An AMA Disability Insurance Review Committee should be continued and should provide a mechanism for claims review.

Political Action. Several resolutions were offered to the House questioning whether the administration of government programs is truly carrying out the intent of Congress in its passage of laws. They were combined by the House into one resolution stating, "That if legislation is introduced to investigate the activities of the Department of Health, Education, and Welfare and its executive personnel who are concerned with health matters to determine if the intent of Congress is being carried out, the American Medical Association will provide to such an investigation any information that its Board and councils may secure in these matters."

The resolution also pointed out that since the most effective method to preserve the private practice of medicine is to elect proper officials at all levels of government, "the American Medical Association urges that physicians, as individuals, redouble their efforts in political activities."

It was also resolved that the Association "continue and expand its efforts to inform our membership of its activities to represent them, particularly before the Congress and the Federal agencies."

The House also adopted a resolution, "That medical societies be urged to investigate, document, and report to the Law Division. . .all violations of Public Law 89–97 by officers or employees of the Federal government" and that "a status report be provided to this House at the 1967 Clinical Convention."

The House also reaffirmed the Association's opposition to S. 260 (the Hart Bill) and its support of direct billing under Part B of Medicare on the basis of a physician's itemized statement of charges.

The House supported AMPAC (American Medical Political Action Committee) and the state political action committee organizations by adopting a resolution recognizing "that leadership at all levels of medicine should make individual commitment to state PAC-AMPAC membership and local political action committee programs, wherever this is legally possible."

Generic Prescribing. A resolution combining several state resolutions was adopted by the House, asserting "that the AMA again reaffirm its policy that physicians should be free to use either the generic or the brand names in prescribing drugs for their patients; and encourage physicians to supplement medical judgments with cost considerations in making this choice."

Other Actions. During the convention, the House welcomed 15 physicians who have served in the Volunteer Physicians for Vietnam program; conducted a memorial service for 27 members of the House and/or officers of the Association who had died since the 1966 annual convention; heard a report on AMPAC from Blair J. Henningsgaard, M.D., chairman of the AMPAC board; heard a report on AMA-ERF from immediate past president James Z. Appel, M.D., president of AMA-ERF; permitted a representative from the Oregon Woman's Auxiliary to introduce to the House the "Doctor's Wife," a new rose developed by the Oregon auxiliary; and heard a talk by David Kindig, president of the Student American Medical Association.

Adopted many other resolutions, including these:

Amending the bylaws so that recipients of the Distinguished Service Award and the Citation of a Layman for Distinguished Service will be nominated at the clinical convention and the presentations will be made at the next Annual Convention.

Confirming that there is nothing in the military officer's oath that conflicts in any way with the ethics of the medical profession.

Noting that a double standard of policy often exists between so-called "hospital-based specialists" and other types of practitioners with respect to hospital staff appointments and endorsing "the principle of a single standard with respect to staff appointments among all physicians having equivalent credentials in all hospital departments and services as a means of assuring maximum freedom of choice of physicians by patients, and of consultants by staff members."

Requesting the Joint Committee on Hospital Accreditation to "encourage. . .the acceptance, wherever possible, of physicians elected or appointed by the medical staff to the Board of Trustees with full voting rights as the most effective form of liaison between the medical staff and hospital-governing authorities."

Opposing the establishment of a racial quota system for hospitals.

Encouraging farm equipment manufacturers to establish standards for basic overturn protective frames and crush-resistant cabs.

Reaffirming the Association's policy regarding tobacco and health and promising vigorous continuation of its measures for corrective action.

Urging that disposable hypodermic syringes be thrown away in such a way as to prevent their possible reuse.

Encouraging state associations to inform state legislators of the need to re-examine existing "battered child" laws so child abuse is to be reported by physicians as well as medically oriented social services.

Supporting continued research and control measures for venereal disease.

Reaffirming the Association's opposition to requirements for certification and recertification.

Stating the Association's continuing concern for the prevention of death and injury from burns by "stepping up its education campaign to make the public more aware of the dangers inherent in flammable fabrics and other related flammable materials" and resolving that "the AMA cooperate with other voluntary associations in the furtherance of this program."

Finally, the House welcomed as its guests at the opening session the winners of the AMA's top awards at the 18th International Science Fair, held in San Francisco. They were Susan T. Bertrand, New Albany, Indiana, whose exhibit was "Electrophoretic Analysis of Blood Serum"; and Stephen R. Igo, Winterset, Iowa, with an exhibit showing the design, construction, and operation of a small, synchronous intrathoracic auxiliary ventricle. Both winning exhibits were on display during the convention.

Respectfully submitted,
HENRY I. FINEBERG, M.D., *Chairman*

New York Delegation to the AMA (Supplementary)

To the House of Delegates, Gentlemen:

Since the annual report, our delegates to the American Medical Association have participated in: (1) a meeting of the delegation, in New York City, on November 15; and (2) the 21st clinical convention in Houston, Texas, November 26–29, 1967.

November 15 Meeting. Henry I. Fineberg, M.D., was unanimously re-elected chairman of the delegation.

Dr. Rawls presented the following resolution for consideration and for presentation to the AMA House of Delegates:

> *Subject:* Teaching Material and the Collection of Fees Where a Third Party is Involved: (Voluntary Health Insurance, Medicaid and Medicare) in Inpatients, Outpatients
>
> WHEREAS, Voluntary insurance, Medicaid, and Medicare have made it possible for most indigent patients to choose their private physicians, thus greatly reducing the number of patients the staffs in the teaching hospitals are required to serve; and
>
> WHEREAS, This poses a hazard to the teaching program and would, if not corrected, interfere with the training of the physicians of the future; and
>
> WHEREAS, Funds are now available from Medicaid and Medicare to pay for medical services to most medically indigent patients; and
>
> WHEREAS, The hospitals are paid separately for the hospital expenses for the care of Medicaid and Medicare eligible patients; now therefore be it
>
> *Resolved,* That all physicians on the staffs of the hospitals with formal teaching programs should cooperate with and participate in the teaching programs; and be it further
>
> *Resolved,* That all Medicaid and Medicare patients referred to the hospitals by their physicians should remain under the care of their physicians who will, in giving the care, cooperate with the teaching programs of the hospitals; and be it further
>
> *Resolved,* That all patients admitted to hospitals and not referred by their physicians should be assigned to physician members of the teaching staffs of the hospitals; and be it further
>
> *Resolved,* That for Medicaid and Medicare patients referred by their physicians to teaching hospitals, fees should be collected by the physicians as they are for their other private patients; and be it further
>
> *Resolved,* That the hospitals may bill for medical services rendered to Medicaid and Medicare patients with the authorization of the physicians rendering the care; and be it further
>
> *Resolved,* That the teaching hospitals may not participate in the division of the fees collected for medical services, except for a reimbursement of the expenses of billing and collection; and be it further
>
> *Resolved,* That fees collected by the hospitals for medical services should be distributed in accordance with patterns freely agreed on by the medical staffs without coercion of any kind; and be it further
>
> *Resolved,* That each and every member of the staff who renders service to these patients shall have equal voting rights; and be it further
>
> *Resolved,* That full-time physicians may participate in the division of funds for services rendered to these patients on the same basis as other members of the staff but only in proportion to the time spent in actual care of the patient and his total salary; and be it further
>
> *Resolved,* That the medical profession and the hospitals engage in a combined program of education to the end that proper teaching material be made available for all teaching purposes; and be it further
>
> *Resolved,* That local county medical societies should be prepared to receive complaints of coercion from any of their members, and if the evidence justifies it, to refer the coercion to the hospital's medical staff and administration; and be it further
>
> *Resolved,* That this be presented through proper channels to the House of Delegates of the American Medical Association at the clinical session held the latter part of November.

After considerable discussion and a few changes, it was voted to send the resolution to the Council, at its meeting the following day, for approval.

The chairman reported that many states have promised to support Dr. Dorman for the position of president-elect of the American Medical Association, and he urged that New York continue to work strenuously towards this end.

Appointments of New York members to reference committees were announced, and the chairman made assignments of certain people to act as observers at the various committee meetings.

There was a report of the Hospitality Committee, and the hours when the hospitality suite would be open were transmitted for the information of all present.

The meeting lasted an hour and fifteen minutes.

AMA Clinical Convention. The 21st clinical convention of the American Medical Association was held at the Shamrock Hilton Hotel in Houston, Texas, November 26 to 29. Our full quota of delegates attended (27). Also present were: two alternate delegates, our AMA trustee, Gerald D. Dorman, three members of the MSSNY staff, and two executives from county societies (Erie and New York).

The delegation held four meetings, three of which were breakfast conferences. Matters coming before the House were discussed and actions were determined on specific issues. The campaign to elect Dr. Dorman president-elect of the AMA was considered carefully, and each member of the delegation was assigned to visit several other state delegations.

At the opening session of the House, Drs. Dorman and Fineberg presented a decorative scroll from the Medical Society of the State of New York to the Medical Society of the District of Columbia in honor of its 150th anniversary.

At one of the breakfast meetings, the delegation from Alabama visited us and presented your chairman with a certificate making him an honorary member of the Alabama Medical Association.

The resolution, first presented to the delegates on November 15 by Dr. Rawls, and later amended by the Council, was discussed in detail (it had been transmitted to the AMA soon after the Council meeting). This resolution was considered by a reference committee and later referred to the AMA House of Delegates. The House considered the following substitute resolution, and adopted it:

> *Subject:* Guidelines for Medical Staffs in Hospitals with Intern and Resident Training Programs
>
> WHEREAS, Voluntary insurance, Medicaid, and Medicare have made it possible for most medically indigent patients to choose their private physician, thus greatly reducing the number of patients the staffs in hospitals with intern and resident training programs are required to serve; and
>
> WHEREAS, This situation poses a hazard to such programs and, if not controlled, would interfere with the training of the physicians of the future; and
>
> WHEREAS, Hospitals are paid separately for their costs incurred in providing services to Medicaid and Medicare eligible patients; therefore be it
>
> *Resolved*, That this House of Delegates of the American Medical Association recommend the following guidelines for medical staffs in hospitals with intern and resident training programs:
>
> 1. All physicians on the staffs of hospitals and/or medical schools which have formal training programs should cooperate with and participate in such training programs;
> 2. Any patient who is admitted to a hospital by his physician should remain under the care of that physician who will, in giving the care, with the patient's knowledge and consent, cooperate as far as possible with the training program where such a program exists;
> 3. All patients who are admitted to a hospital and not referred by or requesting their private physicians should be assigned on an equal rotational basis to members of the medical staff;
> 4. For patients admitted by their physicians to teaching services in hospitals, fees should be collected for services rendered by those physicians of record as they are for their other private patients;
> 5. Hospital medical staffs or organizations representing the medical staff may bill for medical services rendered to patients on behalf of and only with the authorization of the attending physician rendering the care;
> 6. A hospital or medical school may not participate in the fees collected for medical service;
> 7. Fees for medical services collected by a hospital medical staff or organizations representing the medical staff should be distributed solely on the direction of the medical staff without coercion of any kind and in accordance with agreements previously reached by the physicians comprising the medical staff and the hospital or medical school;
> 8. All members of the medical staff who render service to these patients and for whom fees are collected by the medical staff or an organization representing the staff shall have equal voting rights in determining the distribution of the funds collected;
> 9. Full-time salaried physicians may participate in funds for services rendered to these patients in proportion to the percentage of their total salary ascribed to actual care of the patient;
> 10. Medical societies and hospital associations should engage in a combined program of education to insure a sufficient number of patients for the medical training programs of accredited hospitals;
> 11. If complaints of alleged coercion or of excessive charges for the collection of fees for medical services are received by local medical societies from any of their members,

these societies should take appropriate action; and

12. Medical staffs entering into agreements for the collection of fees should seek appropriate advice concerning the legal and tax implications of such arrangements; and be it further

Resolved, That a copy of this resolution be sent to the American Hospital Association for its information.

In our usual way, we are submitting to you the following report from F. J. L. Blasingame, M.D., executive vice-president of the American Medical Association:

Houston, Texas, November 29, 1967—The need for "positive leadership" and "visible action" by the medical profession and all other members of the health team was emphasized to delegates at the 21st Clinical Convention by Milford O. Rouse, M.D., president of the AMA.

"The future of the individual physician, of patient care and of the methods by which it will be made available to all people do not depend on our efforts alone," the president said in his keynote address during Sunday's opening session. "They depend also on the future attitude of the nation toward free enterprise, on the degree of future national respect for individual initiative, and on the extent of future over-all acceptance of the concept that personal satisfaction and personal benefit are to be gained principally through personal endeavor."

Dr. Rouse pointed out that many things can be done only by government, or best by government, but added that many other things can be done only by private organizations and individual citizens working together. The reason, he explained, is that actions of government often are necessarily negative. For example, Dr. Rouse said, "Government can pass laws against theft, but no law can make a people want to be honest. . . . Government can pass laws against drunkeness, but no law can make a people want sobriety."

However, he added, "Leaders in government understandably see it as their duty to do for the people of this country whatever they believe, or whatever they are told by citizen groups, is not already being done. . . . When private citizens abdicate their responsibilities and ask the government to do a job, government responds in the only way it can: it passes more laws. . . . And every time another law is passed, it means another small or large restriction on somebody's freedom."

As citizens, Dr. Rouse said, "we have this choice when facing a situation that needs correcting: we can do it ourselves, or we can ask the government to pass a law" and set up an administrative mechanism to enforce it. In regard to specific, current problems—the cost of health care and the growing need for more effective cooperation among health care professionals and subprofessionals—Dr. Rouse stated that "I believe sincerely that we have reached a point. . .when we can no longer just cling to all of the traditions of our distinguished past. I believe the time has come for orderly, planned, meaningful change—not in the fundamentals of ethics or devotion to excellence, but in the more material features of efficiency, cost and methods of delivery" of health care.

"If we should fail to recognize the present as an opportunity for positive action. . .I believe we would fail not only ourselves, but the people of this country, more and more of whom need and want more and more of the services we are uniquely able to render. Let us not make it necessary," he concluded, "for anybody else to direct the furnishing of those services."

There was no lack of positive action in the Houston meeting, at which 238 out of 242 delegates (98.3 per cent) attended the final two sessions, dealing with 96 items of business, including 17 reports from the Board of Trustees, 20 from the four standing committees of the House, one special report each from the AMA-ERF and the Commission to Coordinate the Relationships of Medicine with Allied Health Professions and Services, and 57 resolutions from state medical societies or individual physicians.

Of those, the House adopted 43 without amendment, amended and adopted 22, referred 21, absorbed four into other adopted items, and rejected six.

Distinguished Service Award. Owen H. Wangensteen, M.D., director of the Department of Surgery at University Hospitals, Minneapolis, was named the winner of the 1968 Distinguished Service Award. The award will be presented to Dr. Wangensteen at the annual convention in San Francisco, in June, 1968.

Under a change in the bylaws, this is the first time the award winner has been selected at the clinical convention. Previously he was selected and the award was made at the annual convention.

AMA-ERF Institute for Biomedical Research. In a special report on the AMA Education and Research Foundation, Charles L. Hudson, M.D., immediate past president of the AMA and president of the AMA-ERF, reported to the House that the board of directors of the AMA-ERF had "voted to endorse in principle the relocation of the Institute for Biomedical Research on, or contiguous to, the University of Chicago campus, and authorized the executive vice-president, with appropriate other members of staff and the president and secretary-treasurer of the foundation, to negotiate a contract with the University of Chicago for consideration by the board of directors of the AMA-ERF."

The House approved the action of the board of directors of the AMA-ERF and endorsed "in principle" the relocation of the Institute "on or contiguous to the University of Chicago." At the same time, the House requested the board of the AMA-ERF "to present at each clinical convention a report on the projected budget of the Institute for Biomedical Research for the ensuing year and the amount of the projected contribution from the American Medical Association to the Institute during that period."

Medical Education. Several actions were taken relating to medical education. One was adoption of the Board of Trustees' summary of the report of the Commission on Research. Fifteen recommendations were contained in the commission report, two of which were seen as particularly significant.

Recommendation 12 encouraged research in the delivery of health care, "provided it is conducted under proper auspices and in accordance with sound research design and methodology." The House adopted it, with the understanding that such support "should not be interpreted to imply any criticism of the present studies of the delivery of health care." Present efforts are productive, but the medical profession "should not hesitate to make known its interest in continued studies to improve the methods and quality of health care delivery."

Recommendation 13 was addressed to correcting the imbalance between biomedical research and education caused by the "heavy but desirable Federal support of research." It stated that "there should be alloted a greatly increased amount for operational expenses of medical schools, to be matched by those schools through private or local government sources."

Again the House concurred, stressing the fact that its approval of the recommendation changes the policy of the AMA with respect to Federal support for medical education. The change results in "an honest recognition that Federal financial support is now accepted by the American medical schools." However, in adopting the recommendation, the House "emphatically urges that a matching formula be used" to "encourage medical schools to retain their independence."

The House also adopted a resolution that the AMA, through its Council on Medical Education, "utilize all appropriate influences to restore teaching to its proper place of prominence in medical education" instead of giving the lion's share of attention, honors, and contributions to research scientists; and adopted 12 guidelines for medical staffs in hospitals with intern and resident training programs.

Health Manpower. A report was adopted on the "Report of the National Advisory Commission on Health Manpower," which was submitted to President Johnson on November 20.

The report was necessarily brief, since there had not been time to study and evaluate the commission report in any depth, but it pointed out that the commission's approach to health care problems indicated recognition of the need for orderly procedures rather than harmful "crash" programs. The emphasis in most of the commission report is to center responsibility on the professional groups best able to evaluate and plan in health areas, rather than on government and nonprofessionals.

The House adopted the preliminary report, voted to enlarge the AMA Committee on Health Manpower by four members to permit more careful and complete study in this area, and noted that copies of the complete commission report will be sent to all delegates and alternates, requesting them to submit their comments to their constituent associations as soon as possible.

In addition, the House approved replacing the present AMA Commission to Coordinate the Relationships of Medicine with Allied Health Professions and Services with a new council of the Board of Trustees to be known as the Council on Allied Health Professions; and directed the Association to seek the establishment of a medically oriented Federal Commission on Health Resources and Medical Manpower to assure properly balanced distribution of health personnel among government agencies, the armed forces, and the civilian population.

Also with respect to health personnel, both professional and allied, the House asked that a report be made at the next meeting evaluating the foreign resident, intern, and physician program; requested a study of the present professional liability implications in the use of allied medical personnel; and urged physicians to become acquainted with the programs of the American Association of Medical Assistants and to encourage their assistants to participate in its educational and certification programs.

Health Care. The House adopted a number of reports and resolutions relating to health care from the standpoint of the community and the individual patient.

One emphasizes that standards of medical care are set at the local level and calls attention to disturbing trends pointing to the possible establishment of medical care standards on a national basis.

Another commits the AMA to leadership in informing the public, the profession, and other elements of the health care field as to practical means of moderating health care costs, the value of voluntary health insurance, expanding the medical manpower supply, and improving the health care of the American people.

With respect to comprehensive planning of health facilities and services, the House urged state and local medical societies to emphasize a variety of activities to be undertaken in the area of over-all planning for government and private programs of health care, including "continued effort by the medical profession to improve Federal legislation in this area and to emphasize the importance of local control."

The House reaffirmed that the procurement, processing, distribution or use of human blood and other human tissue is a medical service and is not the selling of a commodity. The Board of Trustees and the state associations were urged to support legislative action at Federal and state levels to implement this concept.

The use of monitoring, defibrillation, and resuscitative equipment by registered nurses in cases of cardiac emergencies was supported, with provisions regarding the nurse's training and the procedures established by the hospital medical staff.

Alcoholism was identified as a complex disease, and the House recognized that the medical components of this entity are medicine's responsibility.

Medicare and Medicaid. In regard to Medicare, the House reaffirmed its support for direct billing under the Federal program and adopted a resolution regarding the collection and public dissemination of figures on the administrative costs of Medicare.

The House resolved that the AMA continue its efforts to provide for the implementation of Title 19 in a manner which recognizes "the physician's right to bill directly all patients, including Title 19 patients, and allows the physician or his patient to be reimbursed his usual, customary, and reasonable fee for his professional services"; and that the Association actively seek changes in the law that will secure "equal and simultaneous application to all jurisdictions."

Other Legislative Matters. A resolution urging continuing opposition to S-2299, the Long drug bill, and a report detailing the current status of HR-12080, the Social Security Amendments of 1967, were adopted.

The House also adopted recommendations that the AMA arrange a meeting of state medical association representatives to plan regional conferences of physicians to discuss matters of special interest to state legislators, and that state associations invite key lawmakers to attend AMA conferences.

Also approved was a resolution that state associations establish active legislative task forces at the congressional district level to maintain an effective working relationship with congressmen.

Support for AMPAC was reaffirmed in a resolution that requested the Board of Trustees to seek additional ways of helping AMPAC enlarge its activities and its assistance to state medical political action committees.

Hospitals. Because both Medicare and Medicaid provide payment for medical care rendered to patients by residents, the House resolved that the Association should study the problem and develop guidelines that are acceptable to supervising physicians, teaching institutions, and government agencies involved in the payment process.

In addition, with respect to hospitals, the House adopted resolutions:

—Proposing the acceptance of physicians on hospital boards of trustees as the most effective form of liaison between the medical staff and hospital governing authorities.

—Protecting hospital privileges through "due process."

—Calling for more effective liaison and better coordination between medical staffs and local medical societies.

—Pointing out the need for simplifying attendance requirements for maintaining membership on hospital medical staffs.

—Pressing for prompt revision of the JCAH ruling on the use of externs in nonuniversity-affiliated hospitals, with the incorporation of adequate safeguards to insure the quality of programs of extern education.

In addition, model articles of incorporation for hospital medical staffs were made available for distribution in response to requests.

AMA Organization and Procedures. A number of changes were made in the Bylaws:

—Chapter XIV, Section 3(D) was updated, providing that four trustees will be elected annually, each for a three-year term and each limited to three terms.

—The terms in office of the president, president-elect, and vice-president all will begin and end at the close of the final session of the House of Delegates at the annual convention.

—Resolutions must be introduced to the House by a voting delegate.

—Nominations for affiliate membership in the AMA in classes (3), (4), (5), and (6) must be approved by the appropriate county and state medical society.

—A general officer's position is to be considered vacant if he misses six consecutive regular meetings of the Board.

—The House approved giving the vice-president voting rights on the Board.

Convention Sites. Sites and dates for future conventions will be:

	Annual	*Clinical*
1968	San Francisco, June 16–20	Miami Beach, December 1–4
1969	New York, July 13–17	Denver, November 30–December 3
1970	Chicago, June 21–25	Boston, November 29–December 2
1971	Atlantic City, June 20–24	New Orleans, November 28–December 1
1972	San Francisco, June 18–22	Atlanta, November 26–29
1973	New York, July 15–19	Anaheim, Cal., November 25–28
1974	Chicago, June 16–20	Portland, Ore., December 1–4

AMA Objectives. The House adopted a statement of 11 purposes and responsibilities for the AMA, designed to define more clearly the over-all purpose as written in the constitution: "To promote the science and art of medicine and the betterment of public health."

The entire statement follows:

The Purposes and Responsibilities of the American Medical Association

It is the responsibility of the American Medical Association, as the representative of the American medical profession, to continue to foster the advancement of medical science and the health of the American people.

Its continuing purposes are to meet this responsibility through the following means:

1. By encouraging the further development of medical knowledge, skills, technics, and drugs; and by maintaining the highest standards of practice and health care.
2. By creating incentives to attract increasing numbers of capable people into medicine and the other health care professions.
3. By advancing and expanding the education of physicians and other groups in the health care field.
4. By motivating skilled physicians who have the art of teaching to apply themselves to developing new generations of excellent practitioners.
5. By fostering programs that will encourage medical and health personnel to serve voluntarily in the areas of need for medical care.
6. By developing technics and practices that will moderate the costs of good medical and health care.
7. By seeking out and fostering means of making all health care facilities—and physician's offices, hospitals, laboratories, clinics, and others—as efficient and economical as good medical practice and attention to human values will permit.
8. By combining the utilization of the latest knowledge for prevention and treatment with the vital healing force of the physician's personal knowledge of and devotion to his patient.
9. By maintaining the impetus of dedicated men and women in providing excellent health care by preserving the incentives and effectiveness of unshackled medical practice.
10. By maintaining the highest level of ethics and professional standards among all members of the medical profession.
11. By continuing to provide leadership and guidance to the medical profession of the world in meeting the health needs of changing populations.

Additional Actions. A memorial to Percy E. Hopkins, M.D., was read to the House and a copy was sent to Dr. Hopkins' widow. Dr. Hopkins served as a trustee for seven years, the last four as its chairman. He also served for eight years as a delegate from Illinois.

The House reiterated its serious concern with respect to the Blue Cross Association's request for government funds for its research project on group practice.

Criteria for the evaluation of medical programs of national voluntary health agencies were adopted.

Three resolutions, referred to the Board, pointed out that many news stories criticizing the rising cost of health care place all or most of the responsibility squarely on physicians. As one of the resolutions put it, "Statistical reports relating to health care costs are misleading when they are referred to. . .as medical care costs; and. . .the improper labeling. . .may actually delay proper analysis of the several components."

Respectfully submitted,
HENRY I. FINEBERG, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

The report and supplementary report of the New York delegation to the AMA were received and reviewed by your reference committee. The committee approves the reports of the AMA delegation and commends this delegation for so ably representing the Medical Society of the State of New York and so industriously pressing the affairs and attitudes of the Society at the business sections of the AMA. We recommend careful perusal of this report by all members of the House for important information on AMA actions.

The House voted to adopt this portion of the reference committee report.

Osteopathy

To the House of Delegates, Gentlemen:

Members of the Ad Hoc Committee on Osteopathy are:

Samuel Wagreich, M.D., *Chairman*	Bronx
Sol Axelrad, M.D.	Queens
John W. Latcher, M.D.	Otsego
John H. Wadsworth, M.D.	Schoharie

The committee held two meetings during the past year with representatives of the New York State Osteopathic Society.

At its meeting in April, 1967, it was announced that a Postgraduate Institute of Osteopathic Medicine and Surgery had recently been established with a faculty representing both the professions, a board of directors with lay representation, and headquarters at LeRoy Hospital. The purpose of the Institute is to create an intelligent milieu for physicians licensed to practice medicine and surgery in New

York State. Programs to be held at the Institute will be available to all physicians licensed to practice medicine and surgery in New York State. Courses on the following subjects are being considered: emphysema, the rehabilitation of the postsurgical patient, problems in recovery from injury to the body framework, and the public health responsibilities of osteopathic medicine.

The suggestion was made that information about these courses be sent to the State Medical Society's publication *What Goes On* and pointed out that the Reference Committee on Public Health and Education recommended to the House of Delegates at its meeting in February, 1967, that the Empire State Medical, Scientific and Educational Foundation continue its efforts to expand the postgraduate education for general practitioners and specialists and that discussions are being held in this regard. It was stated that doctors of osteopathy will be welcome to attend any of these courses.

Norman S. Moore, M.D., reported that the voluntary health agencies are planning to meet with the deans of medical schools this summer in an effort to expand postgraduate education in cancer, heart disease, diabetes, and so forth, and that these programs will be open to D.O.'s as well as M.D.'s.

It was the consensus of those present that both professions should continue to strive to improve the medical care of the patient and to raise the standards of medical education.

The committee unanimously approved the following motion with the recommendation that it be forwarded to the Council for approval: "That it is the feeling of the Medical Society of the State of New York and the New York State Osteopathic Society that areas of education should be extended to all physicians licensed to practice medicine and surgery in the State of New York."

The committee decided that a definite liaison between the two societies should be maintained on legislation, and it was suggested that this continue through Drs. Fineberg and Peckham.

The group considered the bill to permit the International Longshoreman's Association health centers to treat workmen's compensation cases, which would do away with free choice of physician, since this would be treatment by a closed panel, and would also permit billing for services of a physician by an institution or facility.

The following motion was approved with the recommendation that it be forwarded to the Council for approval: "That the New York State Osteopathic Society and the Medical Society of the State of New York both go on record as being opposed to any legislation which would be a violation of the present ruling that workmen's compensation patients have free choice of physician and that institutions or facilities cannot provide physicians to treat workmen's compensation cases and bill for the physician's services."

The Council at its June, 1967, meeting voted to adopt the committee's recommendations.

At its meeting with representatives of the Osteopathic Society on December 27, 1967, the committee heard a report on the successful outcome of the Article 78 proceeding against the State Education Department by the Osteopathic Society, in which the Medical Society joined as amicus curiae, which held that the unearned degree of M.D. issued by the California College of Medicine was not to be recognized in New York and which directed the striking of the title M.D. from the licenses of the D.O.'s who had received the degree.

Considerable discussion was devoted to the recent inclusion of chiropractors, who are licensed under Article 132, in the Medicaid program and to challenging their participation on the grounds that, although by law chiropractors are not allowed to diagnose, they are permitted to render treatment to Medicaid patients, which cannot be done without prior diagnosis. Doubt was expressed regarding the success of any legal action, because under Title 19, chiropractors fall under the broad definition of the paramedical services. As far as preventing their participation on the basis of ethics, it was believed that the Osteopathic and Medical Societies could be accused of restraint of trade if they directed their memberships not to refer patients to them. The representatives of the Osteopathic Society pointed out that it is the responsibility of the medical profession not to make it possible for an unlicensed practitioner of medicine to practice medicine, and that there are many cases on record which charge a doctor with conspiring or contributing to an unlicensed practitioner practicing medicine.

The committee approved a motion that the Medical and Osteopathic Societies agree to recommend to the State Commissioner of Health that, in view of the fact chiropractors are not able to practice medicine, they should not be empowered to initiate medical treatment which requires diagnosis (permit their participation within the confines of the law and within the privileges of their licensure).

It was suggested that the societies go on record as agreeing that they conform to their codes of ethics and to the statutes on the practice of medicine.

Dr. Wagreich raised the question of the use of manipulative therapy in the practice of medicine—whether it is an effective and valid modality in certain instances, such as pneumonia, flu, and so forth. He asked that the indications and utilization of manipulation be clearly defined. A lengthy discussion followed. The comment was made that the concept of osteopathic medicine could not be explained in a matter of a few hours, but that they have been attempting to do just this in the Postgraduate Institute. The representatives of the Osteopathic Society said that they will pursue the matter and set up a program on a particular subject.

At the last meeting of the Council, the committee was instructed to obtain an official agreement that the Osteopathic Society wants *What Goes On* sent to its members. The Osteopathic Society stated that it wanted this sent and would so notify the Medical Society, officially.

Proposals made by the Medical Society regarding revision of the Education Law and also the universal health insurance bill were discussed. It was agreed to send the Osteopathic Society copies of the statements presented by the Medical Society and the notice of hearings on the health insurance bill.

The committee discussed the problem of physician members of contract laboratories, who are permitted under the Medicaid program to do only three types of tests; others must be referred out. In this connection, there was also discussion of the demands of general practitioners for recertification. After considerable discussion, it was agreed that both the Medical Society and the Osteopathic Society support contract laboratory practice of medicine which would give the doctor of medicine the opportunity to do tests in his office without exploitation of the patient. It was also agreed that both organizations are opposed to any form of secondary licensing.

Dr. Max Kamen requested that, since doctors of medicine and doctors of osteopathy are all licensed as physicians and surgeons in the State of New York, in the future reference should be made "physician and surgeon–M.D." or "physician and surgeon–D.O.," or just "physician and surgeon." He also recommended changing the name of the Medical Society committee to Ad Hoc Committee on Osteopathic Medicine.

The committee agreed that an invitation should be extended to the members of the Osteopathic Society, through their official organization, to participate and join in continuing or postgraduate education by attending the Medical Society's annual convention. A copy of the January 1 issue of the NEW YORK STATE JOURNAL OF MEDICINE is to be sent to the office of the Osteopathic Society's secretary. The Osteopathic Society, in turn, invited the members of the Medical Society to attend its annual convention in Syracuse, in May.

Dr. Kamen reported that Michigan has established an associate membership for doctors of osteopathy in that state. He stated that this action is inconsistent with what this group has been working toward and inquired if the Medical Society of the State of New York has considered this. Dr. Wagreich assured him that the Medical Society has no provisions at the present time for accepting osteopathic physicians in the Medical Society of the State of New York.

Respectfully submitted,
SAMUEL WAGREICH, M.D., *Chairman*

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

Your committee commends this ad hoc committee for its work and endorses its informational report. Your committee recommends approval of this report.

The House voted to adopt this portion of the reference committee report.

68-4. Deduction by Component County Medical Societies of Fees for Collection of Medical Society of the State of New York and American Medical Association Dues

Introduced by Medical Society of the County of Kings

WHEREAS, The component county medical societies collect and remit the State Medical Society and the American Medical Association dues to the Medical Society of the State of New York; and

WHEREAS, The fee for collection, 1 per cent on State Society dues and 0.5 per cent on American Medical Association dues, is then at a later date remitted to the component county medical societies; and

WHEREAS, This second procedure is entirely unnecessary and is of no value; now therefore be it

Resolved, That the Medical Society of the State of New York authorize the component county medical societies to deduct the fees for dues collection, which total 1.5 per cent, before remitting the dues of the State Medical Society and the American Medical Association to the Medical Society of the State of New York.

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

The above resolution was introduced by the County of Kings and suggests that the component medical societies deduct fees for the collection of dues for the State Society and the AMA. Inasmuch as the State Society has agreed to a more prompt return of the fee for collection by the county societies, specifically on a quarterly basis, we recommend no action on this resolution.

The House voted to adopt this portion of the reference committee report.

68-11. Specialty Group Representation in the Medical Society of the State of New York

Introduced by Section on Anesthesiology

WHEREAS, Specialty groups are now well organized in the State of New York; and

WHEREAS, Problems peculiar to a particular specialty are most effectively handled by the involved specialty; and

WHEREAS, County medical societies are unable to solve the problems of State-wide specialty groups; and

WHEREAS, The county medical society is at the present time the only functioning component of the Medical Society of the State of New York; now therefore be it

Resolved, That the Medical Society of the State of New York change its organization structure to give specialty groups more influence in dealing with matters peculiar to such specialty groups; and be it further

Resolved, That the Medical Society of the State of New York establish a mechanism whereby specialty groups that are not organized on a State-wide level will be encouraged to do so.

68-37. Organization of Specialty Group Council by Medical Society of the State of New York

Introduced by Marvin L. Bloom, M.D., Section on Internal Medicine Delegate, as an individual

WHEREAS, Medical specialty groups, including those of general practitioners, are now well recognized and well organized in the State of New York; and

WHEREAS, The Medical Society of the State of New York is often required to act on behalf of these various specialty groups; and

WHEREAS, The various specialty groups should be consulted in negotiations on their behalf carried out by the Medical Society of the State of New York; now therefore be it

Resolved, That the Medical Society of the State of New York organize an interspecialty group council as a continuing structure of official representatives from the various specialty groups to consult and act in concert with the Medical Society of the State of New York on matters affecting all specialty programs, fee schedules, and other matters relevant to the interests of the various specialties.

68-47. Establishment by the Medical Society of the State of New York of Committee Representing Medical Specialty Groups

Introduced by Walter S. Walls, M.D., Councillor, as an individual

WHEREAS, A number of organized specialty societies exist in New York State; and

WHEREAS, There is no mechanism presently available for representatives of these groups to meet and deal with common problems; and

WHEREAS, A specialty liaison committee has been established at the national level by the American Medical Association; now therefore be it

Resolved, That the House of Delegates of the Medical Society of the State of New York recommend to the Council that a study be made of the best means of creating a liaison committee composed of representatives of the various specialty groups and relating the activities of this committee to those of the Council; and be it further

Resolved, That the Council make its findings and recommendations known at the next annual meeting of the Medical Society of the State of New York.

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

Inasmuch as the above resolutions deal with the same subject matter, they were considered jointly. We recommend a substitute resolution for these three resolutions to read as follows:

> WHEREAS, There exists a need for the expression of specialty group opinion on socioeconomic questions; and
>
> WHEREAS, Such a framework for this exists in current specialty sections; now therefore be it
>
> *Resolved*, That the specialty groups organized on a State-wide basis avail themselves of this mechanism through their section delegates to make their needs known to the various committees of the Medical Society of the State of New York.

The House, after discussion, voted to adopt this portion of the reference committee report.

68-12. Review of Malpractice Claims by Panel of Experts

Introduced by Section on Anesthesiology

WHEREAS, The number of malpractice suits against anesthesiologists and other physicians have been steadily increasing in New York State; and

WHEREAS, There has been no satisfactory solution to reduce the high proportion of unwarranted claims; and

WHEREAS, This has resulted in considerable harrassment of physicians in the practice of medicine, in general, and anesthesiology, in particular; and

WHEREAS, Medical malpractice insurance rates have continued to rise; and

WHEREAS, Insurance carriers are becoming more difficult to secure; and

WHEREAS, A new approach to the solution of similar problems has been instituted in the State of New Jersey and other localities; now therefore be it

Resolved, That the Medical Society of the State of New York, in conjunction with the courts, form a panel of doctors, former judges, and lawyers, to review and evaluate the validity of medical malpractice claims in order to discourage baseless professional liability claims and to make expert medical testimony available to claimants where there is a reasonable basis for a claim.

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

Your committee approves the intent of this resolution and recommends that a study and report be undertaken by the Council including reference to the California, Arizona, and New Jersey plans. We recommend no action on this resolution.

The House voted to adopt this portion of the reference committee report.

68-18. Inauguration of Procedures to Establish a Section on Military Medicine

Introduced by Medical Society of the County of Kings

WHEREAS, Military medicine, as a medical specialty, has a long and honored history dating back to colonial times; and

WHEREAS, This long and honored history has been recognized by the action of the Congress of the United States in chartering the Association of Military Surgeons of the United States; and

WHEREAS, The American Medical Association has recognized the special nature of military medicine for many years by having a Section on Military Medicine at its national meetings; and

WHEREAS, New York State has many military installations within its geographic area with medical facilities including, but not limited to: St. Albans Naval Hospital; U.S. Public Health Service Hospital, Staten Island; United States Coast Guard at Governors Island; West Point Military Academy; Stewart Air Force Base; Suffolk County Air Force Base; Plattsburgh Air Force Base; New York Naval Air Station, Floyd Bennett Field; Fort Hamilton, Brooklyn; Fort Wadsworth, Staten Island; and

WHEREAS, Many members of the Medical Society of the State of New York have a vital interest in military medicine as active duty members of the Armed Forces, the Veterans Administration, and the Public Health Service, or as members of the National Guard and of active reserve components of the Armed Services; and

WHEREAS, The bylaws of the Medical Society of the State of New York, Chapter XII, Section 6, state: "No new section shall be created unless a session devoted to its subject matter or specialty shall have been held at at least two successive annual meetings"; now therefore be it

Resolved, That the Medical Society of the State of New York initiate procedures to activate a Section on Military Medicine as a component section to function as an equal with the sections representing other specialties at the annual meeting; and be it further

Resolved, That this House of Delegates approve the scheduling of a meeting of a Session on Military Medicine at the next annual meeting of the Medical Society of the State of New York, as the first step in fulfilling the requirements for the establishment of a Section on Military Medicine.

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

Since no evidence was advanced that there is State-wide interest in the formation of a section on military medicine and that there was evidence of interest by specialists engaged in military medicine in the activities of many of the established specialty sections, your committee suggests further investigation of this matter by the interested parties and recommends disapproval of this resolution.

The House voted to adopt this portion of the reference committee report, disapproving Resolution 68-18.

68-25. Liability for Services Rendered by Paramedical Personnel

Introduced by Cayuga County Medical Society

WHEREAS, The number of physicians in general practice in rural communities and smaller cities is declining; and

WHEREAS, The demand for medical care, accentuated by proliferation of third-party payment, is constantly increasing; and

WHEREAS, The only apparent solution to this problem is the increased use of paramedical personnel in aid stations, clinics, and outpatient and treatment centers; and

WHEREAS, The specific education requirements and certification standards for many of these positions have never been clearly and legally defined; and

WHEREAS, The question of legal liability and medical responsibility of the referring or attending physician has never been clearly defined; and

WHEREAS, The relationship between the agency, clinic, or station providing the services of paramedical personnel and the attending or responsible physician has never been completely and legally clarified, especially in terms of malpractice liability; now therefore be it

Resolved, That the president with the approval of the Council of the Medical Society of the State of New York appoint an ad hoc committee of physicians familiar with the problems inherent in the employment of paramedical personnel and charge the committee with the responsibility of obtaining legal opinions on the responsibilities and the legal liability of physicians who employ such personnel; and be it further

Resolved, That the Council retain necessary legislative and legal consultants to the end that the committee develop legislation designed to protect the public and the physician when paramedical personnel perform what are customarily considered medical services; and be it further

Resolved, That the Medical Society of the State of New York press for the passage of such legislation as is recommended by the ad hoc committee.

REPORT OF REFERENCE COMMITTEE ON ORGANIZATION, POLICIES, AND LEGAL MATTERS: The following report was presented by John H. Wadsworth, M.D., chairman.

In consideration of resolution 68-25, discussion revealed that physicians covered under the liability insurance of the Medical Society's program are protected for the acts of nurses. technicians, and similar paramedical personnel functioning under their supervision and direction or employed by them (except nurse anesthetists if they are employed by an anesthesiologist). Legal counsel of the State Society is available to render opinions on problems arising in connection with paramedical personnel. In view of the above facts, we recommend no action.

The House voted to adopt this portion of the reference committee report.

68–35. Abolition of Inverted Staff of Aesculapius in Great Seal of the Medical Society of the State of New York

Introduced by Section on Space Medicine

> Whereas, It has been amply demonstrated as well as adequately explained in resolution 66–6 and resolution 67–81, that the 162-year old seal of the Medical Society of the State of New York depicts an inverted staff and inverted entwined snake as a staff of Aesculapius, the symbol of healing, which is unquestionably a technical error; and
>
> Whereas, Research in medical heraldry during the last three years has failed to reveal a similar instance of inversion; and
>
> Whereas, An innumerable number of physicians and scholars in private life and in public office (UN, WHO, WMO, and so forth) have recognized the unfortunate incongruity involved; and
>
> Whereas, Once that this technical error has been officially pointed out, the dignity of the Medical Society of the State of New York, representing over some 27,000 physicians, can ill afford to tolerate this incongruity simply on the basis "of excessive cost" (refer: 1967 report of James F. Durkin, M.D., chairman of the Reference Committee on Miscellaneous Business), wherein no actual figures were submitted, and no estimates have as yet reached an officer of the Section on Space Medicine; and
>
> Whereas, There are parallel examples of changes in the great seal of the State of New York (5 times since 1777) and the flag of the United States (27 times since 1776) whereby understandably strong traditional and emotional oppositions were overcome; now therefore be it
>
> *Resolved*, That the Medical Society of the State of New York, through proper parliamentary procedure, recognize the "clear and present status" of improper and incongruous positioning of the staff of Aesculapius in the present seal previous to any forthcoming alterations respecting the past and including the present that would lead to a more beautiful and meaningful symbol that will hopefully soon grace the new home of the Medical Society of the State of New York.

Report of Reference Committee on Organization, Policies, and Legal Matters: The following report was presented by John H. Wadsworth, M.D., chairman.

Your committee heard prolonged discussion of this resolution introduced by the Section on Space Medicine. Your committee carefully considered this resolution and recommends no action at this time.

The House voted to adopt this portion of the reference committee report.

68–53. Report on EMPAC to the Medical Society of the State of New York House of Delegates

Introduced by Medical Society of the County of Monroe

> Whereas, The Medical Society of the State of New York has repeatedly endorsed the aims and objectives of EMPAC and AMPAC, and has urged its members to join and support EMPAC; and
>
> Whereas, Many physicians of this State regularly contribute time, talents, and funds to EMPAC and AMPAC; and
>
> Whereas, The American Medical Association has urged that each state society's house of delegates receive an informational report during its annual meeting from its state PAC chairman, corresponding to the report regularly given the American Medical Association House of Delegates by the chairman of AMPAC; now therefore be it
>
> *Resolved*, That this House of Delegates receive an informational report, in regular open session, from the chairman of the Empire Medical Political Action Committee.

Report of Reference Committee on Organization, Policies, and Legal Matters: The following report was presented by John H. Wadsworth, M.D., chairman.

After lengthy discussion, your committee recommends distribution of an annual informational report* to the members of the House of Delegates from the chairman of EMPAC. However, a report in open session in this delicate area is not advisable at the present time, and we recommend disapproval of this resolution.

The House voted to adopt this portion of the reference committee report.

68–58. State-wide Uniform Date for County Medical Society Officers to Assume Office

Introduced by C. Stewart Wallace, M.D., Councillor

> Whereas, The adoption of a uniform date for county medical society officers to assume office would effect definite economies for the Medical Society of the State of New York in time, money, and printed materials; and
>
> Whereas, Such a uniform date would enable the field service representatives of the Medical Society of the State of New York to assist new county medical society officers more efficiently, especially in the smaller counties; and
>
> Whereas, If such a uniform date were adopted, the Medical Society of the State of

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* An informational report from EMPAC was later distributed to the House, marked "distributed at a meeting of the Medical Society of the State of New York, House of Delegates, 1968."

New York could keep its records and mailing facilities more current and accurate, thus avoiding much confusion and waste; now therefore be it

Resolved, That the House of Delegates of the Medical Society of the State of New York recommend to the component county medical societies that they amend their constitutions and bylaws, if necessary, to require that, regardless of the date of their election, their officers assume office on a specific date which is to be uniform for all such societies; and be it further

Resolved, That this date shall be the first Monday in June of each year.

Report of Reference Committee on Organization, Policies, and Legal Matters: The following report was presented by John H. Wadsworth, M.D., chairman.

Your committee reviewed this resolution and recommends that the last *Resolved* be changed to read that this date shall be set by the Council.

The House voted to adopt this portion of the reference committee report.

The House voted to adopt the reference committee report as a whole as amended.

Proposed Amendments to Constitution and Bylaws

Proposed amendments to the Constitution and Bylaws of the Medical Society of the State of New York were referred to the House Committee on Constitution and Bylaws and will be acted on at the 1969 annual meeting of the House of Delegates.

The proposed amendments are as follows:

68-19. Amendment to Bylaws to Add Requirement for Life Membership

Introduced by Medical Society of the County of Kings

Whereas, Many more members than ever are elected to life membership in the Medical Society of the State of New York on reaching the age of seventy; and

Whereas, This will lead to an imbalance in the membership of the county societies and endanger their financial support; now therefore be it

Resolved, That the Bylaws of the Medical Society of the State of New York be amended to provide that an active member may apply for life membership at age seventy only if he has been a dues-paying member in active practice for a period of at least ten years, as follows:

Amend Chapter I, Section 6, by adding in the first sentence following the word "membership" the following words: "If he has been a dues-paying member in active practice for a period of at least ten years," so that the first sentence of Chapter I, Section 6, will then read as follows:

> "An active member in good standing, on reaching the age of seventy years, or who is permanently disabled, may apply for life membership if he has been a dues-paying member in active practice for a period of at least ten years."

68-27. Rescinding of Mandatory AMA Membership

Introduced by Otsego County Medical Society

Whereas, Continued compulsory membership in the American Medical Association for all members of the Medical Society of the State of New York was voted by the House of Delegates at the annual convention in February, 1967; and

Whereas, Dissatisfaction with certain policies of the American Medical Association has existed in many component county medical societies; and

Whereas, Many valuable members have felt compelled to express their dissatisfaction with the American Medical Association by resignation; and

Whereas, The volume of these resignations has been between 15 and 20 per cent of the membership of the Medical Society of the County of Otsego; now therefore be it

Resolved, That the Medical Society of the State of New York rescind its requirement that membership in the American Medical Association be mandatory for membership in the Medical Society of the State of New York by amending the Bylaws of the Medical Society of the State of New York as follows:

1. Chapter I, Section 1, first sentence, delete the words "and the American Medical Association," so that the sentence will then read: "The active and junior members shall be all active and junior members in good standing of the component county medical societies";
2. Section 2 (c), delete the second paragraph;
3. Section 3, first sentence, delete the words "or the American Medical Association" and change the word "their" to "its" so that the sentence will then read: "A member expelled from his component county society or suspended from its rights and privileges shall likewise be expelled or suspended for the same period from this Society."

68-46. Amendment to Bylaws Concerning Privilege of Floor

Introduced by Medical Society of the County of Queens

Whereas, Despite the lack of specific, applicable mention in the Medical Society of the State of New York Constitution and Bylaws or in *Roberts Rules of Order Revised*, it has been alleged that a nondelegate, except "by permission of the Speaker on unanimous vote of the delegates," cannot be permitted to address the floor; and

Whereas, Such a unanimous vote could not be meaningful since the membership could not know, a priori, if the information they are to accept or reject is pertinent or essential; and

Whereas, There may be a qualified nondelegate present with pertinent information on a specific subject, or with information necessary to correct an error in resolutions, reports, or other proceedings, not previously presented, which might be useful to the delegates; and

Whereas, It would not be practical or proper to give unlimited privileges of the floor to nondelegates who might request it; now therefore be it

Resolved, That the Bylaws of the Medical Society of the State of New York be amended as follows: Amend Chapter VIII of the Bylaws to add a new section, to be entitled Section 7, as follows:

> "Any member in good standing of the Society may, at the request of one or more delegates, be granted permission by the Speaker to address the House in order to present information to it and the general membership concerning a subject or subjects of which the member has special knowledge or information."

68–55. Amendment to Bylaws to Increase Allotments for District Branch Meetings

Introduced by Sixth District Branch

Whereas, The district branches are integral, functioning units of the Medical Society of the State of New York; and

Whereas, In recent years there has been a resurgence of interest in the activities and functions of the district branches; and

Whereas, The cost of these activities far exceeds the maximum annual allowance of $400 which was established by the Medical Society of the State of New York in 1936; now therefore be it

Resolved, That Chapter IX, Section 1 of the Bylaws of the Medical Society of the State of New York be amended by substituting the sum of $1,000 for the sum of $400 now called for, so that Chapter IX, Section 1, third sentence from the end, will then read:

> "Each district branch shall be entitled to receive a sum not to exceed $1,000, exclusive of the work done by the secretary regarding notices, programs, etc., to defray the expenses of such district branch, provided a proper statement of such expenses shall have been presented to the secretary."

Elections

Tellers

Tellers were the following:

John N. Dill, Westchester, *Chairman*
William J. McAuliffe, Cortland
Thomas S. Bumbalo, Erie
James A. Moore, Albany
Mary H. Spalding, New York

. . .Speaker Himler announced that, under the supervision of the tellers, members of the staff would count the ballots. . .

Nominations

. . .Speaker Himler introduced James M. Blake, M.D., chairman, who presented the report of the Nominating Committee. Two nominees for delegates to the American Medical Association, Paul M. De Luca, Broome, and Jason K. Moyer, Broome, withdrew their names; two nominations were made from the floor to fill the vacancies thus left.

The final list of nominees was as follows:

President
Edward C. Hughes, Onondaga
President-Elect
Walter T. Heldmann, Richmond
Vice-President
Felix Ottaviano, Madison
Secretary
Carl Goldmark, Jr., New York
Assistant Secretary
Joseph G. Zimring, Nassau
Treasurer
Thomas F. McCarthy, Bronx
Assistant Treasurer
Albert M. Schwartz, New York
Speaker
George Himler, New York
Vice-Speaker
John H. Carter, Albany
Councillors (four for three years)
Arthur H. Diedrick, Westchester
John E. Lowry, Queens
Edward Siegel, Clinton
C. Stewart Wallace, Tompkins
Trustees (two for five years)
George A. Burgin, Herkimer
Frederick A. Wurzbach, Jr., Bronx
Delegates to the AMA
Lynn R. Callin, Monroe
Max Cheplove, Erie
John Lee Clowe, Schenectady
George L. Collins, Jr., Erie
C. Joseph Delaney, New York
Irving L. Ershler, M.D., Onondaga
Irwin Felsen, Allegany
Henry I. Fineberg, Queens
John M. Galbraith, Nassau
Carl Goldmark, Jr., New York
Frederic W. Holcomb, Jr., Ulster
Joseph J. Kaufman, Wayne
John F. Kelley, Oneida
Herbert A. Laughlin, Chautauqua
John C. McClintock, Albany
James A. Moore, Albany
* Irving M. Pallin, Kings
Solomon Schussheim, Kings
Lester R. Tuchman, Queens
* Samuel Wagreich, Bronx
Walter Scott Walls, Erie

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* Nominated from the floor.

George T. C. Way, Dutchess
Carlton E. Wertz, Erie
William L. Wheeler, Jr., New York
Waring Willis, Westchester
Frederick A. Wurzbach, Jr., Bronx

Balloting

. . .The nominees for president-elect, vice-president, secretary, assistant secretary, treasurer, assistant treasurer, speaker, vice-speaker, councillors (four for three years), and trustees (two for five years) were unopposed and were elected by a single ballot cast by the secretary. . .

. . .Assistant Secretary Goldmark called the official roll for the following members of the House to cast their ballots:

Officers, Councillors, Trustees

Frederick A. Wurzbach, Jr.
Edward C. Hughes
A. W. Martin Marino, Sr.
Walter T. Heldmann
Carl Goldmark, Jr.
Thomas F. McCarthy
Albert M. Schwartz
George Himler
John H. Carter
Gerald D. Dorman
Charles M. Brane
John E. Lowry
Edward Siegel
C. Stewart Wallace
Irving L. Ershler
Joseph J. Kaufman
Bernard J. Pisani
Solomon Schussheim
G. Rehmi Denton
Ralph S. Emerson
Swen L. Larson
Walter Scott Walls
George A. Burgin
John M. Galbraith
Waring Willis
John F. Kelley
William L. Wheeler, Jr.
James M. Blake

Past Presidents

Chas. Gordon Heyd
Arthur J. Bedell
Herbert H. Bauckus
Carlton E. Wertz
Edward T. Wentworth
Andrew A. Eggston
Renato J. Azzari
Thurman B. Givan
Henry I. Fineberg
Norman S. Moore

Commissioner, New York State Department of Health

Hollis S. Ingraham

District Branch Delegates

Marvin Brown
Francis X. Dever
Leonard L. Heimoff
Orville L. Henderson
Otho C. Hudson
Norman C. Lyster
John D. Naples
Charles M. Smith
Herbert L. Sperling*

Section Delegates

Robert B. Beede
Marvin L. Bloom
John J. Clemmer
E. Hoyt De Kleine
Frank A. Disney
Wilfred Dorfman†
Henry Fleck
Robert C. Hays
Ralph E. L. Hertz
Philip H. Landers
Frederick Lee Liebolt
H. Easton McMahon
John H. Morton
Arthur Q. Penta
John F. Roach
William F. Robbett
Adelaide Romaine**
Robert E. Rothermel
Joseph J. Russo
Robert E. Sandroni
William J. Staubitz
Rudolf H. Steinharter
Victor J. Tofany

Delegates From Component County Societies

Albany (4)
Gerald B. Austin
James A. Moore
John J. Phelan, Jr.
Francis A. Stephens

Allegany (1)
Irwin Felsen

Bronx (12)
Carl R. Ackerman
Marcelle T. Bernard
Charles M. Kapp
Michael N. Lavacca††
Samuel Leo
Samuel Lieberman
Francis J. Loperfido
Joseph C. Polifrone
Isidore Sternlieb
Samuel Wagreich
Alvin D. Yasuna
Saul Zucker

Broome (3)
Sterling W. Boyd
Paul M. De Luca
John A. Kalb

Cattaraugus (1)
James F. Durkin

Cayuga (1)
Bernard J. Hartnett

Chautauqua (2)
Herbert A. Laughlin
Garra L. Lester

Chemung (2)
R. Scott Howland
Milton Tully***

Chenango (1)
Thomas M. Flanagan

Clinton (1)
Leonard J. Schiff

Columbia (1)
Rosewell D. Shaw

Cortland (1)
William J. McAuliffe

Delaware (1)
Philip J. Hust

Dutchess (3)
H. Sherman Hirst
Martin G. Koloski
George T. C. Way

Erie (9)
John C. Brady
Thomas S. Bumbalo
Max Cheplove
George L. Collins, Jr.
James H. Cosgriff, Jr.
Kenneth H. Eckhert
Eugene J. Hanavan, Jr.
Herbert E. Joyce
Clarence Straubinger

Essex (1)
Earl A. Munyan, Jr.

Franklin (1)
Robert A. Henderson

Fulton (1)
Armand J. D'Errico

Genesee (1)
Alfred L. George

Greene (1)
Edwin G. Mulbury

Herkimer (1)
Harold T. Golden

Jefferson (1)
Thomas P. Hamilton

Kings (23)
Lawrence Ames
Norman S. Blackman
Matthew Brody
Philip J. Cantor
Leo S. Drexler
John J. Flynn
Vincent J. Geraci†††
Alfred P. Ingegno
David Kershner
Warren A. Lapp
George Liberman
Martin Markowitz
Murray L. Meiselman†††
Bentley D. Merrim
Max B. Milberg
Robert A. Moore
Louis Pellman†††
Ralph M. Schwartz
Milton B. Spiegel†††
Stanley Stark
Leo J. Swirsky
M. Theodore Tanenhaus
Vincent J. Tesoriero

Lewis (1)
Louis A. Avallone

Livingston (1)
James M. Judd

Madison (1)
Felix Ottaviano

Monroe (6)
Lynn R. Callin
William B. Forsyth
Gerald L. Glaser
Eli A. Leven
Charles R. Mathews
Charles D. Sherman, Jr.

Montgomery (1)
Hilbert Ziskin

Nassau (12)
John A. Billows
Clement J. Boccalini
Jeff J. Coletti
Abraham W. Freireich
John P. Glaubitz
Frank M. Green
Marjorie H. Greene
Robert P. Jessup
Raymond F. Smith
Paul H. Sullivan
H. Lawrence Sutton
Joseph G. Zimring

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* Alternate delegate, voted for James M. Jones, delegate.

† Alternate delegate, voted for Mannie M. Schechter, delegate.

** Alternate delegate, voted for Irvin Klein, delegate.

†† Alternate delegate for Frank LaGattuta, delegate.

*** Alternate delegate, voted for Henry B. Marshall, delegate.

††† Alternate delegates, voted for Ernest Buffone, Philip Cohen, Adrian C. Lamos, Harry S. Lichtman, delegates.

New York (25)
Edgar P. Berry
Edward A. Burkhardt
C. Joseph Delaney
James H. Ewing
John A. Finkbeiner
William H. Foege
Samuel Z. Freedman
Stanley H. Greenwald
Keith O. Guthrie, Jr.
John E. Hammett
Milton Helpern
Clarence W. Hogans
W. Graham Knox
Thomas K. Lammert
John A. Lawler
Julia V. Lichtenstein
Barbara Lipton
Donald B. Louria
Vaughan C. Mason
James R. Nealon
William B. Rawls
Guy F. Robbins
Harold Safian
George M. Saypol
Mary H. Spalding

Niagara (2)
John T. Donovan, Jr.
Glenn E. Jones

Oneida (3)
Clarke T. Case
Irving Cramer
Robert B. Wallace

Onondaga (5)
Robert B. Bryant*
Robert J. Collins
Richard D. Eberle
Louis G. Fournier
Charles A. Gwynn

Ontario (2)
Daniel Davis
Philip M. Standish

Orange (2)
Irving Weiner
Leonard S. Weiss†

Orleans (1)
Kenneth J. Clark

Oswego (1)
Milton W. Kogan

Otsego (1)
John W. Latcher

Putnam (1)
Garrett W. Vink

Queens (16)
Alfred A. Angrist
Sol Axelrad
Angelo R. Bologna
Lester J. Candela
Thomas M. d'Angelo
Albert H. Douglas
Harry H. Epstein
John L. Finnegan
Irving G. Frohman
Peter V. Gugliuzza
James S. Kaufman**
George J. Lawrence, Jr.
Norton M. Luger
Kurt Rosenberg
Lester R. Tuchman
Ezra A. Wolff

Rensselaer (2)
Allen G. Gifford
John J. Noonan

Richmond (3)
Albert B. Accettola
William A. Schwarz
Joseph F. Shanaphy

Rockland (3)
Sheldon B. Adler
Burton Allyn
Mark S. Masch

St. Lawrence (1)
Maurice J. Elder

Saratoga (1)
Russell B. Peacock

Schenectady (3)
John L. Clowe
Robert P. Coolidge
Herbert J. Wright, Jr.

Schoharie (1)
John H. Wadsworth

Schuyler (1)
Fritz Landsberg

Seneca (1)
David L. Koch

Steuben (2)
Thomas S. Cotton
Wayne C. Templer

Suffolk (6)
Daniel Friedman
Milton Gordon
Andrew W. Lawrence
George E. Leone
Stuart L. Scheiner
John L. Sengstack

Sullivan (1)
Harry Golembe

Tioga (1)
George F. Pritchard

Tompkins (2)
Stephen W. Blatchly
George G. McCauley

Ulster (2)
Milton M. Grover
Edward F. Shea

Warren (1)
Walter F. Harrison, Jr.

Washington (1)
Milton J. Greenberg

Wayne (1)
James M. Flanagan

Westchester (8)
William Brumfield, Jr.
Arthur H. Diedrick
John N. Dill
James Q. Haralambie
Robert E. Healy
Reid R. Heffner
Wallace M. Sheridan
Maurice L. Woodhull

Wyoming (1)
Paul A. Burgeson

Yates (1)
Vincas Sirmenis

Report of Tellers

. . .Speaker Himler called on John N. Dill, chairman, to give the report of the tellers, as follows:

Delegates to the AMA

Henry I. Fineberg	238
Frederick A. Wurzbach, Jr.	198
Solomon Schussheim	192
William L. Wheeler, Jr.	177
John M. Galbraith	168
Carl Goldmark, Jr.	168
Walter Scott Walls	163
John F. Kelley	161
Waring Willis	160
John Lee Clowe	154
Irving L. Ershler	151
Lester R. Tuchman	137
Carlton E. Wertz	124

. . .These 13 were declared elected as delegates to the AMA, their two-year terms of office to start on January 1, 1969. . .

Joseph J. Kaufman	110
Samuel Wagreich	99
James A. Moore	98
Irving M. Pallin	90
Herbert A. Laughlin	89
Lynn R. Callin	86
C. Joseph Delaney	69
John C. McClintock	39
George T. C. Way	15
Max Cheplove	14
Irwin Felsen	8
George L. Collins, Jr.	5
Frederic W. Holcomb, Jr.	5

. . .These 13 were declared elected alternate delegates to the AMA, their two-year terms of office to start January 1, 1969. . .

Introduction of President-Elect

. . .Speaker Himler introduced the new president-elect, Walter T. Heldmann, who addressed the House as follows:

I want to avail myself of this opportunity to express to you my deep-felt appreciation and my gratitude for the great honor that you have bestowed on me by electing me to this high office of the Society.

I am well aware of the responsibility which goes along with this honor, and I can assure you that when the time comes for me to assume office as your president, I will assume this responsibility to the fullest extent.

I am going to have to call on each one of you for your help and support. Until that time, all I can do is pledge my help and support to my old friend and our present president, Dr. Edward C. Hughes.

Thank you again for this honor—let us continue to work together to provide the best possible medical care for the people of our State.

Closing Proceedings

Thanks to Committees and Staff

. . .Speaker Himler thanked the convention committees and the members of the staff who had worked so hard at the convention, as follows:

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* Alternate delegate, voted for William J. Ryan, delegate.

† Alternate delegate, voted for William S. Montgomery, delegate.

** Alternate delegate, voted for Louis J. Morse, delegate.

Henry I. Fineberg, M.D., executive vice-president; J. Richard Burns, Esq., assistant executive vice-president and convention coordinator; Eugene S. Dombrowski, comptroller and assistant convention coordinator.

House of Delegates: Alvina Rich Lewis, Mary T. Politano, and Gretchen Wunsch, coordinators; Samuel Pakula, stenotypist; Sally Browne, Catherine Renze, Roslyn Schmetterling, Dorothy Smith, Elizabeth Hirsch, Lillian Stekas, Alice Wheeler, Irene Rose, Olga Mielke, Catherine Farrell, and Dorothy Hart, secretarial and workroom staff; Charles Struzinski, production coordinator, and Melvin Fine, Theodore White, and Cleveland Welsh, staff, Mary Singer, registration coordinator, and Beatrice Duckfield and Eileen Cronnelly, Raquel Arana, staff; Deanna Basta, Shirley Wallach, Susan Roberts, and Judy Epstein, information and messages.

Press Room: Guy Beaumont, director, and Martin Tracey, Richard Klemfuss, William Callinan, Helen Hickey, Bess Kurzner, Carol Weisenberg, Harry Dexter, Gerald Sullivan, George Parisi, and Coleman Fineberg, staff.

General Convention: Camille Cunningham, technical exhibits coordinator, and Cathleen Thayer and Pamela Tepperman; Mollie Pesikoff, scientific exhibits coordinator, and Florence Friedman and Jeb Stuart; George Forrest, Jr., dinner dance coordinator; Robert W. Miller and Jack O'Brien, general registration coordinators, with Evelyn DeMarco.

Exhibit Booths: Elizabeth C. Smith, Jana Lipinski, Frances Casey, Evelyn Clark, Florence Gallagher, Anne Rakita, and Clementine Thompson.

Convention Committees: Bernard J. Pisani, M.D., general chairman and scientific program; Arthur H. Diedrick, M.D., dinner dance, and Albert H. Douglas, M.D., scientific exhibits.

The Americana: Matt Miller, convention coordinator, and his staff.

Thanks to Speaker and Vice-Speaker

. . .The House gave a rising vote of thanks to Speaker Himler and Vice-Speaker Carter for their just and excellent handling of the meeting. . .

Adjournment

. . .Speaker Himler adjourned the House at 11:00 a.m. on Thursday, February 15, 1968, sine die. . .

Medical Society of the State of New York

Minutes of the 1968 House of Delegates

Minutes of the Annual Meeting
of the House of Delegates
February 11 to 15, 1968

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The complete examination rules out organic disease. Yet the patient "knows." Again he counts off the complaints—discomfort and pain around the heart, pressure, breathing difficulty, palpitations. He insists something must be wrong with his heart.

When somatic symptoms persist despite negative objective findings, you may suspect a psychogenic cause. As a useful measure, consider adjunctive Valium (diazepam). It helps relieve the psychic tension that often finds its outlet in somatic symptoms. In some patients it's the heart. In others, the troublesome symptoms may be gastrointestinal, genitourinary, respiratory, dermatologic or musculoskeletal.

cardiac symptoms...often the somatic voice of psychic tension

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in: skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders; athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

Contraindications: Known hypersensitivity to drug; children under 6 months of age; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in treatment of psychotic patients, and should not be employed in lieu of appropriate treatment. As with most CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may also be associated with temporary increase in frequency and/or severity of seizures. Advise patients against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance. Keep addiction-prone individuals (such as drug addicts or alcoholics) under careful surveillance because of their predisposition to habituation and dependence. Use of any drug in pregnancy, lactation or in women of childbearing age requires that potential benefit be weighed against possible hazard.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium, such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants. Employ usual precautions in the severely depressed or in those with latent depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed or tolerated).

Adverse Reactions: Side effects most commonly reported: drowsiness, fatigue and ataxia. Infrequently encountered: confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo and blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, use of the drug should be discontinued. Because of isolated reports of neutropenia and jaundice, periodic blood counts and liver function tests are advisable during long-term therapy. Minor changes in EEG patterns (low-voltage fast activity) observed during and after therapy and are of no known significance.

Dosage: Individualize for maximum beneficial effect. *Adults:* Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See **Precautions.**) *Children:* 1 to 2 ½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

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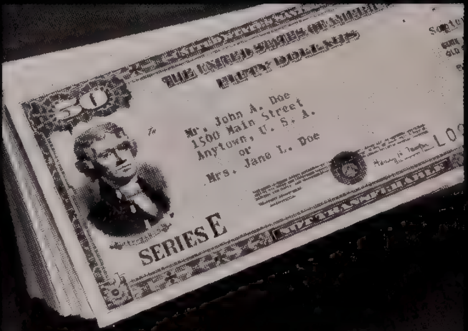
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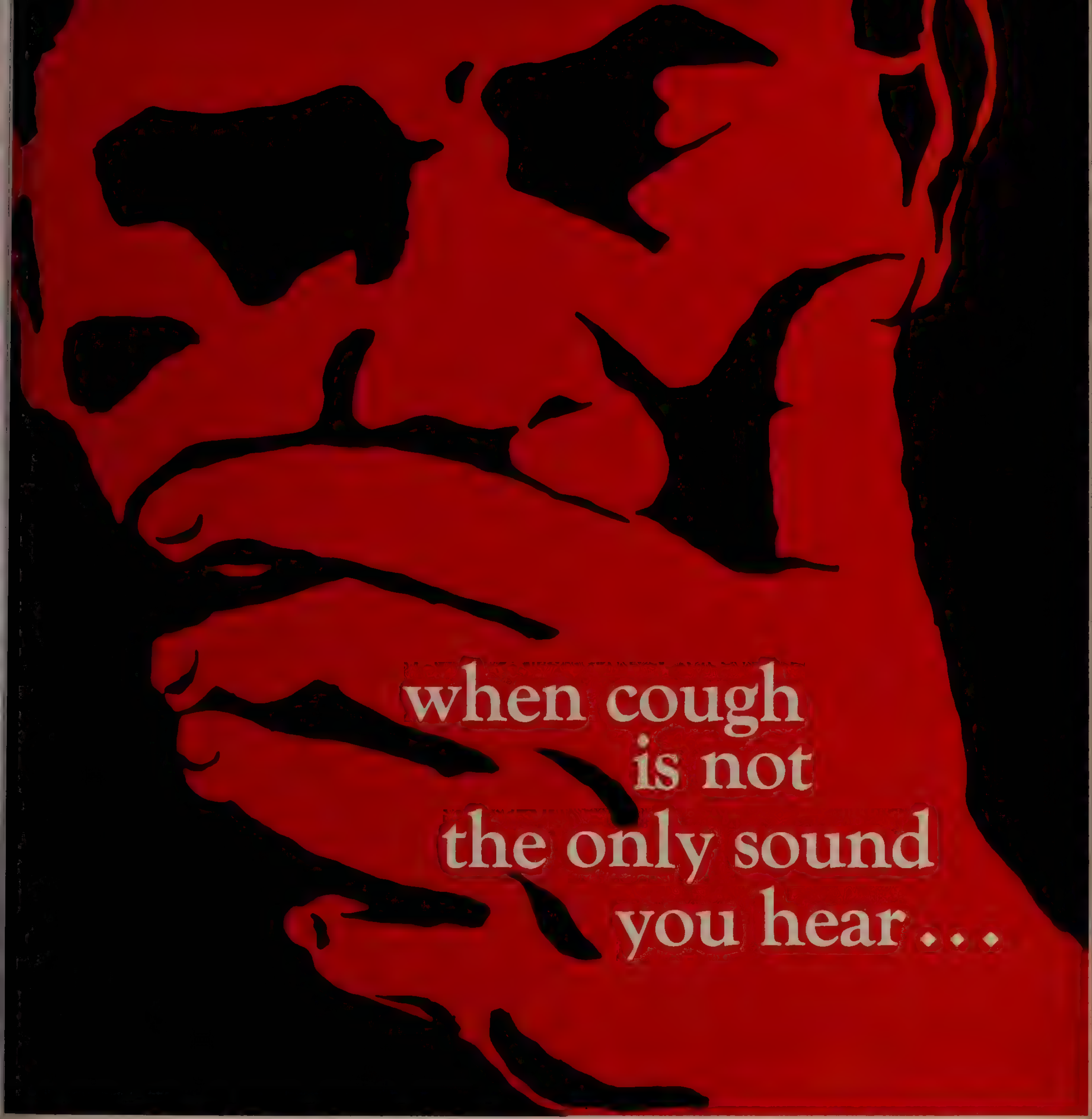

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Available on prescription only. Class X exempt narcotic. Permissible on oral prescription.

Dosage: *Adults:* 1 teaspoonful (5 cc.) q12h.
Children (6-12 *years*): ½ teaspoonful q12h.

Side Effects: Minimal, but when encountered may include jitteriness, nausea, drying of mouth, insomnia, constipation, which disappear upon adjustment of the dose or discontinuance of treatment.

Precautions and Contraindications: For complete detailed information, refer to package insert or official brochure.

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New York State Journal of Medicine

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an underlying depression.

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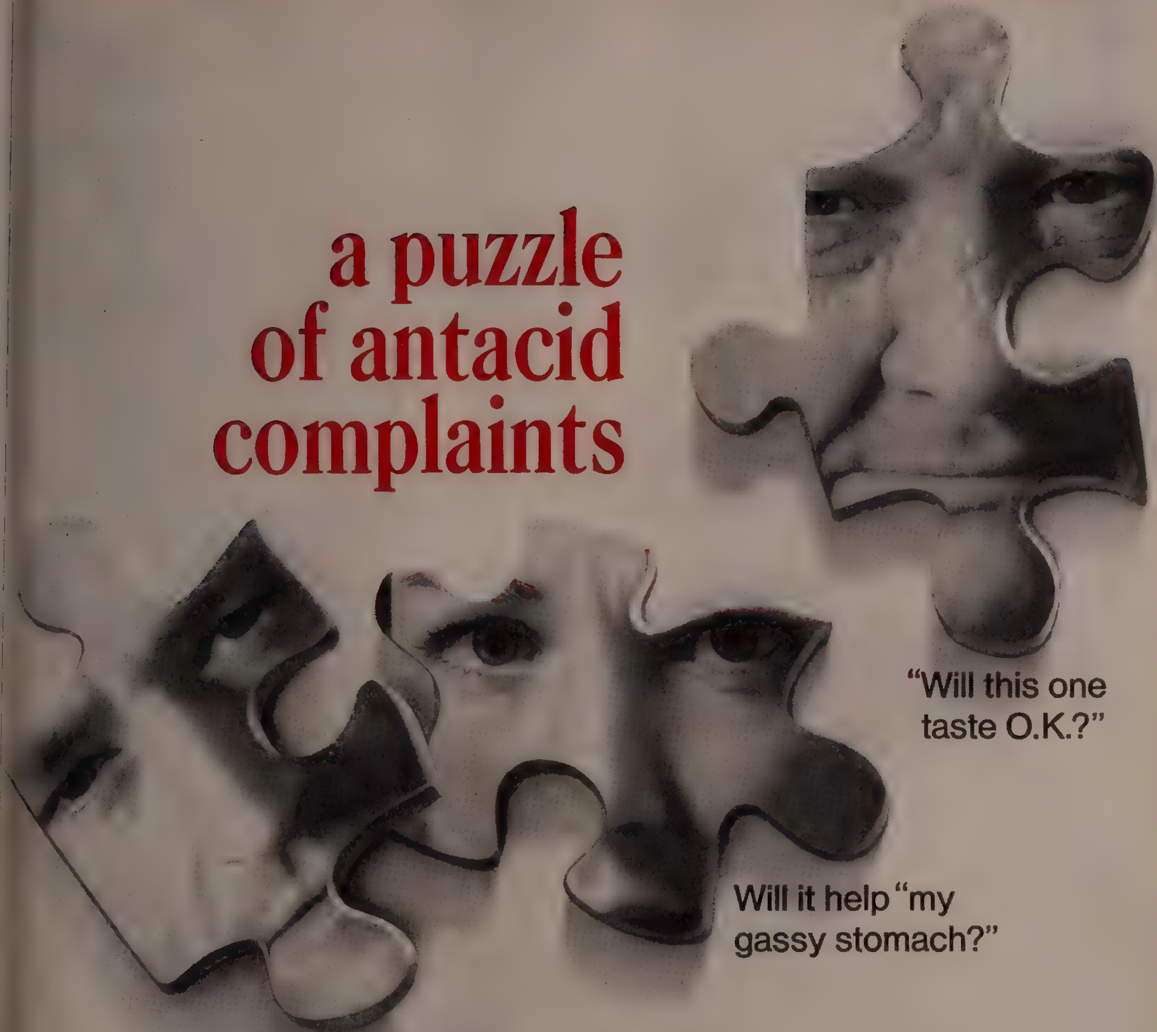
a puzzle
of antacid
complaints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References: 1. Hoon, J. R.: Arch. Surg. *93*:467 (Sept.) 1966. 2. Danhof, I. E., Personal communication.

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Precautions: There have been infrequent reports of leukopenia and/or agranulocytosis and convulsive seizures. In epileptic patients, anticonvulsant medication should also be maintained. Pigmentary retinopathy may be avoided by remaining within the recommended limits of dosage. Administer cautiously to patients participating in activities requiring complete mental alertness (e.g., driving). Orthostatic hypotension is more common in females than in males. Do not use epinephrine in treating drug-induced hypotension. Daily doses in excess of 300 mg. should be used only in severe neuropsychiatric conditions.
Adverse Reactions: Central Nervous System—Drowsiness, especially with large doses, early in treatment; infrequently, pseudoparkinsonism and other extrapyramidal symptoms; nocturnal confusion, hyperactivity, lethargy, psychotic reactions, restlessness, and headache. Autonomic Nervous System—Dryness of mouth, blurred vision, constipation, nausea, vomiting, diarrhea, nasal stuffiness, and pallor. Endocrine System—Galactorrhea, breast engorgement, amenorrhea, inhibition of ejaculation, and peripheral edema. Skin—Dermatitis and skin eruptions of the urticarial type, photosensitivity. Cardiovascular System—Changes in the terminal portion of the electrocardiogram have been observed in some patients receiving the phenothiazine tranquilizers, including Mellaril (thioridazine hydrochloride). While there is no evidence at present that these changes are in any way precursors of any significant disturbance of cardiac rhythm, several sudden and unexpected deaths apparently due to cardiac arrest have occurred in patients previously showing electrocardiographic changes. The use of periodic electrocardiograms has been proposed but would appear to be of questionable value as a predictive device. Other—A single case described as parotid swelling.

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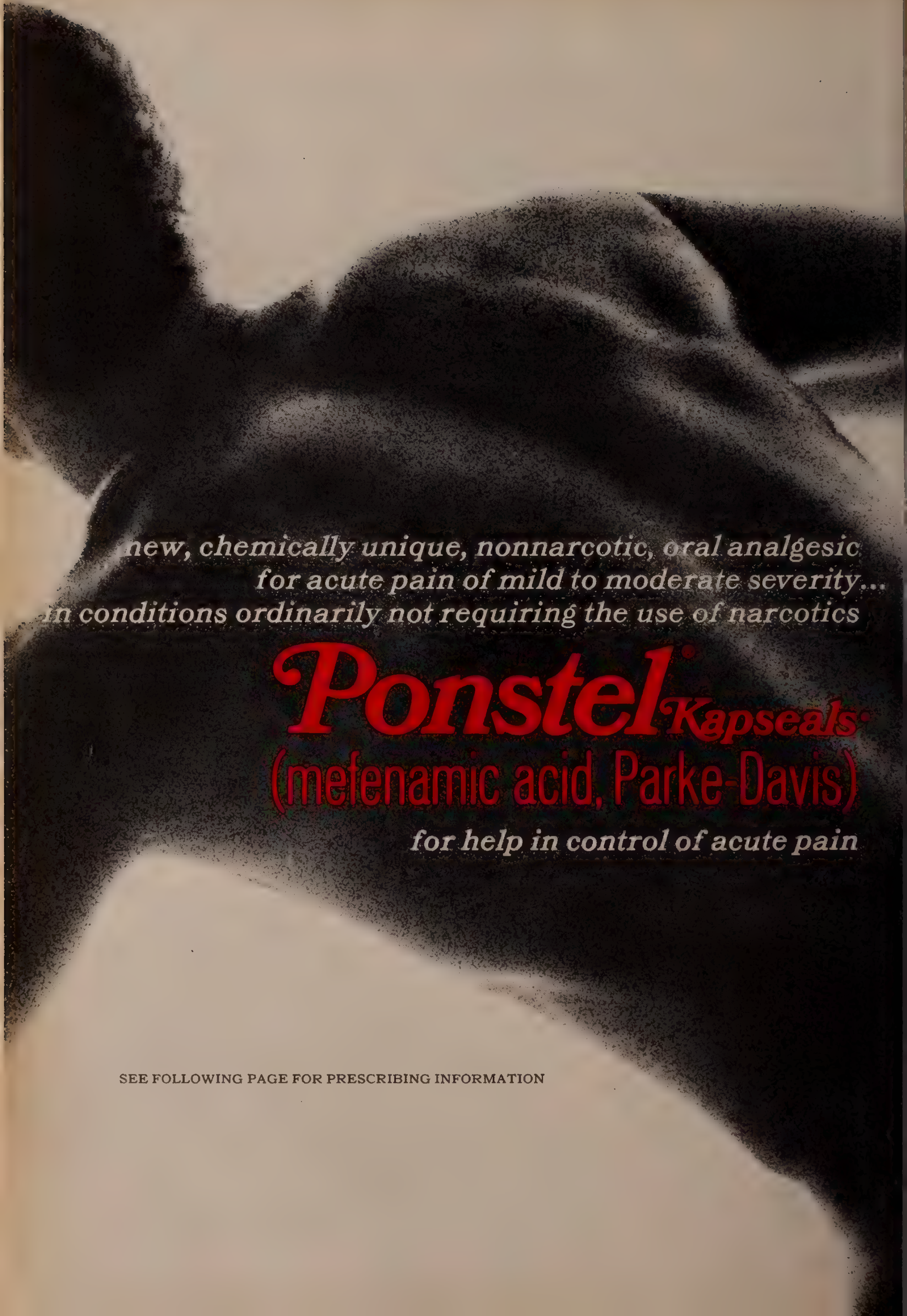

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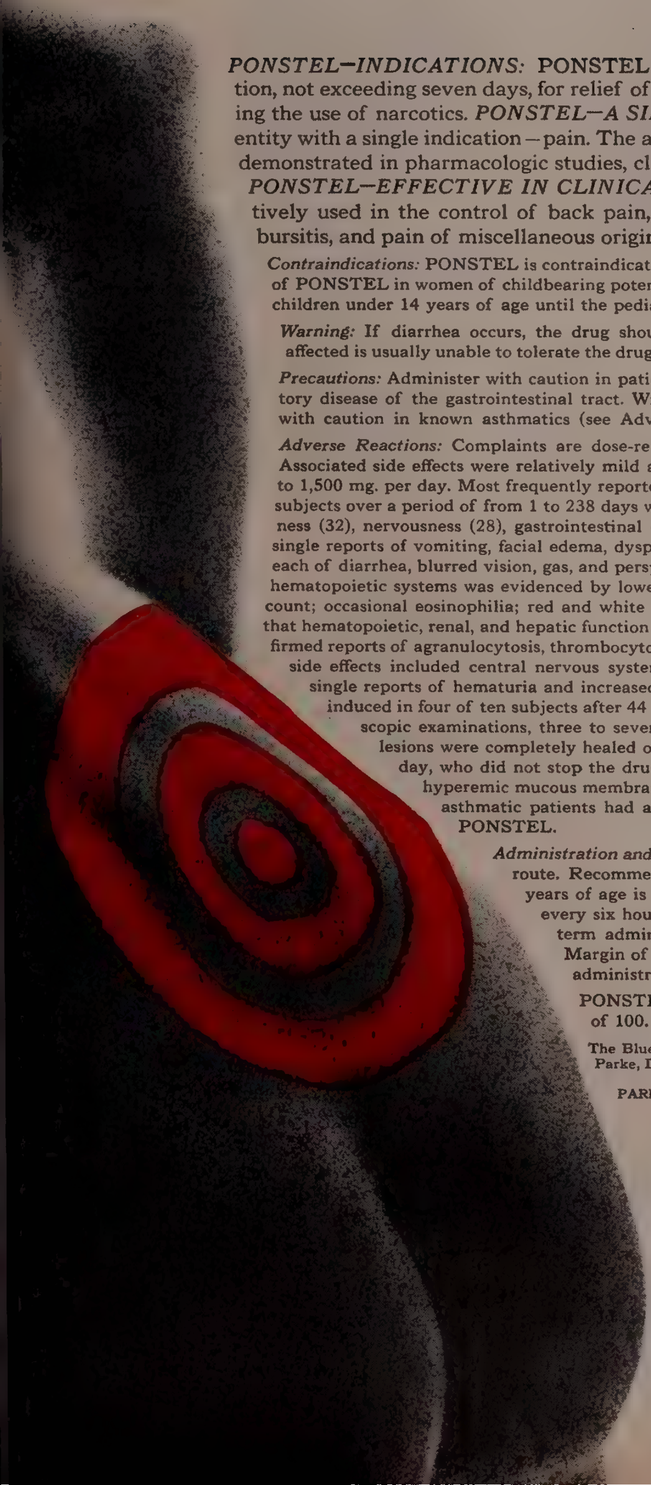

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Adverse Reactions: Complaints are dose-related, being more frequent with higher doses. Associated side effects were relatively mild and infrequent in clinical studies with doses up to 1,500 mg. per day. Most frequently reported side reactions in 3,205 observations on 1,985 subjects over a period of from 1 to 238 days were drowsiness (43 subjects), nausea (41), dizziness (32), nervousness (28), gastrointestinal discomfort (28), and headache (7). There were single reports of vomiting, facial edema, dyspnea, urticaria, and insomnia, and two instances each of diarrhea, blurred vision, gas, and perspiration. Mild toxicity to the renal, hepatic, and hematopoietic systems was evidenced by lowering of hemoglobin, hematocrit, and leukocyte count; occasional eosinophilia; red and white cells and albumin in urine. It is recommended that hematopoietic, renal, and hepatic function studies be done. There have been single unconfirmed reports of agranulocytosis, thrombocytopenic purpura, and megaloblastic anemia. Other side effects included central nervous system symptoms (unsteadiness and confusion) and single reports of hematuria and increased insulin requirement. Intestinal ulceration was induced in four of ten subjects after 44 to 74 days of supratherapeutic doses; sigmoidoscopic examinations, three to seven days after medication was stopped, indicated lesions were completely healed or healing. Two patients receiving 2,000 mg. per day, who did not stop the drug when diarrhea occurred, developed sigmoidal hyperemic mucous membrane which bled when touched. Three of six known asthmatic patients had acute exacerbations following administration of PONSTEL.

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FEBRUARY 9 through 13, 1969

The Americana, New York City

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Average adult dosage: 2 tablets four times daily, given at least one hour before, or two hours after meals.
Contraindications: History of hypersensitivity to any component.
Warning: If renal impairment exists, even usual doses may lead to liver toxicity. Under such conditions, lower than usual doses are indicated and, if therapy is prolonged, serum level determinations may be advisable. Hypersensitive individuals may develop a photodynamic reaction to natural or artificial sunlight during use. Individuals with a history of photosensitivity reactions should avoid direct exposure while under treatment, which should be discontinued at first evidence of skin discomfort.
Precautions: Some individuals may experience drowsiness, anorexia, and slight gastric distress. If excessive drowsiness occurs, it may be necessary to increase the interval between doses. Persons on full dosage should not operate any vehicle. Use may result in overgrowth of nonsusceptible organisms. If infections appear during therapy, appropriate measures should be taken. Infections caused by beta-hemolytic streptococci should be treated for at least 10 full days to help prevent rheumatic fever or acute glomerulonephritis. Use of tetracycline during tooth development may cause discoloration of teeth.
Adverse Reactions: Gastrointestinal—anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. Skin—maculopapular and erythematous rashes (a case of exfoliative dermatitis has been reported); photosensitivity; onycholysis and discoloration of nails (rare). Kidney—rise in BUN, apparently dose related. Hypersensitivity reactions—urticaria, angioneurotic edema, anaphylaxis. In young infants, bulging fontanels following full therapeutic dosage has been reported. This has disappeared rapidly when drug was discontinued. Teeth—dental staining (yellow-brown) in children of mothers given tetracycline during the latter half of pregnancy and in children given the drug during the neonatal period, infancy, and early childhood. Enamel hypoplasia has been seen in a few children. Blood—anemia, thrombocytopenic purpura, neutropenia, eosinophilia. Liver—cholestasis (rare), usually at high dosage. If adverse reaction or idiosyncrasy occurs, discontinue medication and institute appropriate therapy.

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Do you have patients who try to hide fear behind bravado?

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense. The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you. Whether depression is open or secretive, Aventyl HCl assists you in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

Lilly

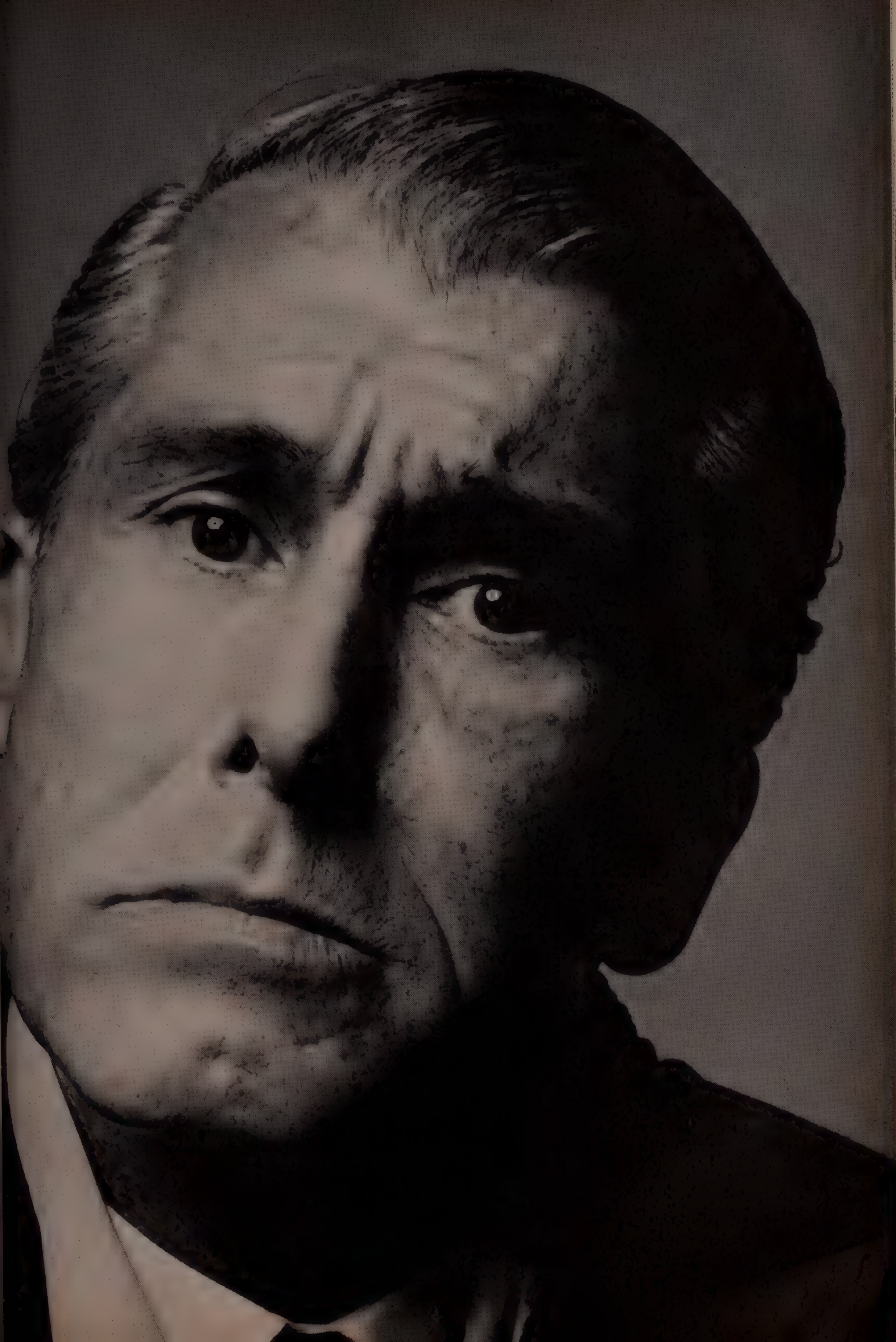
Eli Lilly and Company
Indianapolis, Indiana 46206

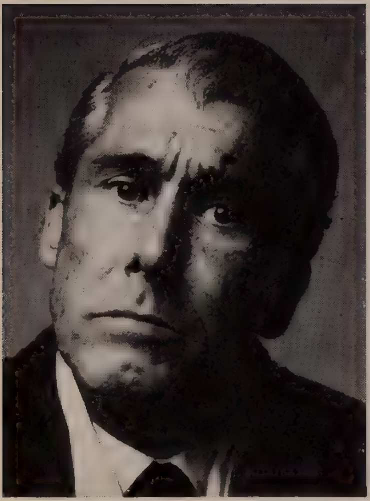
Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

600322

(See last page for prescribing information.)





Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastro-intestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid Aventyl® HCl (nortriptyline hydrochloride, Lilly), 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules Aventyl HCl, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500. [101267A]

Additional information available to physicians upon request. 800322

Lilly
Eli Lilly and Company
Indianapolis, Indiana 46206

Abstracts in Interlingua

Rosenthal, M. C.: Precision clinic in le therapia pro disordines coagulatori (*anglese*), NEW YORK STATE J. MED. **68:** 1695 (15 de junio) 1968.

Therapia de precision pro disordines coagulatori existe currentemente solo pro carentia de AHF (factor VIII). Procedimentos de essayage indica le grado del carentia e le potentia de un producto particular e pote esser usate pro observar le nivello de reimplaciamento therapeutic effectuate per varie productos. Le currentemente disponibile materiales pro le tractamento de carentia de AHF consiste de varie formas de plasma fresc (que es essentialmente equivalente le unes al alteres), un special fibrinogeno human, e al minus tres differente concentratos. Le dose debe esser relationate con le volumine del plasma del individuo e le finalmente desirate nivello del factor. Controlos continue per studios laboratorial es indispensabile.

Disney, F. A.: Le diagnose de infectiones streptococcic al sala de consulta (*anglese*), NEW YORK STATE J. MED. **68:** 1699 (15 de junio) 1968.

Infection streptococcic continua esser—in multe casos—difficile a diagnosticar. Tamen, certe characteristicas suggestiona un augmentate probabilitate del presentia de ille infection (e del applicabilitate de ille diagnose). Tal factores es le saison del anno, le epidemiologia del area immediate in question, e le etate del patiente. Viste que le infectiones es plus commun in juveniles que in adultos, illos ha devenite essentialmente un prerogativa del pediatro e del practicante general. Le symptomas include gurgite rauc, otalgia sin evidentia de infection aural, un suggestive syndrome clinic, e le presentia de infection alterubi in le corpore. Auxilios laboratorial es describite.

Krauss, L., e Miller, F.: Le uso de sulfaphenazol in le therapia de infectiones del vias urinari (*anglese*), NEW YORK STATE J. MED. **68:** 1702 (15 de junio) 1968.

Viste que sulfaphenazol ha un alte grado de tolerantia combinate con efficacia antibacterial a basse nivellos de dosage, un studio de su utilitate esseva instituite in 94 patientes de

continued on page 1676

NEW YORK MEDICAL COLLEGE
Annual Ophthalmological Seminar
January 10th to 19th, 1969
Conquistador Hotel,
Puerto Rico

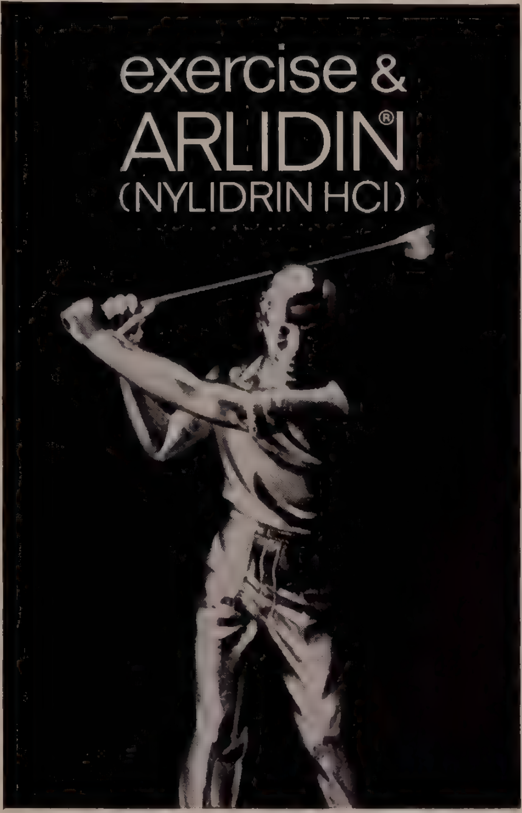
Major Topics: 1) Ocular Disorders in Infants and Children
2) Ocular Surgery of Infants and Children
3) Therapy of Diabetic Retinopathy

Cost: $435/person (Includes non-stop round trip PanAmerican charter from New York City; all transfers, gratuities, taxes, hotel accommodations and meals.)

Registration: $35/person

Checks should be drawn to the order of New York Medical College Address all correspondence to:

Department of Ophthalmology
New York Medical College
1249 Fifth Avenue
New York, New York 10029



continued from page 1675

clinica con infectiones del vias urinari, incluse 65 femininas. Le agente se provava efficace a 100 pro cento in 44 acute infectiones del vias urinari, a 81,6 pro cento in 38 conditiones recurrente, e a 42 pro cento in 12 casos chronic. Le correlation inter efficacia clinic e efficacia bacteriologic esseva notabile. Le therapia a sulfaphenazol habeva excellente resultatos in 80 del 94 patientes (i.e., in 85 pro cento).

Medical Meetings

Medical writing topic of course

A two-day course in medical writing will be held at the University of California, San Francisco Medical Center, on June 21 and 22. The dates coincide with the conclusion of the American Medical Association's meeting. The course is designed to assist and provide practical guidelines to physicians and others who are interested in medical writing and journalism.

Registration fee is $35. For further information contact: M. Coleman Harris, M.D., 450 Sutter Street, San Francisco, California, or Seymour M. Farber, M.D., University of California, San Francisco Medical Center, San Francisco, California 94122.

Nuclear medicine topic of symposium

A symposium on current developments in nuclear medicine will be held September 18 through 20 at the Albert Einstein College of Medicine of Yeshiva University, The Bronx.

The program will include the following topics: "Radiopharmaceuticals and Introduction to Instrumentation"; "Cardiovascular Dynamics: The Lung, Regional Blood Flow, Endocrinology, The Kidney, and Liver and Spleen." Participants in the symposium will include invited faculty members from medical schools and hospitals throughout the country, in addition to the faculty of Albert Einstein College of Medicine.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Registration fee is $75 and $35 for interns residents, and research fellows. This program is accepted for 19 accredited hours by the American Academy of General Practice.

For further information contact: M. Donald Blaufox, M.D., Department of Radiology, Albert Einstein College of Medicine of Yeshiva University, 1300 Morris Park Avenue, The Bronx, New York 10461.

Electromyography and electrodiagnosis topics of postgraduate course

A postgraduate course for physicians in electromyography and electrodiagnosis will be held October 7 through 11 at the New York Medical College Center for Chronic Disease. The course will consist of lectures, seminars, clinical demonstrations, and laboratory sessions. The following topics will be included: "Fundamentals of Nerve and Muscle Physiology"; "Electrical Activity of Nerve and Muscle"; "Electronics"; "Instrumentation"; "Physiologic Basis—Clinical Application"; "Clinical Laboratory"; and "Recent Advances."

Tuition fee is $150 and enrollment is limited. Applications should be submitted by September 10.

For further information contact: Osvaldo Miglietta, M.D., director, Department of Rehabilitation Medicine, New York Medical College, Bird S. Coler Hospital, Welfare Island, New York, New York 10017.

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Month in Washington

The Federal government has established a new agency and appointed two new advisory committees in the health care field. The new agency is the National Center for Health Services Research and Development. The two:

1. The Medical Assistance Advisory Council to advise the secretary of U.S. Department of Health, Education, and Welfare on matters relating to Federal-state medical aid programs.

2. A panel to give the Social Security commissioner advice on experiments to find new methods of reimbursing hospitals and physicians for health care under Medicare and other Federal health programs.

Spokesmen for HEW said the new center will work with universities, industry, hospitals, medical practitioners, and research institutions to seek new ways of delivering health care and was authorized by Congress last year at President Johnson's request.

"The ultimate goal of the center is to aid practitioners and institutions involved in health services to improve the distribution and quality of services and to make the best possible use of manpower, funds, and facilities," said Philip R. Lee, M.D., assistant HEW secretary for Health and Scientific Affairs.

The immediate goals of the center were listed:

—More efficient utilization of health personnel, including the development of new types of health workers at the professional, technical, and auxiliary levels.

—Increased productivity and better management of all elements of the medical care system to improve quality and moderate rising costs.

—Technologic innovation, for immediate application, to achieve cost reduction and quality improvement.

—To survey and analyze health systems, including costs and financing, and to test new concepts and systems of health care delivery.

—To recruit, train, and develop personnel for health services research, including the establishment of regional, nonfederal centers for health services research and training.

—Collection and correlation of existing information on health services delivery for planning and organization design.

—Initiation of systems' studies of institutional design, construction, equipment and maintenance, and support construction of cost-saving innovations.

Director of the center, which is under the newly created Health Services and Mental Health Administration, is Paul J. Sanazaro, M.D., who had directed education and medical care research for the Association of American Medical Colleges since 1962.

HEW said the advisory council would be consulted on program development and practical operation problems involved in Medicaid, Title 19 of Social Security. Such programs are in operation in 38 states, Guam, Puerto Rico, and the Virgin Islands. Rashi Fein, Ph.D., chief economist at the Brookings Institution, was named chairman of the 21-member council which includes 6 physicians: John B. Farley, M.D., Pueblo, Colorado; Thomas B. Georges, M.D., Pennsylvania; Amos N. Johnson, M.D., Garland, North Carolina; Maynard Shapiro, M.D., Chicago, president-elect of the American Academy of General Practice; George W. Slagle, M.D., Battle Creek, Michigan, chairman of the American Medical Association's Council on Medical Service; Donald Smith, M.D., professor of public health, University of Michigan.

The Social Security Administration said the panel on reimbursement would review proposals for experiments submitted by institutions and individuals in the health care and health insurance fields. After such reviews, it will be asked to recommend the ones it believes to have the greatest potential. Nathan J. Stark, a Kansas City, Missouri, businessman, is chairman of the 17-member group. Four members are physicians: Solomon J. Axelrod, M.D., University of Michigan; Thomas W. Georges, Jr., M.D., Pennsylvania; Donald R. Hayes, M.D., Springfield, Massachusetts, and Pierre J. Salmon, M.D., San Mateo, California, county public health and welfare official.

* * *

The American Medical Association urged that Congress appropriate maximum funds for support of medical education. The AMA position was outlined by C. H. William Ruhe, M.D., director of the AMA's division of medical education, at a hearing of a House appropriations subcommittee.

"We recognize the present concern of the Congress and the nation for an over-all reduction in Federal expenditures," Dr. Ruhe said. "However, we believe that the urgent need for more physicians merits the funding, to the fullest extent possible, of legislation supporting medical education. . . .

"An urgent need exists in this country for more physicians to meet the health care needs of the American public. This need can only be met effectively by a major increase in the capacity of American medical schools to educate more physicians."

Dr. Ruhe noted that Federal aid to medical schools under the proposed Health Manpower Act of 1968 would not become available before 1970. Therefore, he said efforts must be made to secure the essential immediate increase in financial support through increased appropriations under existing law. He listed the Health Professions Educational Assistance Act, the Health Research Facilities Construction Act,

continued on page 1684

Prepared by the Washington, D.C., Office of the American Medical Association.

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension

SERPIDINE
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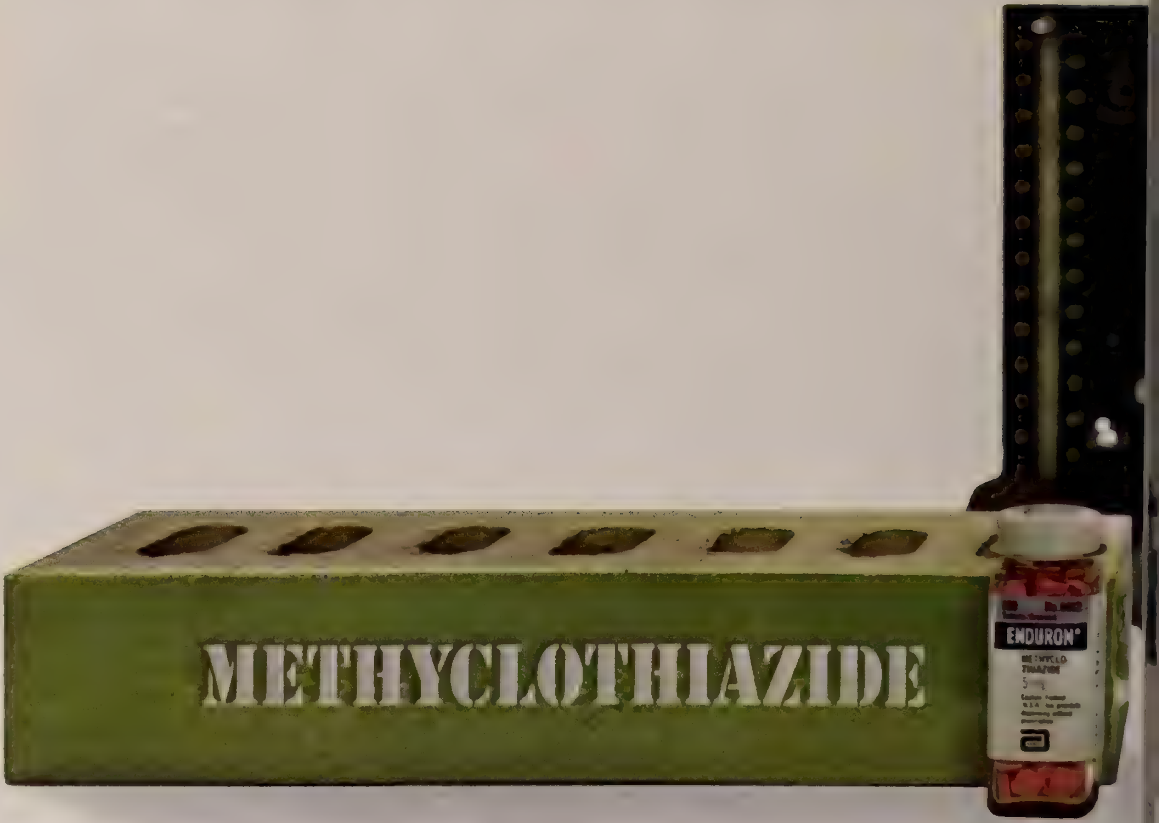
PARGYLINE

Enduron: (methyclothiazide) A basic building block for mild hypertensives



Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

ENDURON®

METHYCLOTHIAZIDE

MILD TO MODERATE TO SEVERE

See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension

DESERPIDINE
METHYCLOT
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ENDURONYL

Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

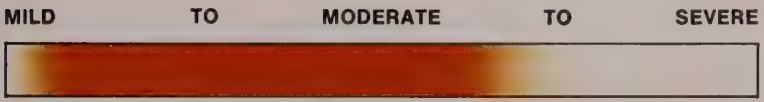
Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

Once a day, every day

ENDURONYL®

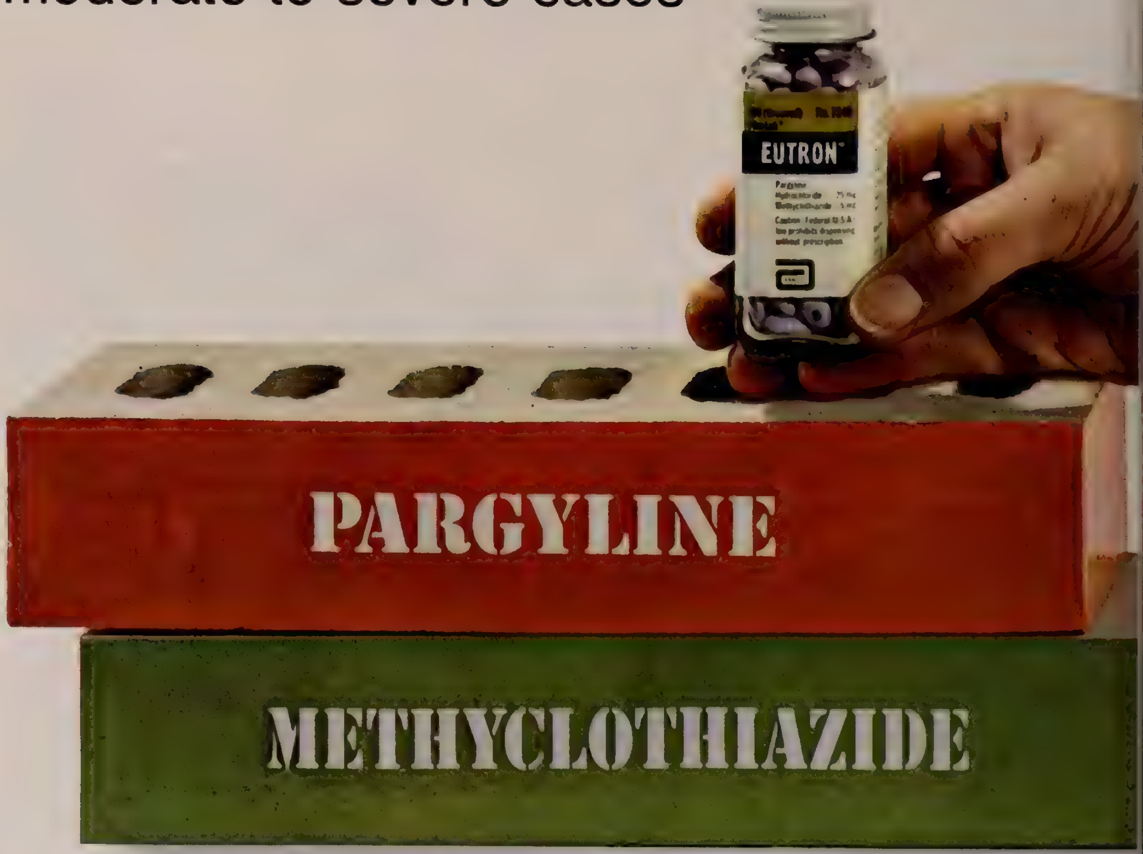
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.



See Brief Summary on final page of advertisement

801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

ENDURON®

METHYCLOTHIAZIDE

ENDURONYL®

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg.

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications—Moderate to severe hypertension.

Contraindications—Pheochromocytoma, paranoid schizophrenia, hyperthyroidism and advanced renal failure. Not recommended in malignant hypertension, children under 12, pregnant patients.

Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. 804438R

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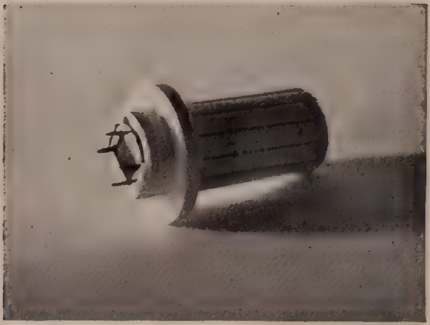
Available in the convenient flask size.
80 Proof. Schieffelin & Co., N.Y.

To fight TB- find it first!

Make tuberculin testing routine with every physical examination.



TUBERCULIN,TINE TEST
(Rosenthal)

Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

Lederle

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continued from page 1678

the Medical Act, and general research support authority of National Institutes of Health.

* * *

Governor Nelson Rockefeller, of New York, and two other witnesses at a Senate subcommittee hearing supported national compulsory health insurance as a solution to the problem of rising health care costs. The other witnesses were Olcott D. Smith, chairman of Aetna Life and Casualty Company, who said private companies could work with government effectively on such a program, and economist, Victor Fuchs.

But Wilbur J. Cohen, acting secretary of HEW, who favored the plan twenty years ago, said he now believes the government should move on other fronts. He said it would be difficult, a "monumental task," at this time to achieve a workable and acceptable program of compulsory national health insurance. He did not foresee the United States following the pattern of European nations in adopting a monolithic central health system for the entire nation. He said this country is too large for a single plan but that benefits under any plans adopted should be relatively uniform for all Americans.

Cohen said first priority now should be given to maternal and child health programs. He listed as other "must" programs the expansion of medical manpower and health facilities and the continued investment in health research.

Senator Abraham Ribicoff (Democrat, Connecticut), chairman of the subcommittee holding hearings on health care costs, also said that the emphasis now should be on more immediate solutions. He said that his experience with the fight for Medicare had convinced him that it would be a long time before Congress would accept compulsory national health insurance.

He said that the first week of the hearings "made clear that a health care system in America must include everyone, public and private organizations, insurance companies, Blue plans, voluntary hospitals, nursing homes, medical societies, individual private medical practitioners, those who practice medicine in groups, and state, local, and Federal agencies."

* * *

Manufacturers of oral contraceptives are being asked by the F.D.A. (Food and Drug Administration) to revise uniform labeling for the products to reflect findings from research in Great Britain that there is an association between the use of oral contraceptives and thromboembolic diseases.

Herbert L. Ley, Jr., M.D., director of the FDA's Bureau of Medicine, notified the manufacturers of the publication of the British reports in the April 27 issue of the *British Medical Journal.* He called representatives of the companies to a meeting in Washington to discuss the "prompt revision of uniform labeling."

Proposed labeling changes, based on preliminary results and unofficial reports of the British findings, had been submitted to U.S. manufacturers by the FDA last month. The proposed new FDA labeling would reflect the findings of the British studies and would be aimed at prescribing physicians, an FDA spokesman said.

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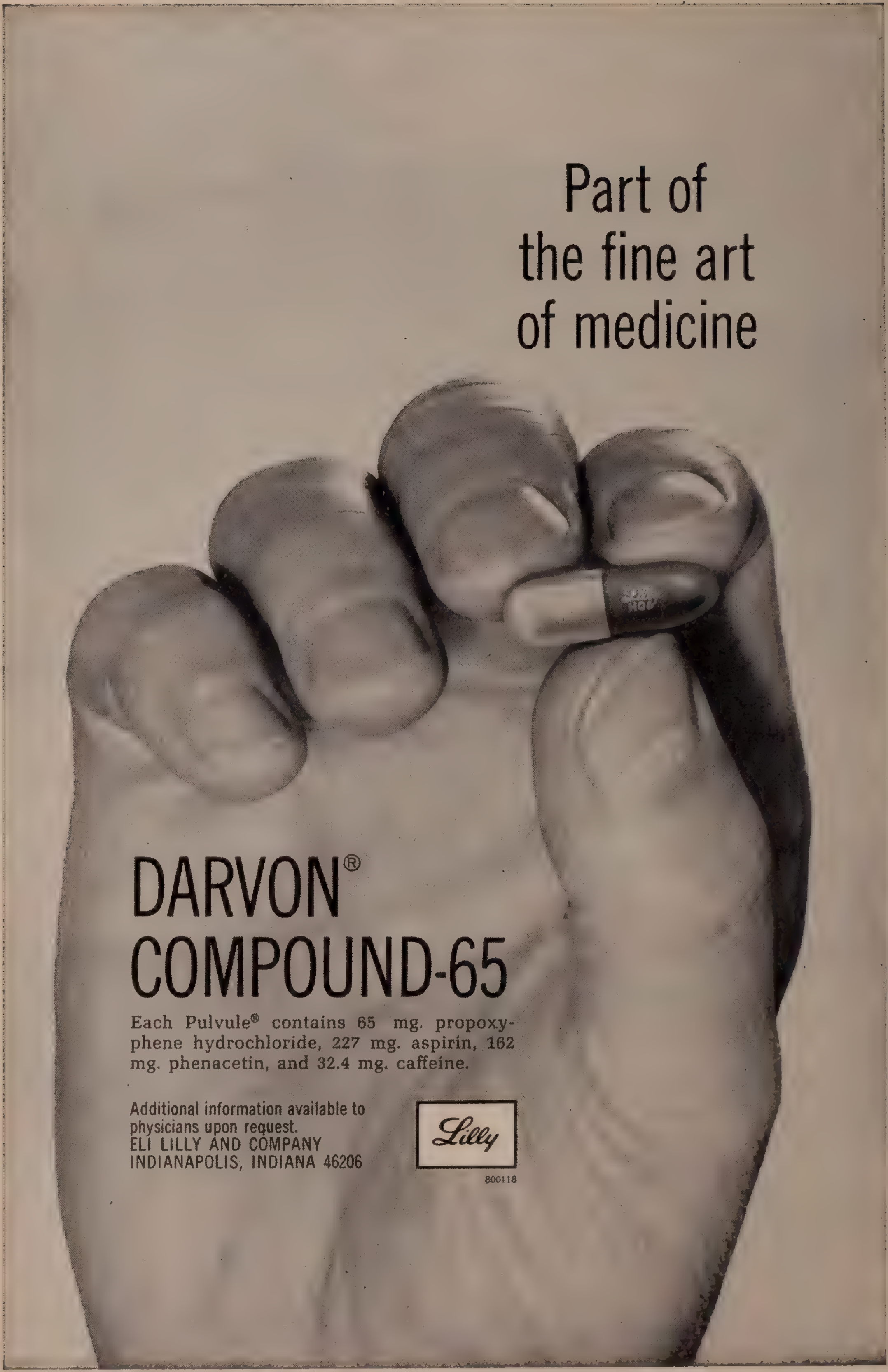

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Editorials

Foreign medical graduates in U.S. training programs

As of September 1, 1966, there were 14,842 foreign medical graduates enrolled in training programs in U.S. hospitals. Graduates of medical schools located in countries other than the United States or Canada are classified as foreign medical graduates irrespective of their national origin or current citizenship. Recently obtained data indicate that only 7 per cent of the foreign medical graduates are native born U.S. citizens and that an additional 3 per cent were naturalized U.S. citizens.

The largest group (64 per cent) of the foreign medical graduates in U.S. training programs were in residencies while 19 per cent were in internships and 17 per cent were in other clinical training programs. The 9,483 residency positions filled by foreign medical graduates in 1966 constituted a new record of 29.8 per cent of the total U.S. residencies. In the same year the 2,793 foreign-trained interns accounted for a near record 26.9 per cent of the interns in U.S. hospitals. Foreign medical graduates in the five years have provided an annual average of 2,442 interns, 8,170 residents, and 1,932 other clinical fellows to the training programs of the U.S. hospitals. Table I presents the number and percentage of U.S. internships and residencies filled by foreign medical graduates in each of the years from 1950 to 1966.

Approved graduate training programs are conducted by 1,512 U.S. hospitals of which 40 per cent have some degree of affiliation with U.S. medical schools. The distribution of foreign medical graduates in the hospitals with affiliations are contrasted with nonaffiliated hospitals in Table II, which compares the number of U.S. or Canadian-trained M.D.s with the number of foreign-trained M.D.s serving as interns and residents in 1966 to 1967. Both in terms of interns and residents the affiliated

TABLE I. Number and percentage of total internships and residencies in the U.S. filled by foreign medical graduates 1950–66

	Internships Filled			Residencies Filled		
Year	Total	By Foreign-Trained M.D.s (Number)	By Foreign-Trained M.D.s (Percentage)	Total	By Foreign-Trained M.D.s (Number)	By Foreign-Trained M.D.s (Percentage)
1950	7,030	722	10.3	14,495	1,350	9.3
1951	7,866	1,116	14.2	15,851	2,233	14.1
1952	7,645	1,353	17.7	16,867	3,035	18.0
1953	8,275	1,787	21.6	18,619	3,802	20.4
1954	9,066	1,761	19.4	20,494	3,275	16.0
1955	9,603	1,859	19.4	21,425	4,174	19.5
1956	9,893	1,988	20.1	23,012	4,753	20.6
1957	10,198	2,079	20.4	24,976	5,543	22.2
1958	10,352	2,315	22.4	26,758	6,042	22.6
1959	10,253	2,545	24.8	27,590	6,912	25.0
1960*	9,115	1,753	19.2	28,447	8,182	28.8
1961	8,173	1,273	15.6	29,637	7,723	26.0
1962	8,805	1,669	19.0	29,239	7,062	24.2
1963	9,636	2,566	26.6	29,485	7,052	23.9
1964	10,097	2,821	27.9	30,797	8,140	26.4
1965	9,670	2,361	24.4	31,687	9,113	28.8
1966	10,366	2,793	26.9	31,792	9,483	29.8
TOTAL	156,043	32,761	21.0	421,171	97,874	23.2

Source: Education Number of the *Journal of the American Medical Association*, vol. 202, no. 8, November 20, 1967.

* Effective December 31, 1960, all foreign-trained physicians applying for internships and residencies in U.S. hospitals were required to have certification by the Educational Council for Foreign Medical Graduates.

TABLE II. Number and percentage of foreign medical graduates serving in internship and residency programs of affiliated and nonaffiliated hospitals in 1966

	Internships Filled				Residencies Filled			
Type of Hospital	By U.S. and Canadian-Trained M.D.s	By Foreign-Trained M.D.s	Total	Foreign-Trained as % of Total	By U.S. and Canadian-Trained M.D.s	By Foreign-Trained M.D.s	Total	Foreign-Trained as % of Total
Affiliated	5,446	847	6,293	13.5	16,103	4,911	21,014	23.4
Nonaffiliated	2,127	1,946	4,073	47.8	6,206	4,572	10,778	42.4
TOTAL	7,573	2,793	10,366	26.9	22,309	9,483	31,792	29.8

Source: Education Number of the *Journal of the American Medical Association*, vol. 202, no. 8, November 20, 1967.

TABLE III. The 20 countries educating the greatest number of foreign medical graduates serving in U.S. training programs

Country and Order of Rank	Total Number of Trainees	Percentage of Total Foreign Graduates in U.S. Graduate Training Programs
1. Philippines	3,517	25.7
2. India	1,468	10.7
3. Korea	805	5.9
4. Iran	612	4.5
5. Thailand	531	3.9
6. Cuba	462	3.4
7. Argentina	446	3.2
8. Mexico	385	2.8
9. Spain	371	2.7
10. Germany	360	2.6
11. Colombia	347	2.5
12. Italy	345	2.5
13. Formosa	329	2.4
14. Switzerland	297	2.2
15. Pakistan	288	2.1
16. Ireland	198	1.4
17. Japan	170	1.2
18. England	161	1.2
19. Peru	153	1.1
20. Lebanon	126	1.0
TOTAL	11,371	83.0

Source: Education Number of the *Journal of the American Medical Association*, vol. 202, no. 8, November 20, 1967.

hospitals are utilizing a lesser proportion of the total number of foreign-trained M.D.s than are the nonaffiliated hospitals.

The 20 countries whose medical school graduates constitute the major share (83 per cent) of the foreign medical graduates in U.S. training programs are listed in Table III which indicates the number and percentage of all foreign medical graduates that were trained in each country. The remaining 17 per cent of foreign medical graduates, not included in Table III, were trained in 56 countries in numbers ranging from the single graduates of medical schools in Estonia and Lithuania to the 125 graduates of medical schools in both Turkey and Belgium. The data in Table III includes in addition to the foreign-trained M.D.s in internships and residencies those that are in all other clinical training programs.

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Analysis of all of these papers shows that the incidence of cures for the *initial* course of therapy ranged from 76.6 per cent to 100 per cent. The cure rates after retreatment of female patients and treatment of their husbands when indicated ranged from 84.7 to 100 per cent. The average final cure rate reported in all investigations was 97.1 per cent.

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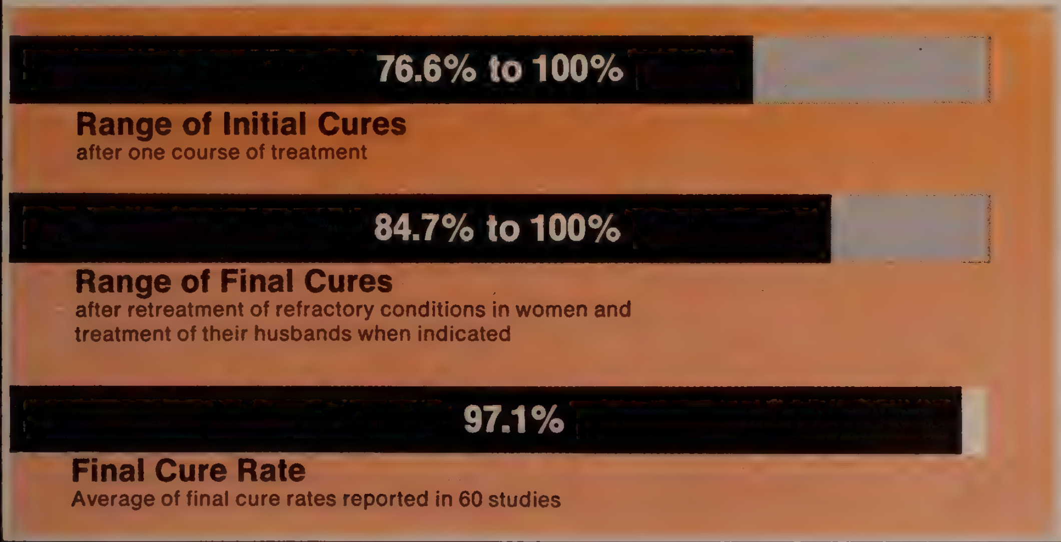

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Side Effects: Infrequent and minor side effects include nausea, metallic taste and furry tongue. Gastrointestinal disturbances, flushing and headache sometimes occur, especially with concomitant ingestion of alcohol. The taste of alcoholic beverages may be altered. Other effects, all reported in an incidence of less than 1 per cent, are diarrhea, dizziness, vaginal dryness and burning, dry mouth, rash, urticaria, gastritis, drowsiness, insomnia, pruritus, sore tongue, darkened urine, anorexia, vomiting, epigastric distress, dysuria, depression, vertigo, incoordination, ataxia, abdominal cramping, constipation, stomatitis, numbness or paresthesia of an extremity, joint pains, confusion, irritability, weakness, cystitis, pelvic pressure, dyspareunia, fever, polyuria, incontinence, decreased libido, nasal congestion, proctitis and pyuria. Elimination of trichomonads may aggravate candidiasis.

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In men: When trichomonads are demonstrated, one 250-mg. oral tablet twice daily for ten days in conjunction with treatment of his female partner.

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Clinical Precision in Therapy for Coagulation Disorders*

MARTIN C. ROSENTHAL, M.D.
New York City

Associate Attending Hematologist, The Mount Sinai Hospital; Associate Clinical Professor of Medicine, Mount Sinai School of Medicine; Medical Director, The National Hemophilia Foundation

PRECISION THERAPY FOR *coagulation disorders now exists only for AHF (factor VIII) deficiency. Assay procedures indicate the degree of deficiency and the potency of a product used and may be used to monitor the level of replacement therapy achieved by various products. Currently available materials for AHF deficiency consist of various forms of fresh plasma, essentially equivalent; a special human fibrinogen; and at least three different concentrates. The dose must be related to the plasma volume of the individual and the final desired level of the factor. Monitoring by laboratory control is essential.*

AT THE PRESENT TIME, strictly speaking, precision therapy with regard to coagulation disorders can only be said to exist for AHF (antihemophilic factor VIII) deficiency. Several factors have conspired to make this event possible. Without a doubt, the single most important factor that has led to the possibility of precision therapy has been the development of various assay procedures which can give an indication as to the degree of deficiency that an individual has and, in a quantitative way, of the potency of any product that one uses; finally which may be used to monitor the level of replacement therapy achieved by a variety of products.[1,2]

With respect to AHF deficiency, another happy circumstance has been, as indicated previously, the wide variety of products now available for use in this hereditary coagulation deficiency state. At the present time, there are at least four concentrates of various potencies available for use in AHF deficiency. Although such concentrates would always be welcome in the therapy of hemophilia of this type, some of the concentrates have an enhancement of their value because of the quantitation possible with the assigning of potency to the various forms in which such concentrates are available.

While this situation does not at the present time exist for other hereditary coagulation disorders, it may be anticipated that in the future products of a similar nature will be available for these disorders, leading to precision therapy. At any rate, the general principles which apply to AHF deficiency apply as well to the other coagulation disorders. For this reason, it is useful to consider the physiology briefly of the various coagulation factors.

Physiology and technic

All of us are born with approximately five times as much of any coagulation factor as is necessary. Thus with respect to AHF deficiency, a normal range of 50 to 150 per cent exists with the average being about 100 per cent. A so-called critical value exists below which an individual

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may be expected to bleed or at least have some hemostatic liability. The precise degree of deficiency which may be termed the critical value has changed from year to year as our laboratory tests have become more sensitive. At one time the critical value was thought to be about 5 per cent, but the advent of more sensitive tests has raised this critical value to the point where it is said to be about 20 to 30 per cent. As a matter of fact, with the advent of high-potency therapy, many who have to deal with these patients have raised the critical value to perhaps 50 per cent to ensure a margin of safety. The critical value may be varied in accordance with the severity of the hemorrhage. Thus, a joint hemorrhage may be readily treated if the critical value is established at about 10 per cent and the therapy aimed at restoring values above this level. A more severe type of hemorrhage, for instance an intracerebral hemorrhage, might have a critical value assigned to it of 30, 40, or even 50 per cent.

In addition to a critical value, all of the coagulation factors have a half-life. This half-life is the time it takes for an administered dose which achieves a certain level to drop to half this level. Most of the data concerning half-lives of various coagulation factors have been established in individuals who lack the factor. Because of this, there has always been some question as to whether or not the half-life of any particular coagulation factor in a normal individual is of a similar order. With the advent of the AHF concentrates, it has been possible to hyperinfuse normal subjects and show that the half-life, at least of AHF, is quite similar in both normal subjects and those individuals who lack this factor. This half-life of AHF has been estimated to range from six to twenty-four hours.[3] This wide spread may be attributed to the fact that in any individual with AHF deficiency, extraneous factors may operate to reduce the half-life of any infused product. Thus it is known that an individual who is bleeding externally would have a shorter half-life because of loss of some of the administered product. Similarly, an internal hemorrhage with hematoma formation would use up the infused material, shortening the half-life. In some hemophiliac subjects, a destructive mechanism probably of an acquired nature is present which further shortens the half-life of any infused products. This variability in half-life makes monitoring of any treatment program by laboratory assay important. Finally, it should be mentioned that initially there seems to be a distribution of any infused product across the vascular space into the extravascular tissues. Perhaps as much as half of the initially administered dose may be lost in this fashion, and for that reason in the treatment of most coagulation disorders, a so-called priming dose becomes necessary.

TABLE I. Fresh plasma, fresh frozen plasma, and dried irradiated plasma

Category	Per Cent
Yield	100
Purification factor	0
AHF content per volume	50 to 150

TABLE II. Human fibrinogen

Category	Per Cent
Yield	?
Purification factor	7×
AHF content per volume	75 to 100

Materials and methods

The materials that are currently available for use in AHF deficiency consist of fresh plasma, frozen fresh plasma, or dried irradiated fresh plasma. These materials are all essentially equivalent. In addition a special human fibrinogen[4] and at least three different concentrates are now available. Utilizing fresh plasma, fresh frozen plasma, or dried irradiated plasma as the model, the yield from this material is obviously 100 per cent since none is lost, in theory at least, during its processing (Table I). There is no purification factor, and the AHF content per unit volume is the 50 to 150 per cent which covers the concentration found in normal subjects. When one goes on to examine human fibrinogen that is especially prepared for use in hemophilia, the yield varies since the process has a varied efficiency (Table II). The purification factor is 7×. This means that the protein concentration in this material is one seventh compared with human

TABLE III. Glycine precipitate AHF

Category	Per Cent
Yield	70 to 100
Purification factor	20 to 40×
AHF content per volume	700 to 1,000

TABLE IV. Cryoprecipitate AHF

Category	Per Cent
Yield	70
Purification factor	20 to 30×
AHF content per volume	843 (337 to 1,428)

TABLE V. Cold ethanol cryoprecipitate (Johnson method III)

Category	Per Cent
Yield	50 to 70
Purification factor	30 to 50×
AHF content per volume	800 to 1,000

plasma. The AHF content per unit volume ranges from 75 to 100 per cent. In other words, this material has about the same potency as normal plasma, but its virtue lies in the fact that it is essentially free of albumin and some of the other proteins and therefore does not lead to circulatory overload.

Going on to the true concentrates, glycine precipitate AHF, which is produced commercially, has a yield of 70 to 100 per cent (Table III).[5] This is a very efficient process. The purification factor is 20 to 40×, again attesting to the highly refined nature of this material. Its AHF content per volume is 700 to 1,000 per cent. In other words, this material is seven to ten times concentrated in the true sense of the word. Another type of material being widely used is cryoprecipitate AHF (Table IV). Here the yield is not as efficient, being about 70 per cent. The purification factor is also quite good, being 20 to 30×. The AHF content per volume averages about 800 per cent, in other words, eight times more concentrated in the true sense of the word than normal plasma. Another concentrate in use is the Johnson method III which is quite similar to the glycine precipitate material in its potency (Table V).

To calculate how much plasma to give to a hemophiliac patient, one determines the body weight, transcribes it into grams, multiplies it by 5 per cent to get the plasma volume, and multiplies this by the DAI (desired AHF increase) expressed in per cent of normal:

Milliliters of plasma =
body weight (in grams) × 5 per cent ×
desired AHF increase (in per cent of normal)

DAI = final level AHF − initial level AHF

The desired AHF increase is equivalent to the final level of AHF that one wants to achieve minus the initial level of AHF that the patient normally has. In most calculations, the initial level can be regarded as zero since the individual has no AHF to begin with. This dose of plasma is given in a double amount as the priming dose and thereafter is given on a six -, eight -, or twelve-hour basis depending on the severity of the hemorrhage being treated and on the results of monitoring by assay procedures. The formula is readily modified when using cryoprecipitate concentrate which is supplied in bags. As a rule, the supplying laboratory processing this material knows approximately the number of units in each bag. If the unit is not known, a safe assumption is that each bag contains 150 units, so that the formula can be modified to give the number of bags that may be necessary in treating a hemophiliac patient:

Number of bags = body weight (in grams) ×
5 per cent desired AHF increase (in per cent
of normal) $\times \frac{1}{\text{unit value of bag}}$

DAI = final level AHF − initial level AHF

Again, double this number is used as a priming dose, and as a rule, because of the potency of the material, the cyroprecipitate is given on a twelve-hour basis. The formula again can be modified to give AHF units, since the unit of AHF is equivalent to the effect of 1 ml. of fresh pooled plasma, so that this formula essentially is the same as the formula for administration of fresh plasma, fresh frozen plasma, or dried irradiated plasma:

AHF units = body weight (in grams) ×
5 per cent × desired AHF increase
(in per cent of normal)

1 unit AHF = effect of 1 ml. fresh
pooled plasma

Conclusion

Thus an era of precision has arrived, at least with respect to the therapy of AHF deficiency.[6,7] To sum up the facts regarding precision therapy:

The dose must be related to the plasma volume of the individual and the final desired level of the factor.

A priming dose is necessary to compensate for distribution into the extravascular space.

A knowledge of the half-life is necessary in a general way so as to space the various dose administrations to keep the effective level of the factor above the critical value.

One has to appreciate what this critical value is and relate it to the severity of the hemorrhage.

Monitoring by laboratory control is essential to indicate the effective levels achieved, to give some idea of correct spacing, and to indicate that the therapy is effective consistently enough to be above the critical value.

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Nominating Committee Appointed

The following Nominating Committee for 1968–1969 has been appointed by Edward C. Hughes, M.D., President, Medical Society of the State of New York.

District Branch	*Committee Member*
First	Frederick A. Wurzbach, Jr., M.D., Bronx, *Chairman*
Second	John M. Galbraith, M.D., Nassau
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Fourth	Walter F. Harrison, Jr., M.D., Warren
Fifth	Marvin Brown, M.D., Madison
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Seventh	Philip M. Standish, M.D., Ontario
Eighth	Herbert A. Laughlin, M.D., Chautauqua
Ninth	John N. Dill, M.D., Westchester
At Large	Carl Goldmark, Jr., M.D., New York
At Large	Samuel Wagreich, M.D., Bronx

Office Diagnosis of Streptococcal Infections

STREPTOCOCCAL INFECTIONS *are still, in many cases, difficult to diagnose. However, certain features suggest a greater likelihood of such infection, and these include season of the year, the epidemiology of the immediate area, and the age of the patient. Since the infections are more common in children than in adults, they have become essentially the province of the pediatrician and the general practitioner. Symptoms include sore throat, ear ache without evidence of ear infection, a suggestive clinical syndrome, and the presence of infection elsewhere in the body. Laboratory aids are described.*

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STREPTOCOCCAL INFECTIONS have become almost exclusively the province of the practicing physician, and, since they are more common in children than in adults, they have become essentially the province of the pediatrician and the general practitioner. In our office of three pediatricians, we see more than 1,000 patients with this infection each year; but despite this frequency, the diagnosis is still, in many cases, a challenge.[1]

In 1954 we conducted a study to determine the importances of various symptoms, signs, and office laboratory procedures in making an accurate diagnosis of beta hemolytic streptococcal infections in children, and we could not discover any consistent criteria which could give us more than a rough guide.[1,2] Our over-all clinical accuracy was 75 per cent, and, although we have not repeated this study subsequently, I doubt if we would improve on this figure even at this time. At least once a day we see a child whose culture results surprise us either when it is positive or negative. In other studies by Stillerman and Bernstein,[2] Siegel,[3] and Rantz, Boisvert, and Spink,[4] comparable percentages were found.

There are, however, certain features which, when present, will suggest a greater likelihood of streptococcal infection, and these deserve some consideration.

We should always be cognizant of the season of the year, the epidemiology of the immediate area, and the age of the patient, since these are very important factors in evaluation.[3] Streptococcal infections are almost nonexistent in August; they reappear in mid-September, gradually increase through the fall and winter months, to reach a peak incidence in March, April, or May, and then taper off through June and July to the very low August level. Consequently the presence of follicles on the tonsils in April has a different connotation from their presence in August. Along with the seasonal incidence, the current epidemiology in the particular community and especially in the family unit can be significant. Of sibling contacts, 25 per cent will contract the infection, usually within seven days of the appearance of symptoms in the primary case, particularly if secondary cases are between the ages of three and ten.[4] These infections are unusual in children under three, and the peak age of incidence is five to ten years of age, so the patient's age is an important factor for consideration. In addition, there are some specific symptoms and signs worthy of mention.

Signs and symptoms

The complaint of sore throat occurs in 79 per cent of streptococcal throats compared with 44 per cent of nonstreptococcal

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throats. Fever, headache, abdominal pain, and vomiting are somewhat more common in our streptococcal patients.

A symptom with which I have recently been impressed is ear ache in the absence of evidence of an ear infection. I don't know whether or not this is more or less frequent in children with streptococcal infection than with nonstreptococcal infection; it certainly would appear to be on the, always deceptive basis, of clinical impression.

On the other hand, the symptoms of a respiratory infection, cough and runny nose, are not usually associated with streptococcal disease although a Streptococcus may be a secondary invader in this situation.

No particular sign can be relied on for diagnosis, but a clinical syndrome may be very suggestive. The beefy red, swollen throat with palatal petechiae, a dirty gray exudate, plus enlarged tender anterior cervical glands are characteristic signs when present, but Stillerman and Bernstein[2] found them in only 6 per cent of their cases of streptococcal disease. Furthermore, the earlier the patient is seen after the onset of his illness, the less the likelihood that the throat will have this appearance. It may take several days before it develops, and the pediatrician is frequently asked to see the patient long before that amount of time has elapsed. We found that our clinical accuracy approached 90 per cent if the patient had been ill forty-eight hours, whereas we were closer to 65 per cent when he had been ill less than twelve hours.

Another helpful sign is the presence of infection elsewhere in the body. Most commonly these are: (1) nasal infection with a purulent rhinorrhea and excoriation of the nares; (2) scattered impetiginous lesions of the face, particularly beneath the nose and around the mouth; (3) paronychia of the fingers or toes; (4) abscesses of the distal extremities; and (5) otitis media.

All these infections elsewhere, so-called "metastatic infections," may sometimes be the presenting symptom in children whose infected throat has already cleared and where the diagnosis can be made only retrospectively from the history.

Another common area of infection is the vagina. Streptococcal vaginitis has a distinctive history. The mother is usually able to date its onset to a particular day in contradistinction to the nonspecific infection where she more commonly states that it has been present "for months." In addition, it has a very heavy, creamy yellow discharge which stains all the child's panties rather than just the occasional pair. It may or may not be associated with a history of a recent throat infection or with a positive throat culture. As a word of warning, it is advisable to watch vaginal cultures for a longer period of time than other cultures; it is our practice to incubate them for eighteen hours and then keep them under observation at room temperature for another forty-eight hours before discarding them. We have occasionally seen the culture become positive as late as seventy-two hours after streaking the blood plate.

Laboratory aids

The laboratory aids that we use are cultures and white blood counts. Of course, the most common culture is a blood agar plate, and it is our most valuable laboratory aid. It is so well known I will only discuss two points concerning it. It has an error of about 10 per cent, and consequently a reculture is advisable if the clinical symptoms persist with a negative report. Second, after years of putting swabs in broth to transport them to the office for plating, we found equally good, if not better isolations when the swab was placed in a dry pill envelope, sealed, and kept there until our return to the office.

Fluorescent microscopy is not practical in the private office of the practicing physician. Its major drawback stems from the need to incubate the swab and broth from two to four hours before it can be processed and examined, and this means that an immediate diagnosis is impossible. Although we could make the diagnosis theoretically earlier than with a routine blood agar culture, there would not be a significant time advantage for the patient in those few extra hours. We must balance the questionable advantage of these few hours gained against the cost of fluorescent microscopy in a private office. There are many preliminary steps in the preparation of the specimen for study, and it takes a technician very little more time to study 20 specimens than it does to study 1 specimen. Consequently, from an office standpoint, it would be inordinately expensive to make a determination on each suspicious patient as he or she appeared in the office, rather than to save them all and run them all at one time. In public health programs, these arguments, of course, are no longer valid.

The white blood count can be very suggestive. We expect it to be elevated above 12,000 in streptococcal disease, although we have frequently seen it below this figure. It should always be remembered that it is an adjunct in diagnosis, and it must be evaluated in the light of the clinical findings. We often do or do not institute treatment in opposition to the significance of the white count, but only if we are very sure of our clinical judgment; otherwise we await the culture result.

Summary

We have presented some of the epidemiologic data, symptoms, signs, and laboratory aids useful in the diagnosis of beta hemolytic streptococcal infections in children in an office practice.

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Announcement

1968 District Branch Meetings

Branch	*Date*	*Place*
FIRST	Sunday, February 11	The Americana, New York City
SECOND	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
THIRD AND FOURTH	Saturday, September 28	Holiday Inn, Lake George
FIFTH AND SIXTH	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
SEVENTH AND EIGHTH	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
NINTH	Monday, February 12	The Americana, New York City

Sulfaphenazole Therapy of Infections of Urinary Tract

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From the Department of Urology, Central General Hospital

IT HAS BEEN ESTIMATED that 3.5 per cent of the female and 0.35 per cent of the male population of the United States have urinary tract infections.[1] The incidence of such infection has been placed second only to that of infections of the upper respiratory tract,[2] and bacteriuria has been said to be one of the most common findings associated with infection in man.[3]

While it is generally agreed that most urinary tract infections follow an ascending pathway,[4-8] etiologic factors are varied. In women anatomic considerations, combined with urethral trauma due to sexual intercourse, pregnancy, and parturition, may be contributory factors,[9] accounting for the strikingly higher incidence of urinary tract infections in females over the incidence in males.[3] In men, instrumentation is considered to be a major factor in nonvenereal and nontubercular genitourinary tract infections.[3,10] It has been held to account for a proportion of infections in women as well.[10] In children autogenous infection is considered usual.[8] A retrospective examination of histories in a gynecologic practice showed that 50 per cent of women with genital tract disease also had urinary tract infection, and a similar review in a urologist's office revealed a like incidence of the reverse association.[10]

The consensus appears to be that Escherichia coli is the prime etiologic agent in urinary tract infection, followed by Klebsiella-Aerobacter and Proteus species, which are also commensal in the colon of man.[4-6,11-15] Other bacteria implicated by the same workers include the enterococci, paracolon, Pseudomonas, and Staphylococci.

In the diagnosis of infection, a count of 100,000 organisms per milliliter or more is generally defined as bacteriuria, but this is not viewed as a rigid guide to therapy.[16] In chronic infection, bacteriuria may appear only intermittently.[4,15] Bacterial counts in patients with suspected infection of the urinary tract can rise rapidly from "none" to "significant,"[17] sometimes overnight,[18] and this sequence can also be reversed spontaneously.[13]

The threat of pyelonephritis exists in the presence of infection anywhere in the urinary tract,[19] and continuing infections probably reach the kidney sooner or later.[4] The sequelae of destructive changes in the kidney are well known.

Early recognition and therapy of urinary tract infection are all important. Since therapy is often indicated before the results of urine culture can be obtained[2] and since disease processes with a bacterial cause often exist in the absence of demonstrable bacteriuria, signs and symptoms, as well as bacteriologic examination, are important to diagnosis.

Because of probable tissue involvement, agents producing effective serum and tissue levels should be selected.[14,15,20,21] To eliminate the offending organisms from the urine and thus prevent reinfection of tissues from this source and to attack any pathogens in the superficial layers of the mucosa, the agents selected should also be capable of producing effective urinary concentrations.[14,15,20]

Drawbacks in the use of antibiotics, notably anaphylaxis and the development of drug-resistant strains of bacteria, have led to a trend in recent years to turn to other chemotherapeutic agents such as sulfonamides.[20] This trend has coincided with research toward the development of sulfonamides with a high degree of tolerability combined with antibacterial effectiveness in low dosages.[22]

Sulfaphenazole, (Sulfabid), a sulfonamide which is a result of such research, appears to possess these characteristics.[23-27] It has been reported to produce high concentrations in both tissue and urine,[28,29] and its effectiveness in treating these infections has been reported.[23-27]

BECAUSE SULFAPHENAZOLE BEARS *a high degree of tolerance combined with antibacterial effectiveness in low dosages, a study of its usefulness was done with 94 clinic patients with infections of the urinary tract, 65 of them female. It was 100 per cent effective in 44 acute urinary tract infections, 81.6 per cent in 38 recurrent conditions, and 42 per cent in 12 chronic cases; the correlation between clinical and bacteriologic effectiveness was close. Sulfaphenazole therapy showed excellent results in 80 of the 94 patients (85 per cent).*

Materials and methods

Ninety-four clinic patients with infections of the urinary tract, 65 of them female, were included in the present study of sulfaphenazole. They ranged in age from three and a half to seventy-nine years (Table I). Clinical diagnoses are shown in Table II. Pretherapy cultures showed bacteriuria in 70 patients, 3 of whom had no significant pyuria (Table III). Urinalysis showed significant white blood cell counts, 5 or more per high-power field, in 82 patients, in 13 of whom bacteriuria could not be demonstrated. In 12 patients there was pus in the semen or prostatic fluid.

Dysuria or urinary burning in 72 patients and urinary frequency in 54 were the most common complaints; pains and aches

TABLE I. Age (years) and sex of 94 patients with urinary tract infection

Classification of Infection	Number of Patients	3 to 14		15 to 50		51 to 79	
		Male	Female	Male	Female	Male	Female
Acute	44	. . .	6	1	2	12	23
Recurrent	38	. . .	12	5	4	5	12
Chronic	12	. . .	1	2	2	4	3
TOTALS	94		19	8	8	21	38

TABLE II. Diagnoses and clinical evaluations in 94 patients with infections of urinary tract

		Clinical Evaluation							
				By Type					
		Over-all		Acute		Recurrent		Chronic	
Primary Diagnoses	Number of Patients	Effective	Not Effective	Effective	Not Effective	Effective	Not Effective	Effective	Not Effective
Cystitis	36	31	5	22	. . .	9	2	. . .	3
Cystitis with complications	10	8	2	1	. . .	7	2	. . .	. . .
Hemorrhagic cystitis	3	3	. . .	3	. . .	. . .	. . .	. . .	. . .
Cystitis and pyelonephritis	3	1	2	. . .	. . .	1	2	. . .	. . .
Cystitis and prostatitis	1	1	. . .	. . .	. . .	1	. . .	. . .	. . .
Pyelonephritis	5	4	1	4	. . .	. . .	. . .	. . .	1
Pyelonephritis with complications	3	1	2	1	. . .	. . .	1	. . .	1
Prostatitis	18	16	2	8	. . .	6	. . .	2	2
Urethritis	2	2	. . .	. . .	. . .	2	. . .	. . .	. . .
Postoperative infection	5	5	. . .	3	. . .	1	. . .	1	. . .
Infections with anatomic complications	3	3	. . .	. . .	. . .	2	. . .	1	. . .
Miscellaneous	5	5	. . .	2*	. . .	2†	. . .	1**	. . .
TOTALS	94	80	14	44		31	7	5	7

* Epididymitis 1, infection associated with ureteral calculus 1.
† Infection associated with benign prostatic hypertrophy 1, with neurogenic bladder and cystocele 1.
** Urethral stricture with chronic infection.

TABLE III. Urinary bacteriology in 94 patients and clinical results

		After Therapy				
					Clinical Results	
Organisms Isolated Before Therapy	Number of Patients	Organism Persisted	New Organisms Isolated*	No Growth	Effective	Not Effective
E. coli	38	5†	4†	30	33	5
E. coli and Aerobacter	1	. . .	1	. . .	1	. . .
E. coli and Proteus	1	. . .	. . .	1	1	. . .
Proteus	13	3	1	9	11	2
Aerobacter	8	. . .	1	7	7	1
Enterococcus	5	. . .	1	4	3	2
Micrococcus	1	. . .	. . .	1	1	. . .
Paracolon	1	. . .	1	. . .	. . .	1
Staph. albus	2	. . .	. . .	2	2	. . .
No growth	24	. . .	1	23	21	3
TOTALS	94	8†	10†	77	80	14

* New organisms isolated after therapy in significant numbers included E. coli and Proteus in 2 patients each, and Aerobacter-Klebsiella in 1 patient. Insignificant counts of Aerobacter and Enterococcus were isolated after therapy in 5 other patients.
† In 1 patient, E. coli persisted and Proteus also appeared after therapy.

referable to urinary tract disease were symptoms in 28, incontinence or enuresis in 14, and hematuria in 7. Seven patients had elevated temperatures. Other symptoms were nocturia in 5, urgency in 4, straining to void in 6, foul-smelling urine and strangury in 2 each, and single complaints of chills, chills with fever, testicular swelling and pain, soreness near urethra, vaginal irritation, slowing of stream, residual urine, and feeling of incomplete emptying. Two patients with chronic prostatitis were asymptomatic.

Insofar as could be ascertained by records and history taking, the duration of the presenting episodes of urinary tract infection before initiation of sulfaphenazole therapy was from one to thirty days. Average duration was five days in the acute cases and ten days for the episodes in recurrent and exacerbated chronic cases. Histories of the recurrent conditions ranged from two months to thirty-three years, with an average of two and a half years. Histories of the chronic conditions ranged from three months to twenty-two years, with an average of slightly more than one and a half years.

Urine samples were cultured for bacterial growth in all patients prior to and at the termination of therapy and, where therapy was protracted, at intervals during its course. Samples were obtained by catheter in the female patients and were taken from the midstream in the males, after disinfection of the urethral meatus.

In 9 patients, phenazopyridine hydrochloride was administered for relief of pain concomitantly with sulfaphenazole for a few days at the initiation of therapy. One patient received acid douches and steroid creams for vaginitis and vulvitis during the treatment period. Another patient was rendered asymptomatic with antibiotic therapy, but sulfaphenazole therapy was substituted since pyuria and bacteriuria were still present.

In the course of therapy, surgery for urethral diverticula was performed on 1 patient, and 5 were administered prostatic massages. Twelve urethral and 2 ureteral dilatations were performed.

Sulfaphenazole was administered to adults in tablet form and to children in suspension form. Dosages for adults were in the main 2 Gm. initially and 1 Gm. every twelve hours thereafter. In children, dosage was approximately $^1/_2$ Gm. of sulfaphenazole per 17 pounds initially and half this dose every twelve hours for the duration of therapy.

Where there was both clinical and bacteriologic improvement, the drug was evaluated as effective. Where one of these elements of improvement was lacking, the drug was generally judged to be not effective.

Results

As can be seen in Table II, sulfaphenazole therapy was effective in 80 of 94 patients (85 per cent), as determined by the criteria of clinical and bacteriologic im-

TABLE IV. Duration of therapy in 79 patients effectively treated (in days)*

Type of Infection	Number of Patients	Symptomatic Relief		Clinical Remission		Therapy After Clinical Remission		Total Duration of Therapy	
		Range	Average	Range	Average	Range	Average	Range	Average
Acute	44	1 to 14	3.8	2 to 18	6.7	5 to 46	14.4	12 to 53	20.3
Recurrent	30	1 to 14	6.0	1 to 14	7.4	4 to 88	21.6	14 to 95	29.0
Chronic	5	1 to 7	3.9	1 to 29	8.6	0 to 34	13.4	22 to 35	22.2
TOTAL	79	1 to 14	4.6	1 to 29	7.0	0 to 88	17.4	12 to 95	26.4

* One additional patient was on continuing sulfaphenazole maintenance therapy at the close of the study. See text.

provement. Effectiveness was 100 per cent in 44 acute urinary tract infections, 81.6 per cent in 38 recurrent conditions, and 42 per cent in 12 chronic cases.

Correlation between clinical and bacteriologic effectiveness was close (Table III). The urine was sterile after therapy in 54 of 70 patients from whose urine bacteria had been isolated before the therapy. Symptoms were cleared in these 54 cases. In 4 patients, new organisms were isolated after therapy in very low counts (Table III); there was good clinical improvement with abatement of symptoms in these cases and no clinical indication that the new organisms were pathogenic. In 23 of the 24 patients whose pretherapy urine cultures showed no growth, the post-therapy cultures continued to show no growth, and in the twenty-fourth the post-therapy culture showed a low Aerobacter colony count. In 3 of these 24 patients, however, no clinical improvement was observed. One patient with recurrent cystitis and a urethral stricture became asymptomatic within one week, and urine became pus-free; the medication was evaluated as effective although urine cultures showed persistent Proteus growth. In 5 patients, organisms not present before therapy appeared in significant numbers during therapy (Table III). The medication was evaluated as ineffective in these cases.

Symptoms were relieved, in the 80 patients in whom therapy was effective, in one to fourteen days, with an average of 4.6 days; clinical remission was observed in one to twenty-nine days, with an average of seven days. Over-all duration of sulfaphenazole therapy ranged from twelve to ninety-five days, with an average of 26.4 days. It was continued after clinical remission, up to eighty-eight days, with an average of 17.4 days (Table IV). Two patients with recurrent infection were given second courses of treatment, 1 on recurrence of symptoms a week after the initial treatment was discontinued and the other because of persistent infection. Duration of this second treatment course was three and four weeks, respectively. One patient with nephrocalcinosis, a horseshoe kidney, and Proteus infection of the urinary tract, was cleared of infection after fourteen days of therapy but was being maintained on sulfaphenazole therapy at the close of the study.

Sulfaphenazole therapy was effective in 16 of the 19 children, all female, in this series. Six of these patients had acute infection (4 cystitis, and 1 each of cystitis with urethral stricture, cystitis with pyelonephritis, and pyelonephritis). Nine had recurrent conditions (3 cystitis, 5 cystitis with urethral strictures, and 1 with pyuria and anatomic complications). One patient had a chronic urinary tract infection with anatomic abnormality. The 3 failures were recorded in 2 children with cystitis and pyelonephritis and 1 with cystitis and anatomic abnormality. Duration of therapy was about the same as that recorded for the entire series.

Sulfaphenazole therapy was effective in 18 (90 per cent) of 20 cases of infection with prostatic involvement (Table II). In 12 of these patients there was no growth in cultures of urine samples before therapy, but all patients showed significant white blood cell counts in urinalysis, pus in semen or prostatic fluid, or both. Organisms isolated before the therapy in the other 8 patients were E. coli in 4, Aerobacter in 2, and Proteus and Staph. albus in 1 each. After therapy no growth was obtained from the cultures of urine samples from 18 patients, and growth was not significant in the other 2. There was a recurrence of

Aerobacter infection in 1 of these patients one month after cessation of therapy, and he was referred for prostatectomy. The 2 patients with unsatisfactory clinical results showed no growth in urine cultures either before or after therapy.

Except for complaints of mouth dryness in 2 cases and drowsiness or lethargy in 2 others, side-effects were confined to 1 patient who experienced a maculopapular rash in the third month of therapy and 1 patient who complained of abdominal cramps and nausea, possibly attributable to the medication. It was discontinued only in the latter case. In the case of the maculopapular rash, the phenomenon disappeared promptly after completion of therapy.

The medication, in tablet form for the adults and as a suspension in the 19 children, was well accepted by all patients. The dosage schedule, administration every twelve hours, was convenient, an important consideration in insuring that the regimen was followed by these clinic outpatients.

Comment

The bacteriologic pattern of infection in this series was in general agreement with other reported observations regarding the cause of urinary tract infections.[4-6, 11-15] E. coli was implicated in 40 (56 per cent) of 70 patients with positive pretherapy urine cultures, Proteus in 14 (20 per cent), and Aerobacter in 9 (13 per cent). Among the 17 female children with positive pretherapy urine cultures, the corresponding incidences were 14 (82 per cent) for E. coli, and 3 (18 per cent) for Proteus. In 2 patients, Aerobacter and Paracolon bacteria, respectively, were present with E. coli. Although serologic typing was not carried out, these findings suggest support for the thesis that urinary tract infections in children are generally autogenous.[8]

The results of treatment with sulfaphenazole in this series of mainly uncomplicated cases of infection of the urinary tract were quite satisfactory. Efficacy appeared at least as great as that reported with other sulfonamides.[30-38]

The few side-effects observed were mild. Advantages of particular usefulness in clinical practice were the low dosage required and the convenience of the twelve-hour regimen, combined with over-all patient acceptance.

Summary

Therapy with sulfaphenazole was clinically effective in 80 of 94 clinic patients with infections of the genitourinary tract. Symptoms were cleared, in most cases in one to three weeks, and there was close correlation between bacteriologic and clinical results.

Side-effects observed in 6 patients were mainly mild, requiring cessation of therapy in only 1 patient.

The agent was well accepted by all patients, and the convenience of administration at twelve-hour intervals helped insure that the regimen was followed by the clinic outpatients.

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Current Concepts of Burn Injury

Part III

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PART II of this article appeared in the June 1, 1968, issue of the NEW YORK STATE JOURNAL of MEDICINE. It considered immediate treatment, including airway and fluid therapy; care of the burn wound including ice-water cooling, topical agents, early excision, homografts and heterografts, synthetic skin substitutes, and regional considerations; care of the electric burn; and care of the chemical burn. Part I appeared in the May 15, 1968, issue. It considered vital statistics; pathologic anatomy; electrical and chemical burn injuries; pathophysiologic factors; mortality rate in burns; and initial evaluation.

Infections

GENERAL CONCEPTS. Infection can be considered the single greatest hazard to the burned patient who survives the shock period.[219] Artz and Reiss[1] have attributed a significant portion of the pain, nutritional depletion, failure of graftings, and deaths in burns to infection. In addition they have implicated burn wound infection in the progressive and deepening tissue destruction noted in cases of conversion from second- to third-degree skin losses. Aldrich in 1933,[155] in a presentation marked by disapproval of toxin formation and absorption as significant to the burn syndrome, considered wound infection, notably streptococcal, as the most critical operational force in the deterioration of the patient with burns. He favored a 1 per cent gentian violet spray and exposure in a warm room to prevent streptococcal sepsis and thereby preserve the many small epithelial islands still viable even after a deep burn. Lyons[220] also early stressed the importance of preventing and treating burn wound infection, particularly that due to hemolytic streptococci. He noted that if infection is controlled superficial burn wounds heal without suppuration in ten to fourteen days, and in instances of deep burns where slough inevitably develops, no healthy marginal tissue destruction occurs. Consistent with other studies of that period, a high recovery of staphylococcal organisms was also reported, while Pseudomonas were described as inconstant contaminants.

The pathogenesis of burn-wound infection was well recorded by Price *et al.*[221] who in 1956 documented the fact that even severe deep burns do not sterilize the skin and that remaining bacteria, within a matter of hours, multiply in numbers exceeding the preburn level. Bacterial penetration of the heat-damaged skin can occur; the bacteria gain access to blood and lymphatic capillaries of the subdermal plexi within six hours after injury. In dog experimental models, these investigators determined that if more than 1,000 bacteria per second entered the blood stream, the usual defense mechanisms involving circulating phagocytes, antibodies, and the reticuloendothelial system were not capable of sterilizing the blood and positive blood cultures would result. They also recovered live labeled bacteria from the regional lymph nodes within eight hours of burn wound inoculation and somewhat later from liver, lung, and spleen even with negative blood cultures. The work of Order *et al.*[21] further secured the concept of the significance of burn-wound infection in the progression of tissue destruction. This group indicated by histologic and radiographic studies in burned rats inoculated with Ps. aeruginosa organisms that deep bacterial invasion caused progressive arterial thrombosis and by this mechanism produced deeper and wider areas of tissue destruction than occurred in the uninfected burn injury. Greater consideration of this article was offered earlier in the section on pathologic anatomy. Moncrief[222] strongly reaffirmed this work in a detailed discussion of infection in the early postburn period. Describing this period as that which immediately follows the shock phase, Moncrief stated that sickness at this point was related to the mass of dead tissue and the vast number of propagating pathogenic organisms. Within hours post burn, a noninvasive Staph. aureus proliferation has been demonstrated, and by the end of the first postburn day, 10^8 organisms have been recovered and gram-negative bacteria have become predominant and penetrative. By four days after injury, deep bacterial penetration has been recorded, particularly in the lymphatics, and after one week viable subcutaneous tissue is under bacterial attack. The strong enzymatic properties of certain organisms, notably Pseudomonas which can elaborate a hemolysin as well as agent(s) inhibiting the reticuloendothelial system,[190] and the progressive arterial thromboses associated with Pseudomonas and Proteus invasive infection, increase the mass of surface destruction and ultimately increase the magnitude of injury, morbidity, and fatality.

Altemeier and MacMillan[223] and Altemeier, MacMillan, and Hill[224] have documented the relevance of infection in burns and stressed the increasing causative role of the gram-negative organisms. They report that Staph. aureus, Ps. aeruginosa, streptococci, and Proteus have constituted 50 per cent of all bacteria recovered on burn wound cultures and have been responsible for 90 per cent of all burn deaths related to infectious complications at the University of Cincinnati Hospitals from 1942 to 1960. Infection per se has been implicated as the primary cause in 33 per cent of their burn deaths. These investigators have similarly noted the clinically invasive qualities of infection at approximately one week postburn and noted the mean postinjury day of blood stream invasion to be the ninth. Hummel *et al.*,[225] from the same institution, reported that controlled contamination of burned previously germ-free rats with Ps. aeruginosa resulted in a slightly increased mortality rate compared with germ-free rats not so inoculated but that Pseudomonas in combination with Staph. aureus markedly increased the mortality rate.

Kefalides *et al.*[226] reviewed the bacteriologic data obtained from 3,940 cultures in 314 burned children who were given antibiotic therapy. Staph. aureus was recovered in 31.5 per cent and Ps. aeruginosa in 21.6 per cent. Of the 83 fatal cases of septicemia recorded, 75 per cent were due to Pseudomonas alone; 10 per cent to Pseudomonas in combination with various other organisms, notably Staphylococcus, Streptococcus, Proteus, and E. coli; 10 per cent to Staphylococcus alone, and 5 per cent to a predominant Staphylococcus in combination with Pseudomonas. Significant wound colonization was noted in 65 per cent of cases by the third day after burn, with the highest incidence of septicemia infections occurring during the third, fourth, and fifth postburn days. Altemeier, MacMillan, and Hill[224] have reported that two thirds of their fatal septicemia cases are due to Ps. aeruginosa and Proteus and one-third to Staph. aureus.

These data serve to emphasize several points: (1) infection in burns is a major negative force significantly contributing to morbidity and mortality rates; (2) burn wound infection appears capable of increasing the extent of tissue destruction to a wider and deeper zone beyond that originally caused by the physical thermal trauma; and (3) Ps. aeruginosa and Staph. aureus are the predominant organisms in the vast majority of significant burn wound infections.

TOPICAL ANTISEPTICS. Wallace[159] had earlier expressed a feeling that a local antibiotic would be most desirable in the management of the burn wound. Reference has been made in previous sections to tannic acid, gentian violet, N.C.P. cream (neomycin, chlorhexidine, and polymyxin B sulfate), sulfa powders, and the use of various antiseptic dressing technics. Altemeier, MacMillan, and Hill[224] have, on the basis of the significant role of gram-negative pathogens, recommended the topical use of polymyxin B. To combat streptococci, bacitracin has been advised.

Particular attention, however, to the subject of mafenide hydrochloride, gentamicin sulfate, and silver nitrate appears indicated at this point. For further details the reader is referred to the section on local care of the burn wound.

Mafenide hydrochloride as a 10 per cent cream has been studied experimentally by Lindberg *et al.*[186] and has been used clinically in the burn unit at Brooke Army Medical Center.[187, 188] Having selected this agent for its known effectiveness against Pseudomonas, they have "buttered" the burn wounds one to two times daily with mafenide hydrochloride. Daily hydrotherapy and debridement, as indicated in association with the other usual systemic supportive measures but with systemic antibiotics reserved for documented distant infectious complications, have in their series of over 200 severe burn cases treated with mafenide hydrochloride resulted in a significant decrease in over-all burn fatality, particularly in burns of from 30 to 60 per cent body surface area. Moncrief *et al.*[188] have related the ability of mafenide hydrochloride cream, by profoundly decreasing the number of recoverable burn wound pathogens, to prevent the often encountered progression of what are at first probably deep dermal burns, with the capacity for spontaneous epithelial regeneration, to full-thickness loss with its need for skin graft closure. Significant among its side-effects is a tendency toward production of metabolic acidosis; this is primarily based on carbonic anhydrase inhibition, thus reducing the effectiveness of the renal buffer mechanism. Pain on application, occasional allergic rash, and a delay in eschar separation, related in part to the drying qualities of the preparation, have also been enumerated by users of the cream. This drug is currently available only for investigative purposes.

Gentamicin sulfate[189, 191] has enjoyed a much more limited use than mafenide hydrochloride but has similarly been described as remarkably effective against Ps. aeruginosa. This product of Micromonospora purpura has been used by both the topical and parenteral routes. Toxicity to renal and eighth nerve tissue has been documented.

Silver nitrate as a 0.5 per cent solution in continuously saturated dressings was discussed earlier. This agent has been stated to be capable of decreasing evaporative water loss and significantly reducing pain.[56] The failure of silver nitrate to afford any true systemic protection, its lesser ability to handle already established burn wound infection, the associated electrolyte losses into its hypotonic phase, the question of systemic silver deposition, and the bulk time and effort involved in this type of wound care, as well as its capacity to stain much of the hospital environment black, have all served to limit its application.

The use of a topical specific antiseptic agent in burn wound care is reasonable and at least partially effective in combating burn wound sepsis. Regardless of the agent chosen, proper technic, meticulous and intensive wound care, and systemic patient support must be provided. The appreciation of the topical antiseptic agent is fine so long as it is restricted to the fact that it comprises one of the many aspects of burn wound and burn patient care.

SYSTEMIC ANTIBIOTICS. Despite the obvious advances in topical burn wound antisepsis, systemic antibiotic protection remains necessary and inevitable in the care of the severely burned patient. Langohr, Owen, and Cope[227–230] discussed the relative yet significant values of systemic sulfa and penicillin therapy in the early 1940's. They indicated that penicillin during the first three weeks postinjury was useful in reducing the quantity of Staphylococcus colonization in the burn wound. They were quick to appreciate, however, that, while early and rapidly destroying particularly sensitive strains of staphylococci, prolonged penicillin therapy was associated with wound overgrowth by gram-negative organisms and ultimately penicillin-resistant staphylococcus strains. By the sixth week, if penicillin therapy was continued, the wound had become a quagmire of resistant organisms. The sulfonamide preparations were more effective than penicillin in reducing the number of streptococcal strains with no concommitant increase in gram-negative groups, but did not suppress staphylococcal proliferation. Theoretically combating beta hemolytic streptococcal burn wound infection, Wallace,[159] Artz and Reiss,[1] and Altemeier, MacMillan, and Hill[224] have advised the immediate use of penicillin, while Moyer *et al.*[56] have recommended continuing the drug for periods of up to four months. MacMillan[147, 231] and Altemeier, MacMillan, and Hill[224] have followed the early use of penicillin with systemic antibiotics dictated in part by cultures, and consisting of antistaphylococcal agents, such as chloramphenicol, oxytetracycline, erythromycin, sodium novobiocin, methicillin, and antigram-negative agents, such as, polymyxin B sulfate, colistimethate sodium, and gentamicin sulfate.

Kefalides *et al.*,[232] from Lima, Peru, in a 1960 study based on 208 severely burned children and 29 adults, reported that systemic antibiotics had no place in the prevention of burn wound infections and that such prophylactic therapy with a variety of drugs only resulted in a change in skin, pharyngeal and intestinal flora, with the emergence of strongly drug-resistant strains of Staphylococcus and Pseudomonas. Monasterio *et al.*,[233] from Mexico City, that same year also concluded that systemic antibiotics (unnamed), in balanced series of 100 burn cases each, afforded no advantage to the burn victim. The group treated without antibiotics experienced a complication and mortality rate similar to the group treated with antibiotics and, interestingly, a similar proportion of deaths due to infection.

Kefalides *et al.* in 1964[226] offered a still more impressive series of 314 burned children subjected to antibiotic prophylaxis with polymyxin B sulfate plus tetracyline, polymyxin B sulfate plus chloramphenicol, colistin plus penicillin G, colistin alone, and penicillin G alone. None of these regimens prevented the colonization of the burn wounds or intestine with Staph. aureus and Ps. aeruginosa, and, in fact, all except colistin alone resulted in the emergence of increasing numbers of resistant strains of these pathogens. Fatal septicemia infections still occurred in each group, the fewest with the use of penicillin G alone and the most with the use of colistin alone, 3 times more often than with any other prophylactic combination.

Despite these data, most clinicians persist in employing immediate antibiotic prophylaxis. It must be suggested, however, that penicillin alone seems the only logical choice if in fact such a scheme is chosen in the first place. Subsequent therapy should be based on bacteriologic studies of recoverable organisms and their in vitro sensitivities. The improvement in topical burn wound antisepsis may considerably aid the clinician with this particular dilemma. However, there can be no doubting the therapeutic value, as contrasted with the prophylactic value, of carefully selected systemic antibiotics in the face of established, bacteriologically proved systemic, pulmonary, urinary tract, or burn wound sepsis.

IMMUNOLOGIC FACTORS AND BURN SERUM. Hummel *et al.*[225] have noted, in experimental work in guinea pigs, that a convalescent burn serum administered within sixteen hours post burn affords a decreased mortality rate after standardized injury. Alexander and Moncrief[66] studying changing immunologic potential after controlled burns in the rat concluded that even after 30 per cent body surface area full-thickness (third-degree) burns, specific gamma globulin can be produced to some antigens and not to others, that the entire immune system is not uniformly affected, and that the ability of the burned animal to react is not apparently related to the soluble or cellular nature of the antigen. The differential response to various antigens was also demonstrated in severely burned patients.

In Bucharest, Roumania, Ionescu *et al.*[234] attempted immunotherapy in 24 of a total of 520 burn cases managed over a one-year period. A total of 9 cases received passive immunization with an antistaphylococcal horse serum; 6 of the 9 developed serious allergic reactions, while 7 of the 9 demonstrated a general improvement in the condition of the wound with staphylococcal suppression. Pseudomonas proliferation did occur, however. Nine other cases received active immunization with an autovaccine prepared for staphylococci and Pseudomonas cultured from their own wounds. Four of 9 cases showed some general diminution in wound infection; no adverse reactions occurred. Six patients received both passive and active immunization therapy with two adverse reactions reported and no significant improvement. Such a report can at best be judged inconclusive.

Feller and Kamei[235] have displayed a more promising picture of active and passive immunizations against Pseudomonas sepsis in burned patients. As of 1964, 75 patients were studied, 41 of these being controls, all with greater than 40 per cent body total surface area burns and over one half of which was third degree. The control group (1959–1962) was complicated by 21 cases of Pseudomonas septicemia. Active immunization by means of a heat-killed, phenol-preserved suspension of whole Pseudomonas organisms was used in the second phase of this study (1962–1963) on 24 cases; only 7 cases developed Pseudomonas septicemia. During 1963 to 1964, the vaccine therapy was complemented by passive immunization using hyperimmune plasma obtained from Pseudomonas-inoculated human volunteers and administered in 250 cc. doses daily to adults and 125 cc. daily to children. No Pseudomonas septicemia occurred in 10 burn patients so treated.

Kefalides *et al.*[232] evaluated the use of gamma globulin in an extensive series of burned children all of whom were treated with antibiotics and alternate cases with the protein fraction. This group noted that gamma globulin, given in doses of 1 cc. per kilogram body weight, intramuscularly on days 3 and 6 post burn, afforded a reduced incidence of septicemia and late fatality, especially in the four-months to four-year age group and with burns of less than 20 per cent body surface area. They concluded that gamma globulin has a place in the treatment of burned children who apparently have an underdeveloped immunologic, antibody-producing system. Kefalides *et al.*[226] later documented the depressed gamma-globulin levels in burned children during the first week after injury, a time period when most cases of septicemia might be expected to occur, and followed the beneficialand prompt rise of gamma-globulin concentration following plasma or gamma-globulin therapy. Also of significance in their studies was the demonstration of a 50 per cent decrease in mortality rate among 10 to 30 per cent body surface area burn patients due to Pseudomonas or staphylococcal septicemia, in those cases resuscitated with the use of plasma and/or gamma globulin, as opposed to those managed with saline alone or saline plus albumin.

Concluding this necessarily brief discussion in an ambiguous area of burn therapy, attention is directed to the work of Bocanegra *et al.*[67] who, in a controlled study effected on a strict alternate-case basis of 152 burned children and with control and treated cases managed simultaneously and similarly, demonstrated no improvement in shock fatality and in late deaths with the use of human plasma of convalescent burned patients as contrasted with nonspecific plasma. In addition no circulating antibodies against a burn toxin could be detected by the precipitin test in human plasma of convalescent patients with burns, and no significant differences could be discovered in hemagglutination titers against Ps. aeruginosa antigens between normal (unselected) human plasma and human plasma of convalescent patients with burns.

The work of many of these investigators continues, and with increasing experience, adjustment in therapeutic design, and larger series hopefully divided into strict random or alternate-case distribution schemes, the true value of immunotherapy by active or passive means perhaps can be defined. At the present time, the problem and the decision is not within the realm of most clinicians who treat burns since neither vast quantities of human plasma of convalescent patients with burns nor specific vaccines are available for general use.

ISOLATION TECHNICS. The separation of the burned patient from the bacteria-rich hospital environment in an effort to obviate the apparently inevitable intense bacterial colonization of burn wounds has prompted Haynes and Hench[236] to report on their experiences during one hundred forty-nine days of patient care with a plastic isolator ("Life Island Unit"). By combining immediate placement of patients in the sterile isolater with intestinal tract antisepsis, using neomycin and pthalylsulfathiazole by mouth, Pseudomonas colonization of the burn wound has been prevented. These investigators judge the unit to be compact, effective, and tolerable to patient and staff. Landy[237] and Burke[238] have had similar satisfactory results with portable plastic isolator systems. The absolute necessity for such isolation, the practicalities of its use in large numbers of cases, and the need for skilled and trained personnel to maintain the integrity of such a unit are factors that remain to be considered.

Disposable mask and cap, gown and shoe covers, and constant attention to sound hygienic practices with frequent hand cleansing provide a more reasonable protective plan at the present time.

Metabolism and nutrition

Certain aspects of the metabolic response to thermal trauma have already been discussed in the section on pathophysiology of the burn syndrome. Previous considerations will be briefly mentioned, and further material with particular reference to therapy will be presented.

EVAPORATIVE WATER LOSS. The metabolic response to the burn injury is probably greater than with any other form of trauma.[239] Moyer[240] has repeatedly defined the profound hypermetabolism in burns as directly related to the vaporizational heat loss through eschar or open wound and has proposed that this water loss is due to the damaged skin organ no longer comprising an effective barrier to the passage of water vapor from dermis to air. Such water evaporation alone can, in major burns, account for enormous caloric expenditures, such as greater than 3,000 calories per day, an energy depletion that is often difficult if not impossible to compensate for with increased intake. Moyer[240] early indicated that continuous warm saline baths would offset this evaporative water and heat loss and later claimed that his dressings, continuously saturated with 0.5 per cent silver nitrate with an outer dry membrane, also would decrease this negative factor[56]

As previously discussed, Cohen[59] has, by use of a microhygrometer, demonstrated vastly increased evaporative water losses, at 16 times the normal skin rate, through "dry" eschars in patients with burns under normal ward conditions. Assuming that 550 kilocalories of energy are expended for each liter of water evaporated, the accepted figure of 3,000 to 4,000 calories per day dissipated by this route seems reasonable. Compounding this problem has been the reactive need for increased heat production, shivering, and inevitable sweating in unburned skin with increased vaporizational heat loss. Moncrief and Mason[60] and Burke and Constable[50] have reconfirmed and re-emphasized the reality and significance of evaporative water loss with its attendant energy dissipation. Although the significance of this vast depletion of calories is well appreciated, the means of correcting such a loss has not been established. Heat lamps have been used on an empiric basis to afford increased comfort to patients during periods of feeling cold or shivering.

PROTEIN METABOLISM. The inevitable entrance of the burned patient into the phase of negative nitrogen balance has been well demonstrated by numerous investigators. Artz and Reiss[1] have indicated that the greatest negative period occurs during the second week after injury with urinary nitrogen levels reaching a maximum of 30 Gm. per day. Wound exudate nitrogen losses have been in the range of 5 to 7 Gm. daily. When one adds nitrogen depletion in vomitus and stool and extrapolates from nitrogen losses to whole-tissue dissolution at 30 Gm. of tissue breakdown to release 1 Gm. of nitrogen for excretion, the clinically well-recognized losses in lean body mass are appreciated.[90] Not all nitrogen excreted, however, is accounted for on the basis of whole-tissue breakdown, since liver and plasma proteins and the catabolism of tissues particularly rich in nitrogen, such as skin and collagen, account to some extent for the high nitrogen values recovered in excreta.

Levenson *et al.* in 1945[241] studied nitrogen metabolism in relation to nutritional needs in 32 patients with burns and concluded that the loss of nitrogen and need for protein was directly proportional to the extent of third-degree burn. The high levels of urinary nitrogen excretion were most significantly correlated with tissue destruction and the formation of protein breakdown products. Levenson[3] reiterated this opinion again a decade later. The work of Reiss, Pearson, and Artz[90] added further to the appreciation of the importance of negative nitrogen balance after burn injury, and after intensively analyzing 5 victims of burns, they offered the sobering observation that even after later, prolonged periods of positive nitrogen balance, an over-all nitrogen equilibrium, that is, replacement of all previously excreted nitrogen, had not been reached despite clinical gain at six months post burn.

Soroff, Pearson, and Artz[242] studied 11 previously healthy adult males with major burns during 4 ten-day periods designated as acute catabolic, late catabolic, anabolic, and late convalescent. Nitrogen intake varied from 1 to 28 Gm. per square meter (total body surface area) per day with calories fixed at 3,500 per square meter per day including vitamins. While only occasional isolated days of positive nitrogen balance were noted in phase I (acute catabolic), this group described gradually increasing periods of positive balance with the passing of time.

CARBOHYDRATE METABOLISM. Rapid utilization of stores of carbohydrate after burn trauma has been well documented in the writings of Kalina *et al.*[87] and Stoner and Threlfall[88] which were discussed earlier. The protective sequence of utilization beginning with liver and muscle and involving cardiac glycogen depletion only terminally has been noted, as has been the marked decrease in neoglycogenesis during the burn syndrome. The assumption that readily available energy in the form of easily utilizable sugars is required is obvious and therapeutically correct.

Evans,[75] Arney, Pearson, and Sutherland,[243] and Rosenberg *et al.*[244] have referred to the rare syndrome of burn-stress pseudodiabetes consisting of glycosuria without acetonuria, high urine specific gravity, intense osmotic diuresis, dehydration, plasma hypertonicity, coma, and death. The key etiologic factor has been forced feedings with prolonged carbohydrate intake in excess of 300 Gm. per day, culminating in pancreatic fatigue with failure to produce sufficient insulin or inactivation of insulin at the cellular level. Therapy has required prompt recognition of the syndrome, fatal in nearly one half of the reported cases, discontinuation of forced feedings, rapid correction of the almost pure water dehydration, and the administration of insulin. Most clinicians would agree, however, that the very rare occurrence of this syndrome does not modify the need for high calorie intake in the vast majority of patients, and that forced feedings are in fact indicated to tolerance to afford the greatest good to the greatest number of burned patients.

FAT METABOLISM. Fat is lost to the body throughout the entire burn syndrome phase. Its participation in energy supply and its rounding-out role in diet palatability and energy value is appreciated yet secondary to the apparently more critical state of protein and carbohydrate metabolism. The calculation of fat dissolution and its addition to intake is often indirect and based on direct analyses of the other metabolites and established energy goals.

MINERAL AND ELECTROLYTE METABOLISM. Mineral and electrolyte metabolism appears to function most critically during the early postburn period and has been considered in detail in the section on "Pathophysiology—Metabolic Factors."

NUTRITIONAL SUPPORT. Adequate nutritional support constitutes one of the most significant factors in the successful conclusion of care of the burned patient. Its role cannot be overemphasized, and the demands imposed on the staff to achieve proper and sufficient feedings tax their emotional strength and ingenuity alike. In the early phase after injury, intravenous feeding is indicated. The frequent occurrence of paralytic ileus and gastric dilatation contraindicate any but the simplest attempts at oral feedings in cases of severe burns. Occasional patients with burns greater than 20 per cent of body surface area will tolerate oral electrolyte-rich fluid resuscitation during burn shock.[136-138] The vast majority of patients will not, and intravenous therapy becomes necessary. With clinical stabilization at three to five days after injury, intravenous fluid volumes can be decreased, and with the expression of hunger, the confirmation of active bowel sounds, and hopefully a bowel movement, gradually increased oral intake can ensue. By seven to ten days post burn, most adequately resuscitated victims will tolerate a large oral intake.

Levenson *et al.*[241] have called for high-calorie and high-vitamin diets with a protein content of up to 400 Gm. per day. Levenson[3] has also indicated that a complete metabolic mixture is required with nutritional levels considerably above those normally associated with a particular age group or sex, such as, a burned child requires 1.5 times its usual needs; a female adult 1.5 to 2 times her usual caloric needs and 2 to 4 times her usual protein needs; a previously healthy young adult male registers the greatest metabolic derangement and while requiring the same increase in calories daily as a female adult, demands 3 to 4 times his normal daily protein intake. Levenson,[3] Artz and Reiss,[1] and Crews[48] have all stressed the importance of offering this vast amount of food in the form of appetizing meals when the patient is hungry, catering to the patient's tastes, and not forcing the patient to conform to society's unphysiologic ritual of three meals a day served and eaten quickly or not at all. Because of the obvious difficulty in achieving this end, Levenson has frequently used liquid feedings which offer a high calorie content in a relatively low volume (approximately 1 calorie per cubic centimeter), allow an accurate record of intake to be maintained, and are comfortable to take even by patients with facial burns. Diarrhea is more frequent, however, with liquid formula feedings, and it may be necessary to reduce the amount of carbohydrate in the mixture, reduce total volume, and administer constipating agents. Haynes([117]) has offered his pediatric liquid formula which is capable of delivering a high calorie-to-volume ratio and is aimed at providing 50 to 100 calories and 1.5 to 2.5 Gm. of protein per kilogram of body weight per day. These values are considerably above those proposed by the National Research Council for average daily needs and are consistent with the studies quoted in the fulfillment of vastly increased amounts of calories and protein.[242] It is of interest to note the work of Andrews, Morgan, and Jurkiewicz[245] who were unable to demonstrate any effect in time of healing of full-thickness burn wounds in rats by varying quantities of protein in their diets.

Lund *et al.*[246] have analyzed vitamin metabolism in human beings and defined the rapid and severe depletion of ascorbic acid, thiamine, riboflavin, and nicotinic acid after burn injury. Using bioassay methods in analyzing plasma and urine values of these vitamins and testing tissue unsaturation with vitamin challenges, these workers documented the accepted clinical impression of the absolute need for increased amounts of vitamins after burns.[1,247] Increased utilization of these elements in enzyme systems and the incorporation of ascorbic acid in adrenocortical hormone synthesis are the presumed metabolic pathways. Increased demands for vitamins A and K are less well established than for the B and C groups.

Hormones. The section on "Pathophysiology" of the burn syndrome prompted an earlier discussion of endocrine function with particular attention devoted to the adrenal gland. Later in the section on "Immediate Treatment" of the burn victim, the therapeutic value of adrenal hormones was considered.

In summary, the early use of adrenal cortical hormones (or ACTH) was noted to be without experimental or clinical benefit, especially capillary permeability changes, by Cope *et al.*,[52] Baker *et al.*,[143] and Butterfield.[144] On the other hand, Martin, McGarity, and Smith,[145] Feller,[74] and Mulholland[146] presented clinical experiences indicating the adrenal steroids to be without harm and possibly of some help in the early and late phases of the burn syndrome. The inescapable conclusion is that there are insufficient data at this time to support or condemn the use of adrenal cortical steroids in the early or late phases of burn care.

Anabolic hormones have been employed with favorable results by Dolecek and Kalina,[248] of Czechoslovakia. Reporting on the use of methandrostendone (Dianabol), administered in 5-mg. doses 3 to 4 times daily by mouth, and nandrolone phenproprionate (Durabolin), 50 mg. administered intramuscularly twice per week, in 23 burn cases, these investigators noted the subjective changes in the patients of increased appetite and a feeling of greater strength and the objective improvements of decreased nitrogen losses in the urine and enhanced "take" of skin grafts. Without altering the adrenal cortical function as tested by ACTH challenge, plasma 17-ketosteroid levels, and urinary steroid excretion patterns, these synthetic anabolic agents were presumed to generate their benefits by their effects on basic enzyme systems, thereby favoring the formation of amino acids and proteins and enhancing true tissue growth. Final comment on drug trials of this type must await carefully planned studies stressing random distribution of control and test cases and double-blind technics.

Complications

Several of the more critical forms among the many possible categories of burn complications have already been presented. For the sake of simplicity a listing of significant and more frequent burn complications is offered with discussion in each area to follow. It is understood that in an instance of severe burn with its manifest massive insult and multisystem effects, virtually any and every conceivable medical and surgical complication can arise with a consequent synergistic destructive force.

A. Respiratory tract
  1. Original burn injury
  2. Tracheobronchitis
  3. Pneumonia
  4. Atelectasis
B. Gastrointestinal tract
  1. Ileus
  2. Gastric dilatation
  3. Curling's ulcer
C. Kidney and bladder
  1. Cystitis
  2. Calculi
  3. Renal insufficiency: glomerular dysfunction, tubular necrosis, and infection
D. Cardiovascular
  1. Thromboembolism
  2. Hypertension in children
E. Anemia
F. Bone, joint, and pericapsular
G. Liver
  1. Original burn injury
  2. Homologous serum jaundice
H. Neurologic
  1. As related to original trauma
  2. Intracranial abscess
  3. Peripheral neuropathy
I. Psychologic
  1. Guilt
  2. Depression
  3. Rejection
  4. True burn psychosis
J. Marjolin's ulcer
K. Late physical deformities
  1. Contractures
  2. Hypertrophic scars and keloids

RESPIRATORY TRACT. The anatomic and therapeutic implications of respiratory tract injury have been detailed in the sections on "Pathologic Anatomy" and "Immediate Treatment." The likelihood of such damage in cases of flame burns, particularly those sustained in closed spaces and where central nervous system changes in the absence of head trauma are evident, is emphasized.[34] Progressive tracheobronchial or parenchymal destruction can ensue with retained and tenacious secretions, suppuration, and partial to complete segmental obstruction culminating in collapse, abscess formation, terminal alveolar compromise, and respiratory failure.[19,33,118,120]

Treatment recommendations have stressed rapid clearing of the respiratory tree and adequate oxygenation employing endotracheal intubation, repeated bronchoscopies, tracheostomy, frequent suctioning, humidified oxygen, antibiotic-enzyme aerosols, assisted respirations,[7,32,117] and specific systemic antibiotic therapy based on bacteriologic analysis of pulmonary drainage.

GASTROINTESTINAL TRACT. The early depression of gastrointestinal function with ileus and dilatation has been frequently reported after severe burn trauma and is appreciated by most clinicians as a fundamental organ response to a variety of injuries.[1,2,249]

Curling's ulcer has previously been discussed. Since Curling's original report in 1842[36] documenting 10 cases of duodenal ulceration following burns, data on etiology, frequency, and therapy have appeared in the literature by Friesen,[37] Ryan *et al.*,[38] Abramson,[39] and Dimick.[250] In essence, hemoconcentration complemented by hyperadrenalism and sepsis comprise the major causative factors. The appreciation and perception of occurrence of Curling's ulcer seems to be on the rise, and prophylactic antacid treatment is recommended in all cases of major burns.[1,249] Surgical intervention is indicated, such as with bleeding or perforation, using clinical criteria similar to those in unburned patients.[250]

KIDNEY AND BLADDER. Cystitis and

ascending genitourinary tract infection culminating in pyelonephritis, as well as renal and perinephric abscesses on the basis of metastatic infection, have been noted in burned patients. Calculi related to stasis, infection, trauma, and prolonged immobilization have also been reported.[1,249]

Renal insufficiency during the burn syndrome comprises a particularly grave complication, and although acute renal failure is apparently less often encountered at the present time than several decades ago, kidney failure still occurs, perhaps somewhat later during the clinical course.[249] This can be correlated with pre-existing renal disease, periods of dehydration and oligemia, oliguria, and urinary tract sepsis.

Therapeutically, the use of adequate and rapidly infused volumes of fluid during burn shock resuscitation, the increasing appreciation of the need to maintain a constant flow of urine, the use of the "water load" test,[51] the utilization of appropriate urinary tract antisepsis in the form of irrigations and systemic antibiotics, and the encouragement of early and active physical rehabilitation all appear to have contributed to the lesser incidence of renal problems associated with the burn injury.

CARDIOVASCULAR. *Thromboembolism.* Embolic phenomena continue to plague the burn injuries just as they complicate other generalized disease states. Feller and Kendrix[110] and Wartman[109] have noted the prominent role of thromboembolism in causing burn deaths. Moore[251] described significant thromboemboli in 5 of 39 Coconut Grove fire victims admitted to the Massachusetts General Hospital, 4 of the 5 occurring in patients who experienced a prolonged confinement. He indicated shock, with its decreased peripheral blood flow, hemoconcentration, immobilization, tight circular dressings, and sepsis to be the key factor in the development of this complication.

The absolute prophylaxis of this condition remains obscure. For therapeutic considerations, the reader is referred to more general dissertations on the problem of thromboembolism.[252,253]

Hypertension in children. In reviewing 53 consecutive burn cases over a two-year period among children aged six months to fourteen years, Lowrey,[254] of the University of Michigan, has reported 13 instances, an incidence of 24 per cent, of sustained hypertension. The hypertensive group demonstrated a greater extent of area burned, 8 per cent above the nonhypertensive group and a twofold increase in mortality rate. A total of 46 per cent exhibited encephalopathy characterized by disorientation, lethargy, irritability, or convulsions; 23 per cent had positive results from funduscopic examination. There was no correlation of the hypertension with sex, blood urea nitrogen values, electrolytes, urine findings including steroid excretion patterns, or therapeutic regimens. However, a significant elevation of urinary catecholamine excretion was determined in the hypertensive group. Treatment has consisted of intravenous use of magnesium sulfate, intramuscular injection of hydralazine hydrochloride, and intravenous or oral use of reserpine in various combinations.

ANEMIA. The occurrence and significance of anemia in the burn syndrome is well accepted. The forces contributing to this state include: (1) red blood cell destruction by direct thermal damage; (2) delayed hemolysis of partially heat-injured red blood cells; (3) sludging and thrombosis during burn shock with reduction of functional red blood cell mass; (4) the production of hemolysins in Pseudomonas sepsis; (5) loss of blood through wounds, particularly during dressing procedures; (6) bone marrow depression secondary to generalized catabolic aspects with malnutrition and sepsis as prominent factors; and (7) the role of toxic factors, which is ill-defined and, therefore, necessarily of questionable significance. The regular check of hematocrit values in the burned patient comprises an easy and remarkably satisfactory gauge of metabolic progress. The use of whole-blood transfusions during the catabolic phase and in association with operative procedures including debridement and skin autografting appears essential and inescapable. Transfusions are the prime means of combating the otherwise prolonged and deleterious anemic state. Whole blood is administered for its red blood cell capacity and not, as is often supposed, for its nutritional effect.

BONE, JOINT, AND PERICAPSULAR. Evans and Smith,[255] Evans and Blumel,[256] and Evans[215] have studied in depth and reported on the musculoskeletal complications of the burn injury. Changes limited to bone have included: (1) osteoporosis, either local, as in a burned extremity, or systemic, in association with prolonged immobilization and (2) periosteal new bone formation in osseous tissue underlying burned soft tissue with its acute hyperemic state and subsequent chronic infection.

Pericapsular structures have exhibited: (1) calcification in ligaments or tendons beneath burned soft tissue, usually first seen two to three months after injury; (2) osteophyte formation, particularly about the elbow in adults; and (3) heterotopic para-articular ossification in the form of severely limiting, joint-crossing, bone bridges with parent bone at either end, inconsistently related to the site of burn, and presumably etiologically related to immobilization, bone atrophy with release of bone salts, inevitable muscle, tendon, ligament, and pericapsular soft tissue damage with the repeated trauma of handling injured parts leading to new bone deposition in these stress areas.

Joint changes noted were destruction and ankylosis, not always underlying the burn wound and, on occasion, caused by a septic arthritis.

Direct bone and joint destruction can also occur because of specific and contiguous thermal injury and not necessarily, as mentioned, at a distance from the burned tissue. Growth abnormalities are possible in cases of epiphyseal involvement in children, and iatrogenic fractures and dislocations have also been described in burned patients, particularly while under general anesthesia and in conjunction with soft tissue contractures.

Trapnell and Jackson[257] have reported a 3 per cent incidence of similar bone and joint complications among their burn cases while Stepanek[258] in his series has described a 4 per cent occurrence of calcification in soft burned parts. Evans claimed a 5 per cent over-all rate of occurrence of these changes, excluding the more common osteoporosis. Griswold[259] presented an example of heterotopic para-articular ossification in the elbow of an eleven-year-old child with elbow bridging six months after skin coverage of extensive burns, not involving this elbow, had been achieved.

Evans[215] has offered his ideas on prevention and treatment of the bone and joint difficulties stressing the importance of early physiotherapy. Noting that the hips and elbows of children are most often involved, and the frequent sparing of interphalangeal, metacarpo- and metatarsophalangeal articulations, as well as the curious rarity of both extra- and intra-articular changes simultaneously in the same patient, Evans proposed proper joint positioning, active exercise, Hubbard tank and hydrotherapy in general, isometric exercises to maintain muscle tone, and skeletal traction. He advised delayed excision of osteophytes and heterotopic bone as indicated by the limitations imposed by these structures, after softening of overlying soft tissue, but demonstrated a somewhat more conservative attitude in children unless severe activity restrictions supervened.

LIVER. The anatomic and biochemical aspects of hepatic tissue during the burn syndrome have been considered in the section on "Pathologic Anatomy." The intensification of pre-existing liver disease, such as in cases of alcoholic cirrhosis, must be appreciated and appropriate liver support or the treatment of frank hepatic failure with ammonia intoxication implemented.[260,261] The significance of the burn injury in patients with liver disease was dramatically demonstrated by Rittenbury *et al.*[105,106] who reported a 60 per cent mortality rate among burned patients with documented liver disease admitted to the Medical College of Virginia Hospital.

Moncrief[249] has stressed the omnipresent risk of homologous serum jaundice among burned patients treated with fresh human plasma and/or blood.

NEUROLOGIC. The association of head injury with burn trauma has been discussed earlier. Suffice it to say that the clinician must constantly re-evaluate central nervous system signs particularly in regard to the clarity of mentation and relate these to the possible causes of direct brain injury, intracranial hematoma, hypoxia, and electrolyte imbalance. The later development of intracranial abscess formation and/or meningitis related to burn wound sepsis is noted.

Peripheral neuropathy due to direct burn trauma, constricting dressings, drug therapy, or as an integral part of the burn syndrome must also be considered and recorded, particularly as it relates to later reconstructive goals.

PSYCHOLOGIC. The overwhelming significance of the emotional response to burn injury on the part of the patient, the patient's family, and the staff is known to every physician dealing with this form of trauma. Inextricably woven throughout the concept of burn-induced human suffering is the incalculable aspect of emotional pain and destruction.[262]

Hamburg *et al.*[263] analyzed 12 severely burned patients at Brooke Army Medical Center and described primary and secondary adaptive problems as follows: (1) primary: threat to survival, fear of disfigurement, prolonged physical discomfort, multiple surgical procedures, prolonged confinement; adaptive mechanisms included repression, suppression, constriction of thought areas, and outright denial; and (2) secondary: guilt regarding the burn accident, separation from family; fears for the future relating to career, sexual potency, and helplessness; ideas of rejection by loved ones; and intense hostility. Therapeutic suggestions offered were: one physician with the key decision-making responsibility for the care of the patient; multiple social contacts with the convalescing burned patient and with friends, family, and mature permanent staff; honest, realistic, and encouraging answers to the patients questions; and involvement of the patient in his own treatment and progress.

Long and Cope[264] studied 19 burned children and noted a high incidence of preexisting family disturbances and pre-burn delinquent behavior. The burned child often viewed the burn as a punishment for previous misdeeds, with the nurses and doctors therefore assuming the role of punishers. With time, increasing irritability, uncooperation, aggression, and assaultiveness developed, and patient and staff morale decreased. As a direct consequence, the care of the patient lagged, and repeated procedures were misinterpreted by the patient as designed only to yield pain. Regression and depression with refusal to eat, and aggression with shouting and kicking frequently manifested the child's upset. Constant reassurance by the staff was strongly advised.

Negativism of a modest degree is not remarkable among severely burned patients. Their pain is real and each change of dressing hurts. Progress is slow, and the end-point often uncertain. The ultimate psychologic escape can show symptoms of a true burn psychosis, the waxy, doll-like, silent, and manipulable patient who returns to reality only after all painful phases have been completed.

MARJOLIN'S ULCER. Although Sevitt[76] has credited an Englishman by the name of Hawkins with having reported in 1825 the first 2 documented cases of cancer arising in burn scars, it is Marjolin, a Frenchman, whose name today designates the development of squamous cell carcinoma in such wounds. Curiously, Marjolin when describing in 1828 the occurrence of cutaneous cancer in scars referred not to burn scars but rather to the scars resulting from gunshot wounds, compound fractures, and soft tissue avulsions.[265] It has been stated that between 1 and 2 per cent of all skin carcinomas arise in burn scars, that squamous cell carcinoma comprises the overwhelming majority of burn scar neoplasms with only a rare basal cell or sarcoma, and that a long latent period, up to thirty-four years, is required for such change to occur.[265,266] It is presumed that secondary healing of the burn wound by scar and contracture, repeated ulceration of unstable epithelium, slow healing, and new breakdown over many years in an area of poor vascularity sets the stage for malignant degeneration.[265] The latent period is reported to be shorter for the older-age group.[265] Malignant ulceration developing within one year of the burn injury has also been described. Most have been basal cell epitheliomas and are assumed to be the result of thermal trauma in an area already demonstrating premalignant alterations.[76,265] Marjolin's ulcers have been most commonly noted on the extremities and more often in men than women.

Theoretically the problem should be preventable by achieving satisfactory healing of burn wounds, by grafting procedures, at the time of the original injury or by resurfacing grossly unstable burn scars prior to the late phase of repeated ulceration, delayed healing, and increasing fibrosis and ischemia. The prognosis for burn scar squamous cell carcinoma is probably not unlike that for any other squamous lesion of comparable extent, and treatment is best effected by wide local excision and regional node dissection, if clinically indicated. Giblin *et al.*[266] in reviewing 21 cases of Marjolin's ulcer reported a survival figure of 67 per cent with an average follow-up of 6.3 years.

LATE PHYSICAL DEFORMITIES. Scar contractures comprise the most prevalent and obvious persistent physical deformity following treatment of severely burned patients. These restricting and often functionally and aesthetically crippling bands appear dramatically on the face and neck, distorting eyelids, mouth, and chin and across joints particularly on the flexor aspects. Contracture releases are achieved most often by excision and split- or full-thickness skin grafting, rotation-advancement of local tissue, pedicle flap, and Z-plasty.[166,169,249,267]

The problems of hypertrophic scars and keloids have been documented in depth by Cosman *et al.*[268] and Crikelair, Ju, and Cosman.[269] The reader is referred to these basic works for a definitive discussion of the differential diagnosis of scars, the planning of realistic goals regarding scar revision, and the technical and theoretical considerations essential to proper late plastic and reconstructive surgery following significant burn trauma. From the point of review, certain concepts can be presented: it is not possible clinically to differentiate hypertrophic scar from keloid in every instance; the single histologic criterion of keloid is the presence of broad, eosinophilic, glassy hyalin-like collagen fibers in the dermis; the histopathologic confirmation of the diagnosis of keloid comprises the most significant prognostic guide and is associated with a 47 per cent recurrence rate, as contrasted to only 17 per cent in lesions with the pathologic diagnosis of scar or "doubtful" keloid.

Disasters and burn center

Burn treatment during disasters comprises a particularly grave sociomedical responsibility for those involved in organizing and effecting the care of trauma victims. Artz and Reiss[1] have keynoted the concept of massive planning to be carried out before the event and designed to provide the most care for the greatest number. Faxon[270] had commented on this theme after the Coconut Grove fire in Boston in the early days of World War II. The overwhelming importance of thorough and realistic predisaster planning was restated by Schenk *et al.*[271] following the Cleveland Hill School fire, Enyart and Miller[272] after the 1954 aircraft carrier *Bennington* disaster, and Blocker and Blocker[273] when reviewing the experiences of the Texas City calamity in which 560 died, 800 were admitted to the hospital with major injuries, and over 3,000 sustained lesser wounds following explosions of ammonium nitrate chemicals aboard ships in port.

The hallmarks of disaster planning include: (1) placing one key man in absolute charge of the facility providing care; (2) triage or sorting of burn victims, using the 15 to 40 per cent body surface area range as those deserving the most care, those with lesser area burns being placed on self-care, and those with greater injuries receiving low priority with an emphasis on relief of pain; (3) effective utilization of skilled personnel, such as, nurses and physicians conserving their energies for the care of the seriously yet salvageable injured persons and allowing lay personnel to provide first aid to the others; (4) the constant accumulation of critical supplies in large quantities; and (5) the application of simple treatment technics, such as exposure of burn wounds as contrasted to complex dressings.[1,274]

Oral medications including broad-spectrum antibiotics and oral administration of electrolyte solution (one-half teaspoon of sodium chloride, 3 Gm., plus one-half teaspoon of sodium bicarbonate, 1.5 Gm.) in 1 L. of cold water flavored with lemon juice or a sweet syrup would be preferred, where tolerated, to parenteral treatment. Tetanus prophylaxis and the "buddy system" of the lesser injured person helping to care for the more seriously injured person would also be essential.

The concentration and isolation of all cases in one area, the prohibiting of early transfers out of the unit, and the establishment of an organized telephone communications network require the understanding and assistance of the administrative staff. Pillsbury and Artz[274] have considered burn disaster care in two temporal phases: (1) triage and immediate resuscitation at the primary medical facility and (2) definitive surgical planning for the individual case, with nutrition and ultimate grafting best accomplished at a "burn center."

The burn center concept represents the culmination of many years of thought and effort devoted to improving the quality and efficiency of care of the burn victim. In an age of population expansion, often inadequate medical facilities and staff, particularly nurses and ancillary personnel such as aides, assistants, and orderlies, and the ever-increasing likelihood of civilian disasters related to transportation and population congestion, the geographic grouping of those critically injured into a compact special area with a small number of highly trained, permanent, experienced, and dedicated personnel offers the most reasonable hope for the provision of proper treatment. Artz[275] has championed this ideal and has played a critical guiding role in the development of the Shriners Burns Institutes, conceived and erected for the care of critically burned children. Artz has further elaborated on the aims of these institutions as surpassing solely burn care and being additionally concerned with research and the greater education of all destined to provide treatment to the burn victim. He has also called for the design and creation of numerous smaller burn units throughout the country, a concept being realized in many regions.[276,277]

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Lenox Hill Hospital
New York City
April 28, 1967

Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by ROBERT E. MARTIN, M.D.,
and CARLOS NAVARRO, M.D.

Fever of Unknown Origin and Left Upper Quadrant Mass

Case history

STEPHEN CARTER, M.D.: A fifty-two-year-old Ukrainian white male porter was admitted to Lenox Hill Hospital with a history of fever and night sweats of three months duration. The patient was apparently well until five months prior to admission when the onset of fever with temperatures up to 103 F. or more occurred and were associated with weakness and chills. He was hospitalized elsewhere, and an extensive workup was completed. No specific diagnosis was rendered at that time to explain the fever. Pneumoperitoneography revealed a left upper quadrant mass, and the barium enema x-ray examination showed the transverse colon was displaced downward by the mass. The stomach was shown to be displaced anteriorly and medially on the gastrointestinal x-ray film series. His physical examination at that time revealed a mildly enlarged abdomen with questionable splenomegaly. His purified protein derivative intermediate strength tuberculin test gave a positive reaction with a 15-mm. area of induration. His fever continued, and he was placed on isoniazid and streptomycin empirically because of suspected tuberculosis.

He was discharged after one month of hospitalization, with reduction in his fever and symptomatic relief. One month later he again noted weakness, and, for the first time, there was an increase in his abdominal girth. There had also been some weight loss, and chills and sweats recurred. The patient noticed some pain over the lower posterior chest-wall bilaterally, and his temperature ranged between 100 and 101 F. He was continued on the isoniazid and streptomycin for six weeks.

The patient denied any history of icterus, change in color of his urine or stool, pruritus, change in bowel habits, cough, diarrhea, or flank pain. There was no nausea or vomiting, but mild anorexia was present as well as a generalized dull abdominal pain. The patient was a nonsmoker and a social beer drinker. There was no personal history of diabetes, tuberculosis, asthma, hepatitis, hypertension, or renal disease; the family history was likewise negative in this respect. He had no known allergies. There was a questionable history of rheumatic fever as a child without any known sequelae. There was no surgical history.

The patient was a well-developed, well-nourished, thin, middle-aged white male appearing chronically ill and older than his stated age, but in no acute distress. The blood pressure was 126 systolic and 96 diastolic, the pulse was 96 and regular, the respirations were 20 per minute, and the rectal temperature was 101.2 F. Examination of the head and neck was unrevealing. The chest was clear to percussion and auscultation. The heart was not enlarged, the rhythm was regular, and there were no murmurs. The abdomen was softly distended but nontender. There was questionable shifting dullness and a fluid wave was present. The liver and spleen were not palpated, and a suggestion of a left upper quadrant mass or fullness was noted. There were no rubs, hums, bruits, or transmitted pulsations in any quadrant of the abdomen. There was no distended venous pattern on the abdominal wall or any collateral circulation

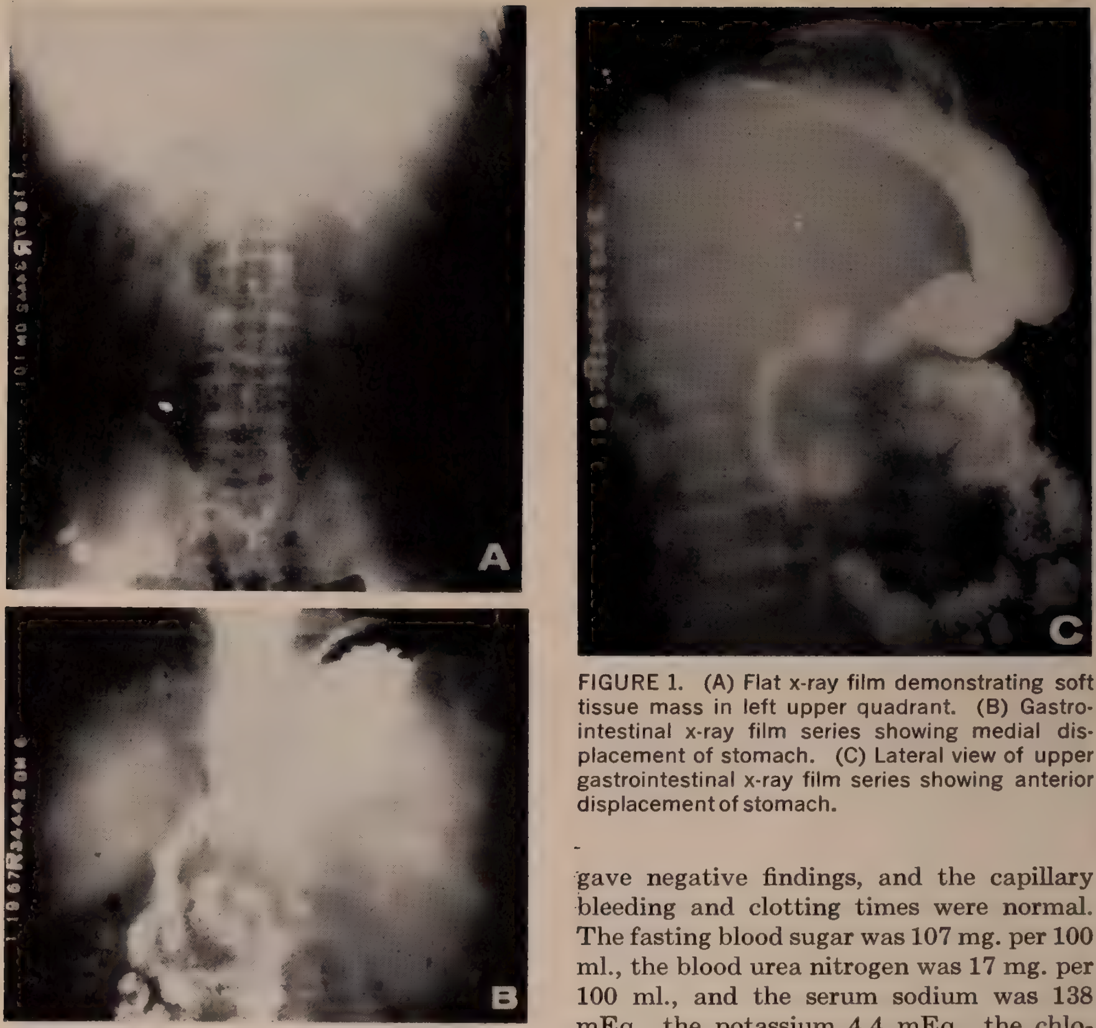

FIGURE 1. (A) Flat x-ray film demonstrating soft tissue mass in left upper quadrant. (B) Gastrointestinal x-ray film series showing medial displacement of stomach. (C) Lateral view of upper gastrointestinal x-ray film series showing anterior displacement of stomach.

noted. The testes were normal in size, and there was a left varicocele. There was no epididymal tenderness or thickening. The rectal examination was unrevealing. There was no clubbing, cyanosis, or edema of the extremities. The peripheral pulses were normal bilaterally, and the neurologic examination showed normal findings. There was no rash, spider telangiectasia, or ecchymoses of the skin.

The hemoglobin was 13.1 Gm. per 100 ml. and the hematocrit 42. The white blood cell count was 8,800 with 72 per cent polymorphonuclear leukocytes with 8 nonsegmented, 20 per cent lymphocytes, and 8 per cent monocytes. The erythrocyte sedimentation rate was 73 mm. per hour, and the platelet count was 240,000. The urinalysis gave normal results, the stool reagent tablet test (Hematest) and serology gave negative findings, and the capillary bleeding and clotting times were normal. The fasting blood sugar was 107 mg. per 100 ml., the blood urea nitrogen was 17 mg. per 100 ml., and the serum sodium was 138 mEq., the potassium 4.4 mEq., the chlorides 104.5 mEq., and the carbon dioxide 25.5 mEq. per liter.

The liver profile revealed the prothrombin time to be fourteen seconds with a control of thirteen seconds. The serum glutamic oxaloacetic transaminase was 15 units, the serum glutamic pyruvic transaminase 17 units, and the lactic acid dehydrogenase 510 units. The sulfobromophthalein retention was 8.5 per cent after forty-five minutes, and the alkaline phosphatase was 10 8 King-Armstrong units. The total protein was 7.4 Gm. with 4.1 Gm. of albumin and 3.3 Gm. of globulin per 100 ml. The total cholesterol was 198 mg. with 64 mg. free cholesterol (32.4 per cent) and 134 mg. cholesterol esters per 100 ml. The cephalin flocculation was plus-minus, the thymol turbidity 2.5 units, and the total bilirubin was 0.6 mg. per 100 ml. The acid phosphatase was 5.3 King-Armstrong units, and

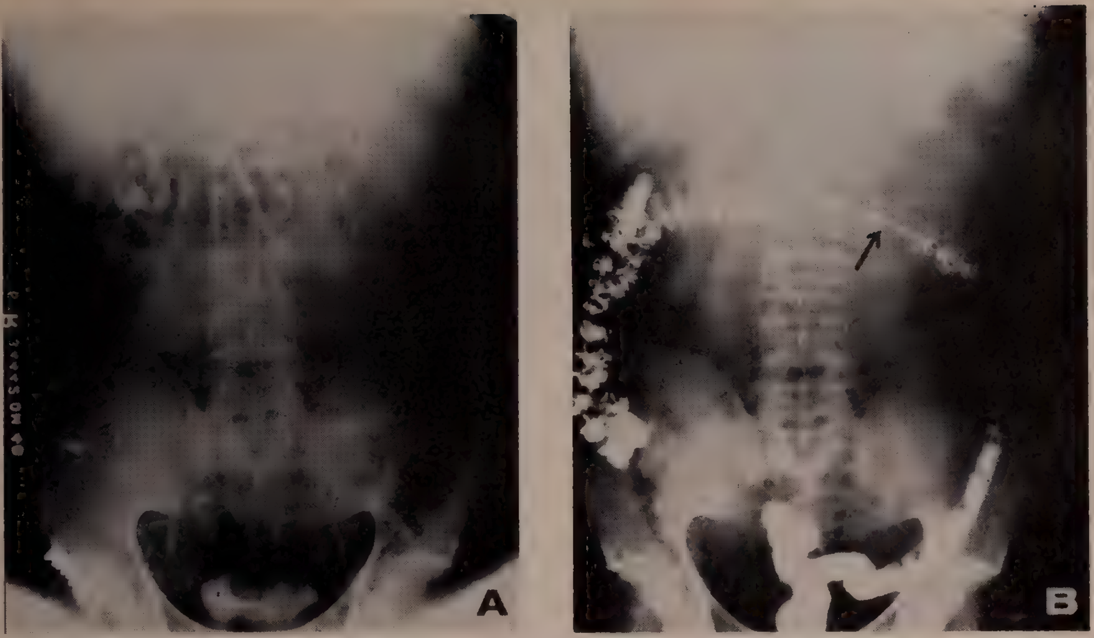

FIGURE 2. (A) Intravenous pyelogram showing normal kidneys and a soft tissue mass overlapping left upper pole. (B) Barium enema examination showing distal transverse colon draped over left upper quadrant mass and mucosa flattened and ironed out (arrow).

the amylase was 46 Somogyi units. A two-hour postprandial blood sugar was 121 mg. per 100 ml. The electrocardiogram revealed a few atrial premature contractions and left axis deviation. The saline venous pressure was 13 cm., and the dehydrochloric acid circulation time was nine seconds with a good end point.

The sputum culture grew out a normal flora, and the smear contained no acid-fast bacilli. Several blood cultures gave negative results. The chest x-ray film revealed rather prominent bronchovascular markings and moderate dilatation of the aorta. The flat x-ray film of the abdomen demonstrated the presence of a double-density shadow in the area of the left kidney and haziness in the left upper quadrant (Fig. 1A). The upper gastrointestinal x-ray film series and esophogram revealed no varices, but in the lateral view considerable increase in the retrogastric space was noted as well as extrinsic pressure on the posterior wall of the stomach with anterior displacement of the stomach (Fig. 1B and C). The intravenous pyelogram revealed spreading of the left renal calyces without significant dilatation; the renal pelvis was small and not dilated (Fig. 2A). A barium enema x-ray examination demonstrated downward displacement of the distal transverse portion of the colon in the area of the left upper quadrant as well as redundancy and tortuosity (Fig. 2B). An aortogram and selective celiac arteriogram done through the right femoral artery showed marked elevation of the main splenic artery from its origin to the spleen (Fig. 3A and B). The spleen was not enlarged, and its vascularization was normal. The venous return was well outlined, and the splenic vein was displaced anteriorly and upward by a large mass lesion which appeared to be separate from the kidney and spleen (Fig. 3C). The vessels supplying the mass were better demonstrated on the aortic injection than on the selective splenic artery injection. Some of the vessels appeared to be supplied by branches of the superior mesenteric and possibly the capsular arteries of the kidney. There appeared to be no intrinsic involvement of the left kidney or the normal-sized spleen.

Throughout the patient's hospital stay, he continued to have a low-grade fever with temperatures in the range of 100 to 101 F. His weight decreased from $165^1/_2$ pounds on admission to 152 pounds. An abdominal paracentesis on his second hospital day was dry, and the suspected shifting dullness was less pronounced than before. On his fourteenth hospital day an elective exploratory laparotomy was performed.

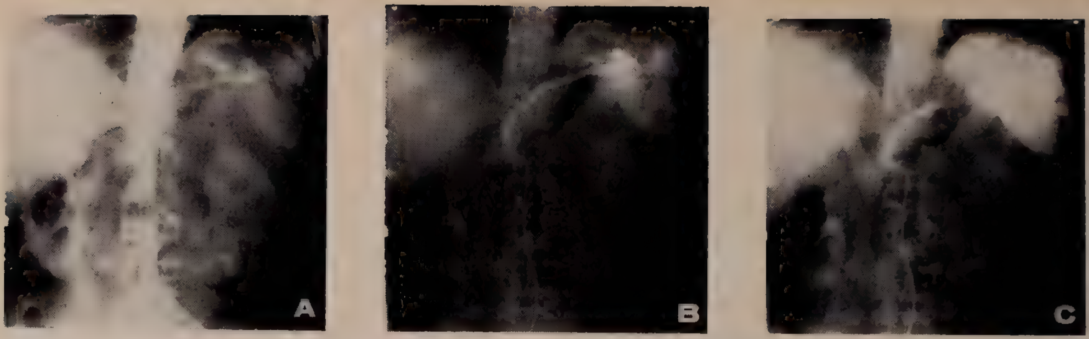

FIGURE 3. (A) Aortogram at 3.5 seconds showing left upper quadrant mass with abnormal vasculature. (B) Selective splenic artery injection at 1 second showing numerous abnormal vessels and splenic artery displaced upward. (C) Venous phase of splenic artery injection at 5 seconds showing puddling of contrast material in left upper quadrant mass and splenic vein displaced upward.

Discussion

ROBERT E. MARTIN, M.D.*: This patient's clinical course extended over a five-month period and was characterized by complaints of fever, chills, night sweats, weakness, anorexia, and later dull generalized abdominal pain as well as pain in the lower posterior thoracic area. The pain was unaffected by position or eating. In addition, he also noted an increase in his abdominal girth.

At the onset of his illness, we are told that he was hospitalized elsewhere for a one-month period and that studies made there apparently revealed a mass in the left upper quadrant that displaced the stomach anteriorly and the splenic flexure of the colon inferiorly. Patients in whom a diagnosis of fever of unknown origin is made are invariably subjected to an extensive workup in an effort to determine the cause of their temperature elevation. The value of an exploratory laparotomy in helping to arrive at a diagnosis in those cases where other studies are inconclusive is perhaps not too well appreciated. In a recent report by Keller and William[1] the diagnosis was established in 38 of 46 such patients. Findings such as prolonged fever with hepatomegaly, an abdominal mass, splenomegaly, or ascites were almost always associated with intra-abdominal disease, and thus laparotomy would be expected to give positive results in their presence. I assume that the reason this patient was not subjected to surgery prior to his admission to Lenox Hill Hospital was that he either refused operation, or the potential benefits derived from this procedure, from a diagnostic point of view, were not fully appreciated.

Tuberculosis was apparently suspected, although no bacteriologic proof was obtained. An intermediate strength purified protein derivative test was performed and resulted in an area of induration 15 mm. in size. Tuberculin reactions represent delayed sensitivity to products of the tubercle bacillus and indicate either past or present infection. The degree of positivity alone is not sufficient evidence of active infection since individuals who have a greater degree of sensitivity can give reactions measuring up to 15 mm. in size.[2] Nevertheless, the patient was placed on isoniazid and streptomycin therapy, and we are told that there was a reduction in his symptoms. However, these soon recurred and resulted in his admission to this hospital.

On physical examination our patient appeared chronically ill and was not jaundiced. There was a notable lack of positive physical findings except in the abdomen which was described as slightly distended, without tenderness, and with a sense of fullness in the left upper quadrant. No definite mass was palpated; the liver and spleen were not thought to be enlarged. There was no lymphadenopathy. A left varicocele was noted, suggesting the possibility of pressure on the spermatic vein, perhaps by an upper abdominal mass.

The laboratory studies were essentially unremarkable except for the high sedimentation rate. The hemoglobin was normal despite five months of illness. Liver function studies showed no particularly abnormal findings, and the amylase, blood sugars, and urinalyses likewise showed results in the normal range. The x-ray examination findings were quite revealing, however, and at this point I think it would be of value to have the films reviewed.

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Fred Pezzulli, M.D.: The initial radiograph of interest in this case is the abdominal flat x-ray film which reveals an increased soft-tissue density in the left upper quadrant. It obscures the upper pole of the left kidney and displaces the gas shadow of the stomach medially. The inferior border of the spleen is identifiable and appears normal in position. In addition, there is no evidence of hepatomegaly, and the remainder of the abdomen is unremarkable (Fig. 1A).

An upper gastrointestinal x-ray film series shows the stomach to be displaced medially and forward (Fig. 1B and C). The most striking finding is the increase in the retrogastric space noted on the lateral view. Multiple loops of small bowel are displaced medially.

An intravenous pyelogram shows the collecting systems of both kidneys to be normal. The upper pole of the left kidney is indistinct, being obscured by the hazy soft-tissue density in the left upper quadrant (Fig. 2A).

A barium enema x-ray examination reconfirms the presence of a left upper quadrant mass (Fig. 2B). A portion of the transverse colon appears draped over a mass in the left upper quadrant. The mucosa in this area is flattened and ironed out which is compatible with extrinsic pressure.

An abdominal aortogram showed interesting although not unexpected findings. A large mass in the left upper quadrant with a highly irregular and abnormal vasculature, displacing many neighboring structures independent of the left kidney and spleen, was demonstrated. There was marked upward displacement of the splenic artery, medial displacement of the aorta, and downward displacement of branches of the superior mesenteric artery. In the venous phase, the splenic vein was markedly elevated, and there were areas of scattered vascular blush throughout the left upper quadrant. The vessels supplying this mass arose from the splenic artery, the aorta, and branches of the superior mesenteric artery as well (Fig. 3A). A selective injection of the splenic artery showed in better detail the abnormal vasculature arising from this artery (Fig. 3B and C).

In conclusion the radiologic investigation of this patient revealed the presence of a large posterior left upper quadrant mass independent of the kidney and spleen with a diffuse abnormal vascular supply. This mass had ill-defined borders, was free of calcifications, and appeared to be rather large.

Dr. Martin: In the protocol abnormal capsular branches from the left renal artery were also mentioned as being involved. Is this true?

Dr. Pezzulli: This is true, but with a large mass such as this, the blood supply often arises from many areas both proximal and distal.

Dr. Martin: Would you say that the arteriogram reveals some displacement inferiorly of the left kidney?

Dr. Pezzulli: This is possibly so, but films of the left kidney revealed it to be at the level of the second lumbar vertebra, which is normal.

Dr. Martin: It appears that there is a large tumor located in the left upper abdominal quadrant. From the vascular pattern demonstrated, it does not appear to be a cyst. Furthermore, the spleen is not involved nor does the left kidney appear to be involved. The left kidney may be displaced inferiorly to a slight degree, and the calyces are somewhat spread, but this might be explained on the basis of extrinsic pressure. From the clinical course described and the x-ray findings, I think we are dealing with a malignant tumor. The problem is to determine its origin.

The abdominal cavity has been described as a series of compartments, the uppermost of which is bounded by the diaphragm above and the transverse colon below.[3] The right side of this area is occupied by the liver, the first and second portions of the duodenum, the gallbladder, and the common bile duct. The left side, which concerns us, consists of the left lobe of the liver, the stomach (except for the pylorus), the spleen, and splenic flexure of the colon. Beneath the peritoneum are found the great vessels, the adrenal gland, third and fourth portions of the duodenum, the pancreas, kidney, nervous tissue elements, lymphatic vessels and nodes, and elements of the primitive urogenital ridge. With reference to this patient, I think that three areas deserve special consideration: the pancreas, the adrenal gland, and the retroperitoneal area.

Carcinoma of the pancreas accounts for from 1 to 4 per cent of all cancers. In a review of 100 cases by Gullick[4] the largest number occurred between the fiftieth and sixty-ninth year. Weight loss was the most common initial complaint with weakness and fatigue being mentioned in 40 per cent of the cases. It is customary to divide neoplasms of the pancreas into those in which the tumor arises in the head and those arising in the body and tail of the gland, although on pathologic examination the distinction is often impossible to make. Nevertheless, there are differences in the clinical picture which frequently make the differential possible. In this series there were 65 tumors involving the head and 26 the body and tail of the pancreas. Jaundice was seen in 89 per cent of the cases of tumor of the head as opposed to only 28 per cent of those of the body and tail. The absence of jaundice in this patient is in favor of a lesion in the body or tail of the pancreas, if indeed we are dealing with a pancreatic neoplasm. The displacement of the stomach and the fact that the duodenal sweep was not widened nor distorted are additional findings which make a tumor of the head of the pancreas unlikely. Abdominal pain was noted in 96 per cent of the cases of cancer of the body and tail of the pancreas. The pain was most frequently described as being steady, dull, and aching and referred primarily to the upper abdomen, usually epigastric in distribution, or to the left upper quadrant with radiation through or around the left costal margin to the back. Frequently there is an increase in the intensity of the pain when patient is recumbent; relief is often experienced when patient resumes a sitting or standing position. Although Bockus[5] states that a mass is only infrequently palpated, in this series[4] a mass was felt in 36 per cent of the cases involving the body and tail of the pancreas. Fever was not a significant feature of these patients but has been reported in one quarter of another series with temperature levels of 101 F. in over half of these.[6] In up to 50 per cent there is usually some disturbance of bowel function, most frequently this was constipation, but occasionally diarrhea was noted. The x-ray findings in lesions of the body and tail of the pancreas when present usually consist of forward displacement of the proximal and midportion of the stomach. There may also be evidence of an extrinsic mass pressing on the transverse colon or splenic flexure. The fact that the diagnosis was made in only one of the 26 cases of head and tail lesions indicates the difficulty in early diagnosis of these tumors.

When I first read the protocol my initial impression was that we were dealing with a tumor of the body or tail of the pancreas. This may well be the case, but I would have expected a more classical pain pattern. Once the pain of pancreatic cancer begins it is usually relentless and frequently severe. In our patient, the pain was described as dull and not localized in the upper abdomen. Furthermore, the arteriogram seems to indicate that some of the vessels supplying the tumor may have arisen in the capsular arteries of the kidney. I am certainly no authority when it comes to interpretation of arteriograms, but to me, this suggests something outside the pancreas. However, just what the vascular pattern would be in a large pancreatic tumor which was infiltrating surrounding structures is open to question. I shall, however, discard the diagnosis of cancer of the pancreas.

If this patient had a carcinoma of the adrenal gland, it must have been a nonfunctioning tumor since there is no evidence of any endocrine imbalance. Adrenal gland carcinomas are apparently rare. A review published in 1957[7] added only 8 cases to the 27 previously reported since 1923. A specific feature in all of the cases was fever, tending to be low grade, with sweats, weakness, and weight loss also frequent complaints. Pain is apparently not a prominent complaint, although many patients complained of discomfort in the loin or in the hypochondrium. In 31 per cent of cases a mass could be palpated. The abnormal result frequently seen on the intravenous pyelogram was the downward displacement of the kidney or distortion of the upper calyces. In 2 of the 6 more recent cases in which an intravenous pyelogram was done, there was no abnormality noted.

Could this patient have had a nonfunctioning tumor of the left adrenal gland? His complaints are certainly not inconsistent with this possibility nor are the x-ray film findings. Despite the minimal changes noted by intravenous pyelography, I think this remains a good possibility.

Primary retroperitoneal tumors are likewise rare. In what is perhaps the largest single published series, Pack and Tabah[8] collected 120 cases from the files of Memorial Hospital over a period of twenty-six years. This represented 0.2 per cent of the 60,000 patients admitted to that institution during that interval. The majority of the patients were in the fifth and sixth decades, and abdominal pain, usually of vague nature, was the most frequent presenting complaint. Next in frequency was the detection by the patient of an abdominal mass or his awareness that his abdomen was becoming larger.

These tumors are rarely detected early because of their location and because they can grow in the loose areolar tissue of the retroperitoneal area without producing symptoms. Often the only clue to their presence is indicated by the displacement of adjacent organs.

Of the 120 cases reported, 85 per cent were diagnosed as malignant tumors, with the majority of these, 77 cases or 74.8 per cent, being sarcomas. These included 22 rhabdomyosarcomas, 18 lymphosarcomas. 6 cases of Hodgkin's disease, 17 liposarcomas, and 14 other types of sarcoma.

It will be noted that the largest group of neoplasms in this series were lymphomas. In this group, the most frequent initial complaint was that of an abdominal mass with vague abdominal pain, fever, weakness, and weight loss. In the absence of lymphadenopathy noted elsewhere, the early diagnosis of retroperitoneal lymphoma is difficult. The presence of associated fever, weakness, and weight loss is more in favor of this condition than any of the other retroperitoneal tumors.

There was nothing clinically distinctive about the other cases which included, in addition to those already mentioned, 4 extra adrenal neuroblastomas, 2 mesotheliomas, 2 myxomas, a malignant schwannoma, a chordoma, and a synovioma. With retroperitoneal tumors the exact diagnosis required laparotomy with the preoperative impression usually being the nonspecific one of an abdominal mass.

Because of the prominence of fever, sweats, and weakness in the clinical course of this patient, I think the two most likely diagnoses are either a retroperitoneal lymphosarcoma or a nonfunctioning carcinoma of the left adrenal gland. The normal hemoglobin seems to be more consistent with the latter diagnosis, and although in a review of 1,269 cases of lymphosarcoma it was shown that 9 out of 10 patients had a normal hemoglobin at the onset of their illness, in 45.6 per cent there was a significant anemia with levels less than 12 Gm. per 100 ml. later in their course.[9] Although I would be happier if there were more classical changes shown on the intravenous pyelogram, I shall make the diagnosis of a nonfunctioning carcinoma of the left adrenal gland. If this were not a clinicopathologic conference, I would be happy indeed to say that this man had a mass in the left upper quadrant requiring laparotomy with the final diagnosis in the hands of the surgeon and the pathologist. This, I suspect, is what happened here.

Michael S. Bruno, M.D.: A case of a functioning carcinoma of the adrenal gland was presented at last week's grand rounds conference, and to offer a diagnosis now of a nonfunctioning adrenal carcinoma may be more than fortuitous. Are there any further questions?

Austin P. Boleman, Jr., M.D.: Dr. Martin quotes an article which states that in lymphosarcoma the hemoglobin was normal initially and then became low during the subsequent course of the disease.[8] Was the fall in hemoglobin thought to be due to the disease process itself, to chemotherapy, or both?

Dr. Martin: These were cases reported from Memorial Hospital, and I can only assume that they were under treatment. I would infer that the disease process itself, as it progressed, and the therapy would both be factors.

Irving Graef, M.D.: Was any thought directed toward a pancreatic cyst as the cause for the patient's illness?

Dr. Martin: The arteriographic study is not consistent with a diagnosis of cyst. They are usually avascular areas, and their clinical course is not one of weight loss, sweats, and fever, signs that indicate a malignant process. There was also no previous history of abdominal pain, pancreatitis, heavy alcoholic intake, and so on.

Dr. Bruno: The arteriogram as presented certainly rules out a pancreatic cyst.

David Lyall, M.D.: What about a cystadenoma of the pancreas? Is the arteriogram compatible with that?

Dr. Pezzulli: They usually show up on the arteriogram as a more circumscribed area with a more homogeneous stain. However, one certainly cannot exclude it altogether from the films.

Louis J. Vorhaus, M.D.: Does the arteriogram rule out carcinoma of the kidney altogether? I wonder about this, since a renal carcinoma may be associated with fever without any abnormal urinary or intravenous pyelogram findings, especially if the lower pole of the kidney was involved.

Dr. Pezzulli: Generally that is true, but the nephrogenic phase of the arteriogram outlines an absolutely normal-appearing kidney.

Dr. Bruno: This patient was under the care of William Eisenmenger, M.D., and I wonder if he has any comments or additions, or would he tell us what his impressions were while this patient was under his care.

William J. Eisenmenger, M.D.: The abdominal mass was hard to feel and outline because of the patient's prominent abdominal musculature. Our preoperative diagnoses were diffuse, and I must admit we could only narrow them down to a retroperitoneal tumor of unknown tissue origin.

Dr. Bruno: Do you know if the left varicocele developed recently or was present for years?

Dr. Eisenmenger: The patient unfortunately had been only recently referred to me, and as far as I know the left varicocele was present for many years.

Dr. Bruno: At this point I would like to ask the surgeon of record, John Vieta, M.D., to discuss his findings at operation.

John O. Vieta, M.D.: When I first saw this patient which was a few days before arteriography was performed, it was my impression that the patient had a retroperitoneal tumor, probably of mesenchymal origin. My diagnosis was either a retroperitoneal lymphosarcoma or a mesodermal tumor, such as a liposarcoma. Even with the additional information the arteriograms supplied, it did not, in my opinion, constitute grounds for another diagnosis.

An incision for a routine exploratory laparotomy was made initially. This incision was later extended into the thorax, with the diaphragm being partially divided, as a huge tumor involving the left upper quadrant of the retroperitoneal space was uncovered. The spleen and pancreas were intimately adherent. The mesenteries of the left colon, small intestine and stomach, and the fatty envelope of the kidney were also attached to the mass. The main venous supply appeared to drain into the renal vein. To remove this tumor, the spleen, one half of the pancreas, some omentum, the renal envelope, and the left crura of the diaphragm were resected en masse. The kidney was saved by stripping it away from its fatty encasement. Even when the mass was finally totally freed, the diagnosis was questionable. At most all I could say was that he had a large retroperitoneal tumor which was very vascular.

Clinical diagnosis

Retroperitoneal mass (tumor)

Dr. Martin's diagnoses

1. *Nonfunctioning left adrenal carcinoma*
2. *? Retroperitoneal lymphosarcoma*

Dr. Bruno: With the diagnosis in question, even after gross inspection of the resected tumor mass, let us ask our pathologist to shed some additional light on this matter.

Pathologic report

Carlos Navarro, M.D.*: The major pathologic specimen consisted of a large ovoid mass that measured 25 by 17 by 10 cm. and weighed 1,834 Gm. The external surface was irregularly lobulated and entirely covered by a thick, tense, fibrous capsule. Multiple cut surfaces of the tumor were composed of irregular bulging lobules of soft gray-brown tissue mingled with flat irregular areas of friable yellow and dark-red tissue. The microscopic examination revealed a very cellular epithelial neoplasm arranged in clusters and interlacing cords separated by thin vascular connective tissue septa (Fig. 4A). The majority of the neoplastic cells were large and polygonal with abundant eosinophilic cytoplasm and a large ovoid or round vesicular nucleus. The cytoplasm was frequently finely vacuolated. A mild degree of pleomorphism was present with an occasional giant irregular nucleus

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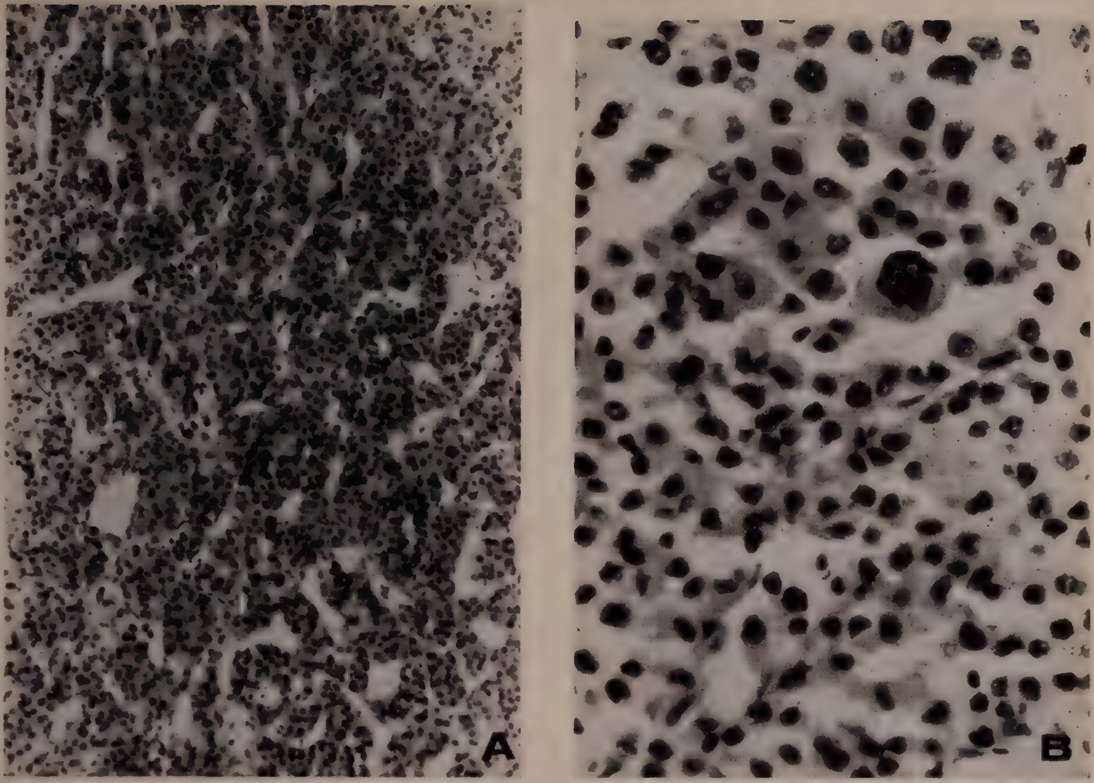

FIGURE 4. (A) Medium-power view of neoplastic tissue showing cord-like arrangement and thin-walled blood vessels separating cords, and (B) High-power view demonstrating epithelial character of cells and a giant nucleus.

(Fig. 4B). Mitoses were very frequent and extensive coagulation necrosis was present. Sections through the capsule showed focal invasion. Reticulum stains revealed a fine reticular meshwork surrounding the cellular cords and clusters without individual cell separation. The sections showed typical cells of carcinoma of the adrenal gland.

Additional material received with the tumor consisted of a spleen which weighed 195 Gm., a large portion of pancreas 10.5 by 3.5 by 1.1 cm., and a 2-cm. lymph node. Gross and microscopic examinations of these specimens failed to reveal any significant abnormalities.

Dr. Vieta: It was a surprise to me to be informed a few days later that this was an adrenal carcinoma. In any event, the main problem postoperatively was the development of episodes of fever with fall in blood pressure during the first few days. Then a pancreatic fistula became apparent. The patient also now had a mild diabetes due to the pancreatic resection. The pancreatic fistula finally closed after seven weeks of daily drainage, ranging from 50 to 200 cm.^{3} of fluid.

Dr. Bruno: Dr. Martin, since this is a rare tumor and you have spent some time reviewing the literature on this subject, would you like to make some additional comments now that we have a tissue diagnosis.

Dr. Martin: This is indeed a rare tumor, as you say. Most of the adrenal tumors that have been reported are functioning adrenal tumors and through their clinical symptoms the diagnosis is made. In the 27 cases reported from 1923 through 1957, weakness, weight loss, and fever were the outstanding manifestations; pain was not a part of this complex of symptoms. The fact that many of these tumors increased to a very large size with hemorrhage and necrosis present was postulated as a cause for their febrile course. The intravenous pyelogram usually will show some abnormality but at other times will not. When I was an intern at this hospital, I recall a similar case, an Armenian male, who presented symptoms of fever of unknown origin with a right midquadrant mass and a positive Casoni skin test result. An operation was performed which revealed the presence of a right adrenal tumor which had involved the liver with necrosis and hemorrhage. The preoperative diagnosis of an echinococcus cyst of the liver was incorrect.

Joseph Kessler, M.D.: I would like to add something to Dr. Martin's explanation for the cause of fever in patients with adrenal carcinoma. An elevated unconjugated etiocholanolone has been found in the plasma of some patients during the febrile phase and been absent during the afebrile phase or after removal of the tumor.[10] Fukushima and Gallagher[11] reporting on steroid production in nonfunctioning adrenal cortical tumors found that 2 of their patients excreted excessive etiocholanolone and dehydroisoandrosterone in their urines. Both of these substances are 17-ketosteroids and are known to be pyrogenic.[12]

Dr. Bruno: That has certainly been reported and might have been acting here. Were urine or plasma etiocholanolone levels done?

Dr. Carter: There was no record of that on the chart.

Dr. Bruno: Yet other workers like Bondy, Cohn, and Gregory[10] have recognized elevated unconjugated etiocholanolone in the plasma to be of more significance than the urinary values when associating the fever with these steroids. Other important considerations with carcinomas of the adrenal cortex are that functioning carcinomas develop more frequently in females, presenting symptoms of Cushing's syndrome; nonfunctioning carcinomas occur with increased incidence in males. The left adrenal gland was noted to be the more frequent site of origin for carcinoma in the cases reviewed by Rapaport *et al.*[13] and MacFarlane.[14] Lipsett, Hertz, and Ross[15] report that 44 per cent of all cases that they reviewed in the literature or saw personally presented symptoms of a prominent palpable abdominal mass. How is this patient at the present time?

Dr. Eisenmenger: This patient, three months postoperative, is still very well. His diabetes mellitus is mild and controlled with diet and tolbutamide (Orinase).

Dr. Bruno: Was postoperative radiation therapy given?

Dr. Eisenmenger: No. The patient did not get any radiation therapy. The surgeon felt that he had removed all of the visible tumor at the time of the exploratory laparotomy.

Dr. Bruno: This is the second case of adrenal carcinoma that we have presented during the past week at our conferences. The last case presented was an instance of a functioning and metastasizing adrenal carcinoma. This case is an example of a nonfunctioning and, so far, nonmetastasizing carcinoma.

Final anatomic diagnosis

Adrenal cortical carcinoma, nonfunctioning

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Correlation Conferences in Radiology and Pathology

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Mass About Elbow

Case history

Richard Stewart M.D.*: This sixty-nine-year-old man presented a one-year history of a gradually enlarging mass about his right elbow. There was minimal limitation of elbow movement. On physical examination the mass, measuring 8 cm. in diameter, was firm and movable. There was no associated erythema. The liver was palpable 6 fingerbreadths below the costal margin. Rales were heard in the right lung. The routine laboratory studies

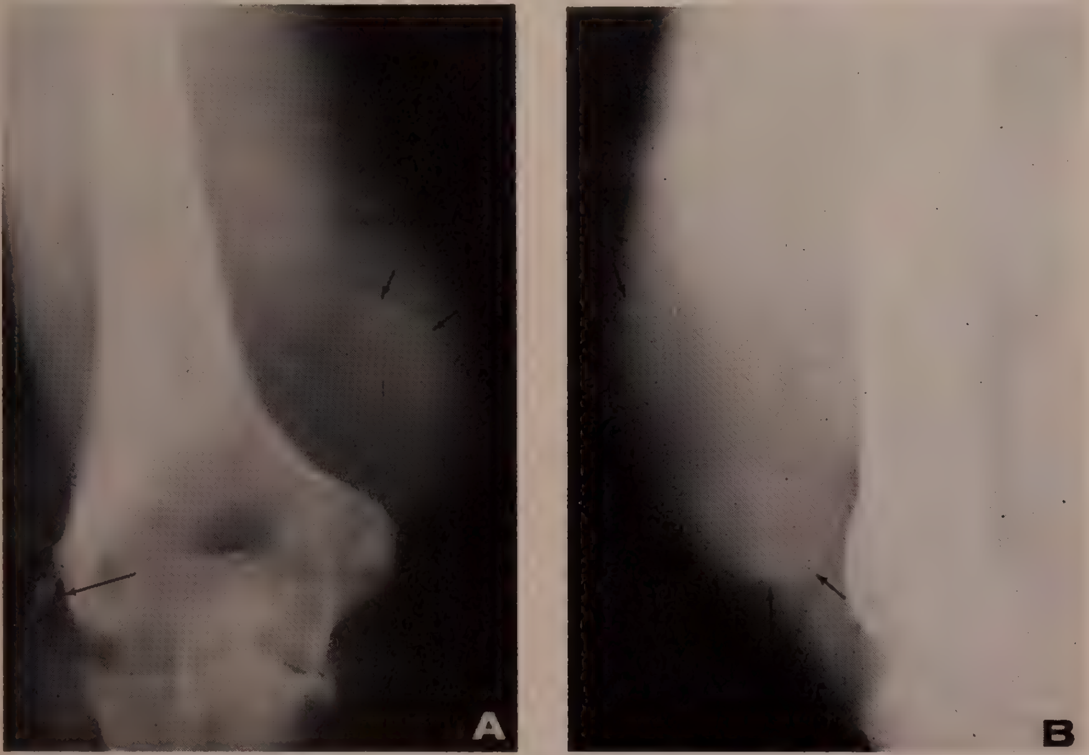

FIGURE 1. (A) Anteroposterior film of elbow. Note bone erosion (single arrow) and soft-tissue mass (arrows). (B) Lateral film of elbow. Note soft-tissue mass (arrows).

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were unremarkable. He was treated for heart failure with good results.

Robert Bornhurst, M.D.*: In this case we are faced with the problem of evaluation of an elbow mass that is present without the usual signs of an acute inflammatory process. The radiographs show that the bones are normally mineralized. A few exostoses arise from the olecranon process. There is some joint-space narrowing, especially between the ulna and humerus. Bone destruction is seen at the lateral epicondyle of the humerus (Fig. 1A).

The anterior fat pad is not shown, but the posterior fat pad is clearly visible and is displaced slightly posteriorly. Behind and somewhat medially there is a large soft-tissue mass (Fig. 1B). Its inferior margin is well defined, but the superior margin is not as distinct.

Joseph Whalen, M.D.†: What does it mean to see the fat posteriorly?

Dr. Bornhurst: The posterior fat normally is not seen unless it is displaced, usually by a synovial process. The bony changes incriminate joint disease and, therefore, I believe that this synovial process is an effusion. It is possible that the soft tissue mass behind the fat pad is preventing the fat from becoming further displaced.

One wonders why the anterior fat pad is not visible. It is common to see both fat pads displaced with intrasynovial fluid. Perhaps this could mean that something outside the joint capsule is displacing the fat posteriorly. It is entirely possible that an extension of the soft mass is insinuating between the extracapsular fat and the capsule itself, but with bone erosion as well as joint space narrowing the finding is probably indicative of effusion. It is conceivable that the whole process, even the soft-tissue mass, could be synovial in origin.

The mass is not of congenital origin, and traumatic effusion can be eliminated since there is no evidence of fracture on the films nor is there a history of injury. This narrows the diagnostic possibilities to some sort of an inflammatory process or tumor. This type of bone destruction could be seen with either. An acute pyarthrosis can be eliminated on the basis of history and lack of physical findings. The process could be something indolent or chronic, such as tuberculosis. Tuberculosis in a joint is slowly progressive, giving joint-space narrowing, effusion, and bone destruction, with little periosteal new bone formation. Thus, it would fit quite well as a diagnosis. Is there a chest film available?

The chest radiographs show only mild cardiac failure, and I can see no evidence of either old or, for that matter, new tuberculous involvement. There is no fibrocalcific scar, nodularity, or adenopathy.

Dr. Whalen: Would that make you think less of the diagnosis?

Dr. Bornhurst: No. Negative chest x-ray film results do not exclude tuberculosis of bone.

Other chronic inflammatory processes should also be considered. This is not a neuropathic condition of the joint, since with these there is more destruction, erosion, and fragmentation. It is unlikely to represent rheumatoid arthritis because the joint is not evenly narrowed, and there is no demineralization of bone. Also, the history does not suggest rheumatoid arthritis. In the later, quiescent stage of rheumatoid arthritis there may be sclerosis, but in this case there is active bone destruction, and therefore we must consider it an active process. Gout is a possibility, and the soft-tissue mass could be a tophus. The history however excludes this painful process from consideration. Gonococcal and syphilitic arthropathies are also excluded by history as well as by lack of physical findings.

This leaves me with neoplasms, which the history does support. A synovioma or synovial sarcoma is entirely consistent with the findings in this case. The inferior margin of the mass as well as its distance from the joint might seem to detract from its origin in the joint, but this is characteristic of these tumors. They can be found arising from tendon sheaths quite some distance from any joint. Those found in the vicinity of a joint may in fact arise outside of the joint with late extension into the joint. There are several theories regarding the nature of these tumors, and to my knowledge these have not been proved. I should mention that the bone destruction does not have to be related to the mass. Fibro-

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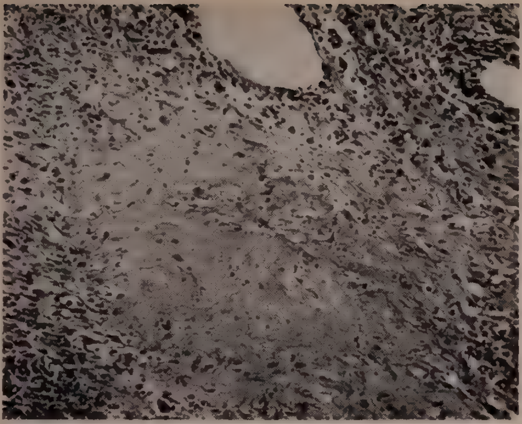

FIGURE 2. Central focus of caseous necrosis surrounded by a histiocytic reaction.

sarcoma is another soft-tissue tumor to be mentioned. If this tumor does invade bone, it enters by direct extension in continuity and frequently has much periosteal reaction. This is not the case here. Has there ever been any attempted aspiration or biopsy of the elbow?

Dr. Stewart: No.

Theodore Perl, M.D.*: Would you consider villonodular synovitis?

Dr. Bornhurst: Yes, but not too strongly. This is usually seen in the knees and occasionally in the feet with more irregular and sharply defined destruction about the joint. This is a possibility, however.

Dr. Whalen: I think, as you point out, this case presents radiographic evidence of synovial disease with findings of "arthritis" in an active stage; therefore, your differential diagnosis must include those processes characterized by synovial abnormality and arthritis. I think the synovial changes do outweigh a little bit the changes in the bone, so, as you indicate, tuberculous involvement of the elbow or synovial sarcoma become prime considerations.

Edwin Euphrat, M.D.: I would expect an active tuberculosis process to produce a great deal more demineralization.

Dr. Whalen: I think that is a point that could be considered somewhat against tuberculosis.

Dr. Bornhurst's diagnosis

Tuberculosis of elbow
Rule out synovial sarcoma of elbow

Dr. Stewart: This man underwent surgical exploration. The rounded density shown on the films was found to be a cystic structure containing thick gelatinous material. It seemed to communicate with the joint itself. A biopsy of the lining of this mass and its contents was obtained.

John Prior, M.D.†: Two or three small fragments of tissue were submitted for microscopic examination. The tissue was composed of dense fibrous tissue, adipose tissue, and one surface which is the synovial-lining tissue. The latter has been replaced by pink amorphous material at the base of which histiocytes and giant cells of the Langhans type can be recognized. This zone is limited by considerable granulation tissue. Well-formed tubercle-like structures were present within the granulation tissue, at the junction of the granulation tissue and the fibrous tissue, and also within the fibrous tissue itself. Most of the tubercles demonstrated abundant caseation (Fig. 2). I considered this to be histologic tuberculosis despite the fact that acid-fast stains and fungus stains gave negative findings.

Final diagnosis

Tuberculosis of elbow

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Effect of Exercise on Atrioventricular Transmission in Patients with Atrioventricular Conduction Disturbances*

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An increase in the sinus heart rate produced by exercise,[1] sympathomimetic amines,[1,2] and atropine[1,3] results in a decrease in atrioventricular conduction time. In contrast, when the heart rate is increased by electric stimulation of the atria, the neurohumoral stimuli to the heart remain constant, and the P-R interval becomes progressively prolonged.[1-9] These findings have recently been confirmed in man.[1]

The purpose of this communication is to report 3 patients with disease of the atrioventricular node in whom exercise had a paradoxical effect on atrioventricular transmission.

Case reports

Case 1. This patient was a seventy-one-year-old white male who was admitted to the U.S. Public Health Service Hospital, Staten Island, New York, with a chief complaint of frequent episodes of vertigo and lightheadedness of two days duration. These episodes were not associated with chest pain or cardiorespiratory distress. The patient had been followed in the outpatient department of this hospital since 1957 because of chronic lung disease. His last normal electrocardiogram was in November, 1959. An electrocardiogram in October, 1964, revealed first-degree heart block. The patient was not taking digitalis or diuretics during this time.

Physical examination was unchanged from previous findings, except that a slow regular heart rate of 56 beats per minute was present. The electrocardiogram showed atrioventricular dissociation. There was no electrocardiographic or enzymatic evidence of recent acute myocardial infarction.

Case 2. This patient was a fifty-two-year-old white female who was admitted to Montefiore Hospital because of a Stokes-Adams seizure. The patient was known to have been in complete heart-block for the past three years. In this three-year period she had been treated with sublingual isoproterenol and had been essentially asymptomatic.

Physical examination was unchanged from previous findings. The heart rate was 40 beats per minute and regular. There were no signs of congestive heart failure and no evidence of a recent myocardial infarction.

Electrocardiograms were obtained during a control period, after the intravenous ad-

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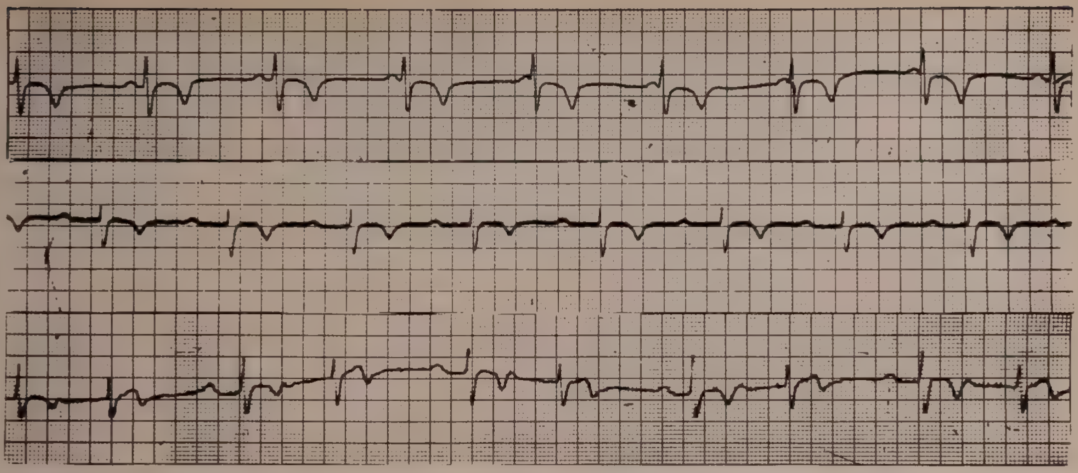

FIGURE 1. Case 1. Seventy-one-year-old male with atrioventricular dissociation. Strip 1: At rest atrioventricular dissociation, and atrial rate slightly less than ventricular rate. Strip 2: During mild exercise, slight increase in atrial rate resulting in regular sinus rhythm with first-degree heart block. Strip 3: Increased exercise load resulted in increase of atrial rate to 85 per minute and 3:2 Wenckebach cycles.

ministration of 2 mg. of atropine, and during graded exercise (deep knee bends) after administration of the atropine.

Case 3. This patient was a sixty-year-old white male who was admitted to the U.S. Public Health Service Hospital, Staten Island, New York, with a chief complaint of shortness of breath and a feeling of fullness in the epigastrium. He had been followed at this hospital for the past eight years and was known to have rheumatic heart disease with aortic insufficiency. In 1957 and 1962 he had been admitted to this hospital because of acute congestive heart failure; in both instances complete heart block was present. Both times he spontaneously reverted to regular sinus rhythm, and the congestive heart failure was controlled by medical management.

Physical examination revealed an elderly white male who was in mild respiratory distress. The neck veins were distended. The heart rate was 38 beats per minute, and the blood pressure was 150/50. The point of maximal impulse was in the sixth intercostal space at the anterior axillary line, there was a III/VI blowing diastolic murmur at the left sternal border and a II/VI holosystolic murmur at the apex which radiated to the axilla, moist rales were present at the lung bases, the liver was 4 fingerbreadths below the right costal margin, and 1 plus pedal edema was present.

It was noted that while the patient was at complete bed rest, his heart rate exceeded 50 beats per minute; as soon as he sat up, the heart rate dropped to about 40 beats per minute. Electrocardiograms were taken at complete bed rest and after two sit-ups.

Results

In Case 1 at rest the atrial rate was slightly slower than the ventricular rate, and atrioventricular dissociation was present (Fig. 1). During mild exercise the atrial rate was slightly increased, and there was 1:1 atrioventricular relationship with a prolongation of the P-R interval. When the atrial rate was further increased to 85 per minute by exercise, Wenckebach cycles with 3:2 heart block resulted.

In Case 2 there was complete heart block (Fig. 2). Atropine initially increased the sinus heart rate and then facilitated atrioventricular conduction resulting in 3:1 and 2:1 atrioventricular block. Mild exercise further increased atrioventricular conduction, resulting in a stable 2:1 atrioventricular block, without significantly increasing the atrial rate. When the atrial heart rate was increased to 136 beats per minute by a moderate level of exercise, complete heart block resulted. After a short period of rest the atrial rate fell to 115 beats per minute, and 2:1 heart block was again present.

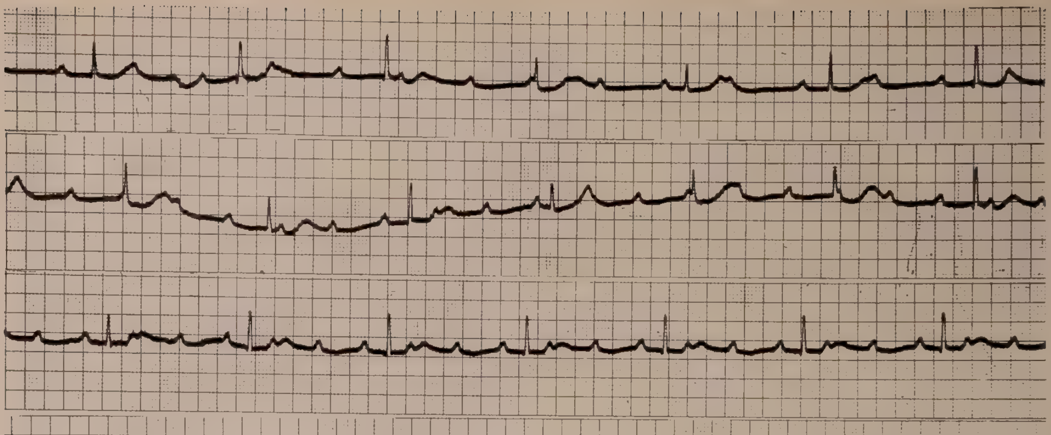

FIGURE 2. Case 2. Fifty-two-year-old female with complete heart block. Strip 1: 2:00 P.M., control tracing, complete heart block, atrial rate 79 per minute, ventricular rate 40 per minute. Strip 2: 2:01 P.M., 2 mg. atropine intravenously, complete heart block. Atrial rate 107 per minute, ventricular rate 41 per minute. Strip 3: 2:05 P.M., complete heart block, atrial rate 125 per minute, ventricular rate 41 per minute. Strip 4: 2:10 P.M., atrioventricular conduction facilitated by atropine, 2:1 and 3:1 atrioventricular block present, atrial rate 125 per minute. Strip 5: 2:15 P.M., mild exercise, atrioventricular conduction slightly enhanced, stable 2:1 block, and atrial rate remains at 125 per minute. Strip 6: 2:20 P.M., increased exercise, complete heart block because of increased atrial rate, 136 per minute. Ventricular rate 40 per minute. Strip 7: 2:38 P.M., 2:1 atrioventricular block, atrial rate 115 per minute.

In Case 3 at rest there was a regular sinus rhythm with a marked sinus arrhythmia and first-degree heart block (Fig. 3). There are two distinct types of P waves seen on this tracing. The change in P-wave contour may be because of respiration, but there are probably two atrial pacemaker foci alternating with each other. The heart rate was 51 per minute when each atrial beat was conducted to the ventricles. When the atrial rate was increased to 96 per minute by exercise, complete heart block resulted.

These 3 patients demonstrate that when there is disease of the atrioventricular node and the atrial rate exceeds a critical rate, varying degrees of heart block ensue.

Comment

A previous communication from this laboratory reported the effect of heart rate, exercise, isoproterenol, and atropine on atrioventricular conduction in man.[1] In that study, when the neurohumoral stimuli to the heart remained constant and the heart rate was increased by electrical stimulation of the atria, there was a progressive

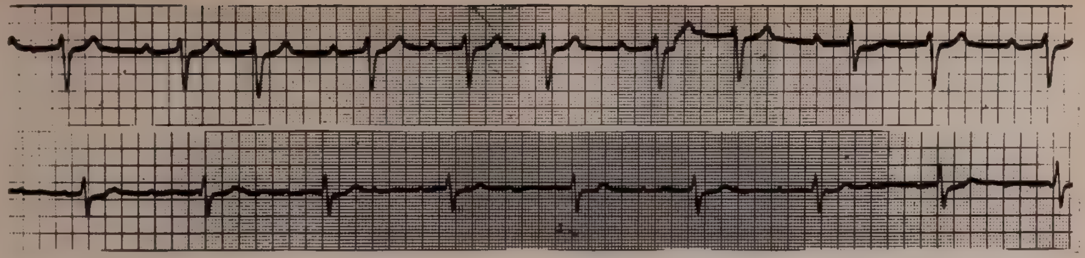

FIGURE 3. Case 3. Sixty-year-old male admitted in complete heart block. Strip 1: Sinus arrhythmia with 1:1 atrioventricular response. Heart rate 51 per minute. Two types of P waves seen. Change in P-wave contour may be due to respiration, but probably due to two separate pacemaker foci in atria. Strip 2: After two sit-ups atrial rate increased to 96 per minute, and complete heart block resulted.

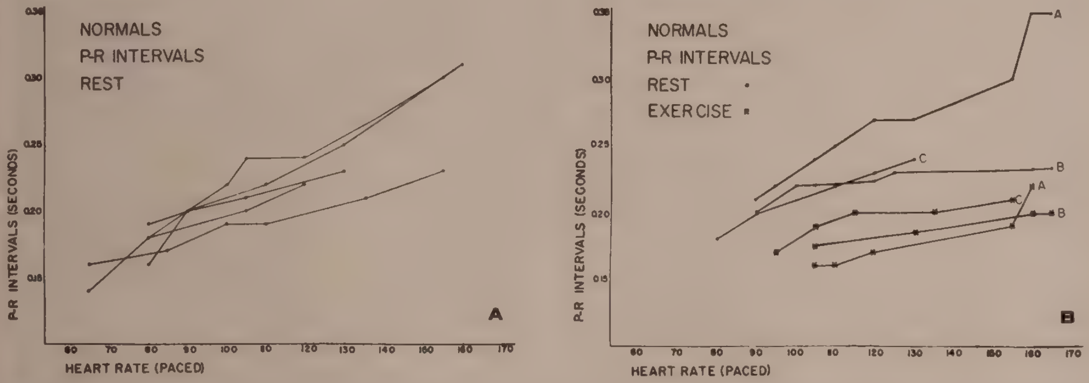

FIGURE 4. (A) Relationship of atrioventricular conduction time to heart rate in 5 normal patients. P-R interval became progressively prolonged as heart rate increased by atrial pacing. Close to linear relationship between P-R interval and heart rate. Normals = normal patients. (B) Atrioventricular conduction times at rest and during exercise in 3 patients. At any paced heart rate, P-R interval shorter during exercise than at rest. In each of states tested, P-R interval became progressively prolonged as paced heart rate increased. A, B, and C represent individual patients.

prolongation of the P-R interval (Fig. 4A). Exercise (Fig. 4B), isoproterenol (Fig. 5A), and atropine (Fig. 5B) shortened atrioventricular conduction time at any given paced heart rate. The results of these studies are in agreement with observations made from standard lead electrocardiograms[10-13] and earlier work done in the experimental animal.[2,4-9,14-16]

It is well known that an increase in the sinus rate is associated with a shortened P-R interval. According to Lepeschkin,[3] in normal subjects the P-R interval may be greater than 0.2 second at heart rates below 80 per minute, but at heart rates above 80 per minute it never exceeds 0.2 second. The neurohumoral stimuli and pharmacologic agents which increase the spontaneous rate of discharge of pacemakers also enhance atrioventricular conduction.

Our patients showed a critical rate phenomenon. When the atrial rate was increased above a critical rate, varying degrees of heart block resulted. One may propose that the mechanism which results in complete heart block when the atrial rate is increased is repetitive concealed conduction in the atrioventricular node.[5] The repetitive partial penetration of the diseased atrioventricular node by action potentials maintains it in a constant state of refractoriness.

Schwartz and Schwartz[17] have reported patients in normal sinus rhythm with first-degree heart block, in whom Stokes-Adams seizures were induced by isoproterenol. A review of their records showed that when the administration of isoproterenol resulted in heart block, there was a marked increase in the atrial rate. It would appear that any mechanism which increases the atrial

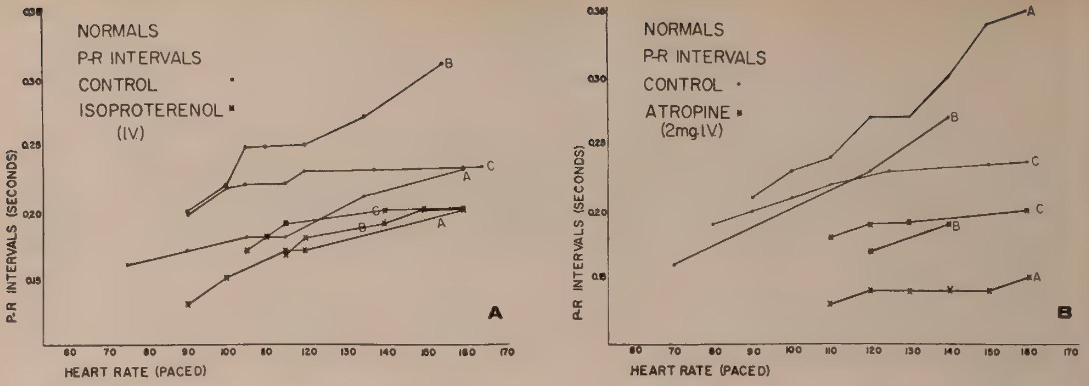

FIGURE 5. (A) Atrioventricular conduction times at rest and during isoproterenol infusion in 3 patients. At any paced heart rate, P-R interval shorter during isoproterenol infusion than at rest. In each of states tested, P-R interval became progressively prolonged as paced heart rate increased. A, B, and C represent individual patients. I.V. = intravenous infusion. (B) Atrioventricular conduction times at rest and after administration of 2 mg. atropine. At any paced heart rate, P-R interval shorter after administration of atropine than at rest. In each of states tested, P-R interval became progressively prolonged as paced heart rate increased. A, B, and C represent individual patients. I.V. = intravenous injection.

rate may induce heart block in patients with disease of the atrioventricular node.

Summary

Three patients with disease of the atrioventricular node who showed a paradoxical response in atrioventricular conduction to exercise have been presented. When the heart rate was increased above a critical rate by exercise, varying degrees of heart block ensued. The effect of heart rate, exercise, isoproterenol, and atropine on atrioventricular conduction has been briefly reviewed.

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Ainhum (Dactylolysis Spontanea)

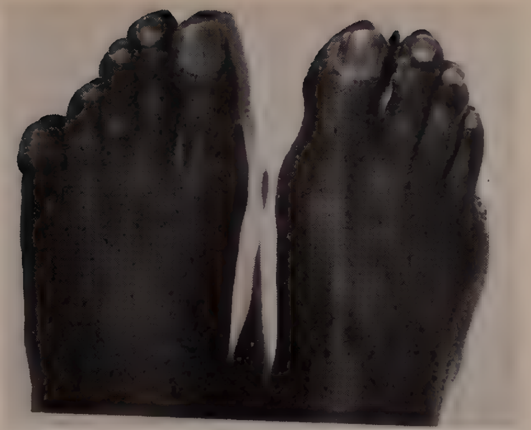

FIGURE 1. Constricting fissure seen about left fifth toe of Case 1. Right fifth toe surgically amputated because of ainhum.

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AINHUM, OR DACTYLOLYSIS SPONTANEA, is an unusual disease, characterized by the spontaneous amputation of the fifth toe following the presence of a constricting fissure (Fig. 1). The 2 cases presented here are the first to be reported from Upstate New York.

History and nomenclature

Clark[1] first described ainhum in 1860 as a form of "dry gangrene of the little toe"! The disease was first called "ainhum" in 1867 by da Silva Lima.[2] In 1881 Hornaday[3] reported the first case from the United States occurring in North Carolina.

The name ainhum is derived from the Yoruba language and means "to saw or file."[4] Matas, however, claims the name is derived from the Brazilian Negro patois and means "fissure."[5] Dactylolysis (sometimes spelled dactylosis) spontanea is a literal translation of the pathologic process.[6]

Incidence

Several hundred cases of ainhum have been reported in the world literature. Recently, Cole[7] and Browne,[8] working separately in Africa, have reported 154 new cases with an incidence of over 2 per cent in the general population. Norton, Sala, and Silverstein[9] found 102 reported cases from the United States up until 1956. Since 1956, 4 new cases have been added.[6,9–11] A total of 14 cases have been reported from New York State[6,9,10,12–17]; all of these cases were from New York City.

Etiology

Evidence has been offered that ainhum is only a symptom that may arise in many diseases where a similar trophoneurotic process of connective tissue and vessels is involved.[18] The absence of any generalized skin, neurologic, or constitutional symptoms has led others to believe that ainhum is a specific pathologic entity.[5,7,19,20]

If ainhum is an independent disease, the cause could be either infectious or mechanical. Hansen's bacillus and the chigger, S. penebrans, have been considered and discarded as potential causes.[5,21–23] One of the oldest theories attributing ainhum to self-mutilation or the wearing of rings[24] can be dismissed since the disease occurs also in those not practicing mutilation and in ringless patients.[25] Anatomically, the position of the little toe makes it liable to injury.[26] Also, the propensity of Negroes for the overproduction of fibrous tissue may be important in the inducement of the circular constriction.[5,8,12,19,23]

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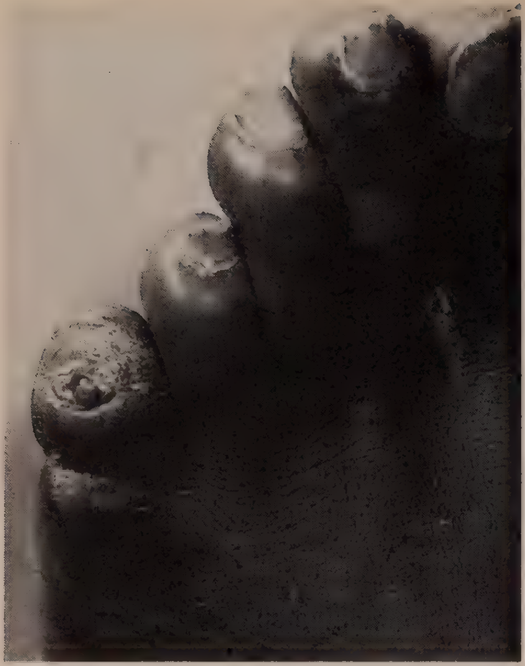

FIGURE 2. Close-up of encircling groove at digitoplantar fold of Case 1.

Clinical manifestations

Ainhum usually begins as a linear narrow groove at the digitoplantar fold of the fifth toe[27] with the fourth toe involved in a small number of cases.[28] Bilateral involvement is usual.[8,29-31] The groove gradually deepens and encircles the toe,[20] with the distal segment eventually attached to the proximal portions by a strand of soft tissue (Fig. 2).[32] This process, lasting on the average of five years, usually eventuates in the spontaneous amputation of the toe.[28]

Spinzig[5] and da Silva Lima[2] shared the view that pain is not present in the early stages of the disease. However, Cole[7] found pain to be present in 78 per cent of all toes examined. Tenderness and edema of the dorsum of the foot are also frequent manifestations of the disease.

Roentgenologic findings

There is a decrease in bone density with thinning of the cortex and narrowing of the diameter of the phalanges (Fig. 3). Resorption may occur in the distal half of the middle phalanx. Spontaneous amputation occurs most often through the proximal phalanx but also may occur through the proximal interphalangeal joint.[5,10,33]

Pathology

The epithelium shows hyperkeratosis and proliferations and the corium fibrosis. Blood vessels, sweat glands, and muscles become replaced by or changed into connective tissue. There is a continuous rarefying osteitis and fibrosis of the bone present.[20,34]

Diagnosis

Ainhum is a unique disease, and diagnosis is not difficult except when seen for the first time since no other condition has similar findings. There are no helpful laboratory studies. The x-ray appearance supports the diagnosis.

Treatment

The treatment of choice is amputation or disarticulation of the affected toe.[3,5,35,36] Z-plasty has been suggested as a possible alternative. In this procedure, the constriction is released.[6] However, the physician may often await spontaneous amputation if the symptoms are mild.

Case reports

Case 1. A fifty-six-year-old Negro male was admitted to the Syracuse Veterans Administration Hospital with the complaint of severe pain in the fifth toe of the left foot of one month duration.

The patient had lived in North Carolina on a farm until 1951 except for the period of time he spent with the army in Burma and India. While in the army, he was treated unsuccessfully for a fungal infection of both feet. After returning to the United States, he experienced burning on the plantar aspect of both feet, and in 1955 the fifth digit of the right foot became increasingly painful. A furrow appearing between the right fourth and fifth toes increased in size and began encircling the fifth toe. Following trauma to his right foot in 1960, the fifth toe was surgically amputated. In 1964 a furrow appeared

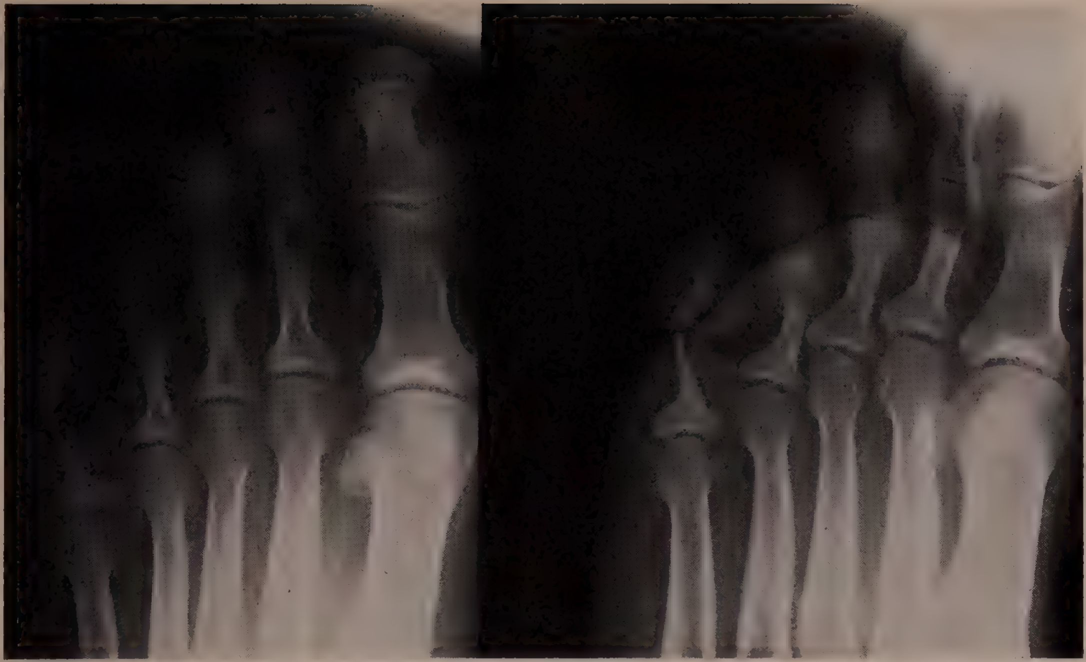

FIGURE 3. Roentgenogram of left foot of Case 1. Thinning of cortex and narrowing of phalanges noted in fifth toe.

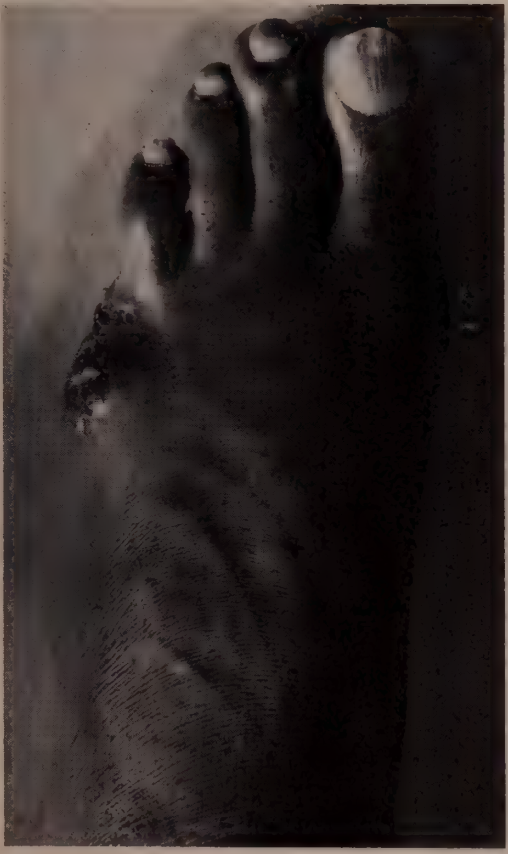

FIGURE 4. Left foot of Case 1 after surgical amputation performed.

on the dorsum of the left fifth toe and extended circumferentially around it. At the beginning of January, 1966, the pain increased with deepening of the encircling furrow, and he presented himself for medical treatment.

On March 3, 1966, amputation of the left fifth toe was carried out (Fig 4).

Case 2. A forty-two-year-old Negro male was admitted to the Van Duyn Home and Hospital for domiciliary care.

The patient was born in the South and had lived there until at least 1952. In 1947 his left fifth toe underwent spontaneous amputation after a progressively deepening fissure appeared on the toe. In 1951 the right fifth toe also spontaneously amputated itself under similar circumstances (Fig. 5).

Comment

Both these patients had lived for a long period in a subtropical climate. One man had fungal infections severe enough to warrant treatment. Environment undoubtedly plays a role in the course of this disease since all the cases reported in the literature have been exposed to tropical or subtropical climates.

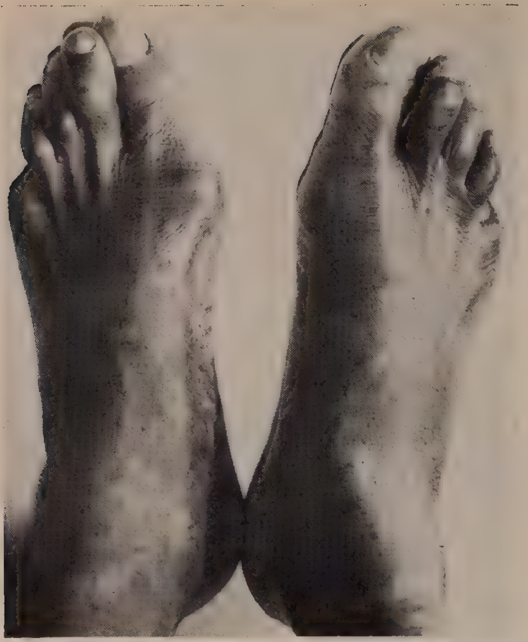

FIGURE 5. Fifth toes of Case 2 have undergone bilateral spontaneous amputation.

Summary

Two cases of ainhum from Syracuse, New York, have been described. The literature has been reviewed with particular emphasis placed on the etiology, diagnosis, and treatment of the disease.

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Medical Arts and Letters

Thomas Lovell Beddoes, M.D. (1803–1849)

"Death Keeps His Pale Court"

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LYTTON STRACHEY called him "The Last Elizabethan," an accurate sobriquet to describe his anachronistic style, a label Beddoes himself would have relished. His fame, such as it is, rests on two verse dramas, *The Brides' Tragedy* and *Death's Jest-Book, or The Fool's Tragedy*, the title of the first and the subtitle of the second both deliberately suggesting Cyril Tourneur's two plays, *The Atheist's Tragedie* and *The Revenger's Tragedie.* Yet Beddoes is closer in spirit to John Webster than to Tourneur, and T. S. Eliot has reminded us that

> Webster was much possessed by death
> And saw the skull beneath the skin.

Living and writing in the Romantic period, scoring his first and only literary triumph the year after Keats's death, Beddoes spent the remaining quarter century of his life much more than "half in love with easeful death" until he finally surrendered to its embrace. So profound was his obsession with death and dying and with the emblems of death and mortality that it requires no great stretching of the phrase to call this poet-turned-physician a morbid anatomist.

The standard anthologies do him scant justice. One scans a lyric poem or two; "Dream-Pedlary" is the recurrent short song. There is a brief mention of his dramas, a reference to a disturbed life, perhaps a passage from one of the plays, but no clear picture of the man. Beddoes burst on the literary scene with the publication of *The Brides' Tragedy* in 1822 while he was still an undergraduate at Oxford. His only previous publication was a volume of short narrative poems and some lyrics titled *The Improvisatore* which had appeared in a small edition the year before. Despite the réclame which hailed *The Brides' Tragedy*, he published almost nothing more. He began several verse dramas—*Torrismond, The Second Brother, The Last Man, Love's Arrow Poisoned*—but he completed none of them; he destroyed most of the unfinished manuscripts. In 1825 he began work on *Death's Jest-Book*, a labor which was to occupy him intermittently all the rest of his life, and he left England for Germany to study medicine. Alienated from the upper middle class society into which he was born and for which he was educated, Beddoes spent his adult life as an expatriate student, political rebel, and writer in Germany and Switzerland. When he died by suicide in 1849, he had already destroyed most of his work, and his family was reluctant to bring his name to further public notice. Had it not been for the devotion of his friend Thomas Kelsall, the completed text of *Death's Jest-Book* and the scattering of lyric and dramatic fragments would have been lost to us.

Early life

Like father, like son, so the old saw runs; and there is much about Thomas Lovell Beddoes to remind one of his father, Thomas Beddoes, M.D. (1760–1808). Beddoes pére, a brilliant lecturer, had resigned his readership in chemistry at Oxford in 1792 because of his outspoken sympathy with the French Revolution, a cause then as popular with the conservative dons as the Bolshevik Revolution was in 1917. He moved to Clifton to establish his Pneumatic Institute for treating respiratory diseases by inhalation. The apparatus was built by James Watt, and his young assistant was Humphrey Davy, who discovered the properties of nitrous oxide in 1799 while working there. The Beddoes home was a rallying point for such West Country intelligentsia as Josiah and Thomas Wedgwood, Coleridge, and Southey. Dr. Beddoes was later described by Davy as "reserved in manner and almost dry . . . nothing could be a stronger contrast to his apparent coldness in discussion than his wild and active imagination." It was the "wild and active imagination" coupled with the eccentricities attendant on carrying out his own idiosyncratic ideas to their next logical steps which proved to be the dominant trait in his son. Neither father nor son had anything but indifference to the reaction apparently perverse conduct might elicit in their fellows.

In 1794 Dr. Beddoes married Anna Edgeworth, the sister of Maria Edgeworth, the popular moralistic novelist, the daughter of Richard Lovell Edgeworth who was styled as an inventor and practical philospher. After his father's death in 1808 when he was less than six years old, young Thomas Lovell Beddoes with his mother and siblings spent much of their time at the large establishment of his maternal grandfather. Grandpapa Edgeworth had been married four times and had 20 children; the house was filled with uncles, aunts, and cousins. Young Beddoes was educated at the Bath Grammar School, then sent to Charterhouse in 1817 when he was fourteen years old. It was at Charterhouse that his wild imagination first began to have an impact on the world around him as well as on himself. He stayed at Charterhouse until 1820, long enough to win prizes in Latin and Greek, long enough to immerse himself thoroughly in the then unfashionable Elizabethan and Jacobean dramatists. The blood and thunder attracted him at first, but he soon absorbed the rhetoric of the speeches, the cadence of the lines, and the sense of imagery. As Strachey[1] that delight of the sophist's mentality puts it, "Perhaps his greatest misfortune was that he was born at the beginning of the nineteenth century, and not at the end of the sixteenth." While still a Carthusian he wrote *Scaroni, or The Mysterious Cave: A Romantic Fiction*. He also led his fellow students in satiric warfare against the pensioners; yet intuitively he must have realized that he was no *magister ludi* nor destined to be Master of the King's Revels. The games he played were far too real and his satire too mordant for anything but a private taste. Donner[2] tells us that "he was generally unpopular and yet exerted a strong influence over his fellows . . . his attitude toward his masters (was) one of humorous defiance . . . as a prefect he kept his house in irreproachable submission, and the masters readily forgave him breaches of discipline." Even more revealing is Donner's comment that Beddoes was "a rebel against discipline, but a tyrant himself . . . one of those liberals who demand freedom for themselves while wanting to restrict that of others." This is the stuff of which Robespierres and Trotskys are bred, but rarely British poets and doctors. Libertarian indeed were Byron and Shelley, but for others as well as themselves.

While still at Charterhouse Beddoes began writing the short narratives in verse and other lyrics which he published as *The Improvisatore* in 1821, the year after he went up to Pembroke College at Oxford, his father's college. The father too had tried his hand at poetry, such as *Alexander's Expedition down the Hydaspes and the Indus to the Indian Ocean* (1793) with appended notes much longer than the 562 lines of verse. However, *The Improvisatore* consisted chiefly of a collection of Gothic tales redolent of madness and sudden death, complete with skulls and bones and all the appurtenances of the charnel house. Later, Beddoes regretted his youthful attempt to shock his readers by such crude devices and tried to destroy every copy he could lay his hands on, even the finely bound copies in his friends' libraries; he would cut out the printed pages with a pocket knife, leaving only the binding, so that when next they looked, all they would find was the empty shell. At about this time he made friends with the Rev. Henry Card, M.A., F.R.S., F.A.S., and so on, a man about twenty years older than himself, who was then vicar of Great Malvern, a member of Pembroke College, a well-known antiquary, and the author of several learned historical and theological works as well as a comedy in five acts. Much of Beddoes' time during his first two years at Oxford was spent with Card at Great Malvern, and he seems to have paid little attention to his studies except insofar as they suited his literary ends of the moment. Large sections of *The Brides' Tragedy* were written at Great Malvern in 1821–1822, and the drama is dedicated to Card. Beddoes also planned to publish a volume of lyric poems titled *Outidana* but decided against it.

The succès d' estime which greeted *The Brides' Tragedy*, the only major work by Beddoes to be published during his lifetime, served to distract him even further from the relaxed Oxford curriculum of that time. From the end of November, 1822, when the verse drama was published, he spent only part of his time at Pembroke. He visited cousins at Cheney Longville; he took chambers in Devereux Court, London. He visited at Southampton with Thomas Kelsall, a new friend, to whom he had been introduced by Bryan Waller Procter (pseudonym, Barry Cornwall), then an important figure in literary circles. The year 1823 saw him at work on two more dramas, *The Last Man* and *Love's Arrow Poisoned*, both of which we know only from isolated fragments, a few dramatic speeches, and a few songs. In May, 1824, he began to take his examinations for the B.A. degree but was interrupted by news that his mother was dying at Florence. He hastened to Italy but was too late to find her alive. He lingered in Italy and became acquainted with Walter Savage Landor; he also met Mrs. Shelley and became, among other friends, a guarantor for the edition of the late poet's *Posthumous Poems*.

On returning to England with his sisters, he began work on *The Second Brother* and *Torrismond;* he visited Kelsall again, then oscillated between London and Clifton, published a few minor poems, and finally took his B.A. degree in May, 1825. He finally decided to end his aimlessness and embarked for Göttingen in July to study medicine. In retrospect he seems to have been a young man of talent but without fixed purpose. He had no need to make a living; his income was enough for his moderate personal needs, enough to permit him the luxury of pursuing desultory intellectual goals both literary and scientific. Possibly he felt that a career in medicine would give structure to his life; possibly he wished to emulate his father and achieve a comparable reputation in a scientific calling; possibly he wanted to escape from England, and the idealistic nature of medicine would preclude any questioning of his motives and require little justification. More likely all three motives were acting in combination, as well as others which still remain obscure.

Medicine

It was not difficult for Beddoes to adopt the intellectual position that a career in science could be combined with one in letters. His father's former assistant, now Sir Humphrey Davy, England's foremost physicist, had corrected the proofs of Wordsworth's Preface to the *Lyrical Ballads*, and Wordsworth's appeal on behalf of poetry had influenced his own ideas later expressed in a lecture at the Royal Institution in 1802. For Davy the study of physical and chemical sciences was not separable from esthetic satisfaction: "The study of nature must always be more or less connected with the love of the beautiful and the sublime. . . it is eminently calculated to gratify and keep alive the more powerful passions and ambitions of the soul." Davy did not agree with Coleridge that science was dead and spiritless; science "bestowed on (man) powers that may claim to be called creative." Davy's impassioned plea for science as equal in human values to poetry had its impact on Wordsworth's thinking. The 1800 edition of the Preface mentioned science only in a footnote; in the 1802 edition he wrote: "If the labours of Men of Science should ever create any material revolution, direct or indirect in our condition and in the impressions which we habitually receive, the poet will sleep then no more than at present, but he will be ready to follow the steps of the Man of Science. The remotest discoveries of the chemist, the botanist, the mineralogist will be as proper objects of the poet's art as any upon which it can be employed." Beddoes chose to apply his poetic gift to the scientific study of death and life after death.

Whatever Beddoes' motives were, conscious or unconscious, he gradually became the perpetual graduate student. He stayed at Göttingen from 1825 to 1829 studying anatomy and physiology under Blumenbach, chemistry under Stromeyer, and surgery under Langenbeck. Blumenbach in particular was one of the great science teachers of the period; Beddoes admired him greatly, and the elderly professor thought highly of his student's ability in science. For the first time in his life Beddoes applied himself to his studies in an organized, purposeful fashion, and for awhile his record was extraordinarily good. His only peregrination during the four years was a quick trip to England in the spring of 1828 to receive his M.A. degree at Oxford. Even before leaving for Göttingen he had mentally formulated the idea for *Death's Jest-Book*, and the composition of this verse drama was his principal avocation; when not engaged at his studies, he spent endless hours writing and rewriting, sending fragments to Kelsall in letters, destroying some of his drafts, then revising sections, elaborating scenes, and so forth. By the spring of 1829 he had completed a draft which he sent off to his friends in England: Barry Cornwall, the poet and critic, John Bourne, a gifted writer of prose and verse, and of course to Thomas Kelsall. Each of them separately pointed out flaws; in one fashion or another they pointed out weaknesses in structure, deficiencies in characterization, and so on. Their letters, although well meant, succeeded in crushing Beddoes; probably none of his friends recognized how central the theme was to his psyche. His failure to impress even his close friends brought on an agitated depression. He began to drink heavily and presumably created a number of minor disturbances which did not come to official notice. However, in August, 1829, he was arrested for being "drunk and disorderly"; although let off with only a reprimand by the civil authorities, the University Court "gated" him. Gottingen was in Hanover, and the King of England was also the King of Hanover; it was plain that Beddoes had "blotted his copybook" and badly so.

From Göttingen Beddoes moved to Würzburg in Bavaria and matriculated at the university there. He managed to stay at Würzburg from 1829 to 1832. There he met and became a student of the redoubtable Schonlein, remembered eponymically for his description of rheumatic purpura, forming a friendship which lasted through political disturbances and years of exile. Partly because of Schönlein's interests, partly because his political imagination had been fired by Benjamin Bernard Reich, an intense Jewish fellow student at Göttingen, and partly true to his father's espousal of revolutionary causes, Beddoes soon became embroiled in the "liberal" cause embodied by the Germania Burschenschaft and the Freie Reichstadt, the Social Democrats of a century ago. He even wrote articles in the *Volksblatt.* In the domain of the Wittelsbachs, liberalism was tantamount to sedition, and Beddoes was ordered deported in July, 1832, just after his M.D. degree had been awarded but before it could be officially conferred. Harassed by the police, he was even subjected to the indignity of being imprisoned for debt before he could escape to Strassburg. From there he went to Zürich where he joined Schönlein who had also been exiled. He proposed translating Schönlein's *Diseases of Europeans* into English and Grainger's *Spinal Cord* into German; nothing came of it. Schönlein recommended him for the chair of anatomy at Zürich; he was not elected. Using Zürich as a base, he began a series of discontinuous wanderings; Beddoes became a fugitive from life and finally from himself. He continued to revise *Death's Jest-Book.*

Later years

The last fifteen years witnessed slow deterioration; a few hazy plans were made but soon abandoned. In 1837 he projected a book of poems to be titled *The Ivory Gate* and to include *Death's Jest-Book;* it never materialized. In 1839 he had an altercation with the local literary society; he also had trouble with the police about his residence permit. Later that year a body of insurgent peasants stormed Zürich, deposed the liberal government, and murdered the minister, Hegetschweiber, who was one of his close friends. By the spring of 1840 Zürich was no longer safe for him, and he fled to Berlin. At the end of the year he visited England and was invited to lecture on the drama at the Polytechnic Institution in Regent Street; the audience was embar-

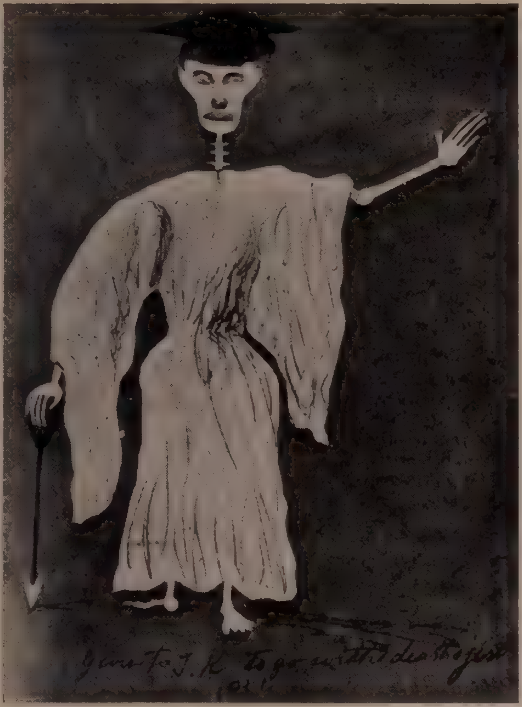

FIGURE 1. Beddoes in 1847, a drawing by Thomas Moultrie Kelsall, aged ten years.

rassingly small. Strachey sums up these years: ". . . we catch glimpses of him, flitting mysteriously over Germany and Switzerland, at Berlin, at Baden, at Giessen (Strachey might have added at Strassburg, at Mannheim, at Frankfort, and so forth)—a strange solitary figure, with tangled hair and meerschaum pipe, scribbling lampoons upon the King of Prussia, . . . evolving now and then some ghostly lyric or some Rabelaisian tale, or brooding over the scenes of his 'Gothic-styled tragedy,' wondering if it were worthless or inspired, and giving it—as had been his wont for the past twenty years—just one more touch." He was a prototype for the "beat generation."

In 1846–1847 Beddoes made an extended trip to England, his last. He visited his cousins at Cheney Longville, the Procters in London, and Kelsall, now a solicitor at Fareham (Fig. 1). Eccentric behavior alternated with prolonged fits of depression. One evening he tried to burn down the Drury Lane Theatre with a lighted five-pound note, a bitter comment on the state of the London stage. When depressed, he would stay shut up in his room for days on end, eating little, complaining of neuralgia, smoking furiously. It was apparent to his friends that he was at the end of his tether.

On returning to the Continent he went to Frankfort where he lived for several months with a young baker named Degen (the name is translated as dagger, or dirk; its symbolic valence is evident), who is described as "a nice-looking young man, nineteen years of age, dressed in a blue blouse, fine in expression, and of a natural dignity of manner." Beddoes and Degen went on many walking trips together. Degen had aspirations for a career as an actor and did in later years succeed in becoming a popular one in minor roles at Frankfort. For a while Beddoes' depression lifted; his drinking decreased. But late in the summer of 1848 at Basel, they quarreled and parted company. Beddoes fell into a deep depression; he finally slashed his leg with a razor, severing the femoral artery. He did not bleed to death but was taken to the hospital. Gangrene finally set in; there is some question whether it was due to simple ischemia as the result of the severed artery or whether Beddoes had deliberately aggravated his condition by tearing off his bandages. However, the leg had to be amputated. Beddoes contrived a feeble story about a compound fracture which he wrote to his sister saying that it had been the result of a fall while horseback riding and telling her it was unnecessary for her to come to his bedside. By this time Degen had returned and was in daily attendance. Beddoes seemed to be recovering and was in relatively good spirits. An apparent upswing following a suicide attempt while depressed can be deceptive; like many other depressive persons who seem "in better spirits" to their friends, relatives, or doctors, Beddoes managed to procure some poison and committed suicide in January, 1849. He concluded a quarter century of failure by putting into action Pope's unhappy wish "To rid me of that long Disease, my Life."

Apposite to the tenor of his life, there were a few final macabre touches. His final note read "I am food for what I am good for—worms . . . I ought to have been among other things a good poet . . . Life was too great a bore on one peg & that a bad one . . . Buy for Dr. Ecklin one of Reade's best stomach-pumps." He left a case of champagne (Moet, 1847) to his nephew to drink his health in, and he left his manuscripts to Kelsall. Dr. Ecklin filled out the death certificate; he gave the cause of death as apoplexy.

Literary executor(s)

Kelsall proved to be a loyal friend and a competent literary executor. Among Beddoes' confused manuscripts were three distinct drafts of *Death's Jest-Book;* from them Kelsall pieced together a first edition of the drama which appeared in 1850. The following year he brought out in two volumes a sizable selection of the poetical works which he prefaced with a memoir of his friend. Much of the material in Kelsall's possession could not be published at the time without wounding surviving members of Beddoes' family who were sensitive on many points, notably the question of suicide. At Kelsall's death in 1873, Beddoes' literary remains were bequeathed to Robert Browning who had expressed considerable interest in the poems. There was probably a tacit understanding between Kelsall and Browning that the latter would wait until the last of Beddoes' immediate family had died before proceeding further. When the last of Beddoes' first cousins died in 1881, Browning invited Edmund Gosse, then a rising young litterateur, to examine the material. Neither of them seems to have been in a tearing rush; possibly they were afraid of what they might find. Finally, in 1883 they opened the tin box containing the manuscripts, notes, and letters. Gosse has left conflicting and self-contradictory reports of precisely what took place on that historic occasion. But in 1890 he did bring out a new edition of Beddoes' works based on Kelsall's text, adding ten poems and one dramatic fragment from the box; he followed this with a volume of letters in 1894. A few years later Gosse also wrote the biographical entry on Beddoes for the *Dictionary of National Biography*. Thus, with a minimum expenditure of effort Gosse became the chief authority on Beddoes.

When Robert Browning died in 1889, the "Browning Box" passed into the possession of his son who removed it along with the rest of his father's large library and other papers to his villa at Asolo. When Pen Browning died suddenly in 1912, the box disappeared; it was inferred that his servants had destroyed it because it contained no material of value. Accordingly, from 1912 to about 1935 the literary world believed that the Beddoes file was complete, at least as complete as it could be.

However, once the box had been opened and its contents made available to Gosse, Browning felt that any other interested person might now have access to it. In 1886 he loaned the box and its contents to James Dykes Campbell, a business man whose avocation was literary studies. Dykes Campbell methodically transcribed every item of importance in the box, a task which took several months; he was meticulous about manuscript corrections, variant readings, even noting the seals and postmarks on letters. These transcripts were among Dykes Campbell's effects at his death in 1895; in 1904 they were sold at auction at Sotheby's. The transcripts were not considered important at the time, as Pen Browning still had the originals which would be available for study in a few years. By the time the loss of the "Browning Box" became known, Dykes Campbell's transcripts were forgotten. They were brought to light in 1935 by Donner [2–4] who, noticing the listing in an old Sotheby catalogue, traced the purchaser and was given free access to the material. From this corpus Donner wrote a full-length biography,[2] edited a complete edition of poems and plays complete with variant texts,[3] and a large volume of letters.[4] It was immediately apparent that Gosse had merely riffled through the manuscripts and taken a few choice items for publication, the poems which were obviously complete, easy to handle, and marketable. No important literary or biographical material has come to light since Donner's thorough, scholarly treatment. The canon has been "complete" for a generation and seems likely to continue so

Death's Jest-Book, or the Fool's Tragedy

It is an oversimplification to view Beddoes merely as an Elizabethan mind and pen misplaced in time. His early poems and plays were merely preludes to his adoption of the most Romantic posture of all: He set himself an impossible task, a goal foredoomed to failure, and he ultimately failed and destroyed himself. Much like William Dunbar (1465–1520) who wrote "*Timor mortis conturbat me*," Beddoes had deep-seated anxieties about death. To what extent his father's early death, when the poet was barely six years old, may have contributed to them is speculative, but the hypothesis is not so far-fetched that it can be dismissed; it was a significant trauma. Beddoes' youthful fascination with the emblems of death and mortality can be interpreted in part as an unconscious maneuver to neutralize these fears, even to the extent of "acting them out" in schoolboy dramas. Later, more consciously, he sought to fortify himself with knowledge as an amulet against death; his implicit maxim can be taken from Kyd:

> What are tragedies, but acts of death?

One of Beddoes' motives in embarking on the study of medicine was to unravel the mystery of life and death, to rid death of its horror. We find him writing in 1827 to Kelsall from Göttingen:

> I am now already so thoroughly penetrated with the conviction of the absurdity & unsatisfactory nature of human life that I search with avidity for every shadow of proof or probability of an after-existence, both in the material & immaterial nature of man. Those people, perhaps they are few, are greatly to be envied who believe, honestly and from conviction, in the Christian doctrines: but really in the New Testament it is difficult to scrape together hints for a doctrine of immortality. . .Nature appears to have appointed one solution—Death. . .(he) who is of a callous phlegmatic constitution may never find the dreadful importance of the doubt. I am haunted forever by it. . .

Beddoes was too perceptive and came from too free-thinking a background to accept the ready-made solutions of theology, the consolations of religion, or to delve into the inanities of spiritualism. He wanted to apply reason and science to solving the problem of life and death. Even earlier he had written a verse letter to Procter embodying much the same sentiment:

> But he who fills the cups and makes the jest,
> Pipes to the dancers, is the fool of the feast.
> Who's he? I've dug him up and decked him trim
> And made a mock, a fool, a slave of him
> Who was the planet's tyrant: dotard Death:
> Man's hate and dread: not with a stoical breath
> To meet him like Augustus standing up,
> Nor with grave saws to season the cold cup
> Like the philosopher, nor yet to hail
> His coming with a verse or jesting tale,
> As Adrian did and More: but of his night,
> His moony ghostliness and silent might
> To rob him, to uncypress him i' the light
> To unmask all his secrets; make him play
> Momus o'er wine by torchlight is the way
> To conquer him and kill; and from the day
> Spurned, hissed, and hooted send him back again
> As an unmasked braggart to his bankrupt den.
> For death is more 'a jest' than life: you see
> Contempt grows quick from familiarity.
> I owe this wisdom to Anatomy.

As Beddoes continued working on *Death's Jest-Book* in Göttingen, the play had become inseparably allied to his studies. But his solution to the problem of death lay in science. Unable to find such a solution, his rationalism failed him. The neatly jointed and mechanical world of anatomy which his scientific mind constructed failed to satisfy his romantic, questing spirit. As a scientist he wanted substantive proof of that for which there is only spiritual proof. Unable to resolve this conflict within himself, he was unable to weld the dramatic elements into a coherent whole. Half a century later Robert Browning was to point unerringly at the distance which separated Beddoes' intentions from his results: "He was to despoil Death of his horrors . . . he does exactly the reverse." Here we see the same fatal flaw in Beddoes as in his father: pursuit of an independent line of thought to its logical conclusion, indifference to the sort of response it could be reasonably expected to elicit in his fellows. Beddoes had an unerring instinct for the grand failure. He might have been much better off had he adopted Dunbar's maxim for himself:

> Since for the Death remeid is none,
> Best is that we for Death dispone,
> After our death that live may we:—
> Timor Mortis conturbat me.

Yet as he continued to write and revise, his literary powers increased. The substance of his thought was fused with his style; the meter and rhythm of Elizabethan and Jacobean drama were not his natural locution. Incandescent language and daring metaphors brought the dance of death to dramatic reality. He recaptured the tension of the antique drama of revenge and horror. Many speeches and passages are tours de force of art, yet *Death's Jest-Book* is a mad play because of the despairing mind behind it. Strachey said of *The Brides' Tragedy* that Beddoes had reached the threshold of poetry and was knocking at the door, waiting for the breath of inspiration. In *Death's Jest-Book* he found his inspiration in the contemplation of death. Typical of his Elizabethan poetic height is Wolfram's dying speech in Act I:

> For me, Sibylla,
> I may be lonely in the grave without thee,
> For I must die too soon. I have oft thought
> (Thou art so beautiful above all women,)
> I might be you; but then 'twas happier still
> To be another and admire and love thee.
> Now, I must die alone, see thee no more.
> Yet, can man die? Ay, as the sun doth set:
> The earth it is that falls away from day;
> Fixed in the heavens, although unseen by us,
> The immortal life and light remains
> triumphant.

He had mastered the art of using a simple vocabulary to express a complex idea and emotion; the drama inherent in the speech is heightened by the admixture of short and long phrases, the deliberately irregular position of the caesura, and the resounding roll of the last line of the declamation.

The plot of *Death's Jest-Book* would do credit to Webster or Marston. Although based on an historical incident in which the Duke of Münsterberg had some centuries previously been stabbed to death by his court fool, Beddoes' play retains but little except a few names and the locale. Prior to the beginning of dramatic action, Wolfram and Isbrand, sons of the deposed Duke of Münsterberg, have sworn to revenge their father. They have entered the service of the usurper, Duke Melveric, whose outwardly noble manner has won over Wolfram. Together, Wolfram and the Duke have been taken prisoner in the Crusades; Wolfram escapes, returns home, and as the drama begins is organizing a naval expedition at Ancona to rescue the Duke. Isbrand stays at Grüssau to plot revenge alone.

As events develop, the Duke soon falls in love with Wolfram's betrothed and manages to slay Wolfram. He returns to Grüssau to find his two sons leading a rebellion against him, spurred on by Isbrand. Yearning for domestic happiness, the Duke induces a wise Arab named Ziba to resurrect the body of his long-dead wife. Isbrand substitutes Wolfram's corpse for the body of the Duchess, and the revenge begins: The Duke's sons are in love with the same woman; one kills the other, then commits suicide before his father's eyes. The Duke is overthrown as Isbrand is established as ruler, but he is murdered by his fellow rebels at the moment of victory. The two women whose beauty has been the cause for so much grief die to be united with their lovers in death. Finally, Wolfram's ghost drags the Duke alive into the tomb, much as the statue does to Don Giovanni.

There is even a comic subplot involving Mandrake and Titmouse; Mandrake, a wise fool, prepares a salve which renders men invisible. On his way back from Egypt where he has gone in quest of wisdom, the pot of balsam falls on his head and kills him. Now dead and invisible, Mandrake is taken for a ghost until a sound cudgelling brings him to his senses and restores him to life. Mandrake is buried instead of Wolfram at Ancona and rises before him at Grüssau. Isbrand is the connecting link between the two plots.

Isbrand serves Beddoes as a man of reason, a counterfoil to the irrational ambience of the dramatic setting. Wagner[5] insists that Isbrand "is not . . . a simple misanthrope, nor the stylized buffoon-tragedian, smiling through his tears like Rigoletto or Canio . . . Isbrand is clearly the dramatist's communication with his audience, the rational man, whose reason, here, is humor . . . Humor is sanity . . . The first thing we notice in a mental home (and to some extent in modern psychiatric practice) is the absence of a sense of humor." And Beddoes' humor, triumphant through the character of Isbrand, was his chief defense. In *Death's Jest-Book* Beddoes assumes the role of satirist as a self-preserving device.

It is sometimes difficult to be certain whom Beddoes has set to be the Fool: after Mandrake has left the plot, Isbrand, victorious in revenge, serves as the vehicle through whom Beddoes shows how man is duped by the world's deceits. As Isbrand lies dying, stabbed by his henchman, Wolfram's ghost sets a fool's cap on his head, saying

> Meantime Death sends you back this cap of
> office.
> At his court you're elected to the post.

To which Isbrand replies in his dying speech:

> I jest and sing, and yet alas! am he,
> Who in a wicked masque would play the
> Devil;
> But jealous Lucifer himself appeared,
> And bore him—whither? I shall know
> tomorrow,
> For now Death makes indeed a fool of me.
> (Dies.)

One finds a similar attitude in a fragment from *The Last Man;* the idea is more fully expanded and the rhetoric characteristic of Beddoes in full Elizabethan fancy:

> By heaven and hell, and all the fools between
> them,
> I will not die, nor sleep, nor wink my eyes,
> But think myself into a God; old Death
> Shall dream he has slain me, and I'll creep
> behind him,
> Thrust off the bony tyrant from his throne
> And beat him into dust. Or I will burst
> Damnation's iron egg, my tomb, and come
> Half damned, ere they make lightning of my
> soul,
> And creep into thy carcase as thou sleepest
> Between two crimson fevers. I'll dethrone
> The empty skeleton, and be thy death,
> A death of grinding madness.—Fear me now:
> I am a devil, not a human soul. . .

Despite his preoccupation with death and its dramatic irony, Beddoes could have a light touch with the macabre. Like many of the better Elizabethans he enjoyed verbal play for its own sake. The scene in Act I between Mandrake and Titmouse is typical of this style, and the song which follows has a singularly modern ring:

> Mandrake: The roots, the toadstools. That's right, and the herbs. Now, where be the bones and the minerals?
>
> Titmouse: In the other basket. Art thou in good faith, a witch?
>
> Mandrake: A poor amateur. 'Tis my hobby. A philtre, a nativity, the raising of a paltry devil or so. I do no more. Mere retail conjuring.
>
> Titmouse: But what dish will thy black art stew of these simples?
>
> Mandrake: With a pound of crocodile's fat we will concoct a salve, an ointment. Thou hast heard of being invisible.
>
> Titmouse: Ay, and now shall I see it? Oh, lend me thy spectacles.
>
> Mandrake: This is the secret: it shall be had in bottles, and to prevent imposition all sealed with the ring of Gyges.
>
> Titmouse: How shall I believe such things?
>
> Mandrake: How you can: but believe, or thou shalt be made an example of, like St. Gingulph's relic. List to her legend and tremble, youth, for 'tis exceeding true, and by St. Cecilia, most musically melancholy.
> (Sings.)

> Whoever has heard of St. Gingo
> Must know that the gipsy
> He married was tipsy
> Every day of her life with old Stingo.
>
> And after the death of St. Gingo
> The wonders he did do
> Th' incredulous widow
> Denied with unladylike lingo.
>
> "For St. Gingo a fig's and a feather-end!
> He no more can work wonder
> Than a clyster-pipe thunder
> Or I sing a psalm with my nether-end."
>
> As she said it, her breakfast beginning on
> A tankard of home-brewed inviting ale,
> Lo! the part she was sitting and sinning on
> Struck the old hundredth up like a
> nightingale.

Droll buffoonery indeed, and doubtless Beddoes' account of the widow of St. Gingulph has its literary descendants, for example, in Norman Douglas's report of a lady from Sparta. But Mandrake is no mere buffoon; he is an integral part of the dramatic structure. One of the pivotal scenes in Act III, the confrontation of the Duke by Isbrand followed by the resurrection of the Duke's widow, is introduced by another one of Mandrake's flights of fancy. It is more revealing of Beddoes' attitude than the fustian rhetoric which follows. The setting consists of "The ruins of a spacious Gothic Cathedral and churchyard. On the cloister wall the Dance of Death painted. The sepulchre of the Dukes with massy carved folding doors, &c., by moonlight." Enter Mandrake:

> After all being dead's not so uncomfortable when one's got into the knack of it. There's nothing to do, no taxes to pay, nor any quarrelling about the score for ale. And yet I begin shrewdly to suspect that death's all a take-in: as soon as gentlemen have gained some 70 years of experience they begin to be weary of the common drudgery of the world, lay themselves down, hold their breath, close their eyes and are announced as having entered into the fictitious condition

> by means of epitaphs and effigies. But, good living people, don't you be deceived any more: It is only a cunning invention to avoid paying poor's rates and the reviewers. They all live jollily underground and sneak about a little in the night air to hear the news and laugh at their poor innocent great-grandchildren, who take them for goblins, and tremble for fear of death, which is at best only a ridiculous game at hide-and-seek. That is my conviction, and I am quite impartial being in the secret, but I will only keep away from the living till I have met with a few of these gentle would-be dead, who are shy enough, and am become initiated into their secrets, and then I will write to the newspapers, turn King's evidence and discover the whole import and secret, become more renowned than Columbus, though sure to be opposed by the doctors and undertakers whose invention the whole most extravagant idea seems to be.—Ah, some living folks.—Well, I must keep up the joke a little longer, and keep away from them: here are good quarters for the like of me, there I'll sleep tonight. (Goes into the sepulchre.)

These were the defenses Beddoes constructed in the 1820's, much in the vein of "Death, thou shalt die!" but lacking the measured gravity of his metaphysical predecessors. The defenses were not durable, and they finally crumbled. They even gave way as *Death's Jest-Book* was being written. The study of anatomy equipped Beddoes with the knowledge and insight to resolve his skeleton complex but not to resolve the conflicting ideas of his drama. His later interpolations in the text are at variance with the premises on which he began to write. The frequently quoted song, "Dream-Pedlary," which he inserted into the action contains the verse which denies the validity of his position:

> If there are ghosts to raise,
> What shall I call,
> Out of hell's murky haze,
> Heaven's blue pall?
> —Raise my loved long-lost boy
> To lead me to his joy.—
> There are no ghosts to raise;
> Out of death lead no ways;
> Vain is the call.

Earlier in his career Beddoes had railed at the world's follies and deceits. Now, slowly, he had come to recognize that he had been deceived by his own folly. His verbal conceits had laid one set of ghosts, the ghosts of physical and corporeal death. He had satisfied himself that there was no immortality. The rest was trivia.

Keats may have been "half in love with easeful death," but Beddoes was fully in love with it. Even as early as *The Brides' Tragedy*, we find the hero ending his amatory declamation with

> We're nearer to our bridal sheets of lead
> By twenty minutes talk.

For Beddoes, perfect union between the sexes could not be found on this earth but in the grave beneath. The same theme is repeated against a background of homosexual conflict in the *Improvisatore;* death was not only a release from conflict but an act of pleasure. According to Wagner[5] "the grave becomes a bridal bed: the language of flowers, the vocabulary of the courtly love convention, is fused with a death which is life. . . The body is the tomb, the grave of the flesh. We only live when we die." The dirge from Beddoes's "Outidana" contains the lines:

> And life is a death,/Where the body's the tomb?

which echo a similar idea in Donne's "The Anniversary":

> When bodies to their graves, souls from their graves remove. . .

or in Donne's "The Exstasie":

> So soul into the soul may flow/Though it to body first repair.

"Beddoes speaks of death in the language of a love affair. . . It is treated with the heavy physical sensuousness of passionate sexual love." His suicide was not only the final acting out of his transient affair with life but his consummation of his love for death, a sexual fulfillment that can only be completed once. A similar note is sounded by Georg Büchner in *Dantons Tod* (1834). Just after the drama begins, Danton speaks of "O you precious grave, your lips are passing bells, your voice their knell, your breasts my burial mound and your heart my coffin." Büchner, also an anatomist, like Beddoes was involved with political movements aiming at reform and revolution; the forerunner of the theater of the non-hero and the alienated man found common ground with the last Elizabethan and Gothic Grand Guignol in a physical love of death.

Conclusion

Beddoes' life was a greater tragedy than the ones he wrote. Yet the cause of his failure remains in large measure unknown, possibly unknowable. There are far too many unanswered questions about his life to permit any position to be other than tentative. For example, we do not know why he chose to study medicine in Göttingen rather than in London or one of the Scottish universities, all of which were open to him as a B.A. of Oxford. We can surmise that his reluctance to return to England after his troubles in Göttingen and Würzburg was a case of not wishing to return as a failure; but if so, why the extended visit in 1846–1847? It is easy enough to classify his mental disturbance as a partly compensated depressive psychosis, but this is purely a descriptive statement and affords no insight as to its causes. By the same token, there is no objective account for his preoccupation with death and resurrection or the idea of a life after death. There are hints in Donner's[2] biography that all too frequently he drank more than was good for him; Donner speaks of "Lord Alcohol," and Beddoes wrote a short poem with that title. Did he try to escape from his unresolvable conflict by drinking?

His relationship with Degen remains doubtful: Was it overtly homosexual? Could Beddoes have been a frustrated latent homosexual who only gave way to his inclination in his fifth decade? Or, was sexual inversion the reason why he chose to live permanently abroad? A predilection for homosexuality exists in the sons of fathers who are stern, obsessional, and coldly remote, often occupying respected and prominent positions of public trust and authority, too exalted and aloof to permit their sons to identify with them or to approximate their eminence. Although Beddoes' father died before the boy was six, his character fitted that description. The lack of a father-image in the prepubertal years may also serve as a background for homosexual orientation. To place a sensitive, imaginative boy like Beddoes in a boys' public school at the onset of puberty intensifies the risk.

Regarding this question, there is one point which requires clarification. Strachey states (with a hint of malice) that on one occasion Beddoes rented an entire theater and its troupe so that Degen could play Hotspur in *Henry IV*. However, Donner has produced accurate evidence that this episode took place in Zürich in 1838, several years before Beddoes had met Degen, and that Beddoes played the role of Hotspur himself. To what extent Beddoes identified himself with Hotspur is not certain, but if we recall Hotspur's dying speech:

> But thought's the slave of life, and life time's fool;
> And time, that takes survey of all the world,
> Must have a stop. O, I could prophesy,
> But that the earthy and cold hand of death
> Lies on my tongue: —no, Percy, thou art dust,
> And food for— (Dies.)

After which Prince Henry completes the dying phrase:

> For worms, brave Percy: fare thee well, great heart!

Isbrand's dying speech echoes Hotspur's, and Beddoes' last scrawled message reminds us that he was "food for worms." Can we construct an image of Beddoes as a Hotspur, even a Hotspur manqué? More to the point, was this his image of himself? The truth about Beddoes remains a riddle wrapped in an enigma. If indeed he was "The Last Elizabethan," he was the first Romantic Elizabethan, a combination of elements which proved disastrous.

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Letters to the Editor

Contemporary European psychiatry

To the Editor: Psychiatry is the only medical specialty in which differences between countries warrant discussion. Are these differences real? Aside from advances in such areas as management of the hospitalized patients and the new discoveries in drug therapy, psychiatrists in Europe are also concerned with developing a new psychologic basis for their work.[1-10]

In most European countries, somatic, constitutional, and genetic factors are considered important. Psychopathology is studied; however, it is without an attempt to explain the psychodynamics. However, it is unjustified to deny the psychodynamic interests in German psychiatrists. Psychoanalysis originated in Vienna, and it is well known to psychiatrists there, although it has never been an accepted part of psychiatric teaching at the universities. While interest in psychoanalysis has lessened in Europe, the new movement of existential analysis actually developed from the efforts of men who had originally been followers of psychoanalysis. Occasionally, there is some difficulty in finding English terms analogous to the German terms used in literature.

The philosophic concept of existentialism has a sharp influence on German and Austrian psychiatry. Biswanger, Boss, and Minkowski were greatly influenced by Jasper's phenomenology, the concept of process and existential analysis.

In France, Henry Ey applied Jackson's neurophysiologic ideas of stratification of mental function to an explanation of the psychoses. He calls his theory of mental symptoms a release of lower level functions and one of interference with higher levels of functioning, an "organodynamic" one in contrast to psychodynamic theories.

Britain has made enormous progress during the last twenty-five years in treating and managing patients even without existential psychiatry.

In the Scandinavian countries, epidemiology and genetics are the main areas of scientific interest (Stromgren, Juel-Nielsen, Forsmann, Langfeldt). In most of these countries, psychiatry is centered around state hospitals and university clinics.

In the Netherlands, all psychiatric services are conducted by a mental health center whose main organizer is Querido.

The Soviet psychiatrist's outlook is Pavlovian and social remotivation, the Marxist therapy. The psychiatric services are centered around ambulatory facilities (polyclinics and dispensaries), and there is no break in contact with the family. Most psychiatric hospitals are directed toward rapid short-term treatment, thus permitting a large annual turnover of patients. Only a minority of psychiatrists in Czechoslovakia have allied themselves with Pavlovian reflexology.

The actual treatment of patients, however, differs very little from one country to another.

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10. *Idem:* Newer concepts in geriatric psychiatry, in Proceedings of the 7th International Congress of Gerontology, Vienna, Austria, June 26, 1966.

Necrology

Lyman Guy Barton, Jr., M.D., of Plattsburgh, died on January 6 at the age of eighty-one. Dr. Barton graduated in 1912 from Harvard University Medical School. He was an honorary staff surgeon at Champlain Valley Hospital and an honorary physician at Physicians Hospital. Dr. Barton was a Fellow of the American College of Surgeons and a member of the American Association for the Surgery of Trauma, the Clinton County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

La Verne Adelbert Bouton, M.D., of Amsterdam, died on December 6, 1967, at the age of eighty. Dr. Bouton, who graduated in 1911 from Albany Medical College, was an honorary physician at St. Mary's Hospital and an honorary member of the medical staff at Amsterdam Memorial Hospital. Dr. Bouton was a member of the Montgomery County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William Burgess Cornell, M.D., of Albany, died on April 6 at the age of ninety-one. Dr. Cornell graduated in 1903 from Johns Hopkins University School of Medicine. He was a member of the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ellis Hewitt Edwards, M.D., of White Plains, died on April 22 at the age of seventy-seven. Dr. Edwards graduated in 1923 from Rush Medical College. He was an honorary obstetrician at St. Agnes Hospital. Dr. Edwards was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Obstetricians and Gynecologists, and a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph Gyurik, M.D., of Roslyn Heights, died on April 19 at the age of fifty-nine. Dr. Gyurik received his medical degree from the University of Budapest in 1933. He was a member of the American Society of Anesthesiologists, Inc., the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herbert H. Hall, M.D., of New York City, died on April 29 at the age of fifty-three. Dr. Hall received his medical degree from the University of Prague in 1938. He was an associate attending obstetrician and gynecologist at Bird S. Coler Memorial Hospital and Home, Memorial Hospital for Cancer and Allied Diseases, and Metropolitan Hospital, and an assistant attending obstetrician and gynecologist at Flower and Fifth Avenue Hospitals. Dr. Hall was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Surgeons, and a member of the New York Country Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ludwig Christian Kalnin, M.D., of Staten Island, died on March 24 at the age of eighty-two. Dr. Kalnin received his medical degree from the University of Dorpat-Yourieff in 1914. He was a Fellow of the American College of Chest Physicians and a member of the Richmond County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Stanislaus Keenan, M.D., of Slingerlands, died on March 25 at the age of sixty-two. Dr. Keenan graduated in 1933 from Georgetown University School of Medicine. He was an assistant attending physician at St. Peter's Hospital, a clinical assistant attending physician at Albany Medical Center Hospital, and an assistant attending physician at Albany Medical Center Hospital Outpatient Department. Dr. Keenan was a member of the American Geriatrics Society, the American Thoracic Society, the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John MacDonald Mallory, M.D., of Endicott, died on April 15 at the age of fifty-nine. Dr. Mallory graduated in 1934 from Syracuse University College of Medicine. He was an attending physician and an attending anesthesiologist at Ideal Hospital of Endicott and since 1945 the Union-Endicott Central School District physician. Dr. Mallory was a member of the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Paul Matlin, M.D., of Whitestone, died on March 31 at the age of fifty-eight. Dr. Matlin received his medical degree from the University of Zurich in 1935. He was a Fellow of the International College of Surgeons and a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Irving Mayer, M.D., of Jamaica, died on April 21 at the age of sixty-two. Dr. Mayer graduated in 1932 from the University of Louisville School of Medicine. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Charles Henry McElwee, M.D., of Binghamton, died on April 16 at the age of fifty-two. Dr. McElwee graduated in 1942 from Temple University School of Medicine. He was an attending physician at Binghamton General Hospital. Dr. McElwee was a member of the Binghamton Academy of Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Milton McLean, M.D., of New York City, died on May 2 at the age of fifty-eight. Dr. McLean graduated in 1934 from Cornell University Medical College. He was surgeon-in-charge of ophthalmology at The New York Hospital, professor of surgery (ophthalmology) at Cornell University Medical College, and a consulting ophthalmologic surgeon at New York Eye and Ear Infirmary, Memorial Hospital for Cancer and Allied Diseases, U.S. Naval Hospital (St. Albans), and Phelps Memorial Hospital Association (North Tarrytown). Dr. McLean was a Diplomate of the American Board of Ophthalmology, a Fellow of the American College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology, the American Ophthalmological Society, the Pan American Association of Ophthalmology, the New York Academy of Medicine, the New York Ophthalmology Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Lester Solano Mullin, M.D., retired, of Brooklyn, died on February 19 at the age of seventy-seven. Dr. Mullin graduated in 1914 from Long Island College Hospital. He was a consulting pediatrician at Kings County Hospital Center. Dr. Mullin was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Israel O. Palefski, M.D., of New York City, died on April 30 at the age of eighty-three. Dr. Palefski graduated in 1910 from Long Island College Hospital. He was a member of the New York Academy of Medicine.

Robert Sorkine, M.D., of New York City, died on March 31 at the age of fifty-two. Dr. Sorkine in 1950 was made a Licentiate of the Royal College of Surgeons of Edinburgh, a Licentiate of the Royal College of Physicians of Edinburgh, and a Licentiate of the Royal Faculty of Physicians and Surgeons of Glasgow. He was a member of the American Geriatrics Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Emil Verrilli, M.D., of Mamaroneck, died on April 25 at the age of sixty-nine. Dr. Verrilli graduated in 1925 from Columbia University College of Physicians and Surgeons. He was an attending pediatrician at United Hospital (Port Chester). Dr. Verrilli was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Maternal exposure to potential teratogens

With few exceptions, the precise role played by potential teratogens in human malformation has not been established. In a prospective study of 240 mothers published in a recent issue of *J.A.M.A.*, J. J. Nora, M.D., *et al.* feel that during the first trimester of pregnancy, judged to be the critical period for fetal damage, there was a high rate of exposure to potential teratogens, most of them obtained through a prescription. The mean exposure to drugs of this nature alone was 3.1 per mother and to all teratonic agents, including radiation and infection, 3.7. By the end of their pregnancies, it was estimated that all mothers had been exposed to some influence regarded as potentially teratogenic. At the end of the study, it was found that a total of 8 babies had anomalies classified as major and 11 others with minor defects.

The 240 mothers were observed until delivery. A code card was designed to include (1) major groupings and specific drugs in common use, prescription or nonprescription; (2) selected environmental hazards of this type; and (3) acute and chronic illness by diagnoses, symptoms, and signs. There were 102 potential teratogens listed, with space for uncoded material. Exposures prior to the first visit were reviewed and additions made during visits until delivery. Babies were examined for congenital defects after delivery and before discharge.

The numbers of mothers exposed to each agent or classification during (1) the first trimester and (2) the end of the pregnancy are as follows: radiation (1) 29, (2) 72; appetite suppressants (1) 31, (2) 65; antiemetics (1) 36, (2) 38; tranquilizers (1) 22, (2) 51; analgesics (1) 28, (2) 155; antibiotics (1) 29, (2) 101; antihistamines (1) 41, (2) 62; insecticide exposure (1) 50, (2) 125; acute illness (1) 28, (2) 129; and vitamins (1) 156, (2) 214.

Abstracts

Rosenthal, M. C.: Clinical precision in therapy for coagulation disorders, New York State J. Med. **68:** 1695 (June 15) 1968.

Precision therapy for coagulation disorders now exists only for AHF (factor VIII) deficiency. Assay procedures indicate the degree of deficiency and the potency of a product used and may be used to monitor the level of replacement therapy achieved by various products. Currently available materials for AHF deficiency consist of various forms of fresh plasma, essentially equivalent; a special human fibrinogen; and at least three different concentrates. The dose must be related to the plasma volume of the individual and the final desired level of the factor. Monitoring by laboratory control is essential.

Disney, F. A.: Office diagnosis of streptococcal infections, New York State J. Med. **68:** 1699 (June 15) 1968.

Streptococcal infections are still, in many cases, difficult to diagnose. However, certain features suggest a greater likelihood of such infection, and these include season of the year, the epidemiology of the immediate area, and the age of the patient. Since the infections are more common in children than in adults, they have become essentially the province of the pediatrician and the general practitioner. Symptoms include sore throat, ear ache without evidence of ear infection, a suggestive clinical syndrome, and the presence of infection elsewhere in the body. Laboratory aids are described.

Krauss, L., and Miller, F.: Sulfaphenazole therapy of infections of urinary tract, New York State J. Med. **68:** 1702 (June 15) 1968.

Because sulfaphenazole bears a high degree of tolerance combined with antibacterial effectiveness in low dosages, a study of its usefulness was done with 94 clinic patients with infections of the urinary tract, 65 of them female. It was 100 per cent effective in 44 acute urinary tract infections, 81.6 per cent in 38 recurrent conditions, and 42 per cent in 12 chronic cases; the correlation between clinical and bacteriologic effectiveness was close. Sulfaphenazole therapy showed excellent results in 80 of the 94 patients (85 per cent).

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Medical News

Chronic myelogenous leukemia topic of study

To continue a study of chronic myelogenous leukemia being conducted by the medicine branch of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland, physicians are requested to refer patients with chronic myelogenous leukemia to the Clinical Center.

Patients of all ages with high white blood cell counts and platelet counts are needed for studies of newer chemotherapeutic agents and as a source of white cells and platelets for in vitro and in vivo study.

Physicians who wish to have their patients considered for this study may write or telephone: George P. Canellos, M.D., Clinical Center, Room 12–N–236, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 496–4916, area code 301.

U.S.P.H.S. issues warning on use of sodium chlorate

The U.S. Public Health Service warned that people handling a weed killer and defoliant known as sodium chlorate, used mainly in southern states and California, may be seriously burned by clothing fires unless they take proper precautions.

Sodium chlorate itself will not burn and is only mildly toxic to a human being. However, the material gives off oxygen when heated adding greatly to the flammability of any combustible material present. When used as a spray, any clothing that comes in contact with the spray becomes highly flammable.

Richard E. Marland, M.D., chief of the U.S. Public Health Service's injury control program, reported that sodium chlorate may be rendered less dangerous by mixing it with fire retardant solutions, such as sodium metaborate. The fire hazard, he said, will vary with the strength of the solution. He also recommended that users of the spray remove any clothing contaminated by the spray and have it laundered as soon as possible.

Patients with severe pectus excavatum subject of study

The cooperation of physicians is requested in the referral of patients with a severe pectus excavatum chest wall deformity for a study of cardiac function being made in patients with this type of chest deformity. The study is being conducted by the National Heart Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Patients between the ages of 16 and 30 who have severe pectus excavatum deformities and who complain of excessive fatigue and exertional dyspnea are preferred, since these patients may be candidates for operative correction of impaired cardiac function.

Physicians interested in having their patients considered for admission to the Clinical Center for this study may contact: Stephen Epstein, M.D., Clinical Center, Room 7–B–14, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 496–3015, area code 301.

Clinical Center to study Ewing's sarcoma

Physicians are requested to refer patients with Ewing's sarcoma for a continuing study being conducted by the Radiation Branch of the National Cancer Institute at the Clinical Center, National Institutes of Health, Bethesda, Maryland.

Patients who have received no treatment are preferred, but selected patients with previous therapy will also be accepted for admission as inpatients. On completion of their studies, patients will be returned to the care of the referring physician, who will receive a summary of the findings.

Physicians interested in having their patients considered for admission to this study may write or telephone: Ralph E. Johnson, M.D., Clinical Center, Room B1B–41B, National Institutes of Health, Bethesda, Maryland 20014. The telephone number is 496–5457, area code 301.

Personalities

Appointed. Leon J. Taubenhaus, M.D., formerly deputy commissioner of community health services of the Boston Department of Health and Hospitals, as director of community health services of Beekman-Downtown Hospital . . . Colgate Phillips, M.D., Glens Falls, as assistant executive director of CARE (Cooperative for American Relief Everywhere) of MEDICO.

Elected. As officers of the Western New York Society of Pathologists: president, John B. Sheffer, M.D., Buffalo; secretary, Oscar M. Wilbur, M.D., Buffalo; and treasurer, John C. Read, M.D., Lewiston.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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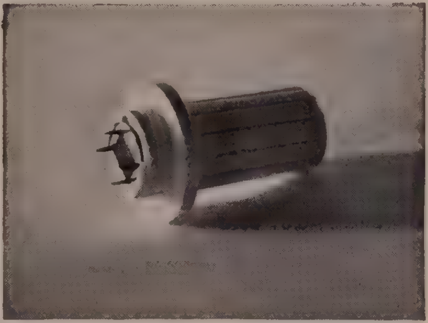

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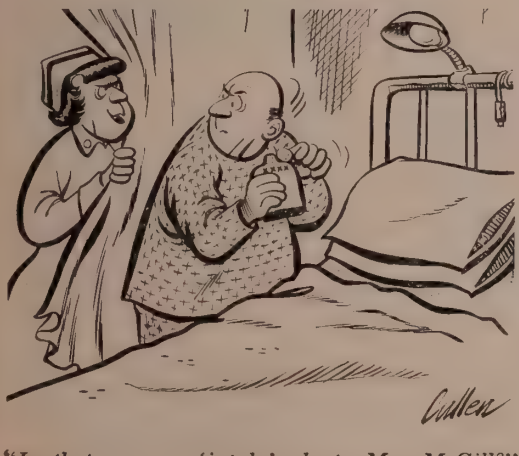

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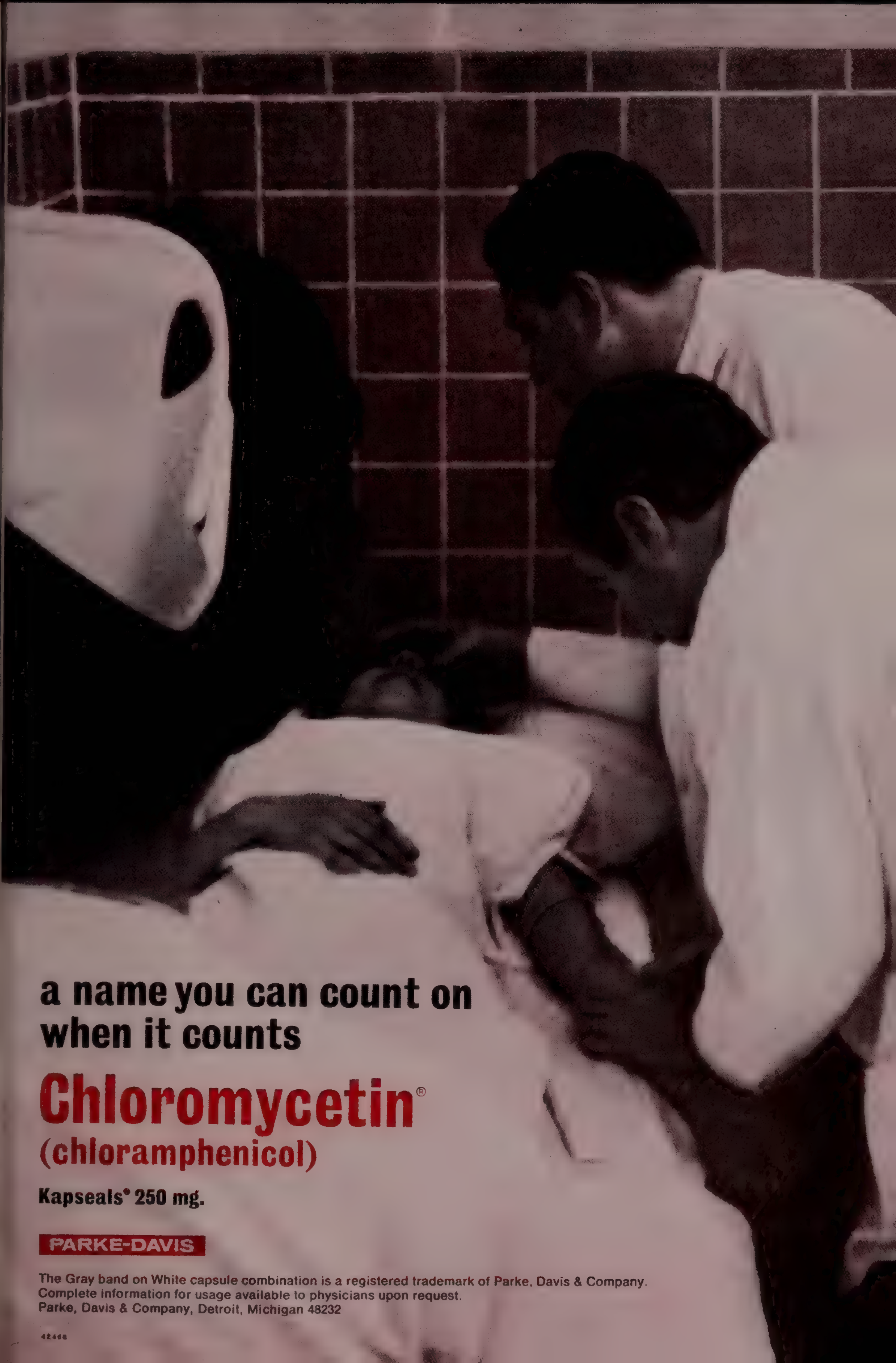

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The Acne "Epidemic"

Acne is constantly present in epidemic proportions. At any given time 60% to 90% of teenagers are afflicted.[1]

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Available in plastic squeeze bottles of 5 oz. and 16 oz.

References: 1. Sulzberger, M. B., and Witten, V. H.: *M. Clin. North America* 43:887, May, 1959. **2.** Hodges, F. T.: *GP* 14:86, Nov., 1956. **3.** Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. **4.** McLean, I. E. D.; Graham, K. T., and East, M. O.: *Practitioner* 189:82, July, 1962.

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Warnings: Acute anaphylaxis (may prove fatal unless promptly controlled) is rare but more frequent in patients with previous penicillin sensitivity, bronchial asthma or other allergies. Resuscitative (epinephrine, aminophylline, pressor amines) and supportive (antihistamines, methylprednisolone sodium succinate) drugs should be readily available. Other rare hypersensitivity reactions include nephropathy, hemolytic anemia, leucopenia and thrombocytopenia. In suspected hypersensitivity, evaluation of renal and hematopoietic systems is recommended.
Precautions: In suspected staphylococcal infections, perform proper laboratory studies including sensitivity tests. If overgrowth of nonsusceptible organisms occurs (constant observation is essential), discontinue penicillin and take appropriate measures. Whenever allergic reactions occur, withdraw penicillin unless condition being treated is considered life threatening and amenable only to penicillin. Penicillin may delay or prevent appearance of primary syphilitic lesions. Gonorrhea patients suspected of concurrent syphilis should be tested serologically for at least 3 months. When lesions of primary syphilis are suspected, dark-field examination should precede use of penicillin. Treat beta-hemolytic streptococcal infections with full therapeutic dosage for at least 10 days to prevent rheumatic fever or glomerulonephritis. In staphylococcal infections, perform surgery as indicated.
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(iron dextran injection)

IN BRIEF: ACTION AND USES: A single dose of Imferon (iron dextran injection) will measurably begin to raise hemoglobin and a complete course of therapy will effectively rebuild iron reserves. The drug is indicated only for specifically-diagnosed cases of iron deficiency anemia and then only when oral administration of iron is ineffective or impractical. Such iron deficiency may include: patients in the last trimester of pregnancy; patients with gastrointestinal disease or those recovering from gastrointestinal surgery; patients with chronic bleeding with continual and extensive iron losses not rapidly replenishable with oral iron; patients intolerant of blood transfusion *as a source of iron;* infants with hypochromic anemia; patients who cannot be relied upon to take oral iron.

COMPOSITION: Imferon (iron dextran injection) is a well-tolerated solution of iron dextran complex providing an equivalent of 50 mg. in each cc. The solution contains 0.9% sodium chloride and has a pH of 5.2-6.0. The 10 cc. vial contains 0.5% phenol as a preservative.

ADMINISTRATION AND DOSAGE: Dosage, based upon body weight and Gm. Hb/100 cc. of blood, ranges from 0.5 cc. in infants to 5.0 cc. in adults, daily, every other day, or weekly. Initial test doses are advisable. The total iron requirement for the individual patient is readily obtainable from the dosage chart in the package insert. Deep intramuscular injection in the upper outer quadrant of the buttock, using a Z-track technique (with displacement of the skin laterally prior to injection), insures absorption and will help avoid staining of the skin. A 2-inch needle is recommended for the adult of average size.

SIDE EFFECTS: Local and systemic side effects are few. Staining of the skin may occur. Excessive dosage, beyond the calculated need, may cause hemosiderosis. Although allergic or anaphylactoid reactions are not common, occasional severe reactions have been observed, including three fatal reactions which may have been due to Imferon (iron dextran injection). Urticaria, arthralgia, lymphadenopathy, nausea, headache and fever have occasionally been reported.

PRECAUTIONS: If sensitivity to test doses is manifested, the drug should not be given. Imferon (iron dextran injection) must be administered by deep intramuscular injection only. Inject only in the upper outer quadrant of the buttock, not in the arm or other exposed area.

CONTRAINDICATIONS: Imferon (iron dextran injection) is contraindicated in patients sensitive to iron dextran complex. Since its use is intended for the treatment of iron deficiency anemia only it is contraindicated in other anemias.

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Medical News

BIOSIS to distribute microfilm file on research reports

BIOSIS (BioSciences Information Service) will distribute its complete file of two million research references on 16 mm. microfilm beginning in June. The microfilmed digests of bioresearch articles dating from 1927 through the current year include landmark discoveries of life science research, among them the articles of a score of Nobel prize winners. Official introduction of the microfilm file is scheduled for the 59th annual conference of the Special Libraries Association to be held in Los Angeles, California, June 2 through 7.

Subscribers to the printed edition of *Biological Abstracts* will be able to lease the entire microfilm collection composed of 109 magazines suitable for use in all standard reader-printer equipment. Subscribing institutions will be permitted to photocopy the microfilmed abstracts. Researchers using the microfilm in conjunction with the printed indexes will be able to search the scientific literature with a minimum of output of time and effort.

Albany Medical Center raises employes' wages and room rates

Employes' wages and daily room rates were raised at Albany Medical Center Hospital, effective May 19.

After a thorough survey of prevailing wages in State and local government and area hospitals and businesses, the Board of Governors of the 800 bed hospital approved a general wage increase for nonsupervisory personnel. The hospital also recently improved employe life insurance and vacation benefits.

To offset these expenses and the rising costs of goods and services, the Board also voted to increase room rates $4.00 per day, effective June 1. With the increase, most semiprivate rooms will be $41 per day and most private rooms will be $49 per day.

Albany Medical Center Hospital is a voluntary, nonprofit institution, the largest nongovernment hospital in the State outside of New York City.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Personalities

Installed. As president of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn, Matthew Brody, M.D., Brooklyn . . . As president of the New York Cardiological Society, Henry I. Russek, M.D., Staten Island . . . As president of the New York State Heart Assembly, Joseph T. Doyle, M.D., Albany.

Named. Mary McLaughlin, M.D., Manhasset, as president of the Public Health Association of New York City . . . Ira Lubell, M.D., The Bronx, as director of Ambulatory Care at Lincoln Hospital/Albert Einstein College of Medicine.

Swimming and boating safety

Instances of unusually mild spring weather underscore the need for swimming and boating safety, especially among boys, according to Hollis S. Ingraham, M.D., the State Health Commissioner.

In a curious pattern that holds true at almost all ages, far more males than females are drowning victims. The latest available figures show that while the annual state-wide drowning total was 61 for females, for males it was 347. This has been attributed to the fact that men and boys swim more and are more inclined to take chances.

These tips have been offered: (1) Whenever children are playing in or near the water, they should be supervised by adults; (2) no one should swim alone. Everyone should know first aid to drowning victims; (3) swimming should be avoided for at least two and preferably three hours after eating; (4) swimming should be avoided by persons who are tired and by all persons when a storm is approaching; (5) swimming pools should be enclosed by a 6-foot high fence and protected with safety equipment; and (6) children should be taught to swim as early as possible, preferably before they enter school.

Among girls, the greatest number of drownings occurs in persons five years old or younger. In boys, two dozen drownings a year are reported in each five-year age group under twenty, but a dozen or more take place in most other five-year age groups to the age of seventy.

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Each tablet contains ethynodiol diacetate 1 mg., mestranol 0.1 mg.

works the way a woman thinks

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Whether it be "shopping day," "bridge day" or "housecleaning day," a woman is accustomed to thinking in terms of days of the week rather than in "cycle days." Ovulen-21 lets her remember her natural way. Once established, her starting day is always the same day of the week... because it is fixed at three weeks on — one week off and is independent of withdrawal flow.

The same Ovulen in the same low dosage... with the same low incidence of side effects and the same high degree of protection against pregnancy.

Note: Ovulen remains available in the familiar round Compack for those women who may wish to continue to use the traditional 20-day schedule. Be sure to specify Ovulen-21 to assure each new patient of the advantages of the new *Three Weeks On—One Week Off* schedule. She might appreciate your budget-minded authorization for a six-month supply (five Refills).

Indication — For oral contraception.

Contraindications — Thrombophlebitis or a history of thrombophlebitis or pulmonary embolism, liver dysfunction or disease, known or suspected carcinoma of the breasts or genital organs and undiagnosed vaginal bleeding.

Warnings — Discontinue medication pending examination if sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine occurs. Discontinue if papilledema or retinal vascular lesions occur. Since the safety of Ovulen in pregnancy has not been established, rule out pregnancy before a patient who has missed two consecutive menstrual periods continues the tablets. Consider the possibility of pregnancy at the first missed withdrawal flow if the recommended schedule has not been followed. The active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this to the infant has not been determined.

Precautions — The pretreatment physical examination should specifically include the breasts, pelvic organs and a Papanicolaou smear. Endocrine and possibly liver function tests may be affected by Ovulen. Such tests should be repeated two months after stopping the medication if their results were abnormal in a woman taking Ovulen. Pre-existing fibroids may enlarge under the influence of progestin-estrogen preparations. Patients with epilepsy, migraine, asthma, cardiac or renal dysfunction, which conditions might be influenced, require careful observation because Ovulen may cause some degree of fluid retention.

Ovulen should be used with caution in patients with a history of cerebrovascular accident. Nonfunctional causes should be considered if breakthrough bleeding occurs. Adequate diagnostic measures are indicated in women with undiagnosed vaginal bleeding. Carefully observe patients with a history of psychic depression and discontinue the medication if depression recurs to a serious degree. Any possible influence of prolonged Ovulen use on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. Carefully observe diabetic patients during Ovulen use since a decrease in glucose tolerance has occurred in a few such patients. Physicians should be alert to the earliest manifestations of thrombophlebitis and pulmonary embolism since such conditions occasionally occur in patients taking oral contraceptives. Use Ovulen judiciously in young patients in whom bone growth is not complete because of the effects of estrogens on epiphyseal closure. Age is no absolute limiting factor, although Ovulen use may mask the onset of the climacteric. Pathologists should be informed of Ovulen use when relevant specimens are submitted.

Side effects — The following adverse reactions have been observed in varying incidence in patients taking oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), change in weight (increase or decrease), changes in cervical erosions and secretions, suppression of lactation when used immediately post partum, cholestatic jaundice, migraine, allergic rash, rise in blood pressure in susceptible individuals and mental depression.

Although the following side effects have been reported in users of oral contraceptives no cause and effect relationship has been established: anovulation post treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme and nodosum, hemorrhagic eruption and itching. Thrombophlebitis, pulmonary embolism and neuro-ocular lesions have occurred in users of oral contraceptives, although a cause and effect relationship has been neither established nor disproved.

The following laboratory results may be altered by oral contraceptives: Bromsulphalein® and other hepatic function tests—increased; coagulation tests, including prothrombin, Factors VII, VIII, IX and X — increased; thyroid function — increase in protein-bound iodine and butanol extractable protein-bound iodine, and a decrease in T^3 values; metyrapone test and pregnanediol determinations.

Dosage and administration — One tablet of Ovulen-21 daily for 21 consecutive days, beginning five days after the onset of a menstrual flow (the first day of menstruation is counted as day 1), then discontinued for one week. If Ovulen is started later than day 5 after menses begins another method of protection is used until the first seven tablets have been taken. Subsequent 21-day courses are begun on the eighth day after the last tablet was taken in the preceding cycle. This three weeks on — one week off schedule is continued whether or not withdrawal flow has begun, flow has ceased or spotting or breakthrough bleeding has been experienced.

If one tablet is missed it is to be taken as soon as it is remembered and the next tablet at the usual time. If two consecutive tablets are missed the dosage is doubled for the next two days, then the regular schedule is resumed. If three consecutive tablets are missed a new tablet cycle is started on the eighth day after the last tablet was taken. For the best protection in the latter two instances instruct the patient to use another method of contraception until the next seven consecutive tablets have been taken. The possibility of ovulation increases with each successive tablet missed.

Postpartum administration — Non-nursing mothers may begin Ovulen immediately after delivery and nursing mothers after lactation is well established.

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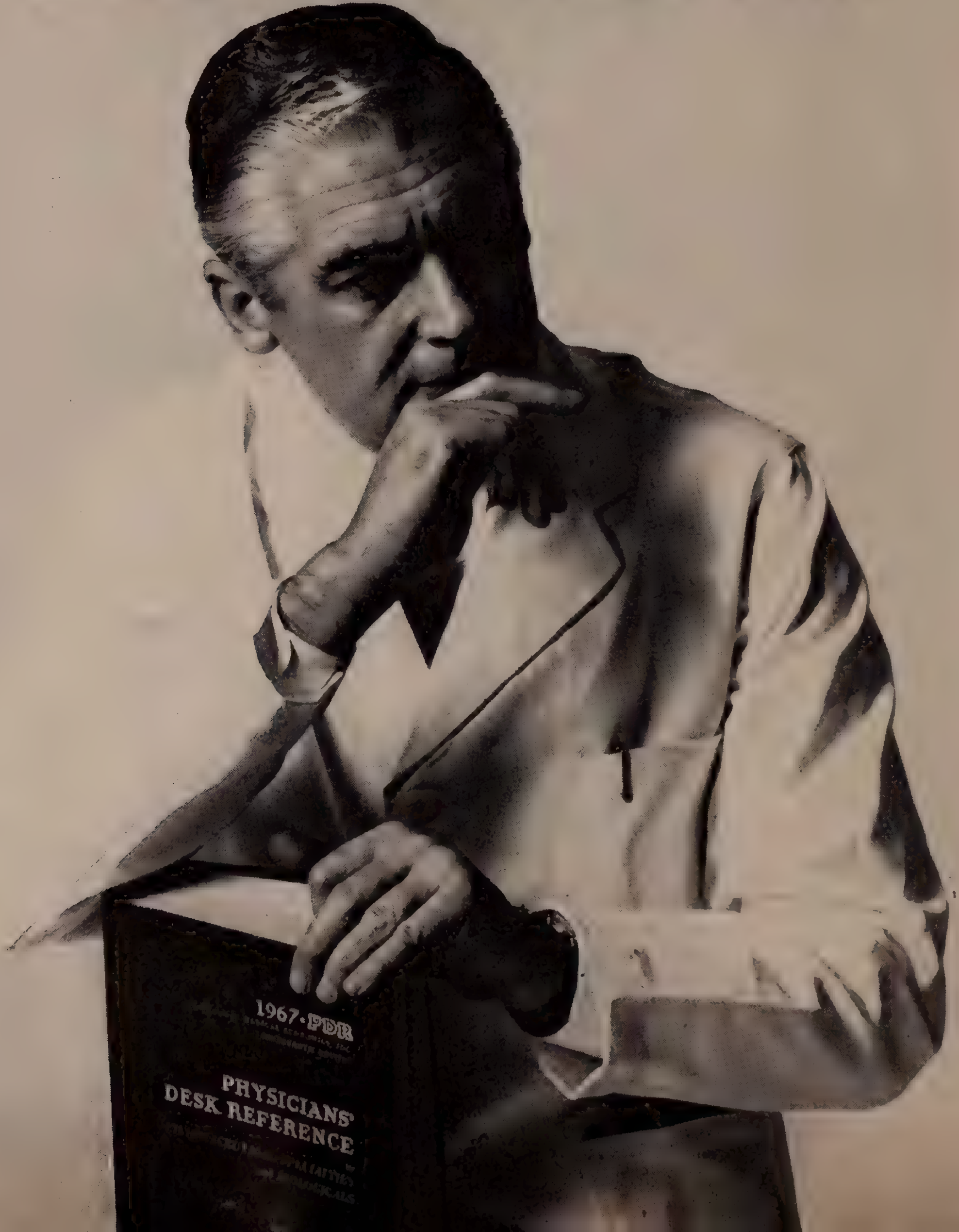
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animal gland products are still widely used today. Synthroid (sodium levothyroxine), however, offers important advantages in the treatment of thyroid deficiency and related conditions.

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the range of 6-10 mcg.%. Count on these and other param-
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atient costs are competitive with the cost of animal gland
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indications

SYNTHROID (sodium levothyroxine) tablets are specific replacement therapy in diminished or absent thyroid function when indicated by diagnostic test criteria in primary, hypopituitary, pediatric, and geriatric hypothyroidism, and for reproductive disorders associated with hypothyroidism. SYNTHROID (sodium levothyroxine) is especially useful in confirming your diagnosis when a diminished level of thyroid is implicated, because it precludes variability in response often encountered with desiccated thyroid.

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recautions: As with other thyroid preparations, an overdose may cause
iarrhea or cramps, nervousness, tremors, tachycardia, vomiting and con-
inued weight loss. Medication, in such cases, should be stopped for 2—6
ays, then resumed at a lower dose level. In patients with diabetes mellitus,
areful observations should be made for changes in insulin or other anti-
iabetic drug dosage requirements. In cases of adrenal insufficiency, the
ysfunction must be corrected prior to, and during SYNTHROID (sodium
evothyroxine) administration. It should be administered with caution to
atients with heart disease.

Contraindications: Thyrotoxicosis, acute myocardial infarction.

Side Effects: Side effects, when they do occur, are secondary to increased
ates of body metabolism: sweating, palpitations, leg cramps, and weight
oss. Diarrhea, vomiting, and nervousness have also been observed. Myxede-
matous patients with heart disease have died from abrupt increases in dos-
age of thyroid drugs. Reduction in dosage followed by ■ more gradual up-
ward adjustment will usually result in ■ more accurate indication of the
patient's dosage requirements without the dosage side effects.

Dosage and Administration: Administer tablets as a single daily dose, preferably after breakfast. In hypothyroidism without myxedema, the usual initial adult dose is 0.1 mg. daily, and may be increased by 0.1 mg. every 30 days until proper metabolic balance is attained. Final maintenance dosage will usually range from 0.2—0.4 mg. daily. In adult myxedema, starting dose should be 0.025 mg. daily. The dose may be increased to 0.05 mg. after two weeks and to 0.1 mg. at the end of a second two weeks. The daily dose may be further increased at two month intervals by 0.1 mg. until the optimum maintenance dose is reached (0.1—1.0 mg. daily). The initial dose for children with cretinism or severe hypothyroidism is the same as for adult myxedema, but all intervals of change should be made every two weeks.

SYNTHROID (sodium levothyroxine) Injection may be administered intravenously utilizing 200—400 mcg. of a solution containing 100 mcg. per ml. If significant improvement is not shown the following day, a repeat injection of 100—200 mcg. may be given.

Supplied: Tablets: 0.025 mg., 0.05 mg., 0.1 mg., 0.15 mg., 0.2 mg., 0.3 mg., scored and color-coded, in bottles of 100 and 500. Injection: 500 mcg., lyophilized active ingredient and 10 mg. of Mannitol, N.F. in 10 ml. single-dose vial, with 5 ml. vial of Sodium Chloride Injection, U.S.P. as a diluent.

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Medical Meetings

Medical aspects on sports topic of AMA conference

The tenth National Conference on the Medical Aspects of Sports, sponsored by the American Medical Association under the auspices of its Committee on the Medical Aspects of Sports, will be held at the Hotel Deauville, Miami Beach, Florida, on December 1. The conference is held annually in conjunction with the Clinical Convention of the AMA.

The program will include forums on the management of knee injuries, back problems, problems related to vision in sports, and a series of discussion sessions on clinical problems, such as cauliflower ear, pulled muscles, facial injuries, and communicable disease. One discussion session will be devoted to the controversial issues affecting participation of young athletes and another to health and safety considerations in aquatic activities.

The featured luncheon speaker will be Payton Jordan, head coach of the 1968 U.S. Olympic Track and Field Team, who will discuss "The Olympics in Retrospect."

For further information contact: Donald B. Slocum, M.D., chairman, Committee on the Medical Aspects of Sports, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Did you know . . .

Excessive speed continues to reign supreme as the number one cause of highway deaths. In 1967, according to a survey by The Travelers Insurance Companies, excessive speed was involved in 39 per cent of the 52,200 highway deaths.

More than 4,200,000 persons sustained injuries in automobile accidents in 1967. Driver error, according to the Company's statistics, was responsible for more than 80 per cent of the year's highway casualties.

Clear days and dry roads are the motorist's greatest invitation to tragedy. An annual survey shows that approximately 80 per cent of the highway deaths in 1967 occurred in this type of weather.

Preludin is indicated only as an anorexigenic agent in the treatment of obesity. It may be used in simple obesity and in obesity complicated by diabetes, moderate hypertension (see Precautions), or pregnancy (see Warning).

Contraindications: Severe coronary artery disease, hyperthyroidism, severe hypertension, nervous instability, and agitated prepsychotic states. Do not use with other CNS stimulants, including MAO inhibitors.

Warning: Do not use during the first trimester of pregnancy unless potential benefits outweigh possible risks. There have been clinical reports of congenital malformation, but causal relationship has not been proved. Animal teratogenic studies have been inconclusive.

Precautions: Use with caution in moderate hypertension and cardiac decompensation. Cases involving abuse of or dependence on phenmetrazine hydrochloride have been reported. In general, these cases were characterized by excessive consumption of the drug for its central stimulant effect, and have resulted in a psychotic illness manifested by restlessness, mood or behavior changes, hallucinations or delusions. Do not exceed recommended dosage.

Adverse Reactions: Dryness or unpleasant taste in the mouth, urticaria, overstimulation, insomnia, urinary frequency or nocturia, dizziness, nausea, or headache.

Dosage: One 25 mg. tablet b.i.d. or t.i.d. Or one 75 mg. Endurets tablet a day, taken by midmorning.

Availability: Pink, square, scored tablets of 25 mg. for b.i.d. or t.i.d. administration, in bottles of 100 and 1000.

Pink, round Endurets® prolonged-action tablets of 75 mg. for once-a-day administration, in bottles of 100 and 1000.

Under license from
Boehringer Ingelheim G.m.b.H.
(B)R3-46-560-B

For complete details, please see full prescribing information.

Preludin®
phenmetrazine
hydrochloride

Geigy Pharmaceuticals
Division of
Geigy Chemical Corporation
Ardsley, New York 10502

"that's enough"

...because she's taking Preludin® phenmetrazine hydrochloride
It often puts a natural curb on appetite.
Frequently promotes a sense of well-being.

Geigy

Preludin® phenmetrazine hydrochloride **Endurets®** prolonged-action tablets

For Brief Summary of
Prescribing Information, please
see adjoining column.

Books Received

*The following books were received during the month of April, 1968.**

The Doctor and the Athlete. By Isao Hirata, Jr., M.D. Octavo of 282 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1968. Cloth, $11.

How to Interpret Electrocardiograms in Terms of Vectors. By Emanuel Goldberger, M.D. Octavo of 187 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $10.50.

Rehabilitation in Extremity Fractures. By Eugene Moskowitz, M.D. Quarto of 150 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $8.50.

Human Transplantation. Edited by Felix T. Rapaport, M.D., and Jean Dausset, M.D. Quarto of 728 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $38.50.

Perspectives in Leukemia. Edited by William Dameshek, M.D., and Ray M. Dutcher, Ph.D. Quarto of 302 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $12.50.

Progress in Atomic Medicine. Volume 2. Edited by John H. Lawrence, M.D. Quarto of 274 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $12.75.

Hereditary Disorders of Erythrocyte Metabolism. Edited by Ernest Beutler, M.D. Quarto of 343 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $9.00.

Minority Group Adolescents in the United States. By Eugene B. Brody, M.D. Octavo of 243 pages. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $8.25.

Collected Works on Rheumatic Fever. By Leo M. Taran, M.D. Quarto of 276 pages, illustrated. Flushing, N. Y., International Professional Publications, Inc., 1967. Cloth.

Major's Physical Diagnosis. Edited by Mahlon H. Delp, M.D., and Robert T. Manning, M.D. Seventh edition. Quarto of 356 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $9.50.

Injuries of the Eye, the Lids, and the Orbit: Diagnosis and Management. By David Paton, M.D., and Morton F. Goldberg, M.D. Duodecimo of 161 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Paper, $4.75.

The Pharmaceutical Industry: A Personal Study. By Wyndham Davies, M.B. Octavo of 240 pages, illustrated. New York, Pergamon Press, 1967. Cloth, $10.

The Role and Methodology of Classification in Psychiatry and Psychopathology. Edited by Martin M. Katz, Ph.D., Jonathan O. Cole, M.D., and Walter E. Barton, M.D. Quarto of 590 pages, illustrated. Wash., D.C., Superintendent of Documents, U.S. Government Printing Office, 1968. Cloth, $4.50. (Public Health Service Publication No. 1584.)

The Medical Clinics of North America. St. Louis Number. March, 1968. Endocrine Disorders. William H. Daughaday, M.D., and Thomas F. Frawley, M.D., Guest Editors. Octavo. Philadelphia, W. B. Saunders Company, 1968. Published Bi-Monthly (six numbers a year). Cloth, $21. per year.

Clinical Obstetrics and Gynecology. Volume 10 Number 4, December 1967. Dysplasia and Carcinoma in Situ of the Cervix. Edited by Raymond H. Kaufman, M.D. **Invasive Carcinoma of the Cervix.** Edited by Ben M. Peckham, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Published quarterly (four numbers a year). Cloth, $18. per year.

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*Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

JUDGE ANTIBIOTIC OINTMENTS HERE

Results on skin are final proof of any topical antibiotic's effectiveness

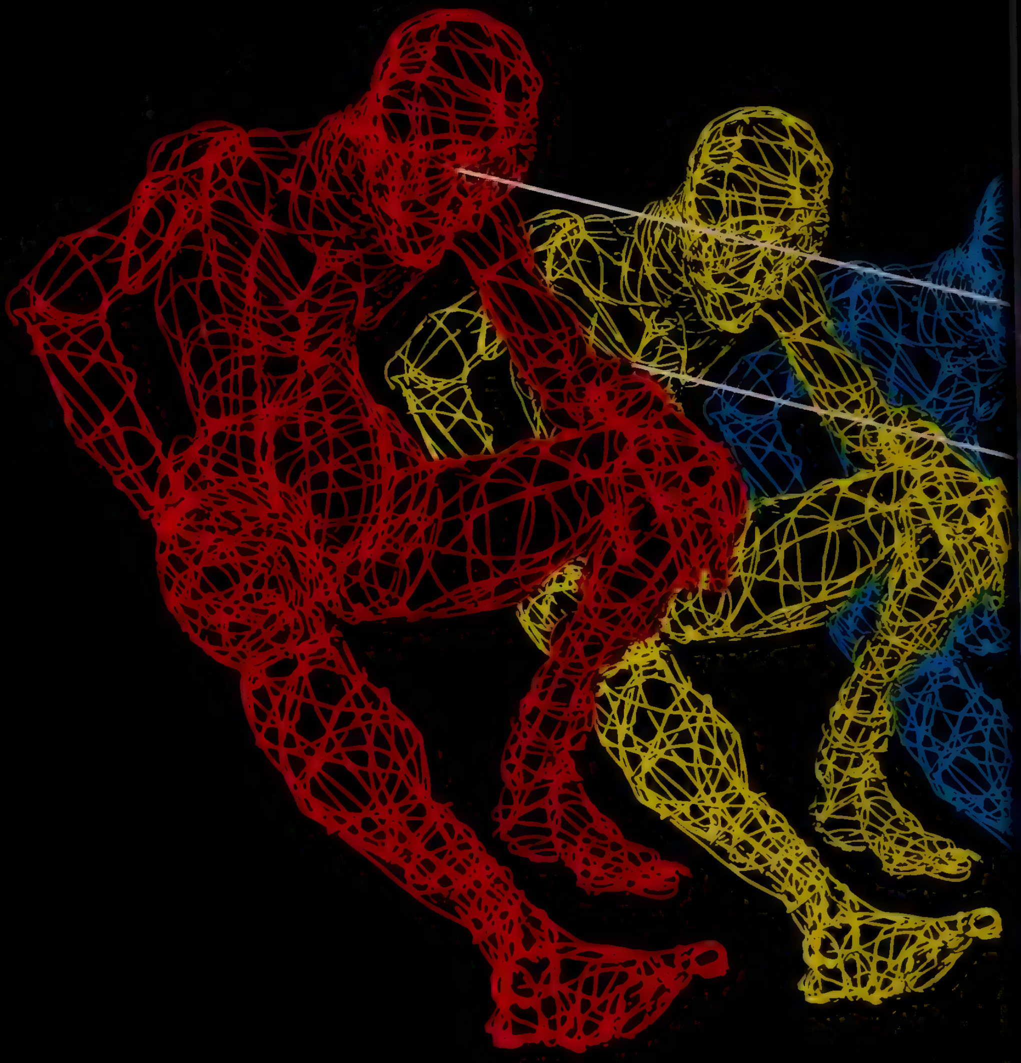
No in vitro test can duplicate a clinical situation on living skin. 'Neosporin' (polymyxin B —bacitracin—neomycin) Ointment has consistently proven its effectiveness in thousands of cases of bacterial skin infection. The spectra of the three antibiotics overlap in such a way as to provide bactericidal action against most pathogenic bacteria likely to be found topically. Diffusion of the antibiotics from the special petrolatum base is rapid since they are insoluble in the petrolatum, but readily soluble in tissue fluids. The Ointment is bland and nonirritating.

Caution: As with other antibiotic preparations, prolonged use may result in overgrowth of nonsusceptible organisms and/or fungi. Appropriate measures should be taken if this occurs. Articles in the current medical literature indicate an increase in the prevalence of persons allergic to neomycin. The possibility of such a reaction should be borne in mind.
Contraindications: This product is contraindicated in those individuals who have shown hypersensitivity to any of its components.
Supplied: Tubes of 1 oz., ½ oz. with applicator tip, and ⅛ oz. with ophthalmic tip.
Complete literature available on request from Professional Services Dept. PML.

'NEOSPORIN'®
brand
POLYMYXIN B-BACITRACIN-NEOMYCIN
OINTMENT

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, N.Y.

a comprehensive hematinic



Description: Each Pulvule® contains—

Special Liver-Stomach Concentrate, Lilly (containing Intrinsic Factor)	150 mg.
Cobalamin Concentrate, N.F., equivalent to Cobalamin	7.5 mcg.
(The total vitamin B_{12} activity in the Special Liver-Stomach Concentrate, Lilly, and the Cobalamin Concentrate, N.F., is 15 micrograms.)	
Iron, Elemental (as Ferrous Fumarate)	110 mg.
Ascorbic Acid (Vitamin C)	75 mg.
Folic Acid	1 mg.

Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinics, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

Precautions: Anemia is a manifestation that requires appropriate investigation to determine its cause or causes.

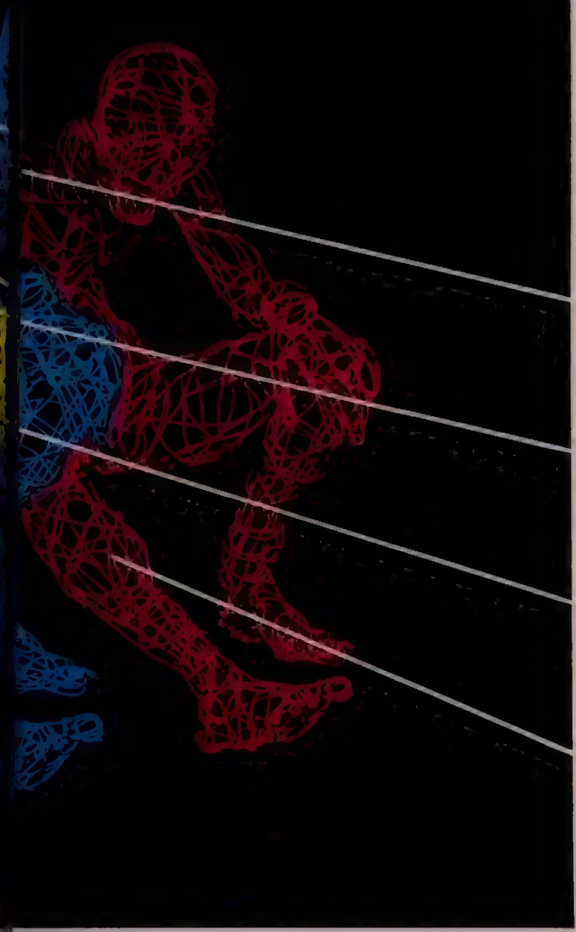
In pernicious anemia, the use of folic acid without adequate vitamin B_{12} therapy may result in hematologic remission but neurological progression. Adequate doses of vitamin B_{12} (parenteral, or oral with potent intrinsic factor as in Trinsicon® [hematinic concentrate with intrinsic factor, Lilly]) usually prevent, halt, or improve the neurological changes.

As with all preparations containing intrinsic factor, resistance may develop in some cases of pernicious anemia to the potentiation of absorption of physiological doses of vitamin B_{12}. If resistance occurs, parenteral therapy, or oral therapy with so-called massive doses of vitamin B_{12}, may be necessary. No single regimen fits all cases, and the status of the patient observed in follow-up is the final criterion for adequacy of therapy. Periodic clinical and laboratory

You can treat combined deficiencies with

Trinsicon®

—the multifactor hematinic



Vitamin B_{12} plus intrinsic factor (15 mcg. B_{12} activity)—helps provide adequate levels of this important vitamin.

Folic acid (1 mg.)—treats nutritional macrocytic anemias and/or malabsorption syndromes.

Ascorbic acid (75 mg.)—augments the conversion of folic acid to its active form and helps iron absorption.

Iron (110 mg.)—treats hypochromic anemia.

studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

In extremely rare instances, skin rash suggesting allergy has followed oral administration of liver-stomach material. Instances of apparent allergic sensitization have also been reported after oral administration of folic acid.

Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

How Supplied: Pulvules Trinsicon® (hematinic concentrate with intrinsic factor, Lilly), in bottles of 60 and 500.

[032568]

Additional information
available to physicians
upon request.
Eli Lilly and Company,
Indianapolis, Indiana 46206.

801668

Lilly

Films Reviewed

*These films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Hospital Housekeeping—Mopping, Two-Bucket Method. Sound, color, 16 mm., nine minutes.

This film shows a complete, step-by-step procedure for wet mopping a floor in an institution. Machine methods are generally most efficient for wet cleaning of floors. However, for a variety of reasons, it may be necessary to use a wet mopping procedure. A two-bucket, two-mop method for daily cleaning of floors is shown in detail.

Source and producer: DuArt Film Laboratories, 245 West 55th Street, New York, New York 10019.

The National Health Test

FOUR PARTS—TOTAL RUNNING TIME
EIGHTY-SEVEN MINUTES

The National Health Test was broadcast over the CBS Television Network in two one-hour programs. These films must be scheduled so that the four parts be requested at the same time and shown in consecutive order or scheduled one at a time in consecutive order.

The National Health Test Part I—Communicable and Degenerative Diseases. Sound, 16 mm., thirty minutes.

This film covers home care, the common cold, cancer, heart disease, stroke, tuberculosis, and immunity.

The National Health Test Part II—Reproduction and Birth. Sound, 16 mm., twenty minutes.

This film covers reproduction, birth, and venereal disease.

The National Health Test Part III—Mental Health, Alcohol, Narcotics. Sound, 16 mm., eleven minutes.

This film covers mental health in general and includes questions specifically on alcoholism and narcotics addiction.

The National Health Test Part IV—Exercise, Nutrition, and Diet. Sound, 16 mm., twenty-six minutes.

The film covers questions 11 to 23 and 33 to 37 from the Second National Health Test.* Questions 11 to 14 are about the role of exercise in physical fitness. Questions 15 to 17 are on other aspects of relation between caloric intake and weight. Questions 18 to 23 investigate knowledge of the nutrients needed for a balanced diet. Questions 33 to 35 concern dental health, and 36 to 37 involve poison and the proper first aid treatment.

Source and producer: McGraw-Hill Book Company, Text Film Department, 330 West 42nd Street, New York, New York 10036. CBS Television, New York, New York.

Tumors of the Major Salivary Glands. Sound, color, 16 mm., fifteen and a half minutes.

This film illustrates the differential diagnosis and management of tumors of the major salivary glands: parotid, submaxillary, and sublingual. The relative incidence of the various neoplastic lesions of these glands is listed. The indications and contraindications for biopsy are covered, and the principles of surgery and end results of treatment are reported. Edgar L. Frazell, M.D., F.A.C.S., Attending Surgeon, Head and Neck Service, Memorial Sloan-Kettering Cancer Center, New York City, was the medical consultant for the film and appears in it.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

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* Film evaluations provided by the Committee on Audio Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman;* Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

* Leona Baumgartner, M.D., stated inadvertently that there were 59,000 cases of poliomyelitis last year in the whole of the United States. Dr. Baumgartner meant to say that there were 59 cases of poliomyelitis last year in the whole of the United States.

IMPORTANT ANNOUNCEMENT
for
READERS OF "WHAT GOES ON"

The Sponsor of "What Goes On" has informed the Medical Society of the State of New York that it will be unable to continue its support of "What Goes On", in the same manner that it has been sponsoring it, beyond the December 1968 issue. The Medical Society thanks Lederle Laboratories for ten years of total sponsorship of this publication.

Because "What Goes On" is important to physicians interested in Continuing Medical Education, the Division of Scientific Activities invites expression from the readers of "What Goes On." Please tear off and return the simple questionnaire to Norman S. Moore, M.D., Division of Scientific Activities, Medical Society of the State of New York, 750 Third Avenue, New York, New York 10017.

- -

( ) I have been a regular reader of "What Goes On"

( ) I depend upon "What Goes On" for guidance in my continuing education

( ) If "What Goes On" is continued under different sponsorship, I request it be sent to me.

Signature ______________________________

Address ______________________________

New

Tegretol®
carbamazepine

Therapeutic breakthrough in non-narcotic contro of the pain of trigeminal neuralgia

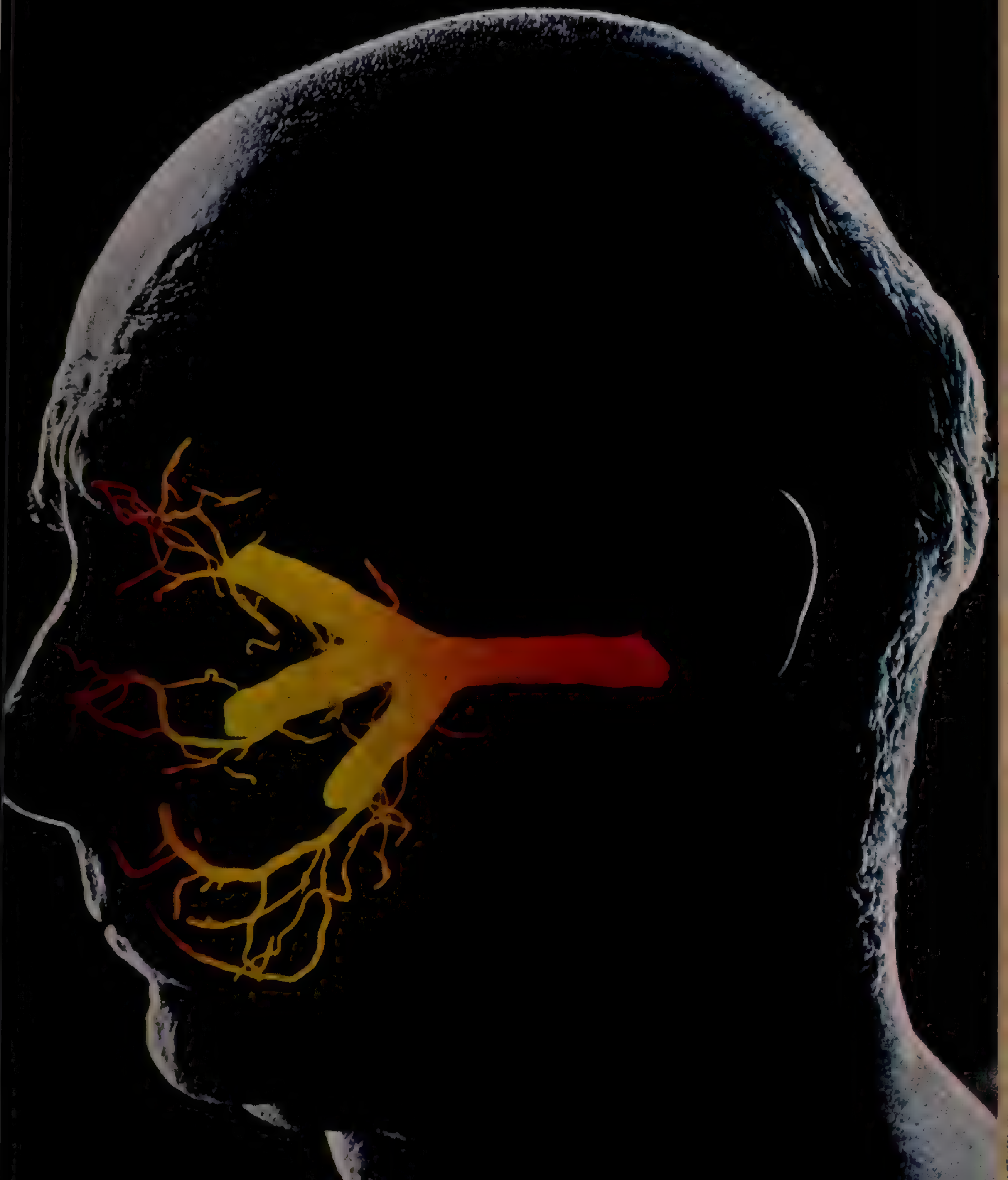
Warning
Fatal cases of aplastic anemia have been reported following treatment with Tegretol. Agranulocytosis, thrombocytopenia and transitory leukopenia have also been observed. Complete blood and platelet counts should be done prior to and at regular intervals during treatment with the drug (see recommendations under "Important Note and Precautions") to help in the early detection of serious bone marrow injury. Abnormalities in initial blood tests should rule out use of the drug. Also, patients should be made aware of such early toxic signs of a potential hematologic problem as fever, sore throat, mouth ulcers, easy bruising and petechial or purpuric hemorrhage. Should such signs appear, the patient should be advised to discontinue the drug and to report to the physician immediately.

Indication Tegretol is indicated in the treatment of the pain associated with true trigeminal neuralgia. It is not a simple analgesic and should never be administered for relief of trivial facial aches or pains.
Contraindication Do not use in those with a known sensitivity to any tricyclic compound or in those being treated with M.A.O.I. agents. As long a period as possible should elapse before using Tegretol in patients who have been treated with M.A.O.I.'s, with a minimum of 7 days. In such cases, initial dosage should be low and the patient's reaction to gradual increments closely observed.
Important Note and Precautions Familiarity with the clinical symptoms which lead to an accurate diagnosis of true trigeminal neuralgia and with the complete prescribing information, careful patient selection, a thorough examination before treatment and close patient supervision throughout the treatment period are essential to the safe and effective use of this drug.
Where feasible, Tegretol should not be used in conjunction with any potent drug which may increase the possibility of toxic reactions.
In pregnancy, the drug should not be prescribed during the first trimester and thereafter only to patients in whom the clinical situation warrants the potential risk. It should not be administered to nursing mothers.
Patients with increased intraocular pressure should be closely observed during treatment with this drug because of its anticholinergic effect. Because of the drug's relationship to other tricyclic compounds, the possibility of activation of latent psychosis and, in the elderly, of confusion or agitation, should be considered.
Dizziness and drowsiness may occur and patients should be cautioned about the hazards of operating machinery or automobiles and of engaging in other hazardous tasks.
Use cautiously in patients with a history of coronary artery disease, organic heart disease, congestive failure or liver disease.
Before initiating therapy, the following laboratory procedures should be performed:
1. Complete blood and platelet counts which, if abnormal, should rule out the use of the drug.
2. Baseline evaluations of liver function.
During treatment with Tegretol, the following laboratory procedures should be performed:
1. Complete blood and platelet counts should be done at intervals of one week during the first month of drug treatment, every two weeks during the second and third months, and at monthly intervals thereafter for as long as the patient is taking the drug. A trend toward a decreasing white blood cell count should suggest a dosage reduction and more frequent laboratory and clinical evaluations. Should this trend continue, the drug should be discontinued.
2. Liver function tests must be performed at regular intervals during treatment with this drug since liver damage may occur during therapy. The drug should be discontinued immediately in cases of aggravated liver dysfunction or active liver disease.
3. Periodic eye examinations, including slit-lamp, funduscopy and tonometry, are recommended for patients being treated with this drug since many phenothiazines and related drugs have been shown to cause eye changes.
4. Complete urinalysis and BUN should be done on patients treated with Tegretol because of observed renal dysfunction.
Adverse Reactions Dizziness, drowsiness, unsteadiness on the feet, nausea, vomiting, aplastic anemia, transitory leukopenia, agranulocytosis, eosinophilia, leukocytosis, thrombocytopenia, purpura, abnormalities in liver function tests, cholestatic and hepatocellular jaundice, urinary frequency, acute urinary retention, oliguria with elevated blood pressure, albuminuria, glycosuria, elevated BUN, microscopic deposits in the urine, impotence, disturbances of coordination, confusion, headache, fatigue, blurred vision, transient diplopia and oculomotor disturbances, speech disturbances, abnormal involuntary movements, peripheral neuritis and paresthesias, depression with agitation, talkativeness, nystagmus, tinnitus, paralysis and other symptoms of cerebral arterial insufficiency, pruritic and erythematous rashes, urticaria, Stevens-Johnson syndrome, photosensitivity reactions, alterations in skin pigmentation, exfoliative dermatitis, alopecia, diaphoresis, recurrence of thrombophlebitis, erythema multiforme and nodosum, aggravation of disseminated lupus erythematosus, gastric distress, abdominal pain, diarrhea, constipation, anorexia, dryness of the mouth and pharynx, glossitis, stomatitis, fever, chills, adenopathy, lymphadenopathy, aching joints and muscles, leg cramps, conjunctivitis, left ventricular failure, aggravation of hypertension, hypotension, syncope and collapse, edema, aggravation of coronary artery disease and congestive heart failure. (Whether these cardiovascular effects are drug-related is not known. However, some of these complications have resulted in fatalities.) The necessity for discontinuing the drug should be dictated by the gravity and severity of the adverse reactions.
Dosage and Administration The drug should always be taken with meals, if possible.
Initial: One-half tablet (100 mg.) b.i.d. on the first day. Thereafter, the dose should be increased in one-half tablet (100 mg.) increments every 12 hours until freedom from pain is achieved. To relieve pain, between 200 mg. and 1200 mg. per 24 hours may be necessary.
Maintenance: Initial control of pain can be maintained in most patients with a dose of 400 mg. to 800 mg. daily. Maintenance doses may range between 200 mg. and 1200 mg. daily.
At least once every 3 months during treatment period attempts should be made to discontinue the drug or to reduce the dose to the minimum effective level.
Availability Round, white, single-scored tablets of 200 mg. in bottles of 100 and 1000. (B)46-820-A
For complete details, please see Prescribing Information.

Geigy Pharmaceuticals
Division of Geigy Chemical Corporation
Ardsley, New York 10502

Geigy

uncommon relief of uncommon pain



Abstracts

Levin, M.: Sex education and the physician, New York State J. Med. **68:** 1819 (July 1) 1968.

Adolescent youngsters are misled by those sex educators who are either vicious in advocating a rejection of moral standards or who prefer to take a neutral stand of permissiveness and freedom of choice. It is necessary to put sex in its proper context at the highest level of human and social responsibility. The physician is obliged to preserve the health of our youth and to counteract the destructive elements that assail them. He can speak on grounds of health, including emotional health and well-being. Sex serves as an instrument in the growth of character. Young people should have an informed choice.

Angrist, A., Oka, M., and Nakao, K.: Prevention and control of bacterial endocarditis, New York State J. Med. **68:** 1824 (July 1) 1968.

The incidence of bacterial endocarditis declined sharply when antibiotics were first used; however, the condition has again increased. Since bacterial endocarditis usually results from the seeding of a primary nonbacterial vegetation, an attempt was made to prevent the initial step in the formation of nonbacterial vegetation, the agglutination of platelets on the heart valve and the deposition of fibrin. Dextran and heparin were compared in rats to show effectiveness in preventing the development of bacterial endocarditis. Practical prophylaxis must be directed to prevent the contamination of nonbacterial thrombotic endocarditis by active or passive bacteremias.

Oster, S., and Tovell, H. M. M.: Family Planning in over age forty female, New York State J. Med. **68:** 1830 (July 1) 1968.

Of 79 women over age forty, only 2 expressed a desire for more children at a later date. Since most of these women said they had completed their families and since they represent a high-risk group, contraception was indicated. If possible the patient is given the contraceptive agent she requests. The oral contraceptive, discounting patient failure, has proved to be 100 per cent effective, and follow-up is greater than with other methods. There were no unplanned pregnancies in the group.

Abstracts in Interlingua

Levin, M.: Le education sexual e le medico (*anglese*), New York State J. Med. **68:** 1819 (1 de julio) 1968.

Adolescentes es mal-consiliate per educatores in matiera sexual qui vitiosemente recommenda le rejection de omne standard moral o qui prefere neutralisar se e sequer un curso de permissivitate con absolute libertate de decision. Es necessari allocar sexo in su appropriate contexto del plus alte nivello de responsabilitate human e social. Le medico ha le mission de preservar le sanitate de nostre juventute e de contra-ager contra le elementos destructive que menacia los. Ille pote parlar ab le puncto de vista sanitari, incluse le puncto de vista del sanitate emotional e del ben-esser emotional. Le sexualitate es un modalitate de crescentia characteral. Le juvenes merita que nos les informa ante que illes face lor decision.

Angrist, A., Oka, M., e Nakao, K.: Prevention e maneamento de endocarditis bacterial (*anglese*), New York State J. Med. **68:** 1824 (1 de julio) 1968.

Le incidentia de endocarditis bacterial declinava acutemente quando le prime antibioticos esseva introducite. Tamen, le con-

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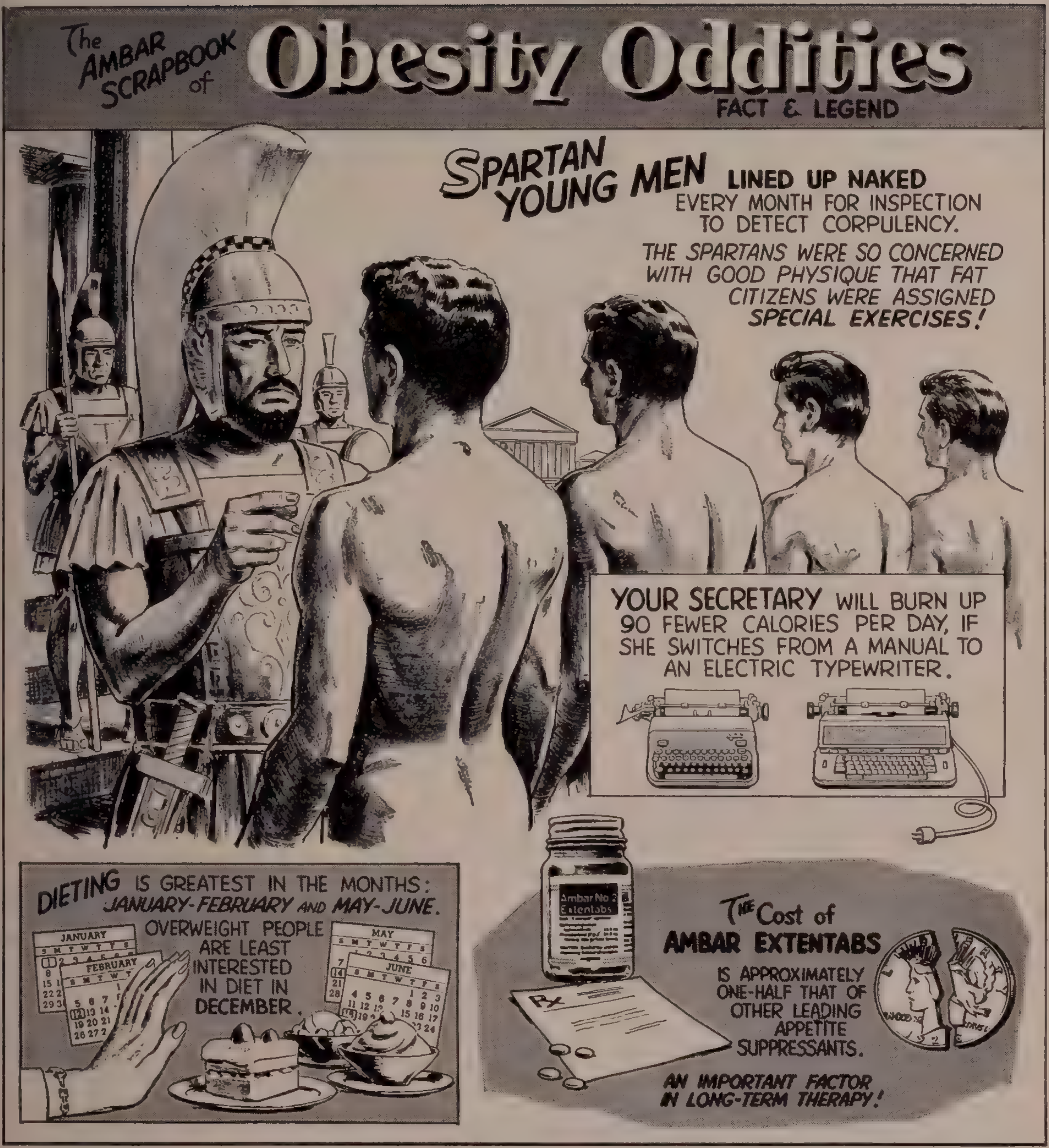
The AMBAR SCRAPBOOK of
Obesity Oddities
FACT & LEGEND
SPARTAN YOUNG MEN LINED UP NAKED EVERY MONTH FOR INSPECTION TO DETECT CORPULENCY.
THE SPARTANS WERE SO CONCERNED WITH GOOD PHYSIQUE THAT FAT CITIZENS WERE ASSIGNED SPECIAL EXERCISES!
YOUR SECRETARY WILL BURN UP 90 FEWER CALORIES PER DAY, IF SHE SWITCHES FROM A MANUAL TO AN ELECTRIC TYPEWRITER.
DIETING IS GREATEST IN THE MONTHS: JANUARY-FEBRUARY AND MAY-JUNE.
OVERWEIGHT PEOPLE ARE LEAST INTERESTED IN DIET IN DECEMBER.
JANUARY
FEBRUARY
MAY
JUNE
Ambar No. 2 Extentabs
Rx
THE Cost of AMBAR EXTENTABS IS APPROXIMATELY ONE-HALF THAT OF OTHER LEADING APPETITE SUPPRESSANTS.
AN IMPORTANT FACTOR IN LONG-TERM THERAPY!

CONTROL FOOD AND MOOD ALL DAY LONG WITH A SINGLE MORNING DOSE

AMBAR #2 EXTENTABS®

methamphetamine HCl 15 mg., phenobarbital 64.8 mg. (1 gr.) (Warning: may be habit forming).

One Ambar Extentab before breakfast can help control most patients' appetite for up to 12 hours. Methamphetamine, the appetite suppressant, gently elevates mood and helps overcome dieting frustrations. Phenobarbital, the sedative in Ambar, controls irritability and anxiety... helps maintain a state of mental calm and equanimity. Both work together to ease the tensions that erode the willpower during periods of dieting.

Also available: Ambar #1 Extentabs®—methamphetamine hydrochloride 10 mg., phenobarbital 64.8 mg. (1 gr.) (Warning: may be habit forming).

BRIEF SUMMARY/**Indications:** Ambar suppresses appetite and helps offset emotional reactions to dieting. **Contraindications:** Hypersensitivity to barbiturates or sympathomimetics; patients with advanced renal or hepatic disease. **Precautions:** Administer with caution in the presence of cardiovascular disease or hypertension. **Side Effects:** Nervousness or excitement occasionally noted, but usually infrequent at recommended dosages. Slight drowsiness has been reported rarely. See package insert for further details.

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RICHMOND, VA. 23220
A-H-ROBINS

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STABILITY . . a strong Insurance company and a program that has provided continuous protection for the past forty-seven years.

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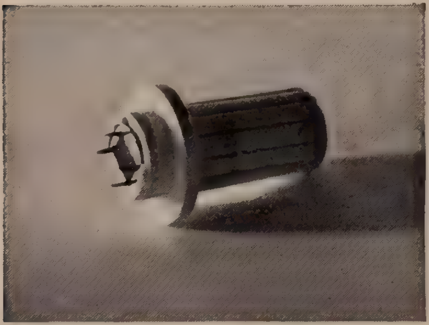
Make tuberculin testing routine with every physical examination.

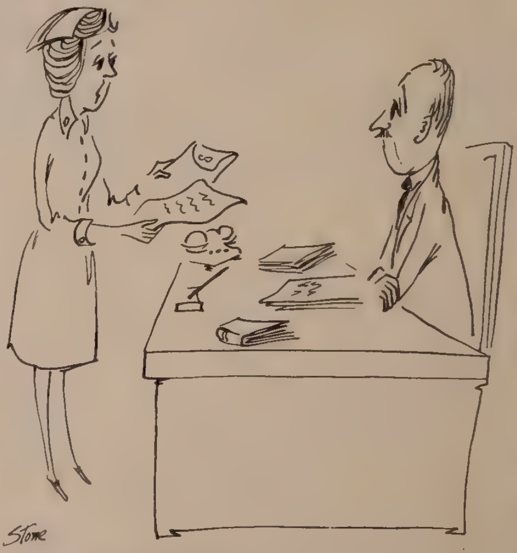


TUBERCULIN, TINE TEST
(Rosenthal)

Side effects are possible but rare: vesiculation, ulceration, or necrosis at test site. Contraindications: none, but use with caution in active tuberculosis. Available in 5's and 25's.

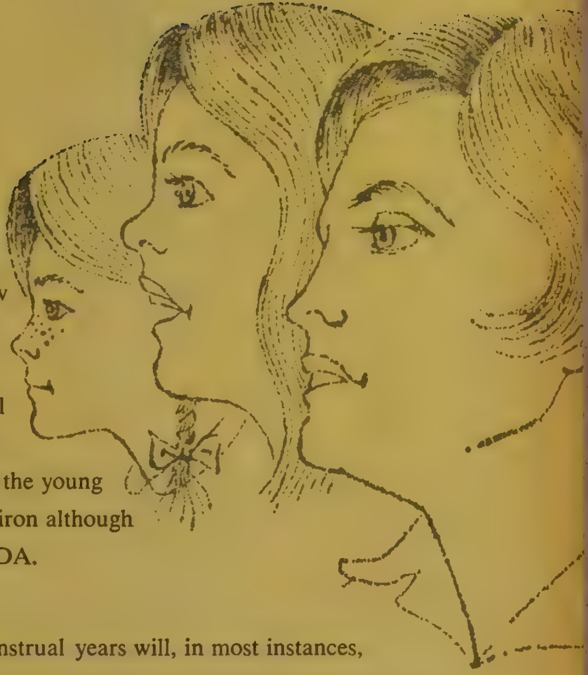
Lederle

330—6/6136



"The journal rejected your article. They said they do not accept fiction."

From menarche to menopause, negative iron balance can exist in otherwise normal women.[1-9]



In two-thirds of 114 "normally" menstruating, healthy college women studied[2], iron stores were precariously low or absent. Normal iron stores[3,7] in women range from 200 to 400 mg.—about half that of the normal male. Iron loss in menstrual blood varies widely among normal women[3-6]—ranging from 15 to 40 mg. An intake of the Recommended Dietary Allowance[8] of 2100 calories for the young adult female will, on the average, supply only 13 mg. of iron although the need may well be more[1,3,4,6] than 15 mg., the current RDA.

Supplementing the diet of women during menstrual years will, in most instances, prevent depletion of their iron stores, thus permitting normal hemoglobin formation and proper functioning of iron-dependent tissue enzymes. **One-A-Day® plus iron** provides 15 mg. of iron supplied as ferrous fumarate (46 mg.) with nine essential vitamins.

Samples are available for clinical trial.

ONE-A-DAY® (Brand) Multiple Vitamins PLUS IRON

Each yellow tablet provides:

Vitamin A	5,000 U.S.P. Units
Vitamin D	400 U.S.P. Units
Thiamine (Vitamin B_1)	2 mg.
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Niacinamide	20 mg.
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References: 1. Finch, C. A.: Iron Balance in Man. Nutr. Rev. 23:129-131 May, 1965. 2. Scott, D. E., and Pritchard, J. A.: Iron Deficiency in Healthy Young College Women. Jour. Amer. Med. Assn. 199:897-900 Mar. 20, 1967. 3. A. M. A. Council on Foods and Nutrition: Iron Deficiency in the United States. Jour. Amer. Med. Assn. 203:119-124 February 5, 1968. 4. Herbert, V.: Iron and Iron Salts, Chap. 9, pp. 1394-1409. In Goodman, L. S., and Gilman, H. (eds.): The Pharmacological Basis of Therapeutics. 3rd edition. New York, Macmillan, 1965. 5. Hahnemann, B.M.: Iron Deficiency in Women. Med. Clin. N.A. 46:139-149 Jan., 1962. 6. Moore, C.V.: Iron and the Essential Trace Elements. Chap. 10. In Wohl, M.G., and Goodhart, R.S. (eds.): Modern Nutrition in Health and Disease. 3rd edition. Philadelphia, Lea & Febiger, 1964. 7. Pritchard, J.A., and Mason, R.A.: Iron Stores of Normal Adults and Replenishment with Oral Iron Therapy. Jour. Amer. Med. Assn. 190:897-901 Dec. 7, 1964. 8. Recommended Dietary Allowances. Sixth Revised Edition, 1964. A report of the Food and Nutrition Board, National Academy of Sciences, National Research Council, Publication 1146, Washington, D.C., 1964. 9. Beutler, E.: Tissue Effects of Iron Deficiency, pp. 256-272. In Iron Metabolism, Symposium. Gross, F. (ed.). Springer-Verlag, Berlin, 1964.

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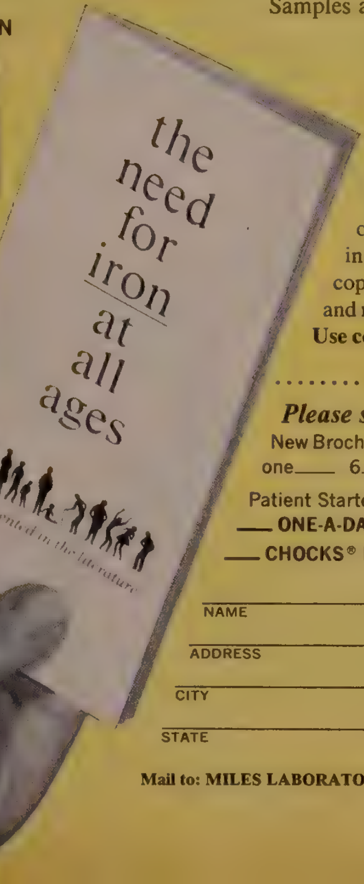
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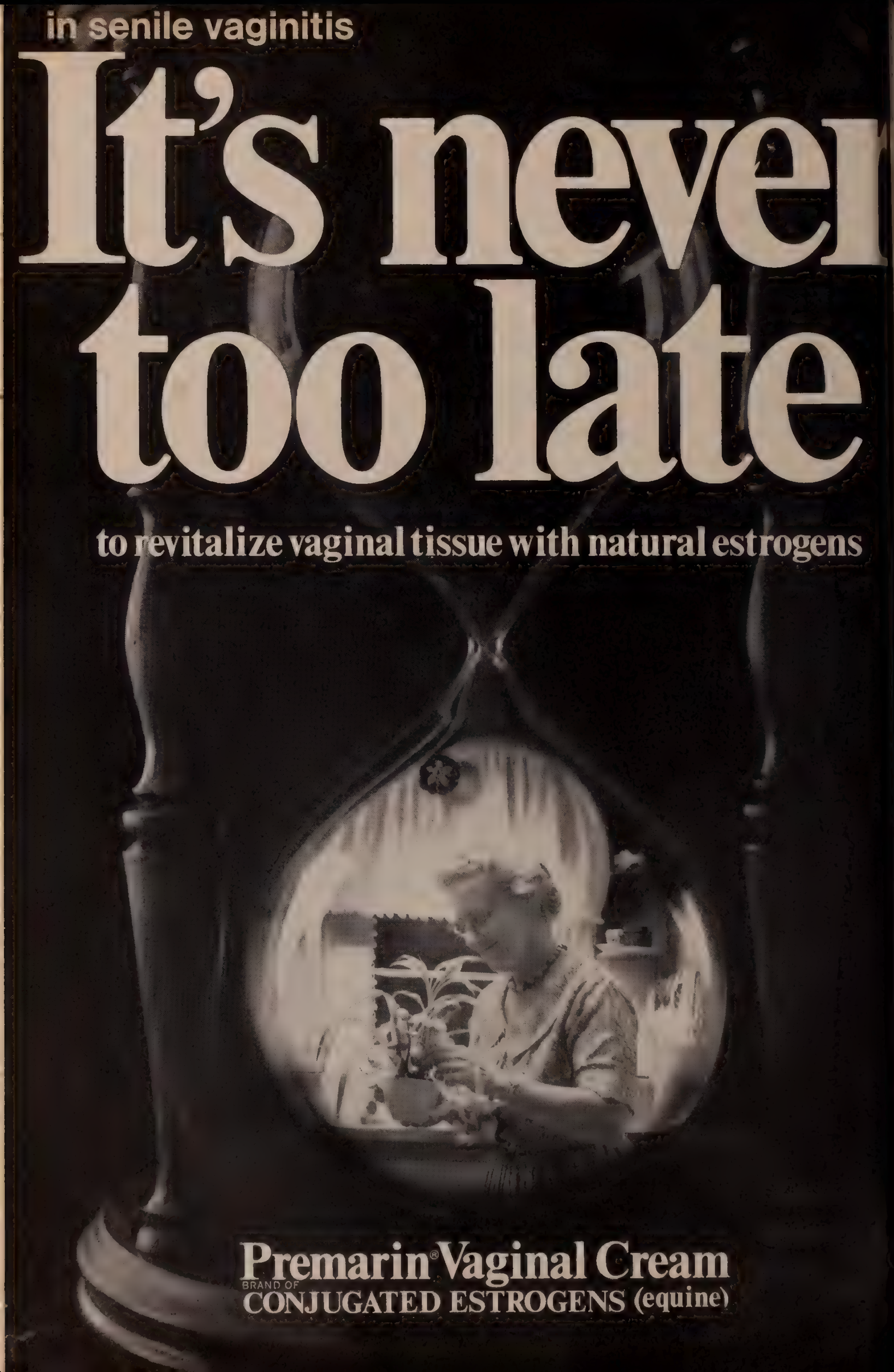

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continued from page 1802

dition ha reganiate in frequentia. Viste que endocarditis resulta usualmente ab le semination de un primari vegetation nonbacterial, le tentativa esseva facite de prevenir le passo initial in le formation de un vegetation nonbacterial, le agglutination de plachettas super le valvula cardiac, e le deposition de fibrina. Dextrano e heparina esseva comparate in lor efficacia in le prevention del disveloppamento de endocarditis bacterial in rattos. Un prophylaxia practic debe esser concernite con le prevention del contamination de nonbacterial endocarditis thrombotic per bacteremia active o passive.

Oster, S., e Tovell, H. M. M.: Planation de familia pro feminas de plus que quaranta annos de etate, (*anglese*), NEW YORK STATE J. MED. **68:** 1830 (1 de julio) 1968.

In un gruppo de 79 feminas de plus que quaranta annos de etate, solo duo exprimeva le desiro de augmentar plus tarde lor prole. Viste que le majoritate de iste feminas insisteva que illas habeva completate lor familias e viste, in plus, que illas representava un gruppo a alte riscos, contraception esseva indicate. In tanto que possibile, le patiente individual recipeva le contraceptivo preferite per illa. Contraceptivos oral—foras de casos de negligentia del parte del patiente—se ha provate efficace a 100 pro cento. Non-planate pregnantias non occurreva in iste gruppo.

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If you plan to live to a ripe old age, it might help your chances a bit if you are listed in the *Who's Who in America.* According to the Metropolitan Life Insurance Company, prominent professional men and businessmen live distinctly longer on the average than men in the general population. Showing particularly pronounced longevity are scientists, educators, and clergymen.

In the Company's study, it was discovered that the mortality rates of the prominent men were 30 per cent below those of white males in the general population and about 15 per cent below those of males insured under standard ordinary policies of insurance. Business executives and lawyers showed a death rate close to the average of the prominent men studied. Physicians and surgeons recorded mortality rates 10 per cent higher and government officials 20 per cent higher than average. On the other hand, college professors and clergymen registered death rates from 10 to 15 per cent below average. Correspondents and journalists had death rates about double those of all the men studied—the least favorable record. And men of letters, as a group, had a mortality rate 30 per cent higher than the average. The best record for longevity was made by scientists whose mortality rate was approximately 20 per cent below average.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. (Now isn't that a good idea in an iron-containing hematinic? We'll send you samples if you'll send a request on your Rx blank, addressed to Department 150.)

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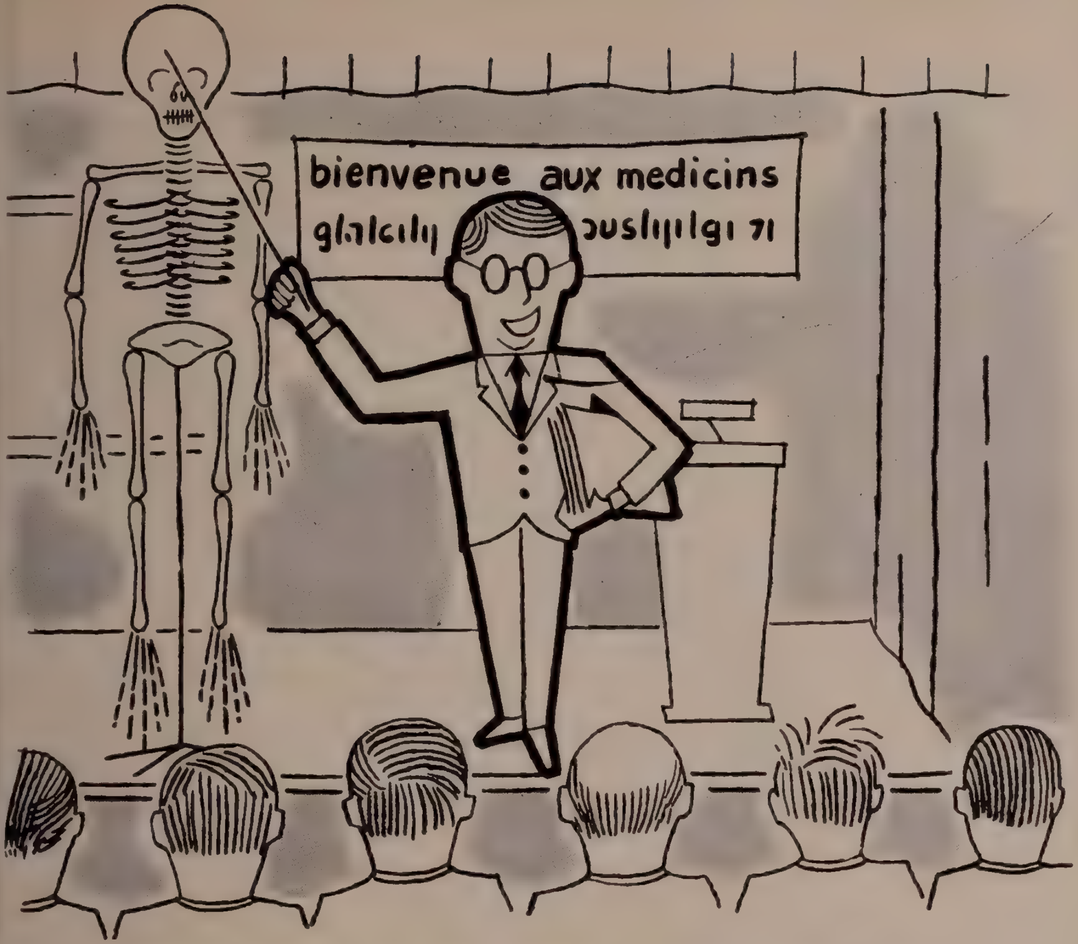

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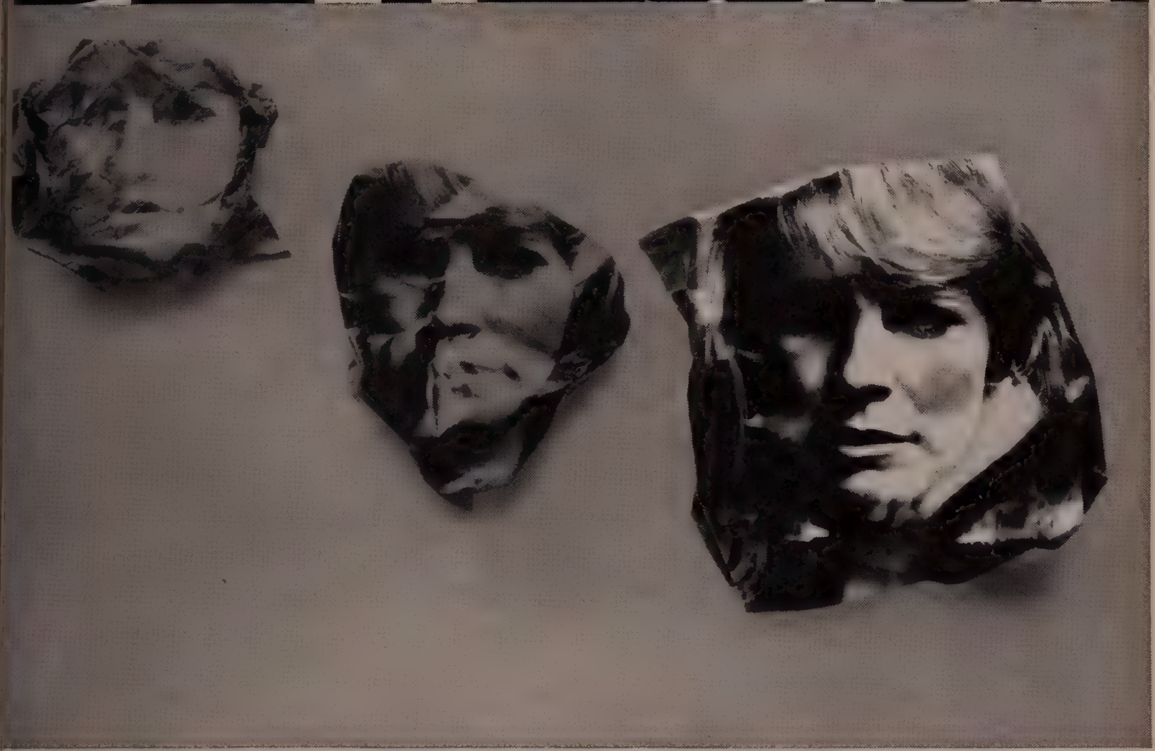

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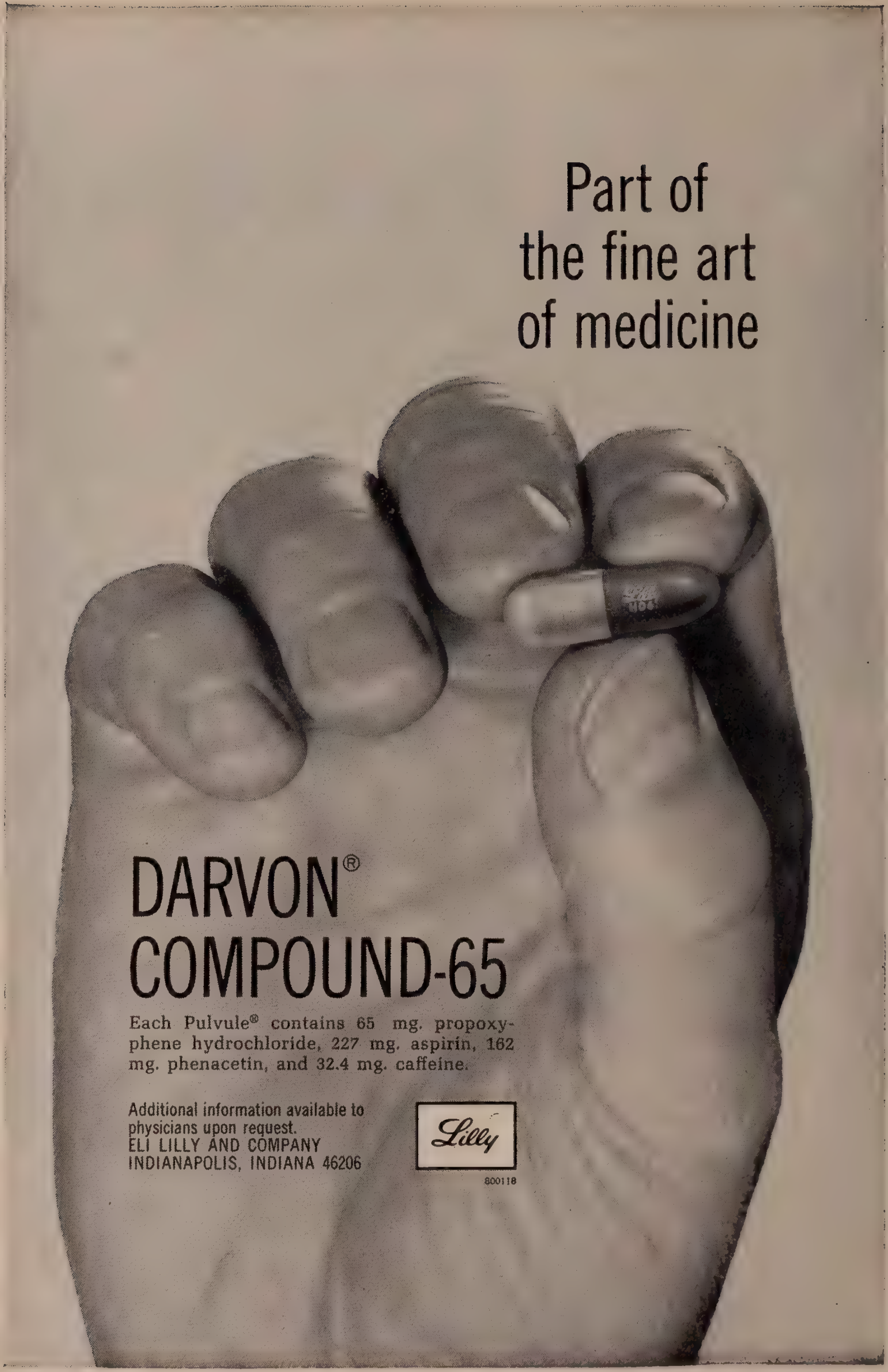

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Responsibility of physicians to selective service

The Selective Service System expects to call into active military service approximately 1,200 doctors of medicine from across the country during the summer of 1968. It is essential that the physicians concerned and the people and communities which they serve understand the procedures followed in calling physicians into military service as well as the suggested procedures to be taken to obtain the deferment or exemption of individuals essential to the care of the sick or to the continuation of an essential teaching program.

Much of the information that follows was obtained from an article appearing in the January 8, 1968, issue of the *Journal of the American Medical Association* entitled "Selective Service and Military Medical Manpower," by James C. Cain, M.D., chairman of the National Advisory Committee to the Selective Service System.

In general, all physicians, unless disqualified for particular reasons, must serve two years in the Armed Forces. This is a basic premise which should be kept in mind at all times.

Broadly speaking, there are three factors used to reach a decision that a physician is "essential." These in relative order of importance are:

(1) the needs of the community;

(2) the role the physician may perform in the Armed Service (e.g. the physician who has completed his specialty training may be of more value to the service than a man who has just finished his internship); and

(3) the extent of disagreeable disruption of his life work that induction causes the physician.

In order to arrive at the quota of physicians that each state is requested to furnish the following procedure is followed: (*a*) Each local draft board is asked by the *state* director of the Selective Service System to furnish the number of 1A physicians it has registered. (*b*) The 4,000 local boards ask the physicians registered with them to undergo a physical examination and the boards then classify their physicians 1A or otherwise. (*c*) The physician then has thirty days in which to object to his classification and have it reconsidered by his local draft board.

The Armed Services, in the meanwhile, have ascertained the number of physicians needed by them, and these must be supplied by the Selective Service System. These physicians are furnished by each state in a ratio proportionate to the total number desired and the total number of 1A physicians registered in a particular state.

If the physician or the institution with which he is associated feels that he is essential to his community, then he or the institution during the first thirty days following his classification as 1A (in practice this period extends up to the time he receives his notice of induction) can request a review of his classification by his local board. The 1A physician can request deferment only on the basis of essentiality to the care of the sick or to the continuation of an essential teaching program. Hardship or factors other than those listed are not considered. The individual should submit any information supporting his request for deferment, such as corroborative statements from his hospital, patients, medical societies, and the like, which would help to show the need for the man's continued activities in the area.

The local board in turn forwards this information to the State Advisory Committee (there are two in New York, one for New York City and the other for the rest of the State). The State Advisory Committee in turn asks for the advice and recommendation of local committees comprised of physicians residing and practicing in the area where the registrant lives and works. This advice is then transmitted to the local draft board for guidance.

We have been advised that the State

Advisory Committee makes suggestions, but seldom reverses or alters the local committee's decision. On occasion it may seek further opinion from the Washington office of the Selective Service System and refer the case back to the local draft board for re-consideration.

If the local draft board, after completion of the above procedure, feels that the physician has been correctly classified as 1A, then he or his sponsoring organization can request that the classification be reviewed by the District Appeal Board. There is such a board in each federal judicial district. The case can be reviewed by the District Appeal Board in the region of the local draft board or by the District Appeal Board of the region where the physician resides, if he so desires. These District Appeal Boards are part of the Selective Service System and rely heavily on the advice of the State and National Advisory Committees who are charged with trying to balance the needs of the civilian community with the requirements of the Armed Services.

If the District Appeal Board agrees by unanimous vote that the physician is 1A, he is certified to the state director of the Selective Service System as 1A and available for induction. If the District Appeal Board is divided in its opinion regarding the physician's classification, or if the state or national director of the Selective Service System disagrees with the opinion rendered, an appeal to the President can be requested. The opinion of the Presidential Appeal Board is final.

We have set the example

For five years the slogan "Set the example—use seat belts!" has appeared on the front cover of the JOURNAL. We feel that we have gotten the message across and that is no longer necessary to carry it.

Now that seat belts are standard equipment and the concept of built-in safety has finally penetrated the manufacturers we look to the future with confidence.

But, lest we forget, here are some conclusions arrived at by the Cornell Aeronautical Laboratory in Buffalo, after a study of 33,831 car accidents, in which 53,720 persons sustained head injuries over a fifteen-year period.

The study, which considered seat position and age of car occupants in relation to source and type of injury, also found:

—injured children up to five had more frequent head injuries than older children through the age of adolescence, but the injuries tended to be minor, primarily involving soft tissue,

—pre-school children suffered skull fractures more readily than school age youngsters,

—the windshield caused 21 per cent of head injuries to children under five who were front seat occupants,

—the windshield also caused 45 per cent of head injuries to persons over 20 who were sitting in the front seat,

—the instrument panel caused 27 per cent of head injuries to pre-schoolers in the front seat and accounted for 29 per cent of head injuries to other children in the front seat from five to nine years old,

—for persons ten years of age or older, the panel caused head injury to only 11 per cent of front-seat passengers,

—probability of head injury in auto accidents is high for all ages, 70 per cent on average, with more severe effects to older people—especially those over sixty,

—front seat passengers aged ten to nineteen are ejected from autos in accidents twice as often as other front-seat passengers up to ten years of age.

The study, which began in 1952, also found that seat positions change the source of head injuries:

—for drivers, the steering assembly causes 27 per cent of such injuries, and the windshield causes 29 per cent,

—for the right-front seat passenger, the windshield causes 45 per cent of head injuries; the instrument panel, 11 per cent,

—for rear-seat occupants, the greatest single cause of head injury was the back rest of the front seat. It caused 25 per cent of head injuries studied.

A belt below the waist is better than a crash in the head.

STOP THE WHIRL

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Sex Education and the Physician

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ADOLESCENT YOUNGSTERS *are misled by those sex educators who are either vicious in advocating a rejection of moral standards or who prefer to take a neutral stand of permissiveness and freedom of choice. It is necessary to put sex in its proper context at the highest level of human and social responsibility. The physician is obliged to preserve the health of our youth and to counteract the destructive elements that assail them. He can speak on grounds of health, including emotional health and well-being. Sex serves as an instrument in the growth of character. Young people should have an informed choice.*

IN THIS ERA of the "sex revolution," our adolescent youngsters are confused. One reason for this is that they are misled by those who undertake to educate them in the field of sex. What's wrong with the educators?

New concepts in sex education

The educators who mislead our youngsters fall into two groups. Those in the first group are little short of vicious. They advocate the rejection of moral standards, and they scorn the ideal of premarital chastity. They may be called vicious not because they are revolted by chastity but because of the style and language of their presentation. They write in a shrill and intemperate style, in words of defiance. Theirs is the intemperate language of the rebellious adolescent.

The second group is made up of people who have a mature sense of responsibility. They are highly motivated and are anything but rebellious, but they are beset by doubts that vitiate their teachings. Their theme is that times have changed, and they call for a corresponding change in our sexual philosophy. They say that permissiveness is the word for today and that our youngsters are free to choose whether to accept or to reject the concept of premarital chastity which used to be held up to the adolescent girl as a desirable ideal. Their posture is that of neutralism: They are reluctant to present the case for chastity.

An example is the report on *Sex and the College Student* issued recently by the Group for the Advancement of Psychiatry.[1] The members of the group are among the top psychiatrists of the country. They command respect, and their opinions carry weight. The Report, I submit, will have a destructive effect on our youngsters and on their teachers.

The authors of the Report (the Committee on the College Student) have chosen the case of a coed named Sally to demonstrate what they regard as an enlightened attitude suitable to the conditions of life today. Sally entered college intending to remain a virgin, but in her junior year she changed her mind when she met a young man who attracted her deeply. The authors of the Report are impressed by her ability to change her mind. They write: "Growth is shown by Sally's ability to develop flexible attitudes toward the possibility of intercourse . . . . She demonstrates a responsiveness to life experience and a capacity to learn from them and to make choices. Rigidity, the necessity to cling unyieldingly to a set of fixed attitudes without the exercise of judgment, is usually indicative of anxiety and a lack of freedom to learn."[1]

The authors speak favorably of the qualities revealed in Sally's change of mind. "Flexibility" and "responsiveness to life experience" are indeed desirable traits.

The authors continue: "Issues of sexual morality are complex and confusing for the college student. The oversimplification of the moral position in which abstinence equals right and indulgence equals wrong is not at all consistent with conduct at most colleges." They deride this "oversimplification" and they prefer the "flexibility" shown by Sally. They write: "Abstinence . . . may simply reflect inability to embrace sexual pleasure during adolescence."[1]

The word "may" appears in the last sentence, but it's a safe bet that some readers will overlook this word and will remember only that in the view of top-level psychiatrists, chastity is a sign of neurotic inhibition.

One of the problems of the teacher is that his message may be open to misinterpretation. The statement that abstinence may be due to neurotic inhibition is eminently correct, for there are cases of sexual disorder arising from neurotic mechanisms. But the statement, impeccable though it be, can have an adverse effect on the coed: It can arouse in her the impulse to reject her moral teachings in an effort to prove that she is not one of those miserable neurotic creatures whose behavior "reflects inability to embrace sexual pleasure." She remembers the pitch of her boy friends. These self-appointed therapists have been drumming it into her that in the climate of today to be a virgin is a sign of "frigidity."

Another example of a mature and respected sex educator is Kirkendall,[2] a man who has devoted a lifetime to the study of adolescent behavior. Impressed by a finding of Kinsey's suggesting that premarital sexual experience is correlated with subsequent marital happiness, Kirkendall wrote:

Effects

> Some studies indicate that couples, especially engaged pairs, experiencing premarital intercourse state that it strengthens their relationships. Some research findings indicate that premarital intercourse may be related if not conducive to more effective sexual adjustments in marriage. Some counselors, therapists and philosophers see positive values in such experiences, and parents may be advised to be more lenient and accepting toward premarital intercourse.[2]

This is a specious argument. Statistical studies such as Kinsey's look great on paper. They are impressive with all their charts and graphs. But so often they are without substantial value, for they are based on the replies of respondents to questionnaires, replies which are notoriously inaccurate.

Kirkendall took pains to hedge his conclusions, but again we must consider the mischief that can be produced even by a carefully worded statement. Poffenberger[3] reports what a high school teacher told him. He writes that he was much concerned when she said that Kirkendall's ideas had been such a help to her. She said, "Now I have an answer; I just tell the girls and boys that they have to consider both sides of the question: Will sexual intercourse strengthen or weaken their relationship?"

This, mind you, was not a college teacher. It was a high school teacher. One can imagine the turmoil in the mind of a high school girl: In the afternoon she heard from her teacher that the question has two sides, and now in the evening she is being propositioned by her boy friend who assures her that intercourse will strengthen rather than weaken their relationship.

For one more example, here is a passage from a book by Johnson,[4] professor of health education at a large university. Pointing out that advances in contraception have upset the "traditional sexual morality," Johnson wrote:

> An increasingly safe and potentially wholesome sex life is said to be becoming available to the married and the unmarried who desire it; and there seems to be a growing feeling that this is a decision to be made by individual women and is not the business of society at all . . . . A considerable number of people view the new era for women with alarm, (but) my personal view is that the new era for women with its opportunities for independence and choice as to way of life is one of the most important and encouraging developments of history.

This book was written primarily for students. The message to the unmarried coed is clear.

Morality today is a dirty word. A

curious change has taken place in our society. In our wife-swapping suburbia, a man and wife are almost ashamed to reveal that they have never deviated from the path of marital fidelity: They dread the raised eyebrows of their "sophisticated" friends. Youngsters of high moral principle must bear a heavy burden. The story has been told of a college student who was under pressure from his classmates. They teased him because of his belief in virtue; they said he must be a fairy. In mounting distress, he finally yielded against his better judgment and allowed them to fix him up with a chippie. He went to bed with the girl in a state of turmoil and couldn't get an erection. He then went into an acute panic.

Why do responsible physicians and teachers go along with the tendencies of the day and sanction the teaching of a degraded view of sex? Why do they accept the expression of sex in a context short of the highest commitment of man and woman, in a setting below the highest level of human and social responsibility?

Issue of premarital sex

In search of the answer, we might study the proceedings of a conference on sex education sponsored by the National Association of Independent Schools.[5] The meeting, attended by headmasters and teachers, was held at Princeton in April, 1966. The four panelists, men and women of distinction in their respective fields, backed away from the key issue of premarital chastity. They said they "don't know" whether chastity should or should not be held up as a guideline for our youth. Thus, one of the panelists said he had been invited to speak to the freshman class at a women's college. "I said, 'You've come to the wrong person. I can't do it.' They said, 'Why not?' I said, 'Because I can't tell these girls whether it's right or wrong to have premarital intercourse. I don't know.' And they said, 'We don't know either.' . . . . The colleges are certainly confused, as are we, the teachers." The panelist alluded to "the uncertainty that I have in my own mind as to whether premarital sex is constructive or destructive."

The ability to confess ignorance is a commendable trait. It takes courage to come forth with the candid admission "I don't know." But a member of the audience voiced his dissatisfaction and frustration: "We deal with adolescents at a time when they are terribly concerned about themselves, their relationships to one another and society, and we say, 'Let's give them five different views and let them sift it out.' I am not sure that this is good enough."[5]

The man is right. It certainly is "not good enough." Premarital sex behavior is a crucial issue, and to take an equivocal stand is to deny our youngsters the help they are looking for, and this includes even those who don't openly ask for help. There are various reasons for the hesitancy and uncertainty of our sex educators, and one of them was noted by one of the panelists, Rev. Richard P. Unsworth, chaplain at Smith College. Mr. Unsworth said:

> Educators have been characteristically punitive with regard to sexual behavior . . . . We are now in the opposite position of being afraid to be punitive at all for fear we will come out looking like Puritans. We are now more commonly afraid to take a stand for what we simply believe: that normally it is not a good thing for people to have premarital intercourse. It may be all right under certain circumstances . . . . But we are not willing to say—most of us—that (it) is acceptable and is to be encouraged. If we are not willing to say it, we've got to take the same kind of stand on this as we do on matters of intellectual honesty and other things that concern us as educators.[6]

Physician's role

No right-minded person today would want to emulate the Puritans, but we need not reject a good moral principle just because it bears a resemblance to one of theirs. The status of the physician in our society is such that he, more than any other worker, can afford to take a moral stand which some people will denounce as puritanical. The physician has the obligation to preserve the health of our youth and to counteract the destructive elements that assail them. To those who are "hung up" on the issue of morality, he can say that he speaks, not on moral grounds, but on grounds of health, which includes emotional health and well-being.

Insight into human sexuality may be gained from the contrast between man and lower animals. In lower animals copulation occurs only when the female is in heat, whereas in man it can take place at any stage of the monthly cycle. This shows that in man sex serves a purpose beyond procreation. The additional purpose is psychologic. Sex serves as an instrument in the growth of character. It enables a man and wife to grow emotionally and to reach emotional maturity. It strengthens the bond that led them to the altar, and thereby it fortifies the home they have established for their children. Thus sex serves a high and noble function: It enables a man and wife to realize their highest human potentialities and responsibilities. To view sex in a lesser context, to regard it as no more than a means of self-indulgence and "instant gratification" or as an avenue of exploitation, is to degrade it.[6]

We must offer our youngsters something better than the "I don't know" philosophy. Klemer,[7] the psychologist, is among those who present a healthy alternative. He is willing to take a positive stand. In a book he edited he has given us an eloquent presentation of the psychologic merits of premarital chastity.

The urge to conform is great, and young women today feel they must go along with what seems to be the prevailing tendency. Klemer makes a trenchant comment on this urge to follow the crowd:

> Perhaps the most insidious of all the confusions impeding more effective moral guidance is the widely believed allegation that premarital intercouse has become so general that we can no longer hope for any real premarital sexual morality on the part of young women. The implication is that no fair-minded parent or educator should expect his child to buck the trend and stand up against the alleged majority in defiance of the march toward complete sexual freedom . . . . This defeatism seems unwarranted. It seems clear to the writer that young women can still be taught to believe in the personal importance of premarital continence to the point where these beliefs are not negative inhibitions, but positive values from which they can gain self-esteem.[7]

Klemer has made a study of college students, and one of them, a girl of twenty-two, told him this:

> Parents must teach their children in such a way that they will not want to go counter to what they believe to be right and just and good. Done this way, taboos become willful self-restraints. They are not set out as things the child must not do, but rather they are things that the child himself wishes not to become part of him. This has worked for me; I would not want it otherwise.[7]

Positive values of chastity

We can learn from this lucky young lady. The biggest argument for chastity is not the risk of pregnancy and venereal disease. These are negative arguments, albeit important. We must stress the positive values of chastity. Children reared in a setting of sound family life, where they can see and absorb the positive values of love and sex, "will not want to go counter to what they believe to be right and just and good."

In speaking to a group of students at a women's college, I referred to the high school teacher, mentioned before, who told her pupils that the question has two sides. I said, in substance, "People say you have a choice. But from the standpoint of emotional well-being, premarital chastity is in your own best interest, and anything that is in your interest is bound to be in the interest of your future husband and children. Really, therefore, you have no choice."

A student objected to the last four words. She thought I would deprive her of the "right to choose," and she passionately defended her rights in a "free society." In reply I gave an analogy. A patient consents to a surgical operation, but it must be informed consent: He must have reasonable knowledge of the risks of the operation. In the field of sex, our youngsters do indeed have a choice, and only a fool would try to deprive them of it, but it ought to be an informed choice. Premarital sex freedom has been made to appear attractive, but they must also know the advantages of chastity in terms of their emotional well-being. They must be helped toward the conception of sex as an instrument in the growth of character and the development of a sense of social responsibility.

Theology lies outside the province of the medical man, but we can help people to see that moral and ethical codes have a meaning beyond theology. They have psychologic and sociologic meaning. A moral code is devised to satisfy the needs of a society, and it should be viewed in terms of those needs. It may have been handed down to us in theologic language ("Thou shalt not"), but even an atheist who rejects theology ought to go behind the language and consider the code in terms of the needs for which it was designed.

Conclusion

Sex educators must not hesitate to stand up for the positive values of life. We must not retreat before the scornful glance of those who would brand us as unsophisticated moralists. We must teach our youth the realities of sex so that the choice they make will be an "informed choice."

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New York, New York 10025

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Gentamicin sulfate for bacterial infections of eye

Based on his experience with 59 patients treated for various external diseases of the eye, A. S. Breakey, M.D., writing in a recent issue of the *Eye, Ear, Nose & Throat Monthly*, concludes that gentamicin sulfate (Garamycin), either as an ophthalmic solution or ointment 0.3 per cent, is a useful new topical agent in infections, particularly those resistant to the usual antibiotics. Conjunctivitis, blepharitis, keratitis, chalazion, and more, were usually eliminated in three to six days. In addition to these 59 patients, 9 were treated with the drug for postsurgical prophylaxis, none of whom developed infections. Staphylococcus aureus in various strains headed the list of organisms cultured (24), and Staph. albus was next (9). Pseudomonas aeruginosa was eliminated in a patient with corneal ulcer and hypopyon. The only adverse effect was slight burning reported by 3 patients; this did not require abandonment of therapy. There was no evidence of sensitization or systemic effects. Some of these conditions were chronic infections resistant to sulfonamides and standard ophthalmic antibiotics and their cure appears to indicate that gentamicin sulfate is effective against these increasingly resistant organisms.

The entire series of 68 patients (59 with eye disease, 9 given postsurgical prophylaxis) consisted of 32 males and 36 females ranging in age from seven to eighty-one years. Of the 59 with external diseases of the eye, the diagnostic distribution was as follows: blepharitis, 4; purulent conjunctivitis, 37; follicular conjunctivitis, 1; keratoconjunctivitis, 1; corneal ulcer, 1; punctate keratitis, 3; chalazion or meibomianitis, 11; and sty, 1. Of the 68 patients, 44 got drops, 17 the ointment, and 7 both. Drop dosage was usually 2 to each diseased eye four times a day, reduced to three, then two times as the patient improved. The ointment was administered once or twice a day. Treatment ranged from two or fourteen days. Follow-up at intervals of two days to six weeks was made on nearly all patients.

There were only 5 treatment failures. Over all, treatment was successful in 43, with 3 requiring second courses of concomitant steroid. There were 11 partial successes, with transfers to zinc sulfate, antihistamine, corticosteroid, or retreatment.

Prevention and Control of Bacterial Endocarditis*

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FOLLOWING THE INTRODUCTION and widespread use of antibiotics, the incidence of bacterial endocarditis declined sharply, from 1.66 per cent of 5,035 autopsies (1935 to 1946) to 0.52 per cent of 4,958 autopsy cases (1947 to 1952) at the Queens General Hospital. Recently, however, bacterial endocarditis has again increased to 1.42 per cent of 6,126 autopsies (1956 to 1965), Bronx Municipal Hospital Center (Table I). This increase, especially with cases of the acute bacterial endocarditis, has been particularly manifest in the elderly and in those with no previous valvular distortion or abnormality.[1,2] In addition, in clinically cured patients bacterial endocarditis frequently left residua resulting in critical complications such as heart failure. Heart failure became a common cause of death in bacterial endocarditis and now occurred more frequently from valvular defects than from myocarditis.[3-6] The study of the development of bacterial endocarditis is important for the proper application of methods for its prevention and control and to avoid its serious complications.

TABLE I. Incidence of BE in various periods between young and old

Periods and Incidence	Total	Under 50 Years	Over 50 Years
1936 to 1946			
Autopsy	5,035	2,239	2,796
BE (per cent)	94 (1.9)	72 (3.2)	22 (0.8)
1947 to 1952			
Autopsy	4,958	1,553	3,405
BE (per cent)	26 (0.52)	13 (0.84)	13 (0.38)
1956 to 1965			
Autopsy	6,126	1,799	4,327
BE (per cent)	87 (1.4)	28 (1.6)	59 (1.4)

Bacterial endocarditis usually results from the seeding of a primary NBTE (nonbacterial vegetation).[7] It would seem logical to approach the problem of endocarditis by attempting to prevent this initial step in the formation of NBTE, the agglutination of platelets on the heart valve and the deposition of fibrin. A number of drugs have been used to prevent the agglutination of platelets, but all have thus far been too toxic to make this approach practical.

Incidental to the use of dextran for the treatment of shock, a bleeding tendency was found, presumably based on the coating of platelets by dextran; this surface coating seemed to prevent their agglutination. The use of dextran in the treatment of thrombosis and in the prevention of experimental thrombosis encourages consideration of its use in the prevention of early platelet NBTE formation.[8-14] Heparin is commonly used as an anticoagulant to prevent fibrin deposition. Others have used heparin in the treatment of bacterial endocarditis.[15]

Experimental studies

A single dose (0.25 ml.) of overnight culture of Streptococcus faecalis† was administered intravenously to intact rats

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† From B. S. Jortner, M.D.

(three months old, 300 Gm. average) and rats with arteriovenous fistula below the renal arteries (sixteen months old, 500 Gm. average) to compare the effectiveness of dextran and heparin in preventing the development of bacterial endocarditis (Table II). Dextran (molecular weight 75,000) was given on three consecutive days to the rats with arteriovenous fistula (arteriovenous shunt rats), starting on the day following bacterial injection (6 cc. of 10 per cent solution or 600 mg. of dextran) and to intact rats three days after bacterial infection (3 cc. of 10 per cent solution or 300 mg. of dextran). Heparin was given intramuscularly, 200 units to arteriovenous shunt rats and 120 units to intact rats. Heparin was given four times every twenty-four hours, starting on the day of bacterial infection, to intact rats. Our previous experiment revealed that no bacterial endocarditis developed within three days after infection of intact rats.

In this preliminary experiment, rats given dextran or heparin showed no effect from the standpoint of prevention of bacterial endocarditis; yet the development of bacterial endocarditis was slightly delayed in the groups of intact rats with no arteriovenous shunts given dextran or heparin (Table II). The tendency of delayed development of bacterial endocarditis was also found in the arteriovenous shunt rats treated with dextran or heparin. Although the number of rats in this experiment is small, this tendency to delay the development of bacterial endocarditis would indicate that further study is warranted. A larger series of rats and animals of different species should be studied. An earlier timing of the administration of the dextran or heparin or both in relation to the administration of the bacteria should be tried with parallel doses.

Other groups of rats, 12 intact and 12 arteriovenous shunt rats, were studied for the morphologic modification of bacterial endocarditis with delayed antibiotic therapy. Ampicillin (Penbritin), 50 mg., effective for Str. faecalis, was given to 6 rats of each group after five days of infection with Str. faecalis (0.5 ml. of an overnight culture). The group of rats that received antibiotic therapy showed a more prolonged survival, and evidence of healing processes was obtained (Fig. 1).

THE INCIDENCE OF *bacterial endocarditis declined sharply when antibiotics were first used; however, the condition has again increased. Since bacterial endocarditis usually results from the seeding of a primary nonbacterial vegetation, an attempt was made to prevent the initial step in the formation of nonbacterial vegetation, the agglutination of platelets on the heart valve and the deposition of fibrin. Dextran and heparin were compared in rats to show effectiveness in preventing the development of bacterial endocarditis. Practical prophylaxis must be directed to prevent the contamination of nonbacterial thrombotic endocarditis by active or passive bacteremias.*

Theoretical considerations

NBTE is best demonstrated by nicotinamide adenine dinucleotide diaphorase reaction, and the age of platelet NBTE is also distinguishable by this reaction (Fig. 2). This reaction demonstrates platelets well, distinguishes fresh from old platelets, and also shows living bacteria with a deep blue reaction and dead bacteria with a much lighter reaction (Fig. 3). The histoenzymatic reactions of NBTE and bacterial endocarditis have been detailed elsewhere.[16,17]

As noted frequently in our work, bacterial endocarditis usually results from a seeding of a primary nonbacterial vegetation (Fig. 4).[7,18] The prevention of bacterial endocarditis depends on the recognition and full realization of this potential hazard of NBTE. This calls for (1) the early institution of energetic measures to prevent the

TABLE II. Experimental condition and results with and without dextran or heparin*

Groups	Dextran	Heparin	Control†
Arteriovenous shunt rats	7 of 10 (70)	9 of 10 (90)	7 of 10 (70)
Days	4 to 13	4 to 10	4 to 12
Intact rats	5 of 12 (42)	3 of 12 (25)	3 of 12 (25)
Days	9 to 13	9 to 10	7 to 10

* Days of development of bacterial endocarditis after bacterial inoculation. Parentheses: Bacterial endocarditis developed in per cent.

† Control: without dextran or heparin.

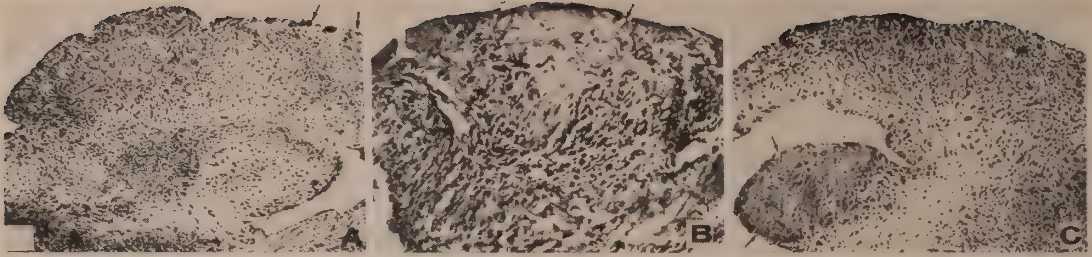

FIGURE 1. Mitral valves of rats. (A) Rat received 0.25 ml. Str. faecalis. Penicillin (ampicillin), started five days thereafter, given daily for six days. Rat killed thirteen days after infection. Valve thickened with cellular reaction, including scattered round cells. Valve quite clean, and fibrotic focus (long arrows) present. Bacterial contamination seen on surface of vegetation attached to valvular surface (short arrows) (hematoxylin and eosin stain). (B) Rat received penicillin (ampicillin) for five consecutive days, starting five days after bacterial inoculation of 0.5 ml. of overnight culture of Str. faecalis; rat killed thirteen days after infection. Valve thickened with active fibrosis. Phosphotungsten acid hematoxylin and other connective-tissue stains demonstrate increase of collagen (triangular area between arrows) (Phosphotungsten acid hematoxylin stain). (C) Rat received ampicillin daily for five days after bacterial infection; rat killed eighteen days after infection. Valve thickened with marked cellular reaction. Vegetation (arrows) nonbacterial and undergoing organization (hematoxylin and eosin stain).

development of the initial NBTE and (2) the control of the passive or active bacteremia to prevent the contamination of the NBTE, once evolved. As yet we have no means of diagnosing the existence of NBTE unless there is a history of recent bland embolism or fresh bland embolization supervenes. NBTE has a propensity to develop on scarred valves of old rheumatic disease, on congenital defects, or on senile changes. There must be a full awareness of the frequent occurrence of NBTE in patients with such scarred valves and the high incidence of NBTE in cachectic states, in uremia, in the aged, and in instances of malignant conditions, particularly in cases of mucogenic cancers.[19] This knowledge is helpful in planning timely prophylaxis.

There is every hope that ultimately an inhibiting enzyme preparation or a chemical product like adenosine or its derivatives or adenosine monophosphate will be found which will effectively inhibit platelet agglutination and which will be nontoxic and will not increase blood volume or susceptibility to infection.[20] The importance of such a successful finding cannot be overemphasized, since the prevention of nonbacterial thrombotic endocarditis is only one clinical application. A more important general application would be the prevention of thrombosis in general; it is the agglutination of platelets which is the important initial step in most instances of natural spontaneous arterial thrombosis, such as occurs in the coronary or cerebral vessels and in phlebothrombosis, all with potential lethal complications.

It must be fully realized that procedures which increase total blood volume, as

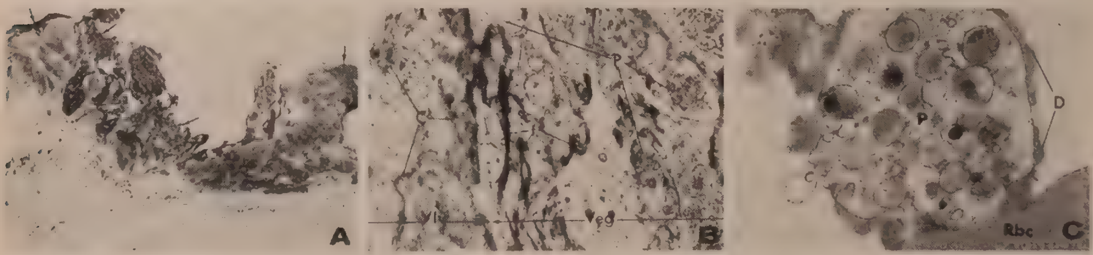

FIGURE 2. (A) Mitral valve from twenty-seven-year-old female with rheumatic heart disease who died after abortion. Platelet vegetation consists of areas of formazin precipitation of different density corresponding to their varying ages. Older deposits of platelets darker, freshly agglutinated platelets more lightly stained. Fresh platelet vegetations (arrows) superimposed on older vegetations. Nicotinamide adenine dinucleotide diaphorase reaction. (B) Electron micrograph of fresh vegetation (Veg.) consisting mainly of platelets (p) with few strands of fibrin (f). Valve tissue occupies left portion of photograph. Note collagen (C) and loss of endothelial layer. (C) Electron micrograph of typical dextran-coated platelet (P) shows amorphous density of dextran on surface of platelet. Portion of red blood cell (RBC) in contact with platelet but shows no coating. Ruthenium red preparation with uranyl-lead stain (×17,680).

arteriovenous shunts of considerable magnitude,[21] favor the development of endocarditis. Obviously the administration of dextran also increases the total blood volume. This may account for the lack of dramatic results encountered in this experiment. One to 2 Gm. per kilogram body weight of dextran has been used to prevent thrombosis in the dog. For the rat, the total blood volume is so small that a more concentrated dextran solution is required to prevent thrombus formation. This too can yield an intolerable blood volume increase. Heparin, in this experiment, was calculated from the usual human clinical dose; yet to decrease the platelet stickiness and the agglutination of platelets, a much higher dose seemed necessary.[22] Any delay in the development of bacterial endocarditis has an important advantage in that it gives time to administer antibiotics, thus preventing the bacterial contamination of fresh nonbacterial vegetation on the valve.

Rationale for prophylaxis

The practical approach to the problem of prevention of bacterial endocarditis, until such chemical prophylactic means to prevent the initial lesion of agglutination of platelets and fibrin deposition are found, lies in the control of passive and active bacteremia to forestall the seeding of such already formed NBTE. This requires the use of potent nontoxic chemotherapeutic drugs and antibiotic agents. Antibacterial therapy can also sterilize such NBTE vegetations as have already become infected superficially. By such effective measures, the development of the fully established and progressive bacterial vegetations (both acute and subacute) can be forestalled, prevented, sterilized, and controlled.

The timing of antibiotic therapy also is important in relation to the morphologic features of the bacterial vegetations. Most organisms that cause bacterial endocarditis are coagulase positive, that is, transform fibrinogen to fibrin. Thus once the bacteria contaminate the NBTE, bulky vegetations tend to be formed quickly. Such a bulky vegetation tends to cover and embed the bacteria and thus check the diffusion and effectiveness of antibiotics on the organisms (Fig. 5). At the same time, the vegetation itself can be an excellent culture medium for the organisms. After the vegetation is fully formed, the process of erosion and ulceration can occur and then, if healing and organization take place, can result in varying deformity of the valves, as thickening and scarring as well as aneurysm and perforation. This is well demonstrated in the series of experiments with antibiotic therapy.

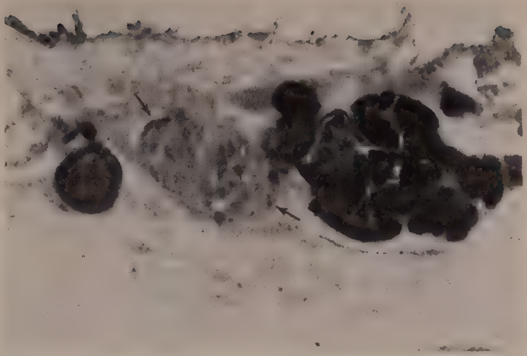

FIGURE 3. Mitral valve from seventy-six-year-old male with vegetation of acute bacterial endocarditis. Living bacteria show deep bluish formazin precipitate, and dead bacteria show lighter reaction (arrows). Fibrin covers bacterial colonies embedded in vegetation. Nicotinamide adenine dinucleotide diaphorase reaction.

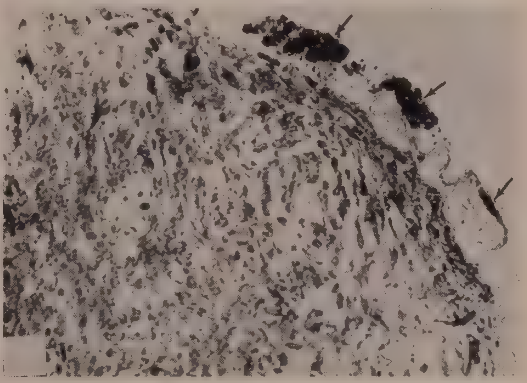

FIGURE 4. Mitral valve from rat with surgical arteriovenous fistula (arteriovenous shunt) who received single dose of 0.25 ml. overnight culture of Str. faecalis. This rat killed six days after intravenous bacterial inoculation. Fifty milligrams of ampicillin started three days after infection and given three times with intervals of twenty-four hours. This section taken from edematous valve showing considerable cellular reaction. Dark bacterial colonies (arrows) located on surface of platelet and fibrin vegetation. Nicotinamide adenine dinucleotide diaphorase reaction.

Delay in antibiotic therapy yielded only a prolonged survival, and recurrence occurred (Fig. 1A). Even when the bacterial endocarditis was cured clinically, valvular thickening and deformity did result (Fig. 1B and C). Such valvular distortion may lead to congestive heart failure in human beings, although no such congestive heart failure has been successfully produced in rats.

Present pragmatic specific recommendations

There seems general agreement that the dosage of sulfonamides or penicillin used to prevent the recurrence of rheumatic fever is not adequate for the prevention of bacterial endocarditis. The Committee on the Prevention of Bacterial Endocarditis of the American Heart Association (Lewis W. Wannamaker, M.D., Chairman)[23] does not recommend eradication of all potential foci of seeding bacteremia by extensive prior therapy. This may do more harm than good, for such measures may substitute a resistant strain of organism for a sensitive one.

However, it is recommended that on the day of any surgical or manipulative procedure, procaine penicillin (600,000 units) be given, and that this be supplemented by a similar dose of crystalline penicillin intramuscularly one or two hours before the actual hazardous surgical or manipulative procedure. Practical considerations often dictate oral administration. Then four doses, every four to six hours, of 0.25 Gm. of alpha-phenoxymethyl penicillin (penicillin V), alpha-phenoxyethyl penicillin (phenethicillin), or 500,000 units of buffered penicillin G should be given during the day of the intervention, with one extra dose taken one hour just before the procedure.

For two days after the procedure, 600,000 units of procaine penicillin should be given intramuscularly each day. If the oral route is used, then 0.25 Gm. of alpha-phenoxymethyl penicillin (penicillin V), 0.25 Gm. of alpha-phenoxyethyl penicillin (phenethicillin), or 500,000 units of buffered penicillin G should be given four times daily by mouth.

When the enterococcus is the potential organism, as occurs in instances of surgery of the lower gastrointestinal tract, instrumentation of the genitourinary tract, and in childbirth, then, in addition to this, 1 or 2 Gm. of streptomycin should be given intramuscularly on the day of the procedure and for each of two days following the procedure. In children streptomycin should be given in a dosage of 15 mg. per kilogram, not to exceed 1 Gm. per day.

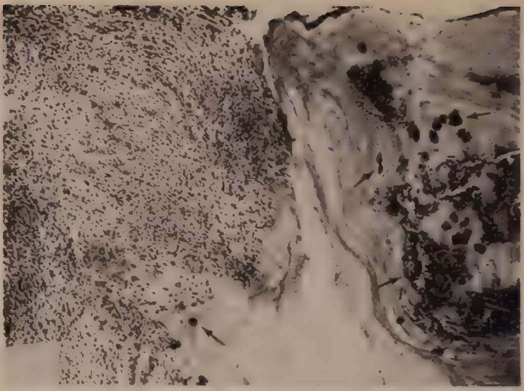

FIGURE 5. Mitral valve from rat who received 0.25 ml. of Str. faecalis and killed thirteen days after infection. Three ml. of 10 per cent dextran solution given daily three times. Bulky vegetation similar to venous thrombus, showing lamellar lines and "built up" zones clearly. Bacterial colonies (arrows) and leukocytes scattered in and on vegetations (hematoxylin and eosin stain).

In each instance an attempt to elicit a history of sensitivity to penicillin or other drugs should be made. In individuals who are sensitive to penicillin, erythromycin should be used in a dose of 250 mg. by mouth four times daily for adults and older children to replace the pencillin. In children a dose of 20 mg. per pound per day divided in three or four doses may be used; the total, though, should not exceed 1 Gm. per day.

Until we can control the prevention of the potential focus or nidus on the valve and the nonbacterial platelet and fibrin vegetation (NBTE), which is prone to be seeded so readily, our efforts must be directed to preventing the infection of NBTE foci during their process of evolution or after such NBTE are fully formed, with appropriate antibiotics in proper dosage at the right time. If this is done, there will be fewer instances of bacterial endocarditis, both acute and subacute, requiring their prolonged treatment. Also the valvular deformity resulting from bacterial endocarditis could be minimized. Recent experience with bacterial and nonbacterial endocarditis at autopsy confirms this viewpoint. Whenever the potential contamination of the NBTE is known, and time permits, sensitivity studies to determine the best antibiotic should be done.

Summary

After antibiotics were introduced, the frequency of bacterial endocarditis declined, only to have the incidence again increase recently. Cured bacterial endocarditis now occurs more often with residua of valvular deformity leading to heart failure. Delayed or inadequate antibiotic therapy is still frequent.

The control of bacterial endocarditis calls for the prevention of the initial platelet nonbacterial vegetation and the prevention or elimination of all passive or active bacteremias to forestall contamination of same. The control of the development of the initial lesion before infection and its diagnosis is now inadequate although there is some future hope in this direction with the development of more appropriate measures for control of the initial platelet agglutination.

At present, practical prophylaxis must be directed to prevent the contamination of nonbacterial thrombotic endocarditis once they are formed. The regimen of the American Heart Association is recommended to control the infection of the initial nonbacterial lesion by the proper prophylactic measures, and the utilization of adequate antibiotic therapy is detailed.

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Family Planning in Over Age Forty Female

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SECOND ONLY TO the tragic unwanted pregnancy of single girls is the unplanned pregnancy in women over age forty. This is so both from a socioeconomic as well as a medical standpoint. Most women have completed their families by the time they have reached the fifth decade of life. The majority have grown, teen-aged children, and some are grandmothers.

It is at approximately this stage in life that there is an increase in the incidence of systemic disease such as diabetes, arteriosclerotic heart disease, arthritis, as well as a higher incidence of the complications that may accompany any pregnancy.[1] At this time there is also an increased number of gynecologic problems, dysfunctional uterine bleeding, cancer of the cervix, and pelvic relaxation.[2] As will be shown later, a number of women are grandmultiparas, an additional hazard in pregnancy at any time of life.[3]

In 1965 there were 158,815 live births recorded in the five boroughs of New York City; of these 3,310 were of mothers over the age of forty, representing 2.2 per cent of the live births in New York City.[4] With these figures and thoughts in mind it was felt that a review of our experience in family planning in the over age forty female would be of interest.

TABLE I. Parity of the 79 women over forty years of age

Number of Children	Number of Women	Percentage of Women
0	4	5.1
1	10	12.6
2	10	12.6
3	14	17.8
4	17	21.5
5	6	7.6
6	8	10.2
7	2	2.5
8	3	3.6
8+	5	5.1
TOTAL 316	79	100

The Family Planning Clinic at the Woman's Hospital of St. Luke's Hospital Center was opened in February, 1966, under the direction of the authors. During the first fifteen months 2,059 new patients were registered, of which 79 or 3.8 per cent were over the age of forty. This is 3.8 per cent of our total clinic and is greater than the figure of 2.2 per cent for all new mothers over forty in New York City. The following discussion is a preliminary report on these 79 patients.

Since approximately 2 per cent of the patients who are delivered in the hospital are over the age of forty, it is apparent that a proportionately larger number of new mothers over forty years of age are being registered in the Family Planning Clinic. These older women would appear to have a greater motivation for family planning than the younger women.

Age

Of the 79 patients, 56 (71 per cent) are between forty and forty-two years of age, 15 (19 per cent) are between forty-three and forty-five years, and 8 (10 per cent) are over the age of forty-five.

The ability of these older women to conceive if unprotected, at this late date in their reproductive life, is well evidenced by the large number of such recent parturient women. Thirty-nine of the 79 patients or over half of the patients had delivered a term infant less than twelve weeks prior to registering for family planning, and 62 per cent had delivered within the past year.

TABLE II. Contraceptive technic

Device	Number of Women	Percentage of Women Over 40 Years of Age	Percentage of Women in General Family Planning Clinic
Lippes loop D	41	52.0	47.0
Norethindrone and mestranol	29	36.5	51.2*
Diaphragm	8	10.2	1.4
Foam	1	1.2	0.4
TOTAL	79	100	100

* All oral contraceptives.

OF 79 WOMEN OVER *age forty, only 2 expressed a desire for more children at a later date. Since most of these women said they had completed their families and since they represent a high-risk group, contraception was indicated. If possible the patient is given the contraceptive agent she requests. The oral contraceptive, discounting patient failure, has proved to be 100 per cent effective, and follow-up is greater than with other methods. There were no unplanned pregnancies in the group.*

Parity

These 79 patients represent 316 live births, or an average of four live births per patient. There were only 4 patients or approximately 5 per cent of the group with no children, and 24 patients or 31 per cent had 5 or more children with the median of 4 children. Seventeen patients or some 22 per cent have four children, and 8 patients or approximately 10 per cent are grand-multiparas with 8 or more live births (Table I).

Contraceptive technic

As is the policy of the Family Planning Clinic in general, the different technics of contraception are explained to the patients by the social service worker in advance of seeing the doctor. The patients then may request the particular technic they desire. If the physician feels there is no medical or intellectual contraindication to the one of choice, the patient's wishes are then accommodated.

A contraindication to the intrauterine device would be that the patient has never been pregnant. Then we feel she may react adversely to an intrauterine device. A patient who we feel could not take the oral contraceptive correctly would be advised to have an intrauterine device.

Using the format described the 79 patients were accommodated with the following contraceptives.

Of the 79 patients 41 or 52 per cent were given an intrauterine device. The large Lippes loop (loop D) is the one we use in our clinic. The figure of 52 per cent compares with the 47 per cent of the total clinic with intrauterine devices (Table II). Twenty-nine of the 79 patients or 36.5 per cent were initially given an oral contraceptive. As the study progresses we are changing for various reasons some of the intrauterine device patients to an oral contraceptive. Initially 36.5 per cent were given pills. The oral contraceptive used is norethindrone 2 mg., mestranol 0.1 mg. (Norinyl 2 mg.).

In the total Family Planning Clinic there were only 30 patients of 2,059 fitted with a diaphragm. In our review of the 79 patients, 8 of the 30 were in the study, therefore over 10 per cent in the above age forty group requested a diaphragm. One patient requested foam only.

Comment

Considering that 3.8 per cent of our Family Planning Clinic is made up of women over age forty, and over 50 per cent of these women have had a baby within twelve weeks prior to registering for family planning, emphasizes the desire and need of these women for contraception. Only 2 of the 79 women in this study express a desire for more children at a later date; 77 patients stated that they have completed their families. In addition to the patients' personal wishes for not wanting to become pregnant, we feel these women when pregnant represent a high-risk group. As stated previously, if at all possible we give the particular type of contraceptive agent the patient requests. If the patient wishes our advice and there is no contraindication medically or intellectually, we recommend that she use an oral contraceptive. In these women we are prescribing norethindrone 2 mg., mestranol 0.1 mg. We feel the oral contraceptive, discounting patient failure, is 100 per cent effective as a contraceptive agent. We have had no pregnancies in our group of 1,074 women who took the pills as directed.

Using the large Lippes loop (loop D) as we do, there have been reports of unplanned pregnancies at the end of one year.[5] In our clinic the pregnancy rate was 0.5 per cent at the end of one year with the large Lippes loop (loop D).

We see less irregular bleeding with the oral contraceptive agents than with the intrauterine devices. In the twenty-year-old females with irregular bleeding we can attribute it to the intrauterine device, but irregular bleeding in the fifth decade of life is more significant and requires a more thorough gynecologic investigation.

We find the follow-up is greater with the pills than with the intrauterine device. The patients with the intrauterine device are protected whether we check them regularly or not. The patient taking the pills must return routinely for a prescription, and therefore an opportunity to examine her exists.

It is interesting to note that 1.5 per cent of the women in the Family Planning Clinic were fitted with a diaphragm, but in over age forty group 8 of the 79 patients, or 10.2 per cent, requested and received a diaphragm. This probably is due to the fact that the older women used a diaphragm when they were younger and before the pill or intrauterine device was introduced. We have had no unplanned pregnancy in our 79 patients.

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State poison control centers show children major victims

Poison control centers throughout New York State received more than 47,000 emergency calls last year, according to the Department's statistics. Almost half of the callers requested advice on treatment of victims poisoned by internal medicines: aspirin, sleeping pills, birth control pills, pills for thyroid and nervous conditions, laxatives, and other medicines.

Consumption of household products such as detergents, bleaches, and solvents accounted for almost one quarter of the calls. The rest of the callers sought advice to combat poisonings from such sources as moth sprays, paints, insecticides, rat poison, perfumes, cosmetics, matches, nails, coins, glue, and gasoline.

Twenty-two centers are located throughout the State, and all but three are connected with treatment facilities which are stocked with emergency equipment and antidotes. New York City's bureau and the Department began to operate centers in 1955. When a center receives an emergency call, treatment begins in a matter of minutes, under the direction of a center physician. In addition, many physicians in the State have recently been supplied with pocket-sized transistor devices. These receive a switchboard signal up to 20 miles away and make it audible to the physician who then contacts the center.

It was pointed out that children under four constitute almost 60 per cent of poisoning cases. In 1966, for example, 5,483 cases of poisoning occurred in the State, with children under four accounting for 3,060 cases.

More than half of the children were poisoned by internal medicines, and the rest by household or petroleum products. Twenty-nine per cent of the total number of cases required hospital treatment, and 85 deaths occurred.

Scientific Session held at
Memorial Hospital
New York City
February 15, 1968

ABSTRACTS OF PROCEEDINGS

New York Society for Thoracic Surgery

ALLAN ELLIA BLOOMBERG, M.D., Editor

Arteriovenous Shunt Through Silastic Membrane Oxygenator for Pulmonary Support

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Arteriovenous shunting through a silastic membrane oxygenator has been used for pulmonary support. Adult dogs were hypoventilated so as to maintain the arterial oxygen pressure at between 40 and 50 mm. Hg. With this degree of hypoxia the animals rapidly became severely acidotic. Femoral arteries were cannulated, and the force of the animal's own arterial pressure was used to drive the blood to the membrane oxygenator from which after oxygenation the blood was returned by gravity to the femoral veins.

It was generally feasible to allow approximately one third of the cardiac output, and under these circumstances the cardiac output rose slightly to pass through the oxygenator. The oxygen tension of the returning blood was between 200 and 300 mm. Hg, and the resulting mixed venous and arterial oxygen tension was 60 to 70 mm. Hg. This rise was insufficient to correct the metabolic acidosis completely, but the pH was maintained around normal levels by respiratory alkalosis produced in the oxygenator. Alterations in the formed elements of the blood were minimal. Two-hour runs were tolerated well, thus indicating the feasibility of this technic for providing limited partial pulmonary support.

Superior Vena Cava Syndrome with Lung Cancer

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Superior vena cava obstruction is a distressing complication of lung cancer. A total of 210 cases of such obstruction, secondary to lung cancer, have been seen in the thoracic service of Memorial Hospital since 1926. The first 137 cases seen from 1926 to 1958 were reported in 1965. In this report we present the total experience gained to the present time.

The incidence of this complication has been increasing steadily. Of 303 patients with lung cancer who were seen at Memorial Hospital between 1926 and 1936, 1.7 per cent had superior vena cava obstruction. Of the 1,310 patients seen in the last five years, 5.5 per cent had this complication. The average age was fifty-five years, the youngest twenty-eight and the oldest eighty-one years. The male to female ratio increased from 27 to 1 in the earlier study to 5 to 1 in the last five years of this study.

Location was determined in 99.4 per

cent of cases. The ratio of lesions of the right side was 5.3 to 1. Tissue diagnosis was obtained in 96.4 per cent of cases. The commonly used methods for diagnosis were biopsy of metastatic nodes and cytologic studies of sputum or pleural fluid. Venous pressure was elevated in all patients on whom this study was done. Fifty-seven patients had pleural effusion.

Treatment until recently was radiotherapy alone or combined with a chemotherapeutic agent. Of all patients, 91.85 per cent received irradiation; 58.3 per cent received chemotherapy. Only 10 per cent had surgery prior to the onset of superior vena cava obstruction.

Two patients with lung cancer involving the superior vena cava underwent planned surgical resection of the lung and the vena cava. Twelve patients were treated with a fibrinolytic agent in addition to irradiation and chemotherapy.

Median survival was two hundred three days. Three patients survived five years or more. Two of these had a tissue diagnosis. One of the 12 patients treated with a fibrinolytic agent in addition to irradiation and chemotherapy was a five-year survivor.

Subglottic Tumors of Trachea and Technics to Overcome Postoperative Obstruction

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The narrowest segment of the trachea is the subglottic or cricoid area. The skeleton is widest at that point, but the soft tissues are abundant and fleshy. Surgical or other scar in that region leads to stenosis and often complete obstruction.

Two subglottic growths, which we have observed, caused 90 and 100 per cent obstruction preoperatively. Both of these tumors were excised by tracheolaryngotomy. Complete obstruction followed. One patient's obstruction responded to postoperative dilatation. The second patient had a specially constructed obturator introduced endoscopically. This led to a good airway.

Both patients talk with a good voice. At least one of the tumors was a hamartoma. The pathology of the lesions and their prognosis were discussed and endoscopic photos and other illustrations shown.

Lower Esophageal Webs or Rings

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Lower esophageal webs or rings have been the subject of much confusion, and questions have been raised as to whether they are clinically significant and the cause of dysphagia; whether they are synonymous with hiatus hernia and always located at the gastroesophageal junction; or whether they are an early stage of structure formation secondary to reflux esophagitis.

These questions are reviewed from a collection of the available literature to include the pathology, the location, the cineradiographic and manometric studies, and the management of 135 symptomatic lower esophageal webs or rings.

Lower esophageal rings or webs may cause dysphagia. The mucosa usually demonstrates little change, although ulceration may be present.

The submucosa demonstrates varying degrees of chronic inflammatory reaction, and the muscle is almost never involved. Lower esophageal webs or rings are almost always located at the gastroesophageal junction, and there may be confusion because of a contractible ring which occurs above a lower esophageal ring associated with hiatus hernia.

The management of patients with symptomatic lower esophageal rings or webs is varied depending on the degree of obstruction. Those patients who have minimal obstruction may respond simply to more thorough mastication. When the ring or web is smaller and there is no reflux esophagitis, dilation is usually effective. If reflux esophagitis is present, dilation and repair of the hiatus hernia is indicated, and good results may be anticipated.

Reconstructing Cardiac Valves with Patient's Own Tissue

Alternative to Prosthetic Replacement

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During the past three years increasing dissatisfaction with the results of prosthetic implantation for irreparable disease of the cardiac valves has led to a search for alternatives. Homograft valves and heterograft valves have been tried by a number of investigators, and one has even used autologous valves (pulmonary) to replace other (aortic). An intensive search for better materials and for better designs for prostheses is currently in progress.

To those of us who have persisted in efforts to refashion or rebuild damaged valves with autologous grafts of various tissues, each of the listed alternatives would seem faulty. Although the homograft valve may work well for a time, it is a dead valve with some antigenic properties. The longest follow-ups indicate a late tendency to fragmentation. Heterograft valves would seem to provide the widest possible genetic pattern for long-term incompatibility and can only be considered as an acceptable possibility if long-term testing proves their soundness. Autologous valves would seem to be ideal if only the presumed need for four cardiac valves could be scientifically dispelled. No doubt better materials and better designs will improve the function and tolerability of future prosthetic valves. Nevertheless, it must be admitted that many of their weaknesses are inherent in the very principle of replacement of a delicate, highly functional structure with a moving foreign body. Moreover, prosthetic replacement, whether of a limb, a tooth, or a cardiac valve, is but a grossly palliative procedure, only to be accepted for the individual patient if there is no preferable alternative.

We believe that better understanding of valvular structure and function plus accrued experience in graft reconstruction of these critical areas have brought us now to the point that further consideration should be given to the use of autologous tissues for this purpose. Nearly all of the disadvantages mentioned or implied with respect to the other alternatives may be avoided by the use of autologous grafts.

Our series of 64 patients has been reviewed.

Segmental Resection of Left Main Bronchus for Bronchial Adenoma

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A forty-year-old white female was admitted to the hospital in August, 1967, for pneumonia in the lower lobe of the left lung. There had been recurrent episodes of pneumonia in the left lung for several years. Admission chest x-ray films showed atelectasis of the lower lobe. The pneumonitis, with fever from 102 to 103 F. daily, responded to penicillin therapy after four days. Subsequent bronchoscopy disclosed a bronchial adenoma at the carina, completely filling the lumen of the left main bronchus. Histologic diagnosis was confirmed by biopsy.

The lesion was resected on August 30, 1967, through a left thoracotomy. Following mobilization of the aortic arch, the trachea, right main bronchus, and left main bronchus were mobilized. The lower lobe of the left lung was completely atelectatic and the upper lobe barely inflated. A sleeve resection of the left main bronchus was performed, the proximal line of division being at the carina and including a small amount of the inferior margin of the right main bronchus. About 4 cm. of left main bronchus were removed, the lumen of which was occupied by the bronchial adenoma. Sterile mucus was aspirated from the collapsed lower lobe, which was then inflated with a sterile endotracheal tube inserted into the distal left main bronchus. Following demonstration of adequate expansion of the lower lobe, the left main bronchus was anastomosed to the carina with interrupted sutures of 2–0 Dacron. A Carlens tube previously inserted into the right main bronchus greatly facilitated the operative procedure.

Convalescence following operation was uneventful. A tracheostomy was performed to minimize endotracheal pressures developed during coughing following operation. She was discharged from the hospital fourteen days after operation, and subsequent convalescence has been satisfactory. Chest roentgenographic examination in January, 1968, was satisfactory.

Loss of teeth

It has been recently reported by a Cornell University scientist, Dr. P. Hendrikson, that the loss of teeth commonly suffered by adults is related to nutritional deficiencies rather than to inflammation of the gums, contrary to popular belief. Specifically, periodontal disease is the biggest factor in tooth decay. Thus, the bone is affected first, and gum inflammation, at most, only aggravates this. These findings appear in a recent issue of *Acta odontologica scandinavica.*

Periodontal disease is the leading cause of tooth loss and extractions in persons over thirty-four years of age. An estimated 20 million Americans are toothless or require the removal of all their teeth because of advanced periodontal disease. Analysis of human dietary habits has revealed that the average diet is too high in phosphorus and much too low in calcium. This problem is most severe in India, for example, where little calcium is available. In that nation, it is a major disease even of teenagers. The emphasis, thus, should be on eating dairy products rather than meat and bread, as is apparently the case.

This disorder is often, with care, caught early; the anatomic details, including detachment of teeth, can be observed after twelve months of feeding in children.

A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Hepatogenic Ascites

Pathogenesis and Management

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Ascites is a frequent complication of portal hypertension. It is seen most commonly in patients with hepatic cirrhosis but occurs in a similar manner in hepatic vein thrombosis and other conditions which produce "outflow block" in the hepatic vascular bed.

Pathogenesis

The mechanisms leading to the formation of ascites may be classified as primary and secondary.

Primary mechanisms. Ascites is a transudate which issues mostly from the liver capsule and the perihilar lymphatics.[1] This "weeping of the liver" is chiefly a consequence of increased hepatic intravascular pressure. The fundamental abnormality is postsinusoidal obstruction of the hepatic vascular system with consequent increased intravascular pressure.[2] The formation of ascitic fluid is similar to that of edema fluid and represents the product of the balance between intravascular, or intrasinusoidal, hydrostatic pressure and plasma oncotic pressure.[3] Since albumin is the chief source of plasma oncotic pressure, hypoalbuminemia is an important factor in the pathogenesis of ascites.

Normally a moderate amount of fluid is formed by hepatic transudation. This is picked up by the lymphatics about the liver and on the undersurface of the diaphragm and returned to the blood via the thoracic duct. This system has a limited transport capacity, and when it is overloaded, intra-abdominal fluid accumulates.[4] The thoracic duct is dilated, and the lymph contains many red cells in patients with ascites. In states of high lymphatic flow, some of the limitation of transport capacity of the lymph may be due to resistance at the junction of the thoracic duct and subclavian vein.[5] This is controversial and probably not of major clinical significance.[6]

Increased permeability of hepatic sinusoids due to circulating vasoactive compounds, such as histamine, can be shown experimentally to increase hepatic transudation.[7,8] It is doubtful that this phenomenon plays more than a minor role in the formation of ascites.

Secondary mechanisms. Impaired renal excretion of salt and water is a most important factor in the pathogenesis of ascites. This is usually not caused by primary renal disease but reflects hormonal influences on renal function and alterations in renal hemodynamics.[9,10]

Aldosterone appears to be the major hormone mediating the renal retention of salt and water in cirrhosis.[11,12] Increased plasma aldosterone levels are found in patients with ascites. Both increased secretion and impaired detoxification of aldosterone have been demonstrated. It appears that increased secretion is the major phenomenon.[13] Patients with cirrhosis and ascites appear to have a decreased "effective blood volume."[14] The aldosterone secretion may be viewed as a response to the relative or absolute intravascular hypovolemia.[15] This mechanism would resemble that demonstrated by Bartter *et al.*[16] to occur in normal subjects. Orloff[13] and Orloff *et al.*[17-19] have demonstrated that in dogs minimal hepatic outflow occlusion produces a hormone which acts via the kidney to stimulate aldosterone production.

Excess plasma antidiuretic hormone has been implicated in ascites formation.[20] This is difficult to document, and it appears that the impaired water excretion in patients with cirrhosis may be explained solely on the basis of sodium and water reabsorption in the proximal renal tubule with a failure of "free water" formation.[21] This increased absorption of sodium in the proximal tubule is not mediated by aldosterone and is apparently a response to decreased fluid volume.[22-25]

Increased estrogen levels have been reported in patients with cirrhosis.[26] This may be a factor contributing to renal salt and water retention. Renal blood flow is often decreased in patients with cirrhosis and ascites.[27,28] These changes are not striking enough or consistent enough in most patients to be considered significant. Patients with terminal liver disease and oliguria, however, do demonstrate marked reduction in renal blood flow.[29,30] Tense ascites can produce diminished renal blood flow by pressure on the renal veins.[31]

Treatment

Although medical treatment of ascites does not attack the primary mechanisms, it is effective in most cases.[32]

Bed rest, avoidance of alcohol, and good nutrition are important.[33] Diets very high in protein should be prescribed cautiously because they may precipitate encephalopathy.[34,35] If signs of encephalopathy occur on a diet of 80 Gm. of protein a day, neomycin 4 Gm. a day may be given by mouth to minimize bacterial degradation of protein. If encephalopathy is still a problem, further protein restriction may be necessary.

Salt restriction is necessary in the treatment of ascites. Routine initial dietary allowance of 500 mg. of sodium a day may be sufficient to produce diuresis without any other measures. Initial management with a 250-mg. sodium diet may be necessary in severe cases, if no diuretics are given. Although salt restriction alone may be effective, its effect is gradual, and weeks may be necessary for disappearance of the ascites.[36,37] Because of the difficulty in maintaining patients on this type of diet for long periods, supplementary diuretic therapy is routine for any but the mildest cases. This will also allow for easier dietary management, with about 1 Gm. of sodium allowed per day.

The diuretic of choice in most patients with ascites is chlorothiazide. The usual dose is about 1 Gm. a day. Supplementary potassium should be administered orally. Chlorothiazide may contribute to the development of encephalopathy and should be avoided in precomatose patients.[38]

Microcrystalline spironolactone is a useful addition to diuretic therapy with chlorothiazide, since it blocks the action of aldosterone and acts more distally in the tubule.[39] Initially 25 mg. four times a day may be given, but if there is no response within forty-eight hours, the dose may be increased to 75 mg. four times a day.

Mercurial diuretics are still useful in the treatment of ascites and may be indicated in the acute treatment of the decompensated patient in whom hepatic encephalopathy is a problem. There is little to recommend them for long-term therapy. Hypokalemia and hypochloremic acidosis may accompany prolonged use. The usual dose is 2 ml. of meralluride every other day.

Ethacrynic acid, a potent new diuretic, can be used successfully in the treatment of ascites.[40] It is more potent than chlorothiazide or mercurials and can produce diuresis in patients refractory to these agents. It is given in doses of 25 to 100 mg. a day. Intensive therapy can lead to depletion of plasma volume, hypokalemia, hypochloremic alkalosis, and encephalopathy. Ethacrynic acid is best administered with potassium chloride and spironolactone. If alkalosis becomes a major problem, lysine monohydrochloride can be used for its correction.

Furosemide is a potent new diuretic agent which can be given orally.[41] It has been used in the treatment of ascites with good results.[32] It is given initially in a dose of 40 mg. per day which may be increased to 200 mg. a day if needed. The complications of this therapy resemble that of ethacrynic acid and appear related to the potency of the agent. Supplementary therapy with spironolactone, potassium, and acidifying agents is similar to that given with ethacrynic acid. The incidence of severe alkalosis or encephalopathy following the use of furosemide appears to be less than that following ethacrynic acid.

Ammonium chloride has been used to correct hypochloremia and potentiate the action of diuretics for many years. Its use is generally felt to be contraindicated in the presence of hepatic decompensation because it may produce encephalopathy. Sloop and Orloff[42] have treated metabolic alkalosis in patients with cirrhosis and hepatic decompensation with as much as 150 mEq. ammonium chloride a day given intravenously and reported no ill effects. At present, however, acidifying agents such as lysine or arginine hydrochloride would appear to be preferable in situations when metabolic alkalosis requires more than large doses of potassium chloride for treatment.[43,44]

Acetazolamide has been found to be useful as a supplementary diuretic, especially in patients who tend to have hypochloremic alkalosis from their regimen. It has little place in the treatment of patients with decompensated cirrhosis. Since it produces an increase in renal venous ammonia, encephalopathy may be produced.[45]

INTRACTABLE ASCITES. Ascites may be defined as intractable if it does not respond to medical therapy such as that outlined. One must differentiate the group of patients who will not or have not followed a good medical regimen from those whose ascites is truly intractable. In the patient with truly intractable ascites, salt restriction and diuretics have been so vigorously pursued that dilutional hyponatremia, hypovolemia, oliguria, and azotemia or some combination of these usually occur without relief of the ascites. Methods for the treatment of this condition are discussed.

Adrenocorticosteroids have been given to patients who are diuretic-fast and especially to those who are hyponatremic.[46] The steroids apparently increase glomerular filtration. The diuresis is usually not dramatic. Side-effects, such as gastrointestinal bleeding and infection, make these agents unsuitable for long-term therapy.

Mannitol has been used as an osmotic diuretic in patients with refractory ascites, when they are suffering from dilutional hyponatremia.[47] It is given in 10 per cent solution in 2 L. amounts. The temporary expansion of plasma volume and consequent increased renal blood flow which accompany mannitol infusion undoubtedly play an important part in its diuretic effect.

Intravenously administered human serum albumin is most useful in the short-term treatment of ascites.[48] It is of little value in long-term therapy.[49] The expansion of plasma volume caused by its administration may initiate a diuresis in the patient with intractable ascites. Human serum albumin has traditionally been administered in the salt-free form in 25-Gm. doses. Recent work, however, has shown that albumin-saline infusion in combination with diuretic therapy can be as effective.[50]

Administering hypertonic sodium chloride to patients with intractable ascites and diuretic-induced hyponatremia is mentioned, only to be condemned. The salt does not remain within the intravascular compartment but distributes itself through the extracellular fluid. This is followed by increased water retention with no improvement in the hyponatremia.

Paracentesis has been a time-honored treatment for ascites but by itself has very limited indications. Dyspnea, anorexia, vomiting, and irreducible inguinal or umbilical hernia may be indications for paracentesis. However, the ascitic fluid reforms rapidly. Withdrawal of large amounts of fluid may lead to hypovolemic shock and renal failure. Multiple paracenteses will deplete the patient of protein, electrolytes, and other normal constituents of plasma. Replenishment or expansion of the blood volume of the patient by intravenous infusion of albumin and saline[50] or reinfusion of the ascitic fluid[51] should be performed during the paracentesis.

Reinfusion of unmodified ascitic fluid is a simple and effective method of treating intractable ascites.[51] Although paracentesis itself may initiate diuresis occasionally, the major effect of reinfusion therapy appears to be expansion of the circulating blood volume. This apparently produces increased delivery of sodium and water to the distal tubule.[15] While blood volume expansion may produce diuresis by itself, it appears to be most effective when combined with diuretic therapy.[52]

SURGERY. Very few patients who are not in terminal liver failure have ascites which is not manageable by these methods. This small group should be considered for surgical therapy.

MISCELLANEOUS PROCEDURES. Procedures such as omentopexy,[53] the Cooney button,[54,55] and ileoentectropy[56] appear to be outmoded. Internal drainage of the ascitic fluid to the venous system is rational but presents long-term technical difficulties at the present time.[57,58] Other procedures such as drainage of ascitic fluid into the pleural cavity[59] and production of perihepatic fibrosis to inhibit transudation of fluid[60] deserve further investigation.

PORTACAVAL SHUNT. Procedures which lower the hydrostatic pressure within the liver are physiologically rational in the treatment of intractable ascites. Two such operations are technically feasible and have yielded good results. These are end-to-side portacaval shunt, which eliminates the contribution of the portal venous system to elevated hepatic intravascular pressure, and side-to-side portacaval shunt, which also allows for decompression of the hepatic arterial inflow via the portal vein.

There is no uniform agreement on the type of shunt most suitable for the treatment of ascites. The end-to-side shunt is usually easier to construct. Experimental work in dogs who have undergone ligation of the hepatic veins strongly supports the superiority of side-to-side shunt in the relief of ascites.[13] Both shunts have been clinically efficacious; the side-to-side shunt is associated with a slightly higher cure rate.[61–69] It has been suggested that hepatic arterial blood may be diverted into the inferior vena cava without traversing the sinusoids by the side-to-side portacaval shunt, with consequent deterioration of hepatic function.[70,71] Thus far, it is controversial whether or not significant diversion has been demonstrated by clinical investigation.[72,73] It would appear that the end-to-side portacaval shunt is an acceptable operation for ascites, if there is a marked fall in the venous pressure on the hepatic side of the portal vein following its temporary occlusion.[61] If the pressure remains elevated or rises past the occluding clamp, side-to-side shunt is the indicated procedure. The mortality rate from portacaval shunt operations for intractable ascites is about 20 per cent, and over 90 per cent of those who survive surgery are cured.[61–69]

REGIMEN FOR MANAGEMENT. The following regimen is currently used on the surgical service at Lincoln Hospital in the routine management of patients with cirrhosis and ascites who are not critically ill. Other therapeutic modalities are used in special situations as outlined.

The patient with ascites who is in no acute distress receives a low-sodium diet, about 1 Gm. daily, with as much protein as is tolerated. He is given chlorothiazide 1 Gm. daily and microcrystalline spironolactone 100 mg. daily. If weight loss and decrease in abdominal girth does not commence within four days, the spironolactone is increased to 200 mg. daily. Four days later it is increased to 300 mg. daily. If no diuresis occurs after four days of this regimen, the chlorothiazide is discontinued and furosemide is given in a dose of 40 mg. a day. If no diuresis occurs within four days, the furosemide is increased to 80 mg. a day, and if still no diuresis occurs within four days, it is increased to 160 mg. a day. Supplementary potassium and acidifying agents are given as needed.

If no diuresis occurs on this regimen, or if the ascites increases and becomes symptomatic, or if hyponatremia or azotemia supervene prior to completion of this regimen, paracentesis and reinfusion of the ascitic fluid is performed. Diuretic therapy is continued.

This regimen has been successful in the short-term treatment of ascites in almost all patients. The failures which have occurred have been in patients with severe progressive hepatic decompensation and in those with associated conditions such as advanced renal failure from primary renal disease.

Patients who repeatedly reaccumulate ascites despite maintenance of salt restriction and adequate diuretic therapy are considered for portacaval shunt if their hepatic function appears adequate and stable.

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Fatigue fractures of shaft of femur: simulation of malignant tumor

That fatigue fractures can occur in the shaft of the femur is not generally appreciated, and, being quite rare, they may at first be thought to be malignant tumors. Awareness of the possibility by those in charge may save needless biopsies. Fatigue fractures are sufficiently common in the metatarsal bones of runners or military personnel on long training marches for the examiner to expect them; consequently these fractures are usually diagnosed without difficulty, but when larger bones are involved, they may be misdiagnosed. D. C. Levin, M.D., M. Blazina, M.D., and E. Levine, B.S., writing in a recent issue of *Radiology*, feel that differentiation from early malignant neoplastic disease of the bone may be difficult because of the similarity of the clinical history and physical findings. The crucial point in identifying fatigue fracture is demonstration of the fracture line itself, which in the early phases may not be possible. Once the hairline of the fracture becomes visible, the periosteal and soft tissue changes can be explained. Laminography should be performed in such cases, since early demonstration of the fracture would obviate the need for biopsy.

The 2 patients studied were both nineteen years old, one a boy and the other a girl. The girl had taken part in a marathon bowling tournament for several days; the boy was a cross-country runner. The presenting complaint was an ache in the thigh, insidious in onset, of several days to several weeks in duration. Physical findings were limited to localized tenderness and the impairment of ability to bear weight on the involved hip. Roentgenograms taken shortly after onset of the pain gave negative findings, but about three to four weeks later, due to the healing process, they showed periosteal reaction and small amounts of amorphous tissue. In the case of the girl, the actual diagnosis was established only retrospectively, based on a later demonstration of a fracture line, about eight weeks after onset of symptoms. The treatment consisted of cessation of weight bearing for three to six weeks.

Clinicopathologic Conference

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Beekman-Downtown Hospital
New York City
September 26, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by HENRY A. SAMPSON, M.D.

Fever, Shock, and Coma in Emphysematous Male

Case history

Won Kim, M.D.: A seventy-six-year-old retired white male was admitted with generalized weakness, constipation, and edema of three months duration.

The patient was seen initially in the emergency room in 1957 for epistaxis; his blood pressure at that time was 170/100. Examination two days later in the outpatient department revealed a blood pressure of 126/80 and bilateral cataracts.

The patient was again seen in November, 1964, in the outpatient department for burning on urination. Urinalysis showed a specific gravity of 1.015; tests for albumin, sugar, and acetone showed negative results; the microscopic examination revealed bacteria. A repeat urinalysis one month later showed entirely negative results. During the following year, the patient had occasional burning on urination and some urinary frequency.

In November, 1966, the patient was seen for a yearly medical evaluation. The blood pressure was 130/70; expiratory wheezes were noted over both lung fields with an increased anteroposterior diameter of the chest. There were bilateral varicose veins. The hemoglobin was 10.6 Gm. per 100 ml., the hematocrit was 33, and the white blood cell count 8,500 per cubic millimeter. The sedimentation rate was recorded as 30 mm. per hour. The chest x-ray film showed left ventricular hypertrophy, exaggerated bronchovascular markings, and osteoarthritis of the dorsal spine. A left bundle branch block was demonstrated on the electrocardiogram. Several weeks later the patient began to complain of cough and dyspnea, which were unrelieved by bronchodilators. Pulmonary function studies indicated normal arterial gas pressures, good oxygen saturation, and no carbon dioxide retention.

In early 1967, the cough and wheezing continued, and mild cyanosis was observed without clubbing of the fingers. The blood pressure was 145/80; a mild degree of cervical vein distention was noted, suggestive of congestive heart failure. In March, 1967, the patient was given digitalis and mercurial diuretics without obvious improvement. Dyspnea and orthopnea increased. He complained of mucus stools; sigmoidoscopic examination showed only internal hemorrhoids, and the barium enema examination revealed multiple diverticula in the sigmoid colon. The skull x-ray film showed no abnormalities. The patient discontinued the use of digitalis and diuretics against advice, complaining of dizziness and "nervousness." The serum phosphorus in March, 1967, was 3 mg. per 100 ml.

The patient was absent from the outpatient department for approximately two months and then was brought to the emergency room in a semistuporous condition complaining of ankle swelling for the preceding three months and of obstipation, extreme weakness, and increased dyspnea for several days. He denied any chest or abdominal pain, nausea, vomiting, or bloody or tarry stools. The very limited past medical history indicated that he has been a heavy drinker and a heavy smoker for many years.

The patient was admitted to the hospital, and on physical examination the blood pressure was 99/70, the pulse 108 per minute, the temperature 99.5 F., and the respiration, 26 per minute. He was semicomatose, pale, nonicteric, confused, and partially uncooperative. There were markedly distended neck veins. Coarse moist rales were heard over both lung bases posteriorly with diminished breath sounds. The heart showed normal sinus rhythm without murmurs. The liver was palpable 2 fingerbreadths below the right costal margin with a soft slightly tender edge. The spleen and kidneys were not palpable. The rectal examination showed a mild fecal impaction with a tarry stool. There was marked edema of both upper and lower extremities. The urinalysis revealed a specific gravity of 1.014; albumin, sugar, and acetone test results were negative; microscopically there were 3 to 5 red blood cells per high-power field associated with focal clumping of white blood cells. The hemoglobin was 4.1 Gm. per 100 ml. and the hematocrit 15. The white blood cell count was 36,000 with 92 per cent polymorphonuclear leukocytes, 4 per cent bands, 3 per cent lymphocytes, 1 per cent monocytes, and heavy toxic granulation of polymorphonuclear leukocytes. The fasting blood sugar was 117 mg. and the blood urea nitrogen 98 mg. per 100 ml. The carbon dioxide was 29.5 mEq., the serum potassium 4.4 mEq., sodium 138 mEq., and chlorides 93 mEq. per liter. Serum enzymes were elevated; the serum glutamic oxaloacetic transaminase was found to be 1,230 units, the serum glutamic pyruvic transaminase 660 units, and the serum lactic acid dehydrogenase over 2,000 units.

The chest x-ray film showed an enlarged heart, increased bilateral hilar and bronchovascular markings, and a very small amount of fluid in the right costophrenic angle (Fig. 1). A left bundle branch block with premature ventricular contractions was demonstrated on the electrocardiogram.

During the four-day hospital course, the patient's temperature rose from 100.2 F. on the second day to 103.2 F. terminally. The patient continued to be pale, restless, and confused. The blood pressure persisted at 80/60 and the pulse rate 100 per minute. The patient was incontinent, and because of enlarged prostate, it was difficult to pass an indwelling catheter. Gastric drainage via Levin tube produced coffee-ground type material. The patient was given 2 units of packed red blood cells, following which the hemoglobin rose to 6.8 Gm. and the hematocrit to 22. A repeat white blood cell count was 25,000, with 60 per cent segmented forms, 33 per cent nonsegmented forms, and 7 per cent lymphocytes. On the second hospital day, the blood urea nitrogen was 96 mg.; the urinalysis revealed a specific gravity of 1.010, and the microscopic examination showed 3 to 5 white blood cells and 1 to 3 red blood cells per high-power field. The total bilirubin was 0.5 mg. per 100 ml., the thymol turbidity was 1 unit, and the cephalin flocculation test 3 plus. The alkaline phosphatase was 2 units (normal 0 to 4) and the acid phosphatase 3 units (normal 0 to 4). The total serum protein was 5.6 Gm. with albumin 2.8 and globulin 2.8 per 100 ml. and the serum amylase 106 Somogyi units (normal 50 to 180 units). Three blood cultures gave negative results after eleven days incubation. A repeat carbon dioxide-combining power was 34.5 mEq., serum potassium 3.9 mEq., sodium 140 mEq., and chlorides 92 mEq. per liter.

A condition of shock persisted with coarse and medium crepitant rales over both lung fields. The patient remained semistuporous, and repeated abdominal examinations revealed good bowel sounds, without tenderness, distention, or rigidity; the liver edge remained 2 fingerbreadths below the costal margin. Repeated rectal examinations showed the stools to be tarry, and the gastric aspirate continued to show coffee-ground type material. On a flat plate film of the abdomen the liver and spleen did not appear enlarged, and no masses were visible. The central venous pressure was 110 mm. of water. The surgical consultant felt that the patient was not in condition to undergo abdominal exploration.

The patient was treated with tetracycline hydrochloride intravenously, hydrochlorothiazide (Hydrodiuril) and meralluride (Mercuhydrin). The daily urinary output remained above 1,500 cc. but terminally decreased to 170 cc. per twenty-four hours. After 7 units of packed red blood cells, the hemoglobin rose to 11.4 Gm. by the fourth hospital day. Prior to demise, the serum glutamic oxaloacetic transaminase was 1,560 units, the serum glutamic pyruvic transaminase 380 units, and the serum lactic acid dehydrogenase over 2,000 units. The serum ammonia remained below 75 micrograms per 100 ml. The blood urea nitrogen continued to rise and terminally was 216 mg.; the creatinine was 4.5 mg. The carbon dioxide was 23 mEq., serum potassium 5 mEq., sodium 142 mEq., and chlorides 84 mEq. per liter. Throughout the hospital course, the white blood cell count remained elevated; the highest count was 35,800 with 65 per cent segmented, 26 per cent nonsegmented, 7 per cent lymphocytes, 2 per cent monocytes, and 1 per cent normoblasts with slight toxic granulation; the indirect platelet count appeared decreased. The sputum culture showed only diphtheroids, alpha hemolytic streptococcus, and unidentified gram-negative rods. The urine culture showed negative results after forty-eight hours.

The pulmonary function studies showed marked retention of carbon dioxide with probable reduction of oxygen saturation. On the basis of these findings a tracheostomy was performed, and, thereafter, the carbon-dioxide retention diminished and oxygen saturation improved. However, coma persisted with low blood pressure unaffected by intravenous metaraminol (Aramine). The patient finally ceased breathing on the morning of the fifth hospital day.

Discussion

Henry A. Sampson, M.D.*: There is an old saying among French physicians when they are faced with a complicated or unusual problem: "In medicine, as in love, one should not say always or never."

We are faced with an unusual case which may require an unusual answer. I wish first to discuss the ten-year period prior to the patient's admission and then the four-day hospitalization period. In 1957 he was initially seen in the emergency room because of epistaxis. Follow-up examination after this visit revealed no abnormalities except for the presence of cataracts. The patient then disappeared from our observation for seven years, returning to the outpatient department in November, 1964, with symptoms of burning on urination. Urine examination revealed bacteria which promptly cleared up following antibiotic therapy.

In November, 1966, a complete physical examination revealed mild bronchial wheezing but no x-ray film evidence of lung disease. An enlarged heart was demonstrated on x-ray film, and a left bundle branch block was evident on electrocardiogram. There was an anemia of 10.6 Gm. with a normal white blood cell count and a sedimentation rate of 30 mm. per hour. Sigmoidoscopic examination was performed with negative findings; however, diverticulosis of the sigmoid was demonstrated on barium enema x-ray examination. A gastrointestinal series was not done at that time.

In late 1966 the patient returned with increased dyspnea, although pulmonary function studies showed normal findings. In March of 1967 the dyspnea and orthopnea increased, and the patient was given digitalis and diuretics, without response to this medication. Probably because of this lack of improvement the patient discontinued all medication on his own volition and did not return to the outpatient department. In reviewing this part of the protocol, I will assume that the patient's anemia, as noted earlier, was gradually becoming worse and, therefore, probably accounted for the increasing dyspnea and lack of response to digitalis and diuretics. May we review the x-ray films at this time?

John Batillas, M.D.: Examination of the chest, at the time of admission, demonstrates the cardiac silhouette to be enlarged with prominence of the left ventricle, as well as of the pulmonic segment of the left cardiac border. The bronchovascular markings are accentuated bilaterally, compatible with pulmonary congestion; and there is minimal blunting of the right costophrenic angle secondary to a small amount of free pleural fluid. The findings are consistent with congestive cardiac failure (Fig. 1).

Films of the chest are also available which were obtained approximately eight months

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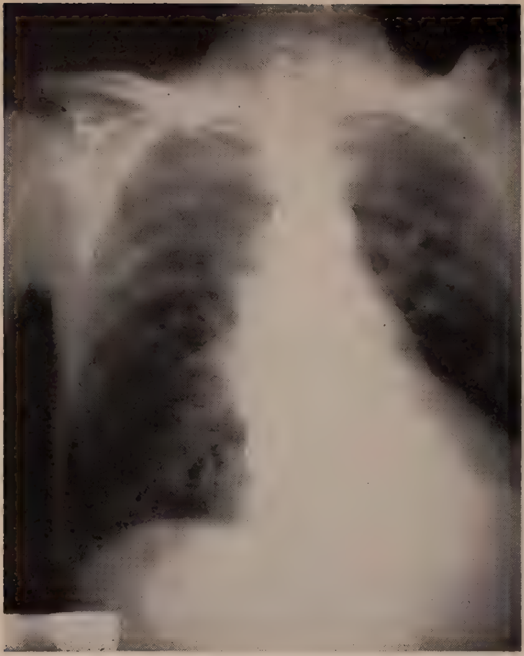

FIGURE 1. Portable chest x-ray film taken on admission showing enlarged heart and increased bronchovascular markings.

prior to admission, while he was being seen in the outpatient department. At that time, there was evidence of pulmonary emphysema in addition to mild congestive heart failure.

A barium enema examination, four months prior to admission, showed multiple diverticula of the sigmoid colon. Examination of the skull at that time was unremarkable.

Dr. Sampson: We now come to the second part of the protocol, the patient's four-day hospital stay. We are told that he had been a heavy smoker and drinker, but no information is available about weight loss. He was in a semicomatose state and confused. The blood pressure was recorded at 90/70 and the pulse rate 108. The temperature was 99 F. and ranged to 103 F. during his hospital stay. There was hepatomegaly; the prostate was clinically enlarged and was associated with a blood urea nitrogen of 98 mg. rising to 216 mg. He developed terminal anuria. The hemogram revealed a marked anemia with a hemoglobin of 4 Gm. and a hematocrit of 15. There was a leukocytosis which reached 35,000 during his hospital stay. The serum transaminase enzymes were elevated.

The patient's mental status was probably due to a combination of severe anemia and uremia, although a malignant process with metastatic lesions in the brain could be a contributory factor. The state of shock persisted throughout the four days of his illness despite the administration of vasopressors and was most likely due to blood loss. The persistent leukocytosis and fever can be readily explained on the basis of gastrointestinal bleeding and retention of large amounts of blood in the gastrointestinal tract. Of course, the presence of an infection in a debilitated patient with uremia is a real possibility. A bronchopneumonia cannot be excluded, especially in view of the clinical pulmonary findings, even though the chest x-ray film result was apparently negative.

The examining physician reported an enlarged and somewhat tender liver, although the hepatomegaly was not confirmed by the flat plate x-ray film of the abdomen. The liver function test results were essentially normal except for a low normal total protein and 1:1 albumin-globulin ratio which could be related to the gastrointestinal hemorrhage. The sulfobromophthalein test and prothrombin time were not given and could be of some value. I do not feel there is sufficient evidence to make a diagnosis of cirrhosis of the liver. The high enzyme readings should make one suspect the possibility of metastatic carcinoma in the liver, a situation in which one can find some of the highest serum enzyme levels.[1]

I believe the patient's anemia was primarily caused by severe bleeding from the gastrointestinal tract, as suggested by the coffee-ground aspirate and tarry stools. There was no evidence of bleeding from any other organ, such as kidney, gums, or skin. Therefore, we can exclude a blood dyscrasia or faulty clotting mechanism, although diffuse intravascular clotting cannot be ruled out.

I would now like to turn my attention to the uremia. The patient had a very large prostate which prevented the passing of a catheter. We also know that there was a history of urinary symptoms. In view of the rubbery consistency of the prostate on palpation and the normal acid phosphatase, I believe that this was a benign hypertrophy rather than a cancer. On the other hand, I feel sure this large prostate was an important factor in the patient's terminal anuria and probably shock. The two urinalyses done during the hospitalization show no evidence of renal damage, although an active pyelonephritis cannot be entirely discounted. The urinary output for the first two days was normal, but on the last hospital day the patient went into anuria. I believe that the presence of large amounts of blood in the gastrointestinal tract over a period of time contributed to the rapidly rising blood urea nitrogen and, therefore, was in part responsible for the patient's high blood urea nitrogen.

I would like to suggest the most probable cause of the gastrointestinal bleeding. In view of the patient's age and symptoms, I suspect that we are dealing with a neoplasm. First, I should briefly mention benign conditions in the stomach, such as peptic ulcer, adenomas, myomas, adenomyomas, lipomas, and even angiomas. Acute and chronic gastritis due to aspirin and especially to alcohol should also be considered. Adenocarcinoma, the most common of gastric cancers, would be the most likely, but other malignant tumors, such as lymphosarcomas, Hodgkin's disease, and leiomyosarcomas can be mentioned. Acute ulceration of the stomach may be present in terminal uremia; however, I do not think this could apply to our patient who had massive bleeding before his blood urea nitrogen was very high. Among the less common causes of bleeding in the stomach are tuberculous lesions, gummas, and mycotic ulcers, although there is little evidence to consider these seriously.

Another form of ulceration in the upper gastrointestinal tract could be related to the Zollinger-Ellison syndrome which brings us to the malignant diseases of the pancreas. These ulcers are found in patients with pancreatic adenomas consisting of proliferating noninsulin-secreting islet cells and develop atypically in the esophagus, duodenum, or jejunum. The islet tumors are usually cancerous growths and liver metastases develop promptly. It is important to note that these adenomas are usually associated with generalized parathyroid hyperplasia, while hyperplasia of the pituitary and adrenal glands has also been reported.[2] A serum calcium determination may have been helpful in evaluating the status of parathyroid function. The normal alkaline phosphatase does not exclude the possibility of parathyroid hyperplasia since there was no obvious bone involvement. I would consider carcinoma of the tail of the pancreas because it is a fast-growing tumor which soon invades the neighboring organs: liver, spleen, stomach, and, most often, lymph nodes. The local extension may result in portal obstruction with engorgement of the portal system which can be associated with gastric bleeding. Although the patient was noted to have varicose veins of the lower extremities, there is no mention of phlebitis. A history of gastrointestinal difficulties in addition to thrombophlebitis would strongly suggest a pancreatic neoplasm.

Finally, I would like to mention the patient's cardiac status. There was definite x-ray film evidence of cardiac enlargement, and the electrocardiogram repeatedly showed left bundle branch block. Terminally, he was apparently in congestive heart failure, although earlier in his illness he demonstrated a normal venous pressure. He never showed an effective response to digitalis and diuretics. An acute myocardial infarction cannot be excluded in the presence of the left bundle branch block which was evident one year prior to admission.

In conclusion my choice of diagnosis is a malignant disease preferably a primary carcinoma of the tail of the pancreas, although a gastric carcinoma and, less likely, a Zollinger-Ellison syndrome cannot be entirely ruled out. If a carcinoma is present, I believe there were liver metastases. Also, the patient had a pyelonephritis with uremia secondary to prostatic hyperplasia.

Harold Coppersmith, M.D.: How do you explain the leukocytosis?

Dr. Sampson: A combination of infection and blood in the gastrointestinal tract.

John T. Flynn, M.D.: I am interested to know why Dr. Coppersmith asked that question.

Dr. Coppersmith: My own feeling is that the differential count reflected a leukemoid reaction and that the patient had a carcinoma with bone marrow metastases.

Also may I add that the absence of an elevated venous pressure in congestive cardiac failure is not infrequent in patients with pulmonary emphysema.[3]

Lewis Bronstein, M.D.: I think that this patient had, in addition to his arteriosclerotic and hypertensive heart disease, pulmonary emphysema with cor pulmonale and most probably bronchopneumonia. It has been reported that somewhere between 25 and 45 per cent of the patients with pulmonary emphysema die of bleeding peptic ulcer, although this has not been my experience.[4] We must give serious consideration to the possibility that this patient's bleeding came from ulceration of the stomach, secondary to his pulmonary emphysema. This patient's pulmonary function studies suggest a considerable degree of pulmonary insufficiency. A tracheostomy was advised to eliminate functional dead space and to improve the oxygenation. Once that was accomplished, his blood gas studies improved. I cannot explain the elevated serum enzymes unless the patient had a pulmonary infarction complicating his general condition.

Dr. Sampson: Metastases to the liver is the only way in which I can explain these elevated enzymes in this case. Several years ago, I followed a case of carcinoma of the cecum with liver metastases in which the serum enzyme levels were the highest ever seen in our laboratory up to that time. At that time I reviewed the literature and noted that metastatic carcinoma in the liver gives rise to the highest enzyme elevations.

Charles M. Karpas, M.D.: This may be true of the elevation of serum lactic acid dehydrogenase, but I would feel more comfortable with such a diagnosis if there was also a rising alkaline phosphatase.

Dr. Coppersmith: In view of the rise of serum enzymes with intravascular hemolysis, would there be some relationship to the transfusion?

Dr. Flynn: The initial enzymes prior to any transfusions were already very high.

George Schreiber, M.D.: From my experience, massive bleeding from a carcinoma is quite rare, but this statistical relationship would be the only basis of my objection at the moment. Of course, there is a possibility of an erosion of a major blood vessel by a neoplasm, but again this is quite rare in carcinoma of the gastrointestinal tract. I do not favor the diagnosis of gastrointestinal tract cancer for that reason, but I think the bleeding could be related to gastrointestinal ulceration. This man had a history of alcoholism, and he may have developed a peptic ulcer, which can cause massive bleeding even though it is painless. Also he could have developed a stress syndrome and eventually multiple gastrointestinal ulcerations.

Dr. Coppersmith: Would destruction of blood outside the vascular system produce high serum enzymes? Do you absorb enzymes from the gut?

Dr. Karpas: I assume that there is a continuous breakdown of cells in the gut, and with increased vascularity I assume also that enzymes could be absorbed.

Dr. Flynn: You are implying that with marked breakdown of red blood cells in the gastrointestinal tract, you can have elevated serum enzymes as well as an elevated blood urea nitrogen.

Dr. Coppersmith: I did not dismiss the possibility. It is just that I am ignorant on that point.

Stanley Yormak, M.D.: The rise of the blood urea nitrogen in gastrointestinal bleeding might be a fairly reliable sign of the occurrence and cessation of such bleeding. I also am not sure about what happens to the enzymes under these circumstances.

Duk-Jhe Shun, M.D.: Serum enzymes can be elevated when there is destruction of red blood cells and hemolysis inside the vascular tree, but also, when there is a hematoma into muscle tissue, there can be a considerable rise in enzymes which is probably due in part to the destruction of red blood cells.

Dr. Bronstein: When you have a hematoma or hemorrhage into muscle, the changes in enzymes are due not only to the hemolysis but also to the disruption of muscle tissue, with release of enzymes from the muscle fibers. When you get multiple trauma or muscle injuries, you are very liable to have an increase in enzymes whether or not you have a hemorrhage into the muscle fibers themselves.

Dr. Karpas: If there is a hemorrhage into a muscle accompanied by necrosis, a creatinine phosphokinase evaluation might be helpful since this determination does not rise significantly with hemolysis alone.[5]

Dr. Bronstein: I feel also that the blood urea nitrogen in this case is too high for simple bleeding into the gastrointestinal tract.

Dr. Sampson: The patient was also in shock with diminished renal function, so that there was a combination of reasons for the high elevation of blood urea nitrogen. I concur with Dr. Schreiber's statement that the bleeding occurred over a considerable period of time even preceding the patient's hospital admission.

Dr. Coppersmith: I was not quite sure why Dr. Sampson should rule out blood dyscrasia as the cause of the bleeding.

Dr. Sampson: I tended to disregard blood dyscrasia because the bleeding was apparently confined to the gastrointestinal tract and did not involve any other organs.

Clinical diagnoses

1. *Upper gastrointestinal bleeding, etiology undetermined*
2. *Probable nephrosclerosis with uremia*
3. *Arteriosclerotic heart disease, probable congestive heart failure*

Dr. Sampson's diagnoses

1. *Carcinoma of the tail of the pancreas with liver metastases*
2. *Zollinger-Ellison syndrome with upper gastrointestinal ulcers* (?)
3. *Arteriosclerotic heart disease with left bundle branch block*
4. *Prostatic hyperplasia and pyelonephritis with uremia*

Pathologic discussion

Dr. Flynn: Dr. Moumgis, will you give us the pathologic findings?

Basil Moumgis, M.D.: On entering the peritoneal cavity, we encountered about 300 cc. of bloody purulent material. Around the porta hepatis there were fibrinous adhesions which extended into the area of the foramen of Winslow. On separating these adhesions and entering the lesser omental sac, I found another 300 cc. of purulent material. The gastrointestinal tract from the stomach through the large intestine was filled with bloody tarry material. On the posterior wall of the stomach, there was a very large ulcer measuring 7 cm. in diameter, which had eroded a large sclerotic blood vessel (Fig. 2A). This seemed to be the site of the gastrointestinal hemorrhage. There was a 2-cm. perforation in the base of the ulcer, communicating with the abscess in the lesser omental sac. Multiple sections failed to reveal any evidence of malignant disease. Microscopically, at the site of perforation there was a complete loss of architecture associated with areas of inflammation, necrosis, and thromboses of the smaller blood vessels (Fig. 2B). Therefore, we had a benign gastric ulcer with vascular erosion and hemorrhage, perforation, and peritonitis. Peritonitis probably had been present for a few days as evidenced by the fibrosis around the porta hepatis and in-

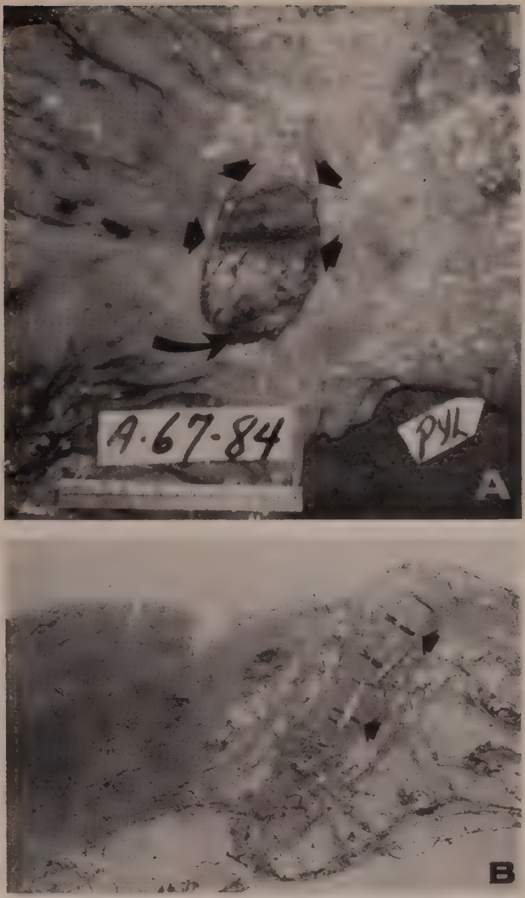

FIGURE 2. (A) Extensive gastric ulcer showing large area of perforation (small arrows) and site of eroded blood vessel (large arrow). (B) Low-power view of gastric ulcer; arrows indicate course of blood vessel traversing ulcerated area.

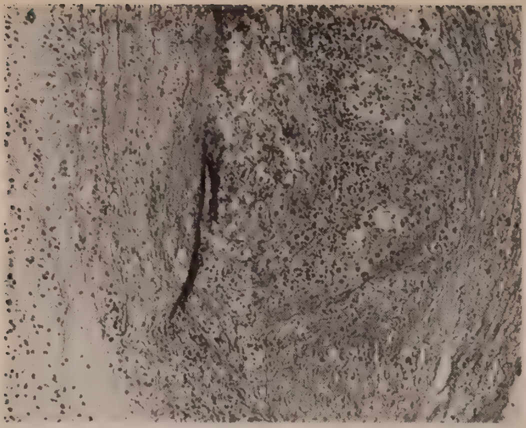

FIGURE 3. Section of necrotizing thrombus within medium-size adventitial vessel supplying rectum.

testinal loops. Diverticulosis of the colon was present but apparently played no part in the final illness. The rectum was massively dilated and filled with tarry material; again we found multiple venous thromboses with necrosis of the rectal wall, but without perforation. The areas of intravascular clotting suggest the possibility of a primary consumptive coagulopathy (Fig. 3).

In the lungs we found congestion, edema, patchy emphysema, foci of atelectasis, and interstitial pneumonitis. Primarily the heart showed left ventricular hypertrophy which could be associated with hypertension. There was coronary artery sclerosis with small foci of ischemic necrosis in papillary muscles but no gross evidence of an infarction. Microscopically, however, we found that small foci of necrosis were being replaced by granulation tissue. It is difficult to ascertain whether or not these small microscopic areas of necrosis were a result of arteriosclerosis, septicemia, shock, or perhaps all three.

The kidneys were normal in size, and microscopically there were small foci of chronic pyelonephritis. There was some sclerosis of blood vessels but very little glomerular change. Diffuse tubular degeneration and interstitial edema reflected a toxic nephrosis which may have contributed to his uremia. In spite of the difficulty with catheterization, the prostate was not enlarged, being only about 3 cm. in greatest dimension. Microscopically a small area of carcinoma was demonstrated in the posterior lobe (Fig. 4A). This was of interest since microscopic seedings of metastatic prostatic carcinoma were scattered throughout the lung fields (Fig. 4B). These consisted of clusters of very few cells and certainly were not large enough nor sufficiently widespread to contribute to his pulmonary dysfunction. Within the prostate gland the carcinoma appeared as clusters of small dark glands with fairly normal architecture as one finds in occult prostatic carcinoma. In the capsule of the gland we can see tumor cells in the perineural lymphatics so that there is no question about the biologic activity of this carcinoma.

The microscopic sections of the lung show some fibrosis and anthracosis, dilated alveoli, and, of course, metastatic carcinoma. There was also evidence of metastatic carcinoma in a random cervical lymph node. The liver showed central lobular necrosis with dilatation of central veins and marked congestion, all of which could be caused by prolonged shock. We feel these changes were severe enough to account for the elevated serum enzymes. In the adrenal glands nodular cortical hyperplasia was evident, but we can only presume that this was nonfunctioning and had no significant role in this clinical picture. The pancreas and the parathyroid glands showed no significant abnormalities.

Dr. Flynn: Irrespective of the changes in the liver, I wonder if collections of pus under pressure, such as the abscess in the lesser omental sac, can elevate serum enzymes? Or can it raise the enzymes simply by the pressure of irritation against the surface of the liver?

Hugo Paganelli, M.D.: It does not take much local pressure and inflammation immediately against the liver to raise the serum transaminase levels. The inflammation does not have to cause an abscess within the liver itself.

Dr. Karpas: It seems to me that this man experienced more hemorrhage than most of us could appreciate clinically. He was admitted to the hospital with a hematocrit of 15 and a hemoglobin of 5.1 Gm., and at autopsy we find a rectum packed with digested hemorrhagic material. I think the perforation of his ulcer plus the necrosis of the rectum contributed significantly to the elevated enzymes. The peritonitis probably produced an increased vascularity of the gastrointestinal tract and most likely resulted in absorption of enzymes from the hemolyzed red cells within the gastrointestinal tract.

Seymour Fink, M.D.: Nowadays, we are recognizing more and more the involvement of the colon and rectum by ischemia. The term that the British introduced a little more than a year ago, "ischemic colitis," is a very appropriate one.[6] The condition is not uncommon in the older-age group and characteristically involves the left colon, especially around the splenic flexure. But other parts of the colon may be involved, depending on which blood vessel is affected. Usually the arterial blood supply is affected, often by emboli in people who have had previous myocardial infarctions or with ruptures of atheromatous plaques. Of course a local thrombosis can occur in either a gastrointestinal artery or a vein. I think clinically there is no way of distinguishing whether the thrombosis is on the arterial side or the venous side, but the end result from the standpoint of the mucosal changes is the same. We knew for a long time that people with mesenteric embolization developed a mucosal slough and often gangrene of a good portion of the small bowel or the large bowel; but nowadays we recognize that ischemia of the bowel can be a limited process with varying degrees of severity. When these lesions heal, they may leave behind a stenotic segment of the colon. If the ischemic involvement is not extensive or if there is good collateral circulation, the first x-ray film study may suggest an ordinary ulcerative colitis or perhaps granulomatous colitis. The interesting thing is that if you repeat the barium enema examination some weeks or months later, the outline of the colon will have returned to normal, an improvement which happens uncommonly with granulomatous colitis or ulcerative colitis. Now, in this case I have no way of making a clinical diagnosis of ischemic colitis because this man did not present symptoms of colonic involvement; the patient with ischemic colitis most often has sudden onset of abdominal pain and bright red blood in the stool. I remember nothing of any bright red blood in this patient's stool; the melena was dark colored and suggested that the bleeding originated high up in the gastrointestinal tract.

Dr. Flynn: It is interesting to note that one of our consultants suggested the cause of the patient's condition prior to demise. I reviewed the hospital chart and found that when the patient regained consciousness he was carefully questioned in this matter and persistently denied any gastrointestinal distress or prior gastrointestinal disease. Sidney Dann, M.D., our consultant in pulmonary function, made the point that duodenal ulcer and active gastrointestinal bleeding are common in emphysematous patients. Bleeding from peptic ulcer may be considered the cause of death in about 50 per cent of cases of respiratory acidosis. Just why should a patient with emphysema tend to have a peptic ulcer?

Benjamin T. Son, M.D.: In cases of pulmonary emphysema and chronic pulmonary disease, the incidence of peptic ul-

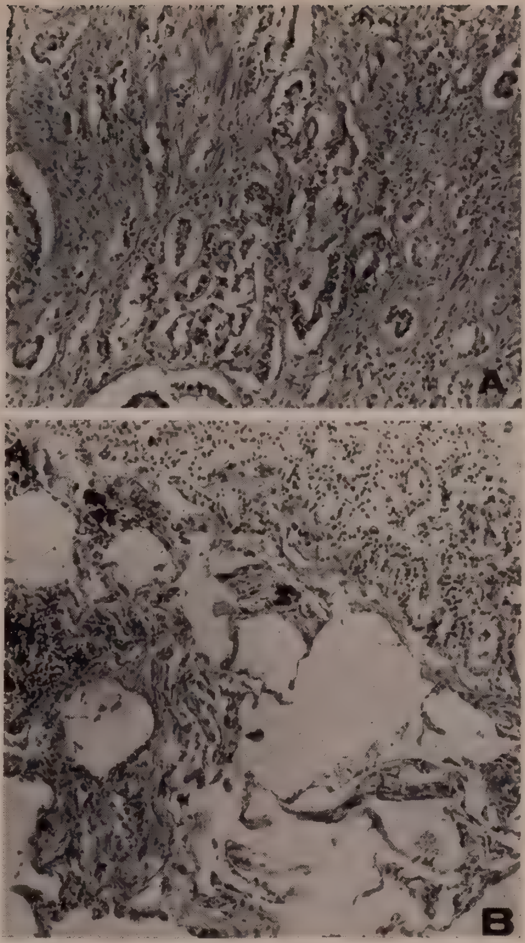

FIGURE 4. (A) Section of posterior lobe of prostate exhibiting moderately well-differentiated carcinoma. (B) Section of lung showing metastatic carcinoma from prostate (upper right).

cer can be as high as 40 per cent. There have been many theories to explain this relationship. There is the possibility of increased gastric acidity during respiratory acidosis with carbon dioxide retention. Second is the frequent occurrence of polycythemia in patients with emphysema; this seems to lower the resistance of gastrointestinal mucosa to peptic digestion. Another factor might be poor oxygenation of the blood which would also have the same effect. An increased serum ammonia could also irritate the gastric mucosa and lead to ulceration.

Anacleta Dumlao, M.D.: At our weekly mortality conference, the suggestion was made that this patient's subphrenic collection of pus might have limited the motion of the diaphragm or even immobilized it, so that the effect of the patient's severe emphysema was further aggravated. However, Dr. Dann pointed out that in most cases of emphysema, the diaphragmatic musculature has atrophied to the point where it can produce little or no motion. Consequently, further immobilization of the diaphragm by a subdiaphragmatic abscess would probably not worsen the anoxemia to any significant degree.

Final diagnoses

1. Benign gastric ulcer, with perforation; generalized peritonitis, abscess, lesser omental sac; and gastrointestinal hemorrhage secondary to erosion of a sclerotic gastric artery

2. Diverticulosis of colon; infarction of rectal wall secondary to venous thromboses

3. Coronary arteriosclerosis; myocardial ischemia and necrosis, minimal

4. Carcinoma of prostate with pulmonary metastases, probably asymptomatic

5. Passive congestion and central lobular necrosis of the liver, associated with shock

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Progress of peaceful atom

One of the first practical uses of the radioisotope was made in about 1911 when George de Hevesy, a pioneer in the use of radioisotopes, performed a secret experiment in the boardinghouse in which he lived. By placing a tiny trace amount of a radioactive material on his unfinished dinner one night, he was able to verify his suspicion that his landlady was using the boarders' leftovers to make the next evening's hash.

According to the U.S. Atomic Energy Commission, we have come a long way since de Hevesy's experiment in using radioisotopes to improve our health. Over the past thirty years, more than 100 different radioisotopes have been used in medical research. Today, some 30 different radioisotopes are used around the world in diagnosis and treatment of many diseases and disorders. Just to name a few, there are: cobalt-60, used as a source of radiation to treat cancer and help suppress the immune reaction involved in the transplanting of human organs; iodine-131, used to diagnose and treat thyroid disorders and to diagnose kidney and liver ailments as well as those of blood volume and cardiac studies; carbon-14, used to study metabolic diseases; gallium-68 and strontium-85, used in bone scanning; technetium-99, to make radiocardiograms; chromium-51, to measure cell mass; arsenic-74 to locate brain tumors; yttrium-90, for pituitary gland therapy; gold-198, as a palliative in lung cancer; zinc-69, to treat prostate malignant conditions; sodium-22 and sodium-24, to diagnose circulatory diseases; phosphorus-32, to locate eye tumors; and many others used in great numbers of research, diagnostic, and treatment technics.

Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Postoperative Water Intoxication

A RECENT CASE REPORT[1] illustrated well-managed fluid replacement during and after prolonged surgery. Appropriate fluid replacement was guided by arterial and central venous pressures and urine output and osmolarity. However, fluid replacement is not always as well conducted, and the following case report demonstrates one of the complications of postoperative hydration, namely the development of water intoxication.

Case Report

A seventy-two-year-old woman was admitted for evaluation of rectal bleeding. Past history included pyloroplasty and vagotomy for duodenal ulcer five years before. Except for a ten-pound weight loss over the past year, she had been in good health. Physical examination revealed a rather small, active, and thin elderly woman with blood pressure of 130/60 and a pulse rate of 68. Hematocrit was 31; electrolytes were within normal range. Electrocardiogram and chest radiogram results were within normal limits. Sigmoidoscopic examination revealed a mass which, on biopsy, proved to be adenocarcinoma.

The patient was scheduled for anterior resection of the sigmoid. She was medicated with hydroxyzine (Vistaril) 50 mg. and atropine 0.4 mg. intramuscularly, and she arrived in the operating room with a blood pressure of 150/80 and pulse rate of 72. Intravenous infusion of 5 per cent dextrose in water had already been started. Anesthesia was induced with 100 mg. of sodium thiopental intravenously and maintained with 4 L. nitrous oxide-2 L. oxygen and intermittent intravenous increments of 10 mg. of meperidine hydrochloride (Demerol), total dose 90 mg. Endotracheal intubation was accomplished with the aid of 40 mg. of succinylcholine. Relaxation during surgery was obtained with d-tubocurarine in divided doses, total dose 18 mg. Arterial pressure remained between 110/70 and 130/80 mm. mercury, central venous pressure between 8 and 11 cm. water, and the pulse rate between 68 and 88 during two and one-half hours of surgery. Blood loss was estimated at approximately 500 ml. Fluid replacement consisted of 500 ml. of whole blood, 500 ml. of Ringer's lactate, and 500 ml. of 5 per cent dextrose in water. The patient left the operating room in good condition, awake, and breathing well. She continued to do well in the recovery room until suddenly, about twelve hours following the end of operation, a generalized convulsive seizure occurred. This was immediately controlled with 100 mg. of sodium thiopental injected intravenously. At this time, it was realized that she had received 4,000 ml. of 5 per cent dextrose in water during the preceding twenty-four hours. Water intoxication was suspected, and a blood sample, drawn for serum electrolyte determination, showed her serum sodium to be 110 mEq. per liter. The intravenous solution was changed to 3 per cent saline and, thereafter, the patient recovered uneventfully.

Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, October 23, 1967. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

Comment

The possibility of water intoxication and concomitant depletion of sodium should be considered in all patients in whom acute neurologic disturbances develop in the early postoperative period.[2] Two groups of surgical patients are particularly susceptible. The first comprises patients who have been treated with diuretics and a salt-restricted diet. The second includes patients who have sustained large losses of electrolytes from the gastrointestinal tract, as the result of vomiting, diarrhea, fistulas, enemas, or gastrointestinal suction.[3] In both groups, the use of excessive amounts of nonelectrolytic intravenous solutions, most commonly a 5 per cent solution of dextrose in water, may readily lead to water intoxication and hyponatremia.[2,3] Mild degrees of water intoxication present symptoms such as nervousness, vomiting, and salivation. More severe degrees are associated with disorientation, stupor, coma, hemiparesis, twitching of extremities, or generalized convulsions. Deficiency of sodium results predominantly in peripheral vascular collapse with hypotension, tachycardia, and vasoconstriction of the extremities.[2] Whenever the complication is suspected, blood should be drawn immediately to determine plasma electrolyte levels since the clinical suspicion can be verified promptly by this laboratory evidence. Characteristically, the plasma sodium level is less than 120 mEq. per liter and plasma chloride less than 90 mEq. per liter. Potassium is also decreased, while the pH level of the blood is not altered markedly. In the absence of acute renal damage, blood urea concentration remains in the normal range.[3]

The predominance of neurologic symptoms is explained, in part, by the marked sensitivity of brain tissue to changes in osmolarity and by the poor permeability of the blood-brain barrier to sodium. When extracellular osmolarity suddenly declines in the body as a whole, the brain is left with relatively more salt than water. Since it cannot lose the salt easily, it takes up water and cerebral edema develops.[3]

The objective of therapy is to reverse the "cellular overhydration" and to normalize the plasma electrolyte level. Hypertonic salt solution, usually 3 or 5 per cent saline, given slowly, relieves the acute electrolyte disturbance in most cases. Occasionally, cautious use of potassium is also indicated. The amount and speed of administration of these hypertonic infusions must be individualized. Too rapid infusion may produce congestive heart failure.[3]

Although water intoxication is promptly reversible once recognized, it is best to prevent this complication by careful estimation and monitoring of fluid administration.[2]

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Electrocardiograms of the Month

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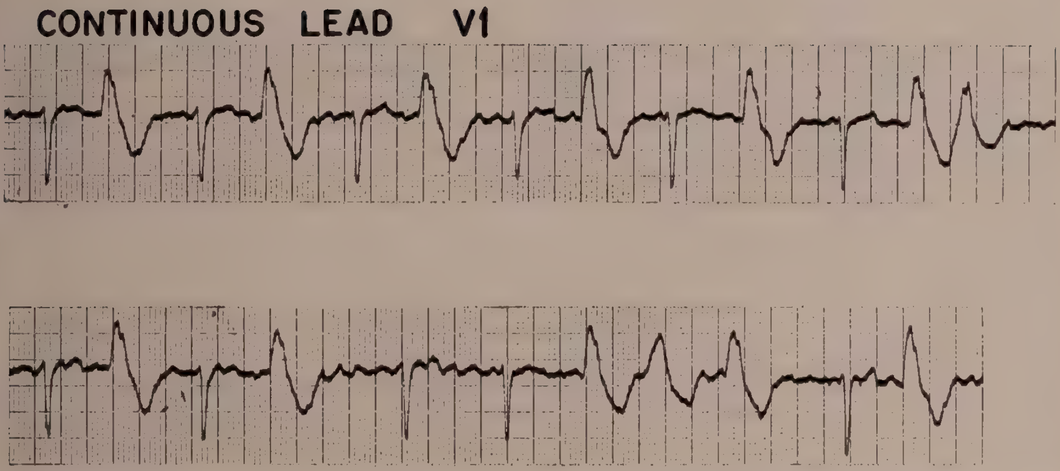
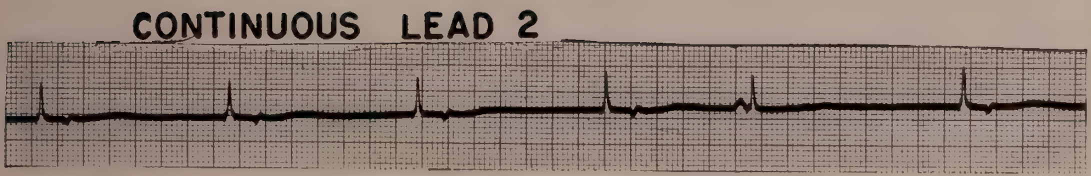


QUESTION 23. Continuous lead V_1 obtained from a patient with mitral stenosis and congestive heart failure. What is the interpretation? What are the therapeutic implications?



QUESTION 24. What is the rhythm?

Electro-
cardiograms
of Month

ELUCIDATION

Question 23. The rhythm is atrial fibrillation. It is clearly demonstrated by the presence of coarse f waves. In the upper strip, each of the first five beats is followed by a premature ventricular contraction at a fixed interval (fixed coupling). Following the eleventh ventricular complex, there are two ventricular premature beats. In the bottom strip, after the sixth ventricular complex, there are three consecutive ventricular premature beats. This is, by definition, a short burst of ventricular tachycardia. Multiple ventricular premature beats, fixed coupling, and ventricular tachycardia, occurring in a patient with atrial fibrillation, usually indicate digitalis toxicity. In patients with such arrhythmias digitalis should be stopped and hypokalemia corrected if present. Some physicians use antiarrhythmic agents such as lidocaine and diphenylhydantoin in this situation.

Question 24. The first four beats are atrioventricular junctional (nodal) in origin. The usual characteristics of such beats are visible: (1) a slow rate, usually 50 to 60 beats per minute, (2) QRS of 0.10 or less, and (3) retrograde P waves. Atrioventricular junctional beats may be preceded by an inverted P wave, if the impulse originates high in the atrioventricular junctional tissue. When the inverted P wave follows the QRS, as in this case, the impulse arises low in the atrioventricular junctional tissue.

The fifth beat in this series is preceded by an upright P wave and is a sinus beat, or "sinus capture."

Skin cancer in endemic area of arsenicalism in Taiwan

In a limited area on the southwest coast of Taiwan where artesian well water with a high concentration of arsenic has been used for more than forty-five years, a high prevalence of chronic arsenic poisoning has been observed in the recent years. W. P. Tseng *et al.*, writing in a recent issue of *Journal of the National Cancer Institute,* have found that the total population of this endemic area, which is defined by the presence of both patients and contaminated wells, is approximately 100,000. The over-all prevalence rates for skin cancer, hyperpigmentation, and keratosis were 10.6, 183.5, and 71 per 1,000, respectively. The male-to-female ratio was 2.9:1 for skin cancer and 1.1:1 for hyperpigmentation and keratosis, respectively.

Generally, the prevalence increased steadily with age in all three conditions, although there was a decline in age groups above sixty-nine in females with cancer or hyperpigmentation. The prevalence rate for skin cancer showed an ascending gradient according to the arsenic content of the well water; that is, the higher the arsenic content, the more patients with skin cancer.

The results were the same with hyperpigmentation and keratosis. Blackfoot disease, so termed locally, a peripheral vascular disorder resulting in gangrene of the extremities, especially of the feet, had an over-all prevalence rate of 8.9 per 1,000. A dose-response relationship between this disease and the amount of arsenic in the well water was similar to that observed for skin cancer. The association of blackfoot disease with hyperpigmentation, keratosis, and skin cancer was significantly higher than expected. The causal relationship between blackfoot disease and chronic arsenicalism remains to be discussed in more detail.

Spontaneous Rupture of Esophagus

One Transverse Rupture*

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Spontaneous rupture of the esophagus constitutes an acute emergency which carries a high mortality rate, rising with every hour of delay in treatment. It is generally accepted that the condition should be recognized with speed and be promptly treated surgically. The immediate surgical intervention is so important that one does not have to wait to overcome the shock if associated, since shock is produced by the sudden episode of the rupture of the esophagus and becomes worse as time passes on.

We are reporting 2 cases of rupture of the esophagus with a discussion at achieving a faster diagnosis. The important technical points are also included. One of the patients had a transverse rupture of the esophagus which is probably the third such case reported since 1724.

Case reports

Case 1. A seventy-three-year-old white female was admitted to the emergency room with pronounced shortness of breath. She had had sudden sharp pain in the lower retrosternal area four hours prior to admission and dyspnea. There was no associated vomiting. She denied intake of alcohol, heavy food, or fluids. Of her own choice, she had been taking salicylates and 500 tablets of an oral analgesic (Bufferin) each month for arthritis. On admission the patient looked orthopneic and distressed. She had absent breath sounds and dullness in the left lower side of the chest. Grade II systolic murmurs were heard at the apex. She was thought to have congestive heart failure. Shock ensued twelve hours after admission. Intravenous metaraminol (Aramine) was started. Complete blood count, blood urea nitrogen, blood sugar, and electrolytes were within normal limits. The chest x-ray film revealed bilateral pleural effusion (Fig. 1). No other significant findings were recognized at that time. The electrocardiogram revealed sinus tachycardia. The patient had an intermittent fever up to 103 F. Blood culture was sterile. She expired thirty-six hours after admission. Autopsy revealed a transverse rupture of the lower esophagus involving three fourths of the circumference, with mild degree of peptic esophagitis, profound mediastinitis, bilateral empyema, and a moderately large esophageal hiatus.

Case 2. A fifty-year-old, stoutly built, white male was transferred to B. S. Pollak Hospital after having had two attempts made at repair of spontaneous rupture of the esophagus in another hospital. One hour prior to admission, the patient had voluminous vomiting; he soon developed severe lower retrosternal pain accompanied by marked dyspnea. He stated that he

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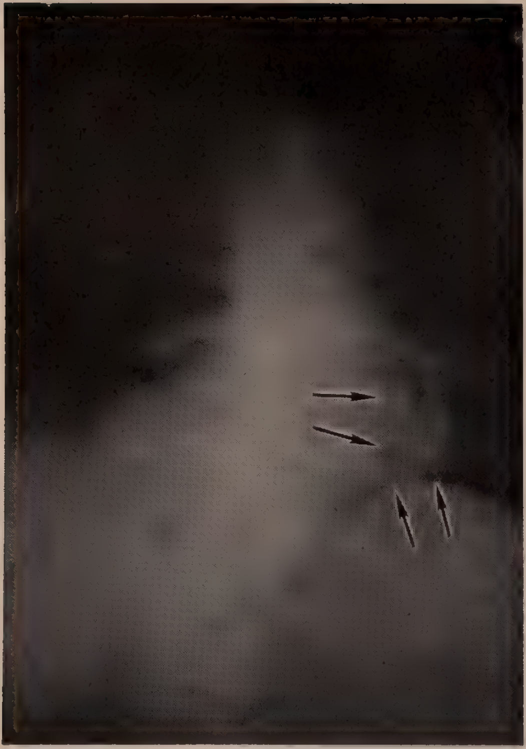

FIGURE 1. Case 1. Mediastinal emphysema in form of "V" (arrows) in left cardiophrenic angle caused by esophageal perforation. Bilateral pleural effusion present.

had consumed 120 cans of beer within twenty-four hours.

On admission to the previous hospital, his examination had been consistent with the diagnosis of left pleural effusion (Fig. 2A). The heart had been normal on x-ray film and electrocardiogram. Air crunch had been noted in the suprasternal notch and supraclavicular regions. Chest x-ray had revealed interstitial emphysema in the mediastinum. There had been mild rigidity and tenderness at the epigastrium. Closed thoracotomy had been performed, and 1,000 cc. of brown, gray, nonfoul-smelling fluid had been obtained. His breathing had improved soon after this procedure. Sixteen hours later a left thoracotomy had revealed a 3-cm. longitudinal tear in the left posterolateral area of the lower esophagus. The tear had been repaired with 0-chromic catgut. On the fourth postoperative day, the intercostal tubes had drained gastric contents and bile. The barium swallow had showed extravasation into the left pleural cavity. After a second thoracotomy and suture of the recurrent tear with 00-silk, the leak had recurred again (Fig. 2B).

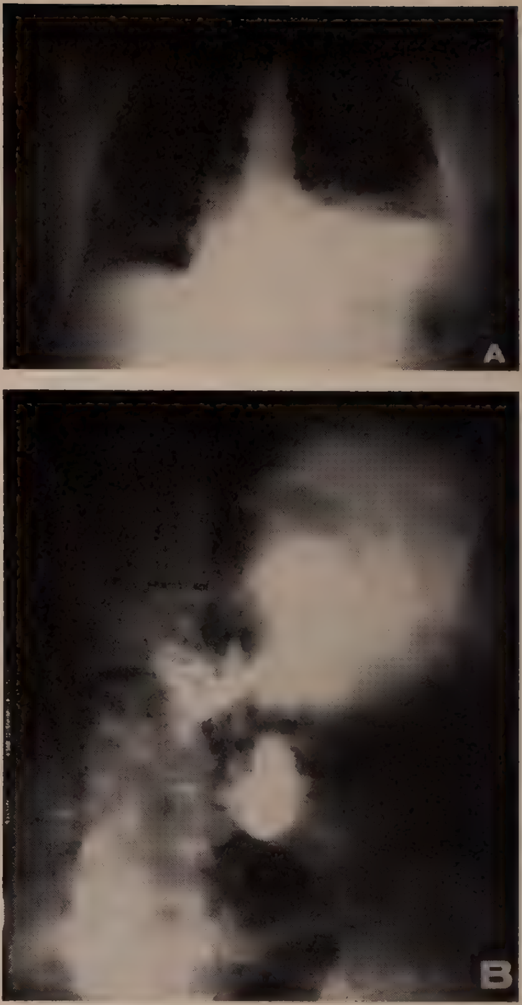

FIGURE 2. Case 2. (A) Considerable left pleural effusion; patient in moderately marked dyspnea. (B) Massive leak of radiopaque material from esophagram into left pleural cavity.

The patient was then transferred to B. S. Pollak Hospital. He appeared in a good state of nutrition but with a massively infected thoracotomy wound and empyema of the left pleural cavity. There was a moderate jaundice. Treatment with nasogastric suction, intravenous infusions, and massive antibiotics was continued. Total bilirubin was 12 mg. per 100 ml. A third thoracotomy was performed three weeks after his first operation. Great difficulty was encountered because of adhesions, marked mediastinitis, and pleurisy. A perforation was seen in the area of the lower esophagus. It was 5 mm. long and was closed with interrupted 000 Tev-dec* sutures in a single layer. A pedicle flap of thick pleura 6 by 6 cm. was sutured over the perforation. The pleural space was drained with an intercostal tube. Because of the overwhelming infection of Escherichia coli and Aerobacter in the chest wound, the skin edges were packed with iodoform gauze. Penicillin, streptomycin, sodium colistimethate (Coly-Mycin), and chloramphenicol (Chloromycetin) were administered at various times as determined by cultures and sensitivities.

Eight pints of blood were given during his entire hospitalization. His jaundice became progressively worse, and the last total bilirubin was 34 mg., direct 18 mg. and indirect 16 mg. per 100 ml. He expired on the twentieth day of admission. Autopsy revealed an extensive hepatocellular necrosis with acute inflammation and marked mediastinitis.

Comment

It is not easy to explain the mechanism of spontaneous rupture of the esophagus. Some believe that there is always a peptic esophagitis predisposing to rupture.[1] Since the mucosa is stronger than the muscular wall of the esophagus, peptic esophagitis, which attacks the mucosa, might be one of the factors predisposing to spontaneous rupture of the esophagus.[2] However, esophagitis is not always present. Voluminous vomiting with increased intragastric and intra-esophageal pressure may be the responsible factor for the spontaneous rupture.[3] The proponents of such explanation call this entity an emetic rather than spontaneous rupture of the esophagus. It has been seen in the experimental animals, as well as in the autopsy specimens, that by increasing the intragastric pressure with air, the lower esophagus balloons out and ruptures the lower posterolateral aspect. In association with this event, the cricopharyngeus muscle, instead of relaxing normally during vomiting, contracts and pushes down the vomitus toward the stomach with the result of high pressure in the esophagus which gives way. Snapper[4] is of the opinion that spontaneous rupture of the esophagus occurs because of high intragastric and intra-esophageal pressure during the act of vomiting, even while the stomach is empty. He further states that the rupture of the esophagus is also noted in the Far East with high frequency among the opiate addicts. Esophageal rupture in the absence of vomiting, according to Conte,[5] is most probably because of distal obstruction in the lowermost part of the esophagus. The nature of the obstruction may be stricture, malignant growth, esophageal ring, or achalasia. However, no obstruction was found in our cases. Besides, spontaneous rupture of the esophagus has occurred with heavy weight lifting,[6] labor,[7] defecation,[8] and convulsive seizure.[9]

The most frequent symptom of spontaneous rupture of the esophagus is the sudden continuous pain in the lower retrosternal, epigastric, and intrascapular regions. Simultaneously, or following that, the patient develops persistent dyspnea caused by rapid development of left pleural effusion which lasts until operative measures are taken. Emphysema as manifested by crunch may be noted in the suprasternal notch and left supraclavicular region. Vomiting is also a common symptom and, at times, the first symptom. In the absence of any cardiac abnormality, the clinical signs are suggestive of esophageal rupture. Dullness on percussion and absent breath sounds at the lower left part of the chest associated with mild epigastric tenderness and rigidity will lead, more often than not, to the correct diagnosis. Very suggestive is the chest x-ray film which shows the presence of emphysema in the mediastinum and left pleural effusion. The emphysema may form a V-shaped shadow (V sign) to the left of the inferior thoracic vertebrae, as reported by Naclerio.[10] This sign was present in one of our cases (Fig. 1). The left pleural effusion may appear sometime between four to six hours after the onset. Right pleural effusion is rarely encountered.[11] The contents of the left pleural cavity comprise previously ingested food and fluids, gastric juice, bile, and, rarely, hemolyzed blood. The right pleural effusion is usually sterile and does not communicate with the left pleural cavity.[11]

The laboratory findings are essentially insignificant except for some elevation of serum amylase which may suggest acute pancreatitis or perforated peptic ulcer.[12] The condition should also be differentiated from dissecting aneurysm of the thoracic aorta, myocardial infarction, pulmonary embolism, and strangulated hernia.

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* Teflon-coated Dacron, manufactured by Deknatel, Queens Village, New York.

Spontaneous rupture of the esophagus is referred to in the literature as Boerhaave syndrome.[13] In 1724 Boerhaave's patient was found to have a transverse rupture of the esophagus. Such a finding was present in Case 1 of this report. In the remainder of the 300 cases reported, there has been a longitudinal tear in the posterolateral aspect of the lower esophagus. The treatment of the condition was obscure until Graham in 1944 treated 2 cases by simple chest tube drainage with survival.[7] In 1947 Barrett[14] was celebrated for his first successful thoracotomy with closure of the rupture with chromic catgut. The operation was performed ten hours after the onset of symptoms. In the literature sparse information is available as to what material has been used for the repair. Whenever it is mentioned, it is mostly chromic catgut. However, silk has also been used.

It is our opinion that immediate closed thoracotomy is the treatment of choice for the relief of symptoms and for improvement of the patient's condition so that he may withstand open thoracotomy. Delay in closure of the perforation causes local chemical damage by the gastric juice and infection from the oropharynx resulting in a high mortality rate, approximately 90 per cent in thirty-six hours. In an otherwise healthy individual with no associated disease, one should not expect an operative fatality. The tear should be repaired with nonabsorbable sutures. Intravenous infusions, nasogastric tube suction, and antibiotics should be used. The patient may be encouraged to lie mostly on the right side so that the suture line is free of tension. A pedicle flap of the parietal pleura or an intercostal pedicle may be made and swung over one layer suture line. Alternatively the fundus of the stomach may be delivered in the pleural cavity through an incision in the diaphragm and sutured over the perforated part of the esophagus so as to surround the lower esophagus.[15] Fresh blood should be given if needed, since these patients are usually chronic alcoholic individuals and may have portal cirrhosis with low prothrombin time.

Summary

Two cases of spontaneous rupture of the esophagus are reported. In one case the rupture was transverse and was not associated with vomiting. The second case had a longitudinal rupture which occurred following voluminous vomiting. Some diagnostic points are mentioned to achieve a faster diagnosis. The treatment is prompt surgical repair of the esophageal tear with nonabsorbable sutures.

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Severe, Acute Diphenylhydantoin Intoxication Treated with Peritoneal Lavage

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THERE ARE RELATIVELY few reported cases of severe acute diphenylhydantoin (Dilantin) intoxication. Among them we have found 2 deaths recorded.[1,2] The symptoms of acute poisoning are the same as those seen when, in the course of routine anticonvulsant treatment, the therapeutic level of 3 to 10 micrograms per 100 ml. is grossly exceeded, and the plasma concentration rises above 37 to 45 micrograms per 100 ml. Symptoms include lethargy, nystagmus, mydriasis, slurring of speech, stuttering, discoordination, choreiform movements, and ataxia.[3-10] More severe intoxication is manifested by hypertension, opisthotonos, decerebrate rigidity, and respiratory failure.[11,12]

The therapy of diphenylhydantoin intoxication has generally been supportive rather than specific. In instances where poisoning has been severe enough to threaten life, extracorporeal dialysis has been used and has been followed by a significant fall in the concentration of diphenylhydantoin in the serum. But the clinical response has been rather poor, and no measurable amounts of diphenylhydantoin have been found in the dialysate.[13,14]

In 1961 Thiele *et al.*[13] suggested peritoneal dialysis as a preferable procedure. We have found no reports of its use. The simplicity and safety of the technic recommend it particularly for infants and children.[15] Furthermore, because the patient can be exposed to the dialyzing solution for a more prolonged period than is practical with the artificial kidney, peritoneal dialysis may be more effective in removing drugs released slowly from the tissues.

In the case reported here, peritoneal dialysis was used and was followed by a slow but satisfactory therapeutic response. The identification and measurement of diphenylhydantoin in the dialysis fluid withdrawn from the peritoneal cavity demonstrated that significant amounts of the drug can pass the peritoneal membrane and be removed in the dialysate.

Case report

A five and a half-year-old Negro male weighing 22 Kg. was admitted unconscious to the medical service of the Children's Hospital of Buffalo at 1:10 P.M. The child was said to have been well until four hours prior to admission when his parents found that they were unable to awaken him from the night's sleep. During the time between this discovery and his arrival at the hospital, he had several generalized seizures.

Initial questioning of the parents failed to reveal any history of exposure to toxins or ingestion of drugs. Later it was learned that on the evening before admission, the patient and his younger brother had consumed an unknown number of capsules from two bottles, one containing 100 mg. diphenylhydantoin capsules and the other containing capsules of 100-mg. diphenylhydantoin and 15-mg. phenobarbital. The medication had been prescribed for the patient's mother. The brother showed ataxia, lethargy, and slurring of speech but was not sufficiently affected to require admission.

The temperature was 37.5 C. The pulse was 120 per minute. The blood pressure was 100/70. Respirations were 30 to 40 per minute and irregular, with a jerky inspiratory phase.

The patient was comatose. He responded to painful stimulation with brief generalized clonic convulsions or with generalized muscular spasm and opisthotonos. The opisthotonic seizures, strikingly similar to those seen in tetanus, occurred spontaneously every six to ten minutes, lasted for sixty to ninety seconds, and were followed by generalized muscular relaxation. The child had occasional choreiform movements. His pupils were equal, dilated, and responded sluggishly to light. The fundi were normal. Cranial nerve function was intact. Deep tendon reflexes were hyperactive and symmetrical. Abdominal and cremasteric reflexes could not be elicited. The Babinski response was present bilaterally. Respiratory stridor was severe, and there was wheezing at the end of expiration. Many rhonchi were present.

Laboratory findings. Hemoglobin was 12.2 Gm. per 100 ml. and hematocrit 35. Leukocytes were 12,350 per cubic millimeter; there were 75 per cent filamented polymorphonuclear cells, 15 per cent band polymorphonuclear cells, and 10 per cent lymphocytes.

Urine pH was 5.5 with specific gravity 1.021, protein and sugar negative, and acetone trace. Sedimentation rate was normal. Blood pH was 7.25. Serum sodium was 124, chlorine 97, potassium 3.9, and carbon dioxide 25 mEq. per liter. Blood urea nitrogen was 10.9, serum calcium 7.9, and salicylate 3 mg. per 100 ml. Serum phosphatase was 612 Bodanski units. Blood lead was 0.06 mg. per 100 ml. The blood sugar was 280 mg. per 100 ml. after an intravenous infusion containing 10 per cent glucose was started.

The spinal fluid was clear under a pressure of 180 mm. water and contained 20 mg. per 100 ml. protein and 10 leukocytes per cubic millimeter.

X-ray films of the skull and abdomen gave normal results.

Course. A tracheotomy was performed, a Foley catheter inserted, and a polyionic solution containing 57 mEq. per liter sodium and 25 mEq. per liter potassium in 10 per cent glucose given intravenously at a rate of 2,400 to 3,000 ml. per square meter of body surface every twenty-four hours. Intramuscular procaine penicillin, 600,000 units every twelve hours, was administered.

Ten hours after admission, the patient's condition was not improved, and his prognosis seemed grave. At this time peritoneal dialysis was begun using a Nylon catheter inserted into the peritoneal cavity through a trocar placed just below the umbilicus. A commercially prepared peritoneal dialysis solution (Inpersol) 1.5 per cent, with 25 mg. tetracycline and 4 mEq. potassium chloride per liter was used without the addition of albumin. The warmed solution, 1,000 ml., was instilled rapidly into the abdominal cavity and was allowed to remain there for one hour after which time it was drained by gravity. This procedure was repeated at hourly intervals.

Between twelve and eighteen hours after the dialysis was begun, the patient began to open his eyes and respond to very simple commands. From that time on, he improved slowly but steadily.

At twenty-two hours after admission and twelve hours after the start of dialysis, the child developed a fever (38 C.) and had both x-ray and clinical evidence of pneumonia. After thirty-six hours of dialysis, the procedure was discontinued. The only complication of the dialysis was some infiltration of dialyzing solution into the soft tissues of the flanks and scrotum. Ninety-six hours after admission the child's convulsions and opisthotonic spasms stopped completely, and he responded well to commands. Eight days after admission he had normal activity but showed some hyperirritability, depressed affect, and hallucinations. These symptoms gradually disappeared, and after twenty-one days of hospitalization the patient was discharged as cured.

Diphenylhydantoin concentration in blood and dialysate was measured twelve hours after the dialysis was started. The blood level was 58 micrograms per 100 ml. The dialysate contained 37 micrograms per 100 ml. The blood also contained 27 micrograms per 100 ml. of phenobarbital and the dialysate 8 micrograms per 100 ml.

Comment

Severe, acute diphenylhydantoin poisoning has a significant hazard of mortality and morbidity. Respiratory depression, resultant anoxia, and secondary pneumonia, seen in the patient here reported, are the most pressing threats. In addition there may be direct injury to the central nervous system. Animal experiments and postmortem examinations in man have shown that high doses of the drug can produce lesions of the Purkinje's cells.[16]

Supportive therapy including tracheotomy, artificial respiration, and careful maintenance of fluid and electrolyte balance should be instituted as appropriate. Such therapy may have to be continued for as long as a week because the drug is poorly excreted. Following massive doses, high plasma concentrations of diphenylhydantoin have been reported up to six days after ingestion.[3,13]

The grave condition of our patient twelve hours after supportive therapy was begun indicated that some attempt should be made to speed removal of the drug from the body. Peritoneal lavage was instituted, and the results were gratifying. Both the prompt clinical response and the finding of significant quantities of diphenylhydantoin in the dialysate indicate that this relatively simple technic is of value in the treatment of diphenylhydantoin poisoning. The simultaneous removal of phenobarbital probably contributed to the clinical improvement of the patient. Measurement of the concentration of diphenylhydantoin in plasma and in the dialysis fluid after twelve hours of dialysis showed that at a plasma level of 58 micrograms per 100 ml. the dialysate, after one hour of intra-abdominal equilibration, attained a diphenylhydantoin concentration which was two-thirds that of the plasma.

Of circulating diphenylhydantoin, 70 per cent is bound to albumin in vitro,[3] so the ability of the dialysis fluid to compete for the drug and the efficiency of removal of the drug might have been enhanced by the addition of serum albumin to the dialyzing fluid.

Since diphenylhydantoin is excreted into the bile and then reabsorbed by the gastrointestinal tract,[4,17] it is possible that continuous duodenal drainage could provide another avenue for removal of the drug. However, difficulty in positioning the tube and complication of the problem of fluid and electrolyte balance might prove to be disadvantageous.

Summary

A case of severe acute diphenylhydantoin poisoning treated successfully with peritoneal dialysis is reported.

It was found that after one hour, the dialysis fluid attained a diphenylhydantoin concentration equal to two thirds of the plasma diphenylhydantoin concentration.

Acknowledgment. We are indebted to Parke, Davis and Co. and Charles F. Weiss, M.D., their medical coordinator of pediatrics, for performing the quantitative analyses of diphenylhydantoin and phenobarbital.

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Samuel Friedman, M.D.
(1874–1947)

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SAMUEL FRIEDMAN, PHYSICIAN, educator, inventor, and philanthropist (Fig. 1), was born on a winter morning in 1874 in Hisborov, a tiny hamlet in Austria.[1] He was the first son, after three girls, of Mendel Friedman and Malke Neuhauser. At the age of three, he began to attend cheder, the private Hebrew school. Two years later, the Friedman family emigrated to "the freedom and opportunity in the new Garden of Eden,"[1] arriving in Hoboken, New Jersey, in February, 1879.

Early years

Samuel Friedman matriculated at the City College of New York at fourteen years of age, several years younger than most other students. He continued his Hebraic studies under the private tutorship of Rabbi Naftali Reiter. The future physician developed a keen interest in biology and physiology, and in 1892 entered the New York University School of Medicine from which he graduated in June, 1895, at age twenty-one. He studied surgery under John F. Erdmann, M.D., and medicine under William Cullen Bryant, M.D. Dr. Erdmann was later to state: "Dr. Samuel Friedman was a diagnostician who stood head and shoulders above others in the medical profession."[1]

Dr. Friedman married Annie Brody, the daughter of a textile merchant, on June 7, 1899, and subsequently eight children were born.

As a physician, Dr. Friedman was completely devoted to his patients and unselfishly dedicated to his profession. Neither the time of day or night, nor the weather or location would deter him from visiting the sick. Many patients, particularly the poor and clergymen of all faiths, were treated free of charge.

Famed surgeon A. A. Berg, M.D., of New York's Mount Sinai Hospital once stated "If Friedman puts his finger on it, there I will operate. Friedman is never wrong."[2]

Influenza cure

During the influenza pandemic of 1918 to 1919, Dr. Friedman advocated a novel method for the treatment of patients afflicted with this disorder. Instead of the time-honored "open air cure" being practiced by many physicians at the time, Dr. Friedman suggested "continuous and profuse perspirations from the onset to its termination as the only rational and safe method of treatment."[3] This was to be accomplished by "frequent hot drinks, warm coverings, warm room, closed windows in the patient's chamber."[3]

Dr. Friedman's clinical observation led him

> . . . to regard perspiration in febrile diseases as not only a mere indication of a reduced and temporary, or a complete and permanent, cessation of the active febrile processes, but particularly to regard it as a most vital and special process of nature, by which the system in these afflictions, as in health, rids itself of the accumulated toxins, both active and neutralized as well as of certain products of metabolism, and thus brings about a proportionate fall in temperature.[3]

He then describes the clinical courses of mild, moderate, severe, and fatal cases of influenzal pneumonia based on his personal experience in treating over 2,500 cases from beginning to end. The pathogenesis of the disease is vividly depicted as follows:

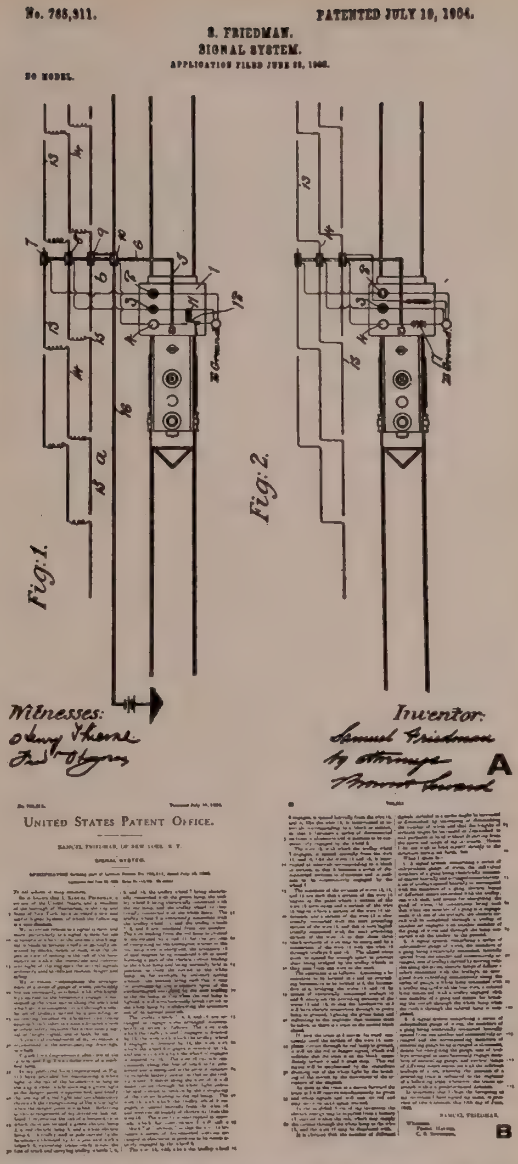
FIGURE 1. Samuel Friedman, M.D.

> The infecting organism produces a more or less rapid inflammation of the lung tissue which, in several types, becomes filled with effusion with most remarkable rapidity. The tissues, blood vessels, and lymphatics in the lungs break down, and the swarms of bacteria at once invade the general circulation by which they are carried to and deposited in the various other organs of the body and the circulatory and nervous systems, thus intoxicating the whole system and completing the vicious cycle.

The induction and maintenance of profuse perspiration was achieved by the administration to the patient of a small dose of aspirin, 3 to 5 grains, every three to five hours, followed by 1 to 2 drams of whiskey and a glass of hot water. In addition, the patient was given 2 minims of tincture aconite and 2 drams of liquid ammonium acetate followed by $^{1}/_{2}$ to 1 dram of whiskey and one half of a glass of hot water every hour.

Dr. Friedman's medical career reached its peak on May 7, 1947, when he was honored by the Medical Society of the State of New York at its annual banquet in Buffalo by being invited to join the newly organized Fifty-Year Club.

Inventions



UNITED STATES PATENT OFFICE.

FIGURE 2. (A) Signal system developed by Dr. Friedman. (B) Patent.

As an inventor, Dr. Friedman, chagrined by a series of disastrous railroad accidents that cost many lives, helped to perfect the block signal system which utilizes automatically operated red, orange, and green lights. Many a night he spent employing toy trains, tracks, bells, and lights on his dining room table to develop this life-saving signal system (Fig. 2).

Another creative idea of Dr. Friedman's concerned the subdivision of ships into numerous watertight compartments. Thus, if a ship was rammed by another ship or an iceberg, it would have much less chance of sinking than it would have if the hull comprised a single unit.

His most imaginative invention was the snow machine. He obtained copies from the Federal Patent Office in Washington, D.C., of previous patents granted for snow removal devices. His theory for their failure was that pushing snow up conveyor belts simply packed it into a hard mass which bent or broke the conveyor belts. After painstaking study, Dr. Friedman

> . . . designed a blade with an edge sharpened and curved at a particular angle, and supported at a particular angle, so that as it swung around it actually "ate" into the snow instead of pushing against it. This shovel took a "bite" out of the snow (or even ice) and carried it up an incline. At the top of the incline, by the centrifugal momentum caused by a swift circular movement, the snow was swung free of the shovel and dropped into a large hopper . . . where it would be mixed with a chemical solution. Then it would be drained by means of a valve and emptied into the gutter where it would run down to the sewer. As it flowed, the slush would melt additional snow in its path.[1]

On February 22, 1920, after a heavy snowstorm, an important demonstration of the snow machine took place. In attendance at Broadway and Sixty-first street in New York City were the then acting Mayor, Fiorello H. LaGuardia; Fire Chief Kenlon; Commissioner of Health Copeland, later United States Senator; and Street Cleaning Commissioner McStay. A full account of the successful and spectacular performance of Dr. Friedman's snowloader appeared in the February 23, 1920, issue of *The New York Times* (Fig. 3).

In addition, a picture of the snow machine appeared on the cover of *Scientific American* with a caption: "A Machine That Eats its Way Through the Heaviest Snows."[4] The featured story on the snow machine in this journal stated in part[5]:

> . . . melting the snow in situ being abandoned as a bad job, it becomes necessary to consider improved mechanical ways of removing it. . . . A better performance was given by the apparatus illustrated on our cover . . . . This machine runs along, tracking on the ground already cleared and so free from danger of stalling. The shovels at the front collect the snow, which is carried up the chute and deposited in the boxlike receptacle at the rear. This holds ten cubic yards—a good truck-load. When it is full, a truck draws up and at the throw of a lever receives the snow for hauling to the dump. Or if this is not convenient, the machine will discharge the snow at the side, just like the ordinary plow, save for the manner in which the trick is done. It is claimed for this machine that unless its progress is retarded by an extraordinary accumulation of solidly frozen material, it can proceed through a snow-covered street at from two to ten miles per hour and deliver the snow at the rate of 10 cubic yards per 30 seconds, and that it can do this with any fall of snow up to five feet. This machine was given a very successful trial, but it was not obtainable in sufficient numbers . . .

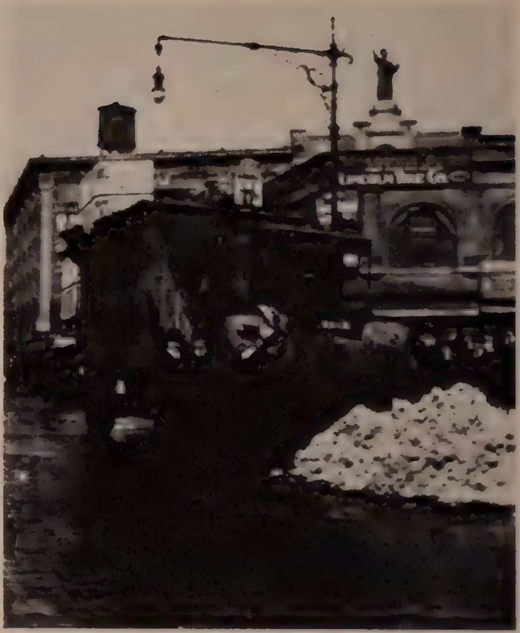


FIGURE 3. Dr. Friedman's snow machine.

So ended the story of the snow machine.

Politics

Dr. Friedman's involvement in politics began in the spring of 1918. Julius Miller, a young Democrat, was running for the State Senate in the Republican stronghold "silk-stocking district." Dr. Friedman campaigned hard for Miller, addressed political meetings, called special parlor gatherings in his home, and wrote hundreds of letters to personal friends and acquaintances. Julius Miller was elected and served three terms in the State Senate, after which he served as Borough President of Manhattan and New York County Supreme Court Justice. Dr. Friedman was also instrumental in the election of Samuel Hofstadter to the State Assembly in 1925 and State Senate in 1929. Dr. Friedman's interest in politics continued into the 1930's. On August 2, 1937, *The New York Times*, reporting on the New York mayoralty campaign, stated in part as follows:

> Dr. Friedman of 1140 Park Avenue, announced that a committee of influential Democrats was being formed to press the candidacy of former Supreme Court Justice Jeremiah T. Mahoney for the Democratic nomination for mayor. Dr. Friedman said that members of the Tammany Committee and Democratic leaders of other counties would be approached to see if there could not be brought about the withdrawal of both Senator Royal S. Copeland and Grover A. Whalen and the substitution of Mr. Mahoney as the mayoralty candidate in a move for harmony. . . Dr. Friedman said . . . "I do not believe that either of the two other candidates can beat Mayor LaGuardia . . . ."

Judge Mahoney won in the primaries but, after a long and bitter campaign, was defeated for mayor by incumbent LaGuardia. With this defeat ended Dr. Friedman's involvement in politics.

Further public work

Five-day week. Dr. Friedman was one of the early champions of the five-day work week. The reasoning behind his pioneering efforts in this regard was voiced in a letter to the editor of *The New York Times* which appeared on October 17, 1926:

> To the Editor of the New York Times:
>
> The recent report on the progress of the 5-day workweek is most encouraging. It is of particular interest to me, since for years I have given this subject a great deal of my time and energy . . .
>
> . . . The long hours of travel in crowded conveyances to and from work and places of amusement, the long hours of wakefulness and activity, leaving only a short number of hours for rest and sleep, brought about a persistent and continuous grind on the physical and nervous energy of the people, resulting in cardiovascular diseases. Added to this, the hasty eating of improper food brought about gastro-intestinal disturbances which in time lead to ulcerations and malignancies of these organs.
>
> Since the regular routine of the daily environment of people in large cities probably cannot be modified, I felt that if an additional whole day of rest were added weekly, it would repair the rapid wear and tear of the remaining five days' work. Of course, the thoughtless element might not gain much through this, but the vast majority of people are sensible and would unquestionably use this extra day for the general betterment of the community, physically, intellectually, and perhaps also spiritually.
>
> Samuel Friedman, M.D.
> New York, October 9, 1926

Dr. Friedman approached Herbert Lehman, later to become governor of New York, with the five-day work week concept. Mr. Lehman was acting as arbitrator for a garment workers' strike. The five-day work week became one of the issues involved. The strike was settled, and the five-day work week became a reality.

The president of the American Federation of Labor, Samuel Gompers, in a letter to Dr. Friedman dated March 30, 1924, wrote:

> I am glad to know that you are collecting additional information on the health of the workers in the needle industry. I think it would be well for you to have a conference with the president of the International Ladies Garment Workers' Union, Mr. Morris Sigman, 3 West 16th Street, New York. This organization has paid considerable attention to its health problem and probably it would be well for you to consider whatever information the organization can give you in connection with your other study. I hope you will continue the work that you have begun.
>
> Sincerely yours,
> Samuel Gompers

In advocating the five-day week, Dr. Friedman had two objectives in mind. As a physician, he was interested in the health and welfare of the community. As an orthodox Jew, he was interested in increasing Sabbath observance among his Jewish brethren. For his devoted efforts toward the establishment of the five-day week, Dr. Friedman is to this day spoken of and remembered in Jewish circles as Dr. "Sabbath" Friedman.

Education. Dr. Friedman's activities in the field of education were highlighted by his inspired leadership in the organization of the Talmud Torah Ohel Torah, one of the pioneer Hebrew schools in New York City. He was also a major influence in the move of the now Yeshiva University from its primitive quarters on the lower East Side to its present home in the Washington Heights section of Manhattan.

Religious interests. When the late chief rabbi of Palestine, Rabbi Abraham Isaac Kook, visited the United States in 1925, he was the house guest of Dr. Friedman. Years later, in 1942, Rabbi Kook's successor as chief rabbi of the Holy Land, Rabbi Dr. Isaac Halevy Herzog, visited this country. A formal dinner was tended in his honor at Dr. Friedman's home. Following numerous conferences and discussions with Rabbi Herzog, Dr. Friedman's interest in Palestine was rekindled. His activities in promoting the formation of the State of Israel culminated in his organizing and leading a "march on Washington" on November 12, 1945. A sample of his indefatigable zeal in his pursuit might be the following telegram which he sent on August 9, 1945, to Senators Meade and Barkley and Congressmen McCormick and Bloom:

> I beg to wire you a copy of a telegram which I sent to President Truman during this critical moment of Palestine and Jewry. I am fully aware of your sympathies with justice to the remnants of Israel. May I pray that you speak to the President urging him to insist that Britain carry out his demands for the admission of 100,000 European Jews to Palestine. The president needs the help of men of your type to enforce and encourage the wishes of his heart and soul in these trying times. With my everlasting gratitude and wishing you all goodness, I am
>
> Sincerely yours,
> Dr. Samuel Friedman

Final years and death

On November 29, 1947, Dr. Friedman was in attendance when the United Nations General Assembly voted to partition Palestine into Jewish and Arab states. A little over two weeks later, on December 14, 1947, Dr. Friedman died. His epitaph was written by his oldest son[1]:

> Dr. Samuel Friedman has passed on, but traffic lights are still regulating the traffic, snow is being removed by machine from the streets. The five-day week is an actuality. The small school on the lower East Side is now Yeshiva University and Palestine is now the State of Israel. Mankind in general and Jewry in particular are deeply indebted to him. May his memory be a blessing and an inspiration to all.

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ACKNOWLEDGMENT. The author is indebted to Dr. Leonard Seymour Friedman, for advice and permission to quote from his book, *The Angel Cometh*, the only biography of the late Dr. Samuel Friedman, copies of which can be obtained from the author. The author also acknowledges the encouragement of the Friedman family in the preparation of this article. Mrs. Frances Rose typed the manuscript.

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Special Article

Analysis of Neonatal Review

Rochester Region Perinatal Study

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THIS REPORT PRESENTS an analysis of the neonatal material surveyed in the Rochester Region Perinatal Study of the Medical Review Project of the Empire State Medical, Scientific and Educational Foundation, Inc., the research arm of the Medical Society of the State of New York, under a contract from the State of New York Department of Health. Previous reports have described other aspects of this study.[1-3]

The clinical material in this study of the quality of medical care consisted of 1,258 maternity cases selected from the records of the 29 hospitals with maternity services in the Rochester Hospital Service Region. These cases were chosen by a statistical sampling method from the birth records of the State of New York Department of Health for the year 1963.[1] Cases were selected from the following categories: (1) stillborn infants over 1,000 Gm., (2) neonatal deaths over 1,000 Gm., (3) primary cesarean section, (4) preeclampsia, (5) breech extraction, (6) placenta praevia, and (7) uncomplicated deliveries. The obstetric and pediatric problems presented by these cases furnished a test of the judgment and skill of the attending physicians as well as a test of the facilities and services of the hospitals involved.

Materials and methods

The 1,258 deliveries included 57 sets of twins and one set of triplets for a total of 1,317 infants. Among these were 119 stillbirths. The stillbirths were not reviewed by the auditing pediatricians because they were the result of obstetric rather than pediatric problems.

The charts of the remaining 1,198 babies and their mothers were subjected to a complicated method of review described in an earlier report.[1] Each case had at least two independent reviews. Since the cases were from the Rochester Hospital Service Region, the reviewers were selected from Buffalo, Syracuse, and Albany. There were 10 pediatricians in each of these three locations selected by the professors of pediatrics at the medical schools in those cities. All the reviewers were active clinicians; 23 in private practice and 7 in full-time salaried positions with the medical schools or with their affiliated hospitals. There were 28 men and 2 women in the group of 30 reviewers.

A standard evaluation form was completed by each reviewer for each case reviewed.[3] The questions on the form dealt with preventability of death, adequacy of diagnostic procedures, correctness of diagnosis, adequacy of treatment, indication for consultation, length of hospital stay, quality of chart, and finally, an over-all evaluation of case management. Each reviewer was given a brief list of guidelines for the handling of neonatal complications, but, in general, reliance was placed on the reviewer's own judgment and experience as to what constituted satisfactory management. Each reviewer was also asked to make comments explaining critical responses to the form questions. These evaluations and comments provide the basis for this report.

For purposes of this study, a small hospital was defined as one having fewer than 500 deliveries in 1963. A medium hospital had 500 to 1,199 deliveries. A large hospital was one having 1,200 or more deliveries. Using this definition, there were 16 small hospitals contributing 494 (41.2 per cent), 8 medium hospitals supplying 363 (30.3 per cent), and 5 large hospitals providing 341 (28.5 per cent) newborn infants to the study. The smallest hospital was represented by 16 babies, while the largest had 83 babies in the study.

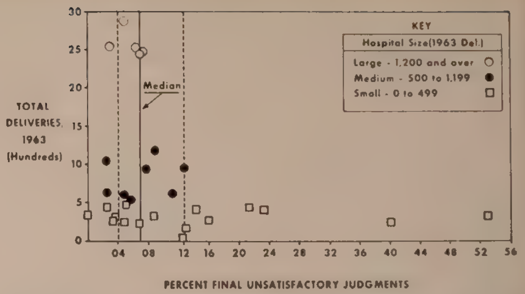

FIGURE 1. Final unsatisfactory judgments of 1,198 neonatal cases reviewed by hospital size, based on total 1963 deliveries, Rochester Region Perinatal Study, 1963.

Hospital size

The relationship of hospital size to the judgment of satisfactory management was studied. Of the total of 1,198 newborn infants in the study, 1,081 (90.2 per cent) received a final rating of satisfactory management. The small hospitals as a group had evaluations of satisfactory management for 85.4 per cent of their babies, the medium hospitals had a satisfactory rating in 92.8 per cent, and the large hospitals had a satisfactory rating in 94.4 per cent. To illustrate the relationship of hospital size to adjudged management of the newborn infants, the 29 hospitals were divided into quartiles according to the proportion of judgments of unsatisfactory care (Fig. 1). The hospitals with the highest proportion of unsatisfactory evaluations thus fall farthest to the right on the graph, into the fourth quartile. The large hospitals are found in the first and second quartiles and cluster about the median. The medium-sized hospitals are spread rather evenly through the first, second, and third quartiles. The small hospitals are widely distributed from the top of the first quartile to the bottom of the fourth quartile. All hospitals found in the fourth quartile happen to be small hospitals. It may be concluded in general that the larger the hospital, the better the medical management. However, it is also obvious from the graph that size alone is not the determining factor since some of the small hospitals rated as well as, or better than, some of the medium and large hospitals.

The hospital with the highest per cent of unsatisfactory cases contributed a total of 36 babies to the study, 19 (53 per cent) of them being rated unsatisfactory. It is possible in this instance that unsatisfactory management was more apparent than real. The real problem in this hospital may well be the poor quality of the charts rather than poor care. The infants do not have separate charts. In most of this hospital's records, the infant has only a graphic sheet in the mother's chart. There is no place for recording a physical examination, physician's orders, or a final diagnosis. Most of the reviewers felt that a recorded physical examination was a basic requirement for a judgment of satisfactory management. This dilemma of poor record keeping plagues all medical audits since a medical audit is a comparison of the actual care rendered, as documented or reflected in the hospital chart, to predetermined standards of care.

Diagnostic groups

To analyze our material, the cases were divided into several groups by diagnosis and then subdivided by size of hospital. This provides comparisons of the percentages of satisfactory judgments and also of the reasons given by the reviewers for rating some cases as unsatisfactory. These judgments and comments will be discussed in detail.

As would be anticipated from the type of cases selected for the study, this was not an ordinary or average group of newborn infants. Neonatal complications and deaths were rather common. Of the 1,198 liveborn infants, 120 (10 per cent) died in the hospital of birth, and 76 of these deaths were autopsied. Major congenital defects occurred in 51 babies, of whom 29 died in the hospital of birth. The eventual fate of those infants who were transferred to other hospitals is unknown. The 58 multiple births resulted in 114 liveborn infants and 3 stillbirths. Prematurity, as evidenced by birth weight of 2,500 Gm. or less, was common, involving 18.9 per cent (226) of the liveborn infants instead of the usual 7 to 10 per cent. Atelectasis, hyaline membrane disease, respiratory distress syndrome, or pneumonia affected 121 infants or 10.1 per cent of the liveborn infants. Eighty-three (68.8 per cent) of these 121 were premature. Another way of looking at this group is that 36.7 per cent (83) of our 226 premature babies had pulmonary complications.

Mature and premature infants

When the infants were separated into mature and premature groups on the basis of birth weight alone, regardless of any other diagnoses or methods of delivery, there were 972 mature and 226 premature infants. As stated previously, 90.2 per cent of all the infants received a satisfactory reviewer rating. Of the 972 mature babies, 899 (92.5 per cent) achieved a satisfactory rating. However, only 180 (80.5 per cent) of the premature infants were considered satisfactory. If we examine these groups by hospital size, there is a much greater differential. The small hospitals received satisfactory ratings in 88 per cent of their mature and 74.7 per cent of their premature infants. The medium hospitals had satisfactory ratings in 96.6 per cent of their mature and 78.1 per cent of their premature infants. The large hospitals had satisfactory ratings in 94.7 per cent of their mature and 93.1 per cent of their premature infants. Thus we see that in general, neonatal care in large hospitals was adjudged better over-all, especially in the management of the premature infants. We also see that the adjudged quality of the management of the premature lagged behind that of the mature infants regardless of hospital size. It must also be remembered that there was wide variation in the proportion of satisfactory judgments among the individual hospitals in the small hospital group. This ranged from 100 to 42.9 per cent for the mature and from 100 to 0 per cent for the premature infants.

Most of the criticisms made by the reviewers fell in the category of inadequate diagnostic procedures. This did not usually involve complicated laboratory tests but referred rather to the need for better evaluation of the infant at the time of delivery, the use of Apgar scoring, performance and recording of admission and discharge physical examinations, measurement of head circumference, and some attention to neurologic evaluation. In addition, the reviewers advocated better monitoring of the baby's temperature until it was stabilized and early checking of the temperature rectally to rule out imperforate anus.

Among laboratory procedures, criticism was leveled at failure to get Rh types and Coombs' test results when the mother's Rh type was unknown, failure to follow bilirubin levels in the presence of obvious neonatal jaundice, and failure to get chest x-ray examinations in the presence of respiratory distress and/or cyanosis. The reviewers pointed out that blood cultures should be included in the diagnostic work-up of infants with unexplained jaundice.

Criticism involving therapy dealt with failure to use vitamin K, improper use of oxygen, failure to use antibiotics, and the inappropriate use of antibiotics. The reviewers felt that consultation should have been obtained in many cases. Criticism concerning understay was directed at the practice of discharging newborn infants at the age of forty-eight hours. Overstay was mentioned only when there was delay in transferring newborn infants to another facility for definitive care. It was felt that such transfer should have been prompt rather than delayed until the patient was moribund.

Further analysis of this material by examining the neonatal deaths, the transferred babies, and the groups of various secondary diagnoses will emphasize the importance of these criticisms.

Neonatal deaths

Among these 1,198 newborn infants, mostly resulting from complicated pregnancies and/or deliveries, there were 120 (10 per cent) neonatal deaths. Seventy-six (63.3 per cent) were autopsied. Small hospitals showed 49 deaths and a 42.9 per cent autopsy rate for the neonatal deaths in the study. Medium hospitals had 37 deaths and an autopsy rate of 59.5 per cent. Large hospitals had 34 deaths with an autopsy rate of 97.1 per cent.

Of the 120 neonatal deaths, 32 (26.7 per cent) were mature infants, and 88 (73.3 per cent) occurred among the premature infants. This proportion was obtained regardless of hospital size. It emphasizes again the importance of prematurity to mortality statistics.

Of the 120 neonatal deaths, 37 (30.8 per cent) were considered to have had unsatisfactory pediatric management as compared with a rate of 9.8 per cent unsatisfactory judgments over-all. The small hospitals had 49 deaths, of which 20 (40.8 per cent) were considered unsatisfactory. The medium hospitals had 37 deaths, of which 14 (37.8 per cent) were unsatisfactory. The large hospitals had 34 deaths, of which only 3 (8.8 per cent) were judged to be unsatisfactory.

There were 317 individual reviews of these 120 cases. Of the 199 reviews in which the management was judged to be satisfactory, 163 (81.9 per cent) also considered the death to be not preventable. However, in the 118 reviews resulting in unsatisfactory judgments, only 26 (22 per cent) of the deaths were considered not preventable. The remaining 78 per cent were classified as either preventable, questionably preventable, or insufficient information. In other words, there was a positive relationship between a judgment of preventable death and a judgment of unsatisfactory management.

Transferred infants

Forty-three infants were transferred from the hospitals of birth, 35 of them in the first two days of life. The babies were lost to the study on transfer to a different hospital. The review was limited to the management of the patient in the hospital of birth. Fifteen were transferred because of prematurity. An additional 16 premature and 12 mature infants were transferred largely because of complicating illness, usually respiratory distress or some congenital defect. The 43 transferred babies came from 13 hospitals (one large, two medium, 10 small). The management of 4 (9.3 per cent) of the 43 transferred babies was considered to be unsatisfactory. This is very similar to the unsatisfactory percentage of the entire group. Three of these came from small hospitals, and the fourth case came from a medium-sized hospital. None of the unsatisfactory cases came from a large hospital. In general, criticism of these cases concerned the costly delay in diagnosis and transfer. One of these babies had a tracheo-esophageal fistula and was not diagnosed for four days. Another had a diaphragmatic hernia and was not examined by x-ray for seven hours, in spite of obviously severe respiratory symptoms. The third infant had meconium ileus. The fourth case was not transferred for six days and was then signed out with a diagnosis of congenital heart disease. The reviewers all considered this an unsatisfactorily managed case because during these six days in the hospital, there were no diagnostic observations such as pulse and respiratory rates, blood pressure readings, or an electrocardiogram. In addition, the baby was treated with antibiotics for which the reviewers could find no indication.

Congenital defects

Fifty-one babies had congenital defects. Most of these were gross defects. Ten of the babies had multiple defects. Included in this group of 51 defective infants were 19 with cardiac defects, 4 monsters, 5 babies with spina bifida and meningocele, 3 with imperforate anus, 3 with tracheo-esophageal fistulas, and 3 with diaphragmatic hernias. Twenty-nine of the 51 infants died in the hospital of birth.

The small hospitals supplied 24 of these babies, the medium hospitals contributed 12, and the large hospitals contributed 15. Of the 51 babies with congenital defects, 7 (13.7 per cent) had unsatisfactory judgments, compared with 9.8 per cent for the over-all group. Six of these came from small hospitals and 1 from a medium-sized hospital. None of the cases from the large hospitals were considered to be unsatisfactory. Three of the unsatisfactory cases had cardiac defects. One was criticized because no diagnostic efforts were made, and the baby was not transferred to another hospital until six days had passed. Another had dextrocardia and chondrodystrophy. However, the baby died in forty-eight hours with symptoms of omphalitis, jaundice, respiratory distress, and fever. The reviewers all felt that the diagnosis of sepsis was missed in this case. They recommended that cultures should have been done and antibiotics should have been administered. The third case in the cardiac group had congestive failure and recovered. This infant also did not use the left arm following a difficult delivery. All reviewers called this case unsatisfactory. They criticized the lack of an electrocardiogram, the failure to take x-ray films of the disabled arm, the absence of a description of the heart sounds, and the final diagnosis. Although this case was signed out with a diagnosis of septal defect, no murmur was reported. The reviewers considered treatment with antibiotics for three weeks excessive and also noted the lack of any bacterial cultures. The fourth unsatisfactory case had a tracheo-esophageal fistula. Although all 3 of the infants in the study with tracheo-esophageal fistula were transferred, there was a delay of four days before this one was diagnosed and transferred. The fifth and sixth unsatisfactory cases were 2 babies with diaphragmatic hernias. Both came from small hospitals. Both were considered unsatisfactory because of the critical delay before obtaining x-ray studies. The seventh unsatisfactory case had a meningomyelocele and died in four days of complicating meningeal infection without benefit of cultures, antibiotic therapy, consultation, or transfer to a medical center.

Respiratory distress

The group with respiratory distress was the largest of the secondary diagnosis groups, numbering 121 babies, encompassing atelectasis, pneumonia, hyaline membrane disease, and respiratory distress syndrome. As could be expected, most of these cases were in the premature weight class. There were 38 (31.4 per cent) mature and 83 (68.6 per cent) premature babies. This proportion is very different from the composition of the total group of 1,198 infants which had 81.1 per cent mature babies. Also, only 72.7 per cent of this group had satisfactory judgments as compared with 90.2 per cent for all babies. This respiratory distress group was composed as follows: (1) Small hospitals furnished 43 cases, of which 26 (60.5 per cent) were judged to be satisfactory; (2) medium hospitals furnished 35 cases, of which 22 (62.9 per cent) were judged to be satisfactory; and (3) large hospitals supplied 43 cases, of which 40 (93 per cent) were judged to be satisfactory.

Although there is a striking difference in the percentage of satisfactory judgments between the small and the large hospitals, the criticisms made by the reviewers about the unsatisfactory cases were very similar regardless of hospital size. In other words, the unsatisfactory cases have certain characteristic deficiencies not related to hospital size. The reviewer criticisms are summarized next.

Of the 17 unsatisfactory cases from the small hospitals, there were 14 lacking chest x-ray films, 11 in which consultation was indicated but not obtained, and physician's notes including a recorded physical examination were either absent or inadequate in 9 of these cases. Two cases, in which x-ray studies were done, were graded unsatisfactory because the studies were done after a delay of several days.

Medium hospitals supplied 35 cases, of which 13 (37.1 per cent) were unsatisfactory. Of these 13 cases, there were 11 without x-ray films, 9 in which consultation was indicated but not obtained, and 7 where cultures should have been done.

Only 3 (7 per cent) of the cases from the large hospitals were unsatisfactory, but all 3 were criticized for lack of chest x-ray films, while 2 failed to have consultations that were indicated, and inadequate notes were criticized in 2 cases.

Intracranial injury, hemorrhagic or anoxic

In the group of 19 babies with intracranial injury, there was a high percentage of prematurity and also a high percentage of unsatisfactory judgments. Eight (42.1 per cent) of the 19 babies were premature, and 6 (31.6 per cent) of the 19 were judged to have unsatisfactory management as compared with 9.8 per cent for the entire study group.

Small hospitals supplied 8 of these babies, 4 (50 per cent) of them being in the unsatisfactory group. Medium hospitals had 3 infants, all satisfactory. Large hospitals had 8 cases, 2 (25 per cent) being unsatisfactory.

Although five small hospitals contributed 8 cases to this group, one small hospital was alone responsible for 4 of them. Three of the 4 from this one hospital were labeled unsatisfactory by the pediatric reviewers. The maternity care of the mothers of these 3 babies was also thought to be unsatisfactory by the obstetric reviewers.

In general, the pediatric reviewers were critical of the 6 unsatisfactory cases mainly because of inadequate diagnostic efforts. They also criticized the inadequacy of therapeutic measures. They thought the babies should have had lumbar punctures, subdural taps, and blood chemistry determinations. In the presence of associated respiratory distress, they also recommended chest x-ray films, more adequate suctioning of the airway, and therapy with higher concentrations of oxygen.

Erythroblastosis and jaundice of newborn infant

Erythroblastosis fetalis occurred in 15 liveborn infants and in 7 of the stillborn babies for a total of 22 (1.7 per cent) of the 1,258 pregnancies in this study.

Because of recent research advances that promise the eventual disappearance of Rh erythroblastosis, obstetric reviewer comments relating to stillbirths from this cause are included here. These stillborn babies did not constitute a part of the regular pediatric review of newborn infants but were included in the obstetric review.[3]

The small hospitals furnished 4 stillborn infants with 2 being judged unsatisfactory; the 1 from a medium hospital was unsatisfactory, and 1 of the 2 from large hospitals was unsatisfactory.

Six of the 7 stillborn children were dead from two to twelve days prior to delivery, and all were attributed to Rh incompatibility. Their lengths of gestation varied from thirty-two to forty-two weeks. The obstetric reviewers considered the management of 3 of these 6 cases to be unsatisfactory because of lack of prenatal Rh typing in one, disregard of elevated anti-Rh titer in another, and failure to treat toxemia in the third. With present-day technics, it is possible that some of these babies might have been salvaged

The seventh stillborn infant died during labor and delivery as a result of a prolapsed cord and erythroblastosis. This case was also considered unsatisfactory by the obstetricians because of failure to determine prenatal anti-Rh titers and the failure to do a cesarean section. Thus we have 4 of these 7 stillbirths judged unsatisfactory.

There were 15 liveborn infants with erythroblastosis fetalis. Twelve of the cases were the result of Rh incompatibility, and 3 were ABO problems. Two cases came from small hospitals, 4 from medium hospitals, and 9 from large hospitals. Nine of the infants were treated with exchange transfusions.

The management of only 2 (13.3 per cent) of the 15 erythroblastotic infants was considered to be unsatisfactory from a pediatric viewpoint. However, both cases came from the same medium-sized hospital. One was criticized because of failure to follow the bilirubin levels during the three days after exchange transfusion. The handling of the other case was criticized because of the delay of exchange transfusion until the third day of life when the bilirubin had risen to 30 mg. per 100 ml., since 20 mg. per 100 ml. is the commonly accepted indication for exchange transfusion. In addition, the reviewers felt there should have been a more active diagnostic effort since the hyperbilirubinemia in this case was not due to Rh incompatibility.

There were also 12 other babies in which special note was made of jaundice. One of these was from a small hospital, 2 were from medium hospitals, and 9 from large hospitals. Only 1 of these from a large hospital was judged unsatisfactory. This was a 4-pound 15-ounce baby who was discharged after two days in the hospital with a bilirubin which had risen to 11 mg. per 100 ml. at forty-eight hours. The reviewers thought the patient should have remained in the hospital for a longer period of close observation.

Brachial plexus injury and fracture of upper extremity

There were 4 infants with the diagnosis of brachial plexus injury. One was a breech delivery, 1 was delivered by section after a failed-forceps attempt, and the other 2 were spontaneous vertex deliveries.

The 2 infants that were spontaneous vertex deliveries were judged to have unsatisfactory pediatric management. The common criticisms by the pediatric reviewers about these 2 cases were the lack of x-ray examination of the involved upper extremity and the lack of consultation. In addition, there were other individual criticisms concerning improper treatment of the arm in 1 case and improper diagnostic and therapeutic procedures in the other.

It is interesting to note that there were no diagnosed fractures of the clavicle in our newborn infants, although it is the most common fracture in newborn infants, but there were 4 brachial plexus injuries and 2 instances of fracture of the humerus. The humeral fractures were not suspected at the time of delivery. X-ray examinations were done one or two days after delivery because of impaired motion of the involved arm. This experience makes one suspect that either one or both of the babies labeled as having brachial plexus injury without being examined by x-ray film may in fact have had a fracture of the clavicle or humerus.

Infections of newborn

There were 8 instances of infection, excluding pneumonia. Included were 1 case of diarrhea, 2 of conjunctivitis, 1 of impetigo, 2 of omphalitis, 1 of septicemia, and 1 of meningitis. Five occurred in large hospitals and 3 in small hospitals.

Two (25 per cent) of the cases were judged unsatisfactory, and both came from small hospitals. One was a $4^1/_2$-pound infant with dextrocardia and chondrodystrophy who died after forty-eight hours with an enlarging area of erythema about the umbilicus, jaundice, respiratory distress, and fever. The reviewers criticized the failure to recognize or appreciate the importance of the presence of infection. No cultures were made, and no antibiotics were given. The reviewers felt that death was due to infection rather than to the congenital defects. The other baby had meningitis complicating a meningomyelocele.

The management of this case was criticized because there were no diagnostic or therapeutic attempts; neither was there consultation nor transfer to a medical center.

Hospital characteristics

Not only were certain criticisms characteristic of certain diagnoses, but they also pinpointed questionable practices characteristic of specific hospitals which did not necessarily result in unsatisfactory judgments. For example, the reviewers objected to a routine order of a sterile aqueous solution (Alevaire) and oxygen for one hour after birth in hospital 1. The use of penicillin for eye prophylaxis in hospital 5 and sulfisoxazole diolamine (Gantrisin) in hospital 9 were also questioned.

Hospitals 12, 17, 18, and 25 did not have separate charts for the babies. This created much confusion. There was difficulty in distinguishing which orders and laboratory reports were for the mother and which were for the baby. Since there was only one administrative record, primarily for the mother's chart, there were usually no final diagnoses on it for the baby. This, of course, created problems in coding and filing. Hospital 18 had only a weight and temperature graphic sheet for the baby placed in the middle of the mother's chart. There was no place for a physician to record a physical examination. Hospital 17 did use a separate sheet for notes, but orders, nurse's notes, and physician's notes were all intermingled on this sheet.

The reviewers also objected to a practice apparently designed to prevent oral thrush. In hospital 22, sodium caprylate was routinely put in the infant's mouth on the first day. In hospital 23, the routine called for one dose of nystatin (Mycostatin) orally on the third day of life.

Comment

It is interesting to note that even in the absence of rigid criteria, the pediatric judgments were fairly uniform. The number of cases which had total agreement among reviewers as to satisfactory or unsatisfactory management was 968 or 80 per cent of the 1,198 infants. There were some slight regional differences among the reviewers. The Albany reviewers favored a longer hospital stay for newborn infants than did the reviewers from Buffalo and Syracuse. They were critical of the practice of discharging a newborn baby after only forty-eight hours. They also preferred to keep premature infants in the hospital until a weight of 5 pounds was attained, while those in Buffalo and Syracuse would allow an infant to be discharged at 4 or $4^{1}/_{2}$ pounds if he were doing well. Apparently the use of prophylactic vitamin K is not thought to be important in the Rochester Region. However, all the reviewers routinely remarked on the lack of vitamin K. Only one felt so strongly that he frequently rated management unsatisfactory if vitamin K was not used.

After noting these specific criticisms, what general factors influenced the reviewers in making the decision as to satisfactory or unsatisfactory management? There were 2,314 individual evaluations labeled satisfactory and 405 labeled unsatisfactory. Table I shows the frequency of criticisms appearing on the evaluation forms of satisfactory cases as contrasted with those of the unsatisfactory cases. While the same critical comments were observed in the evaluations regardless of ultimate judgments about management, multiple critical comments on the same chart were the rule when the judgment was unsatisfactory and the exception with a satisfactory judgment.

TABLE I. Relation of frequency of certain critical comments to reviewer judgment

	Satisfactory Newborns (2314)		Unsatisfactory Newborns (405)	
Criticism	Number	(Per Cent)	Number	(Per Cent)
Inadequate diagnostic procedures	225	(11.0)	261	(64.4)
Incorrect diagnosis	26	(1.1)	38	(9.4)
Inadequate treatment	87	(3.8)	129	(31.9)
Consultation indicated, not obtained	80	(3.5)	170	(42.0)
Overstay	15	(0.6)	17	(4.2)
Understay	82	(3.5)	80	(19.8)
Poor chart quality	182	(7.9)	192	(47.4)

Summary

As a result of this study, we have attained several goals. We now have specific material for educational purposes which has been presented to the medical staffs of the hospitals in the study. Specific problems can be presented to the postgraduate departments of the medical schools of the State. The act of reviewing the charts was of definite educational benefit to the physicians who served as reviewers. They now appreciate more than ever before the value of a good chart. As a valuable and unlooked-for by-product, the reviewers have been stimulated to improve the work and records in their own hospitals. They now more fully appreciate the value of medical audit and will help to spread such activities in their own localities. Finally, experience has been gained which will be of value in the conduct of future studies.

From this study, it can be seen where and how the quality of medical care rendered to newborn infants can be improved. This study demonstrates that certain services for certain babies in certain hospitals are less than optimal. It also demonstrates that improvement in the quality of medical care for newborn infants requires the earlier and more frequent use of diagnostic procedures, such as x-ray examinations and bacterial cultures, and the more vigorous use of therapeutic measures.

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Necrology

Harry James Berger, M.D., of Jackson Heights, died on March 8 at the age of sixty. Dr. Berger graduated in 1939 from the Royal College of Physicians and Surgeons of Edinburgh. He was an assistant attending physician at Physicians Hospital. Dr. Berger was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Samuel Michael Blick, M.D., of Buffalo and Clarence, died on April 11 at the age of fifty-six. Dr. Blick graduated in 1937 from New York Medical College. He was an associate attending surgeon at Millard Fillmore Hospital. Dr. Blick was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harold Feldman, M.D., of Rochester, died on April 13 at the age of sixty. Dr. Feldman graduated in 1932 from the University of Buffalo School of Medicine. He was an assistant attending psychiatrist at Strong Memorial Hospital and an assistant director of psychiatry at Rochester State Hospital. Dr. Feldman was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the American Psychiatric Association, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Cecil Benedict Hert, M.D., of Rochester, died on January 26 at the age of seventy. Dr. Hert graduated in 1923 from the University of Michigan Medical School. He was a consulting physician in ear, nose, and throat at Rochester General Hospital. Dr. Hert was a Diplomate of the American Board of Otolaryngology and a member of the American Academy of Ophthalmology and Otolaryngology, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Oliver Street Hillman, M.D., of Whitestone, died on May 7 at the age of eighty-six. Dr. Hillman graduated in 1906 from McGill University Faculty of Medicine. Retired, he was a Diplomate of the American Board of Pathology, a Fellow of the College of American Pathologists, and a member of the American Association of Pathologists and Bacteriologists, the American Society of Clinical Pathologists, the New York Academy of Medicine, the New York Pathological Society, the New York State Society of Pathologists, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William A. Horwitz, M.D., of New York City, died on May 15 at the age of sixty-four. Dr. Horwitz graduated in 1927 from Albany Medical College. He was an assistant director of the New York State Psychiatric Institute and an attending psychiatrist at Presbyterian Hospital. Dr. Horwitz was a Diplomate of the American Board of Psychiatry and Neurology and a member of the American Psychiatric Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ann Gayler Kuttner M.D., of New York City, died on May 19 at the age of seventy-three. Dr. Kuttner graduated in 1930 from Johns Hopkins University School of Medicine. She was a member of The Society for Pediatric Research, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Dougald Findlay Macarthur, M.D., of Greenwich, died on February 18 at the age of seventy-two. Dr. Macarthur graduated in 1926 from Queens University Faculty of Medicine, Kingston, Ontario.

Anthony Mangiaracina, M.D., of Brooklyn and East Setauket, died on May 6 at the age of seventy-six. Dr. Mangiaracina graduated in 1916 from Long Island College Hospital. He was an attending otolaryngologist at Brooklyn-Cumberland Medical Center, an associate attending surgeon at Brooklyn Eye and Ear Hospital, and a consulting physician in ear, nose, and throat at St. Charles (Port Jefferson) and the John T. Mather Memorial Hospitals. Dr. Mangiaracina was a Diplomate of the American Board of Otolaryngology and a member of the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

James H. Mouradian, M.D., of White Plains, died on April 18 at the age of fifty-nine. Dr. Mouradian graduated in 1936 from Columbia University College of Physicians and Surgeons. He was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Gustav Kielland Oxholm, M.D., of Randolph, Vermont, formerly of Brooklyn, died on May 6 at the age of seventy-seven. Dr. Oxholm graduated in 1919 from Cornell University College of Medicine. He was a member of the Industrial Medical Association.

Hannibal Humbert Paolozzi, M.D., of Utica, died on April 30 at the age of fifty-six. Dr. Paolozzi graduated in 1938 from Chicago Medical School. He was an attending proctologist at St. Elizabeth's Hospital. Dr. Paolozzi was a Fellow of the International College of Surgeons and a member of the International Academy of Proctology, the Oneida County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Kenneth Rosenheck, M.D., of The Bronx, died on March 11 at the age of fifty-three. Dr. Rosenheck graduated in 1941 from New York University School of Medicine. He was an associate attending physician at Montefiore Hospital. Dr. Rosenheck was a Diplomate of the American Board of Internal Medicine and a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis A. Sarrow, M.D., of Santa Monica, California, formerly of Far Rockaway, died on April 24 at the age of sixty-eight. Dr. Sarrow graduated in 1921 from University and Bellevue Hospital Medical College. He had been an attending physician at St. Joseph's Hospital (Far Rockaway). Dr. Sarrow was a Diplomate of the American Board of Internal Medicine and a member of the American Geriatrics Society, the New York Cardiological Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Isidore Morris Turner, M.D., of Flushing, died on February 8 at the age of sixty. Dr. Turner received his medical degree from the University of Vienna in 1936. He was an assistant attending physician in physical medicine and rehabilitation at St. Francis Hospital (The Bronx) and an attending physician in physical medicine and rehabilitation at the Veterans Administration Hospital (Castle Point). Dr. Turner was a Diplomate of the American Board of Physical Medicine and Rehabilitation and a member of the New York Society for Physical Medicine and Rehabilitation, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Henry Valentine Wildman, M.D., of New York City, died on April 24 at the age of seventy-eight. Dr. Wildman graduated in 1912 from Columbia University College of Physicians and Surgeons. He was a Diplomate of the American Board of Psychiatry and Neurology and a member of the Aerospace Medical Association, the American Geriatrics Society, the Pan-American Medical Association, the New York Neurological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John W. Zerkowski, M.D., of Penfield, died on April 10 at the age of forty-eight. Dr. Zerkowski graduated in 1946 from Georgetown University School of Medicine. He was an assistant attending anesthesiologist at Rochester General Hospital. Dr. Zerkowski was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Anesthesiologists, Inc., the New York State Society of Anesthesiologists, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

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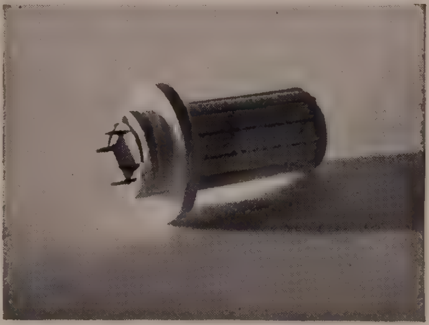

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Contraindications: Known hypersensitivity to drug; children under 6 months of age; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in treatment of psychotic patients, and should not be employed in lieu of appropriate treatment. As with most CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may also be associated with temporary increase in frequency and/or severity of seizures. Advise patients against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance. Keep addiction-prone individuals (such as drug addicts or alcoholics) under careful surveillance because of their predisposition to habituation and dependence. Use of any drug in pregnancy, lactation or in women of childbearing age requires that potential benefit be weighed against possible hazard.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium, such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants. Employ usual precautions in the severely depressed or in those with latent depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed or tolerated).

Adverse Reactions: Side effects most commonly reported: drowsiness, fatigue and ataxia. Infrequently encountered: confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo and blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, use of the drug should be discontinued. Because of isolated reports of neutropenia and jaundice, periodic blood counts and liver function tests are advisable during long-term therapy. Minor changes in EEG patterns (low-voltage fast activity) observed during and after therapy and are of no known significance.

Dosage: Individualize for maximum beneficial effect. *Adults:* Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See **Precautions.**) *Children:* 1 to 2 ½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

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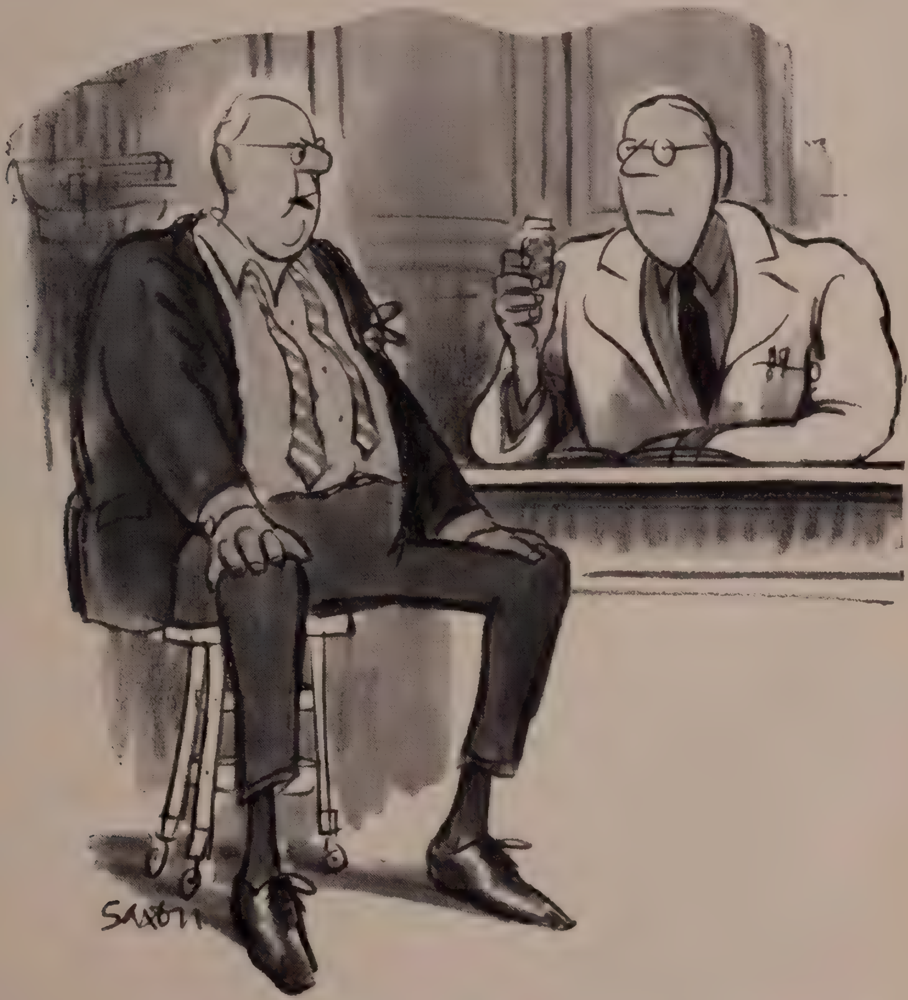

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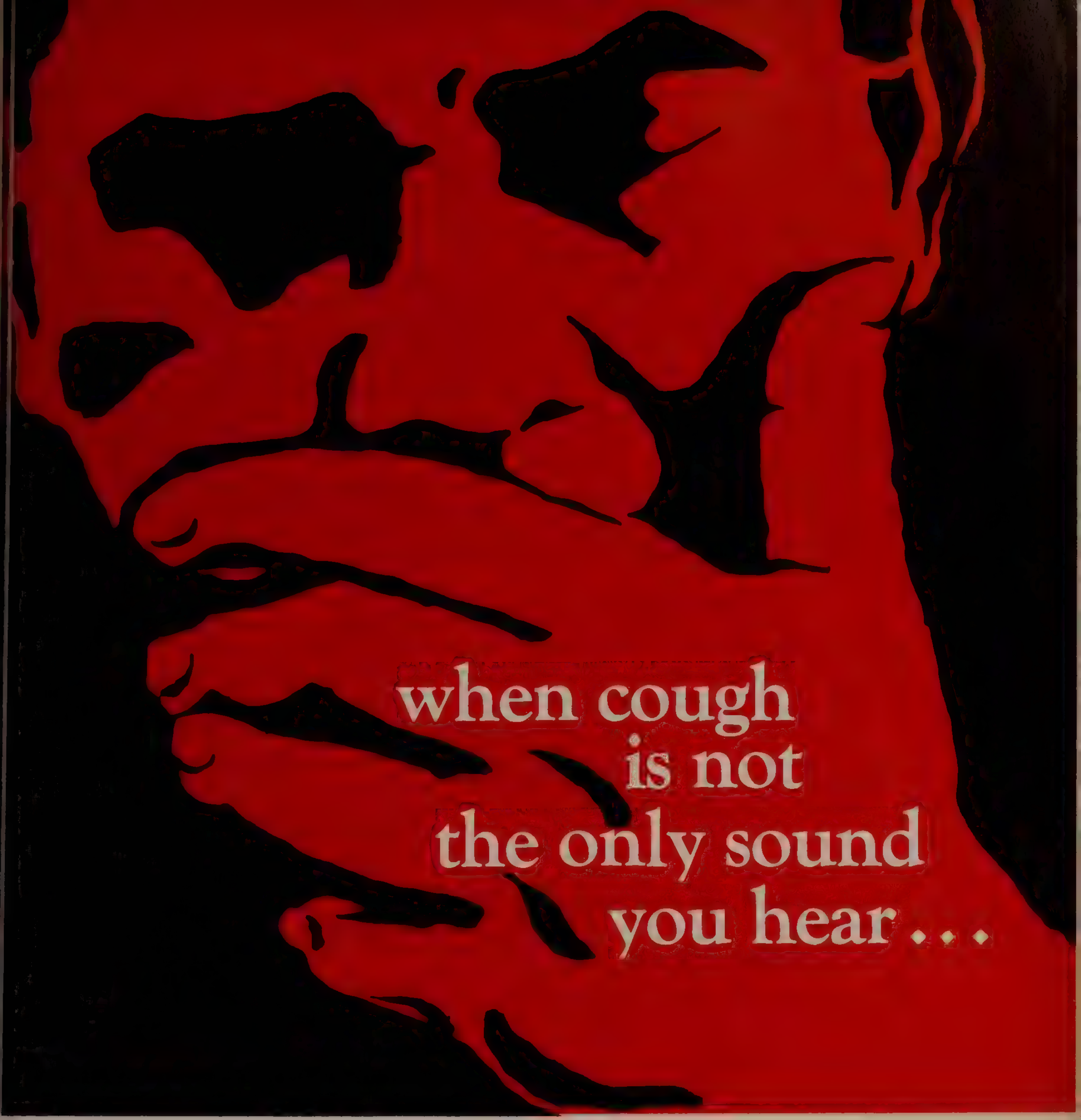

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after administration of Talwin to patients who have received
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not indicated that Talwin causes or increases renal or hepati
pairment, the drug should be administered with caution to pa
with such impairment. Extensive liver disease appears to predis
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sleepiness) from the usual clinical dose, and may be the res
decreased metabolism of the drug by the liver.

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the cause of the pain
the site* of the pain
the duration of the pain
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rred in less than 0.1 per cent: tachycardia, visual disturbance
urred vision, diplopia and nystagmus), hallucinations, disorienta-
n, weakness or faintness, muscle tremor, chills, allergic reactions
cluding edema of the face, taste alteration, insomnia, diarrhea,
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nbarrassment in adults (never apnea), even with large amounts. A
nall number of newborn infants whose mothers received Talwin
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ution in the rate or strength of uterine contractions is low after
lministration of Talwin, similar to that following meperidine hydro-
loride. (In reporting no interference with normal labor in patients
ceiving Talwin, one investigator further stated that the drug may
crease uterine activity.) Generally, no significant fetal heart rate
ange occurs.

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significant increase in the per cent of eosinophils in peripheral
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anges in insulin requirements have been observed.

osage and Administration: *Adults, Excluding Patients in Labor.*
verage recommended single parenteral dose is 30 mg., by intra-
uscular, subcutaneous, or intravenous route; may be repeated
very three to four hours. Pain has been relieved in most patients
ith not more than three doses daily. Infrequently, selected patients
ave received single doses as high as 60 mg.

atients in Labor. A single, intramuscular 30 mg. dose has been most
ommonly administered. An intravenous 20 mg. dose has given adequate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

Duration of Therapy. Patients with chronic pain who received Talwin for prolonged periods (e.g., over 300 days) experienced no withdrawal symptoms even when administration was stopped abruptly; furthermore, there was no tolerance to the analgesic effect.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Talwin has not produced apnea or severe respiratory embarrassment in adults, even in large doses. Occasionally, however, moderate respiratory depression may occur. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin® (pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

Winthrop

Winthrop Laboratories
New York, N.Y. 10016

Abstracts

Levine, R. A.: Spectrum of liver disease after viral hepatitis, New York State J. Med. **68:** 1919 (July 15) 1968.

Viral hepatitis, potentially one of the most serious infectious diseases, is on the increase because of the greater number of blood transfusions and increased parenteral illicit narcotic usage. Particular emphasis in this report is given to proper diagnosis of chronic hepatitis and its variants, including fulminant hepatitis, posthepatic (unconjugated) hyperbilirubinemia, subacute hepatic necrosis, chronic active and self-limited hepatitis, chronic auto-immune hepatitis ("lupoid" and "plasma-cell" hepatitis), and postnercrotic cirrhosis. Although most patients recover from acute viral hepatitis, approximately 5 per cent have residual sequelae.

Schwalb, E., Blau, H., and Zanger, E.: Developmental dyslexia; diagnosis and remediation by modality blocking, New York State J. Med. **68:** 1931 (July 15) 1968.

Developmental dyslexia is considered a specific, organically determined cerebral defect in the visual interpretation of verbal symbols and in associating sound with symbol. This is not usually associated with intelligence retardation and gross neurologic or primary emotional defects. It must be differentiated from symptomatic dyslexia, often caused by a visual perceptual lag. According to the modality blocking theory, learning, and especially learning to read, may be cut off or interfered with by the visual modality. In 2 cases described, a nonvisual learning approach was used, employing auditory, kinesthetic, and tactile modalities. The method warrants further investigation.

Kaplan, E. H.: Congenital absence of vagina; psychiatric aspects of diagnosis and management, New York State J. Med. **68:** 1937 (July 15) 1968.

Congenital absence of the vagina should be diagnosed at birth; the defect is easily identified. Vaginal construction must await the completion of adolescent growth, but early diagnosis makes it possible to deal with the irrational reactions of parents and patient and to facilitate conscious acceptance of the defect in a realistic light. Later on, in adolescence or young womanhood, emotional disturbances interfere with management, especially following vaginoplasty. Case histories of 9 patients with congenital absence of vagina are presented.

Abstracts in Interlingua

Levine, R. A.: Le spectro de morbo hepatic post hepatitis viral (*anglese*), New York State J. Med. **68:** 1919 (15 de julio) 1968.

Hepatitis viral—potentialmente un del plus serie morbos infectiose—accresce in frequentia a causa del accrescente numero de transfusiones de sanguine e del accrescente consumo illegal de narcoticos. In le presente reporto, attention particular es prestate al correcte diagnose de chronic hepatitis e su variantes, incluse hepatitis fulminante, posthepatic hyperbilirubinemia (nonconjugate), acute necrose hepatic, chronic hepatitis active e auto-limitatori, chronic hepatitis auto-immun (hepatitis "lupoide" e "plasmocytic"), e cirrhosis postnecrotic. Ben que le majoritate del patientes se restabli ab acute hepatitis viral, sequellas residue persiste in approximativemente 5 pro cento.

Schwalb, E., Blau, H., e Zanger, E.: Dyslexia disveloppamental; diagnose e remediation per blocage de modalitate (*anglese*), New York State J. Med. **68:** 1931 (15 de julio) 1968.

Dyslexia disveloppamental es reguardate como un specific, organicamente determinate defecto cerebral in le interpretation visual de symbolos verbal e in le association de sonos con ille symbolos. Usualmente le condition non es associate con retardo in le disveloppamento intelligential o con grossier defectos neurologic o primari defectos emotional. Illo debe esser differentiate ab dyslexia symptomatic que es frequentemente causate per un retardo in le perception visual. De accordo con le theoria del blocage de modalitates, apprendimento e, in particular, apprendimento del lectura, pote

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esser disrumpite o disturbate per le modalitate visual. In duo hic-describite casos, un methodo de apprendimento non-visual esseva utilisate, con le empleo de modalitates kinesthetic e tactil. Le methodo merita esser investigate additionalmente.

Kaplan, E. H.: Congenite absentia del vagina; aspectos psychiatric del diagnose e del therapeutica (*anglese*), NEW YORK STATE J. MED. **68:** 1937 (15 de julio) 1968.

Congenite absentia del vagina deberea esser diagnosticate a nato. Le construction de un vagina debe esser postponite usque al completion del crescentia adolescentic, sed un precoce diagnose rende possible neutralisar le reactiones irrational del parentes e del patiente mesme e facilitar pro illes le conscie acceptation del facto del defecto in un lumine realista. Plus tarde, quando le patiente ha attingite le etate de adolescentia o del prime nubilitate, disturbationes emotional interfere in le programma therapeutic, particularmente post le vaginoplastia. Es presentate 9 casos de congenite absentia del vagina.

Cornell University Medical College commencement

In its seventy-year history, the Cornell University Medical College has graduated 4,445 physicians, and the School of Nursing has graduated 3,172 nurses since its founding in 1877. Between 1912 and 1951 Cornell University granted 42 Ph.D. degrees and 21 M.S. degrees to students in medical science; since the Graduate School of Medical Sciences was created as a separate entity in 1951, 66 Ph.D. and 14 M.S. degrees have been awarded.

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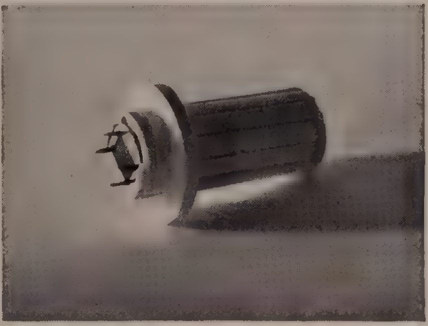

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They want your help and Aventyl HCl can help you.

Whether depression is open or secretive, Aventyl HCl assists in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

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Aventyl® HCl
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(See last page for prescribing information.)

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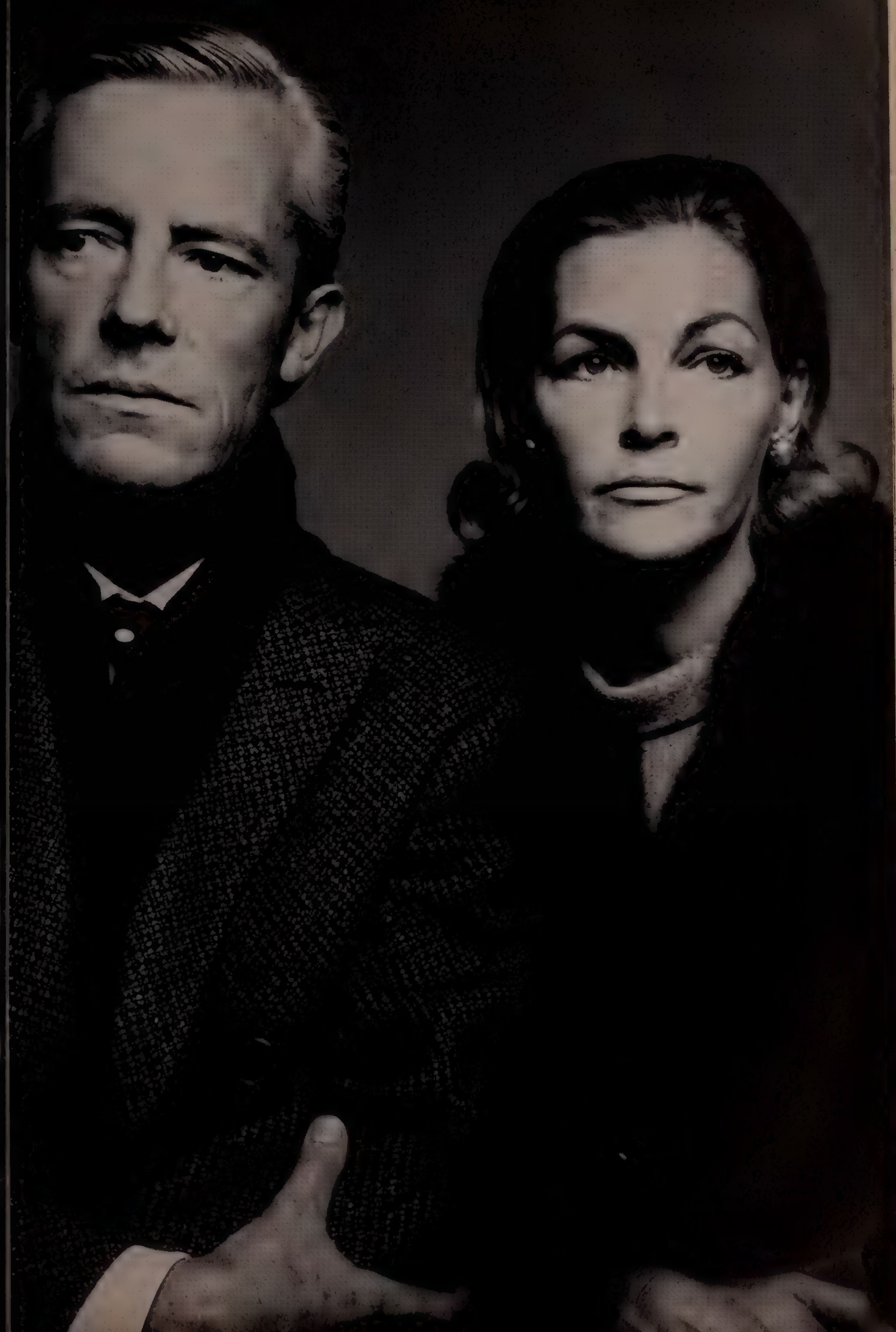

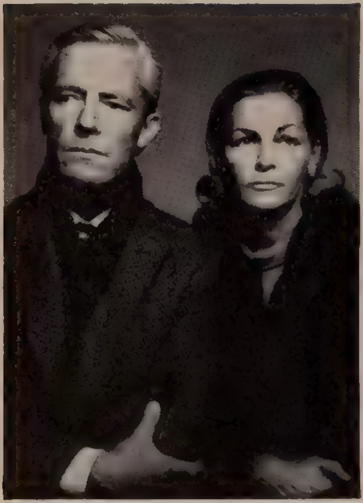

Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastro-intestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl® HCl (nortriptyline hydrochloride, Lilly) is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
  10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
  10 mg.—Ages three to six, 1 Pulvule one to three times daily
  Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
  Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid, 10 mg. (equivalent to base) per 5 cc., in pint bottles. [101267]

Pulvules, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500.

Additional information available to physicians upon request. 800314

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Medical News

Case of galactosemia reported

For the first time since February 20, when the New York State Department of Health began a pilot study to screen newborn infants for galactosemia, a baby has been detected to have the disease.

Galactosemia is a rare but often fatal disease of newborn infants characterized by the infant's intolerance to milk and other sources of galactose. Unless a proper diet is given, victims may suffer gastrointestinal ailments, severe liver damage, cataracts, growth abnormalities, and progressive mental retardation.

Screening for galactosemia is done through laboratory testing of blood samples taken as part of the existing program to detect phenylketonuria, another rare disease of newborn infants which requires corrective dietary measures. The prognosis in patients who receive early treatment for this condition is very good.

Teaching hospital information center to be established

The U.S. Department of Health, Education, and Welfare has contracted with the Council of Teaching Hospitals of the Association of American Medical Colleges to study the feasibility of establishing a teaching hospital information center.

A total of $71,240 has been awarded to the Council of Teaching Hospitals to conduct this study. One of the features of this activity will be the development of a methodology designed specifically for the dissemination of a constantly changing body of information of particular interest to those involved in the administration of teaching hospitals. Also the Council will study ways to encourage innovation and experimentation and to evaluate present administrative stimuli to continued research on relationships between teaching hospitals and medical schools or medical centers.

Forms of collagen topic of Cornell study

New forms of collagen recently devised by scientists at Cornell Medical College are now to be developed for use in the replacement of corneas and other damaged or diseased body parts. The research is being supported by a three-year grant of $340,222 from The John A. Hartford Foundation, Inc., and will be undertaken by Albert L. Rubin, M.D., associate professor of surgery in biochemistry, and his colleagues.

A major aim of the current study is to develop collagen for use in eye surgery. The investigation will focus on determining the best types of collagen prostheses which can be put in the eye, function for prolonged periods of time, and cause no adverse reactions.

Neurologic laboratory dedicated at New York Hospital-Cornell Medical Center

The Edward W. Bourne Behavioral Research Laboratory, a new basic research laboratory where studies in the neurologic basis of behavior are under way, was dedicated at the New York Hospital-Cornell Medical Center, Westchester Division, in White Plains.

Paul McHugh, M.D., neurologist and psychiatrist, Thomas Meikle, M.D., neuroanatomist, Gerard Smith, M.D., physiologist, and Peter Stokes, M.D., endocrinologist and internist, are collaborating on studies in emotions, relearning, and alcoholism. Research on the ability of individuals to recognize time span is being conducted by William T. Lhamon, M.D., chief psychiatrist, The New York Hospital, and Dr. Sanford Goldstone, head of psychology in the Department of Psychiatry.

Personalities

Appointed. Emil Froeschels, M.D., New York City, as honorary professor of speech pathology, Pace College . . . Donald K. Binder, M.D., Schenectady, as director of the Bureau of Chronic Disease and Geriatrics, New York State Health Department . . . Ralph E. Dwork, M.D., formerly of Pennsylvania, as associate director of community health services, New York State Health Department.

Elected. As president of the American Society for Adolescent Psychiatry, at its annual meeting in Boston, William A. Schonfeld, M.D., assistant clinical professor of child psychiatry, Columbia University College of Physicians and Surgeons.

Named. As president-elect of the American College of Allergists Paul F. deGara, M.D., clinical professor of pediatrics (allergy), The New York Hospital-Cornell Medical Center.

Retired. Victor N. Tompkins, M.D., Albany, after twenty-two years of service as assistant commissioner for laboratories and research, New York State Department of Health.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Awarded. Norman J. Levy, M.D., New York City, the Adolf Meyer Award by the Association for Improvement of Mental Health . . . George Leone, M.D., Suffolk County health commissioner, the Distinguished Service Award from the New York State Department of Health . . . Louis F. Bishop, M.D., New York City, by the American College of Sports Medicine, a citation in recognition of long and distinguished service as a founder of the College.

Medical Meetings

Congress on neurologic sciences to be held in New York City

The Ninth International Congress of Neurology and the Fourth International Congress of Neurological Surgery will be held as a combined scientific meeting at the New York Hilton September 20 through 27. This combined meeting will be called the World Congresses of Neurological Sciences.

The program will feature joint sessions of the two congresses on the topics of epilepsy and cerebral vascular disease. Subjects for the session of the neurologic congress are cerebral dominance, nutritional and metabolic diseases, and geographic and viral diseases of the nervous system. The neurosurgic congress will discuss the treatment of brain tumors, intracranial pressure, and pain.

For further information and registration forms write to: World Congresses of Neurological Sciences, 420 Lexington Avenue, Suite 417, New York, New York 10017.

Medical ethics topics of meeting

The Judicial Council of the American Medical Association is sponsoring its second National Congress on Medical Ethics to be held at the Drake Hotel, Chicago, Illinois, October 5 and 6.

The program on October 5 will feature "Medical Ethics in Practice," Chauncey D. Leake, Ph.D., and F. J. L. Blasingame, M.D.; and "Medical Ethics and Medical Science," Irvine H. Page, M.D., and Paul A. Freund, LL.B. On October 6 the program will be "Medical Ethics and Discipline," J. Frank Walker, M.D., Milton D. Krueger, and Charles Forbes, LL.B.

Early registration is encouraged because attendance will be limited. For further information write to: E. G. Shelley, M.D., chairman, Judicial Council, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Hypnosis topic of postgraduate course

Columbia University College of Physicians and Surgeons announces its annual postgraduate course in "Medical Hypnosis (Basic)" to be given on Saturdays, October 5 through November 16, 10:00 A.M. to 5:00 P.M. The course will feature lectures, case demonstrations, practice sessions, movies, slides, and seminars designed to present technics and theories of hypnosis and to demonstrate the practical adjunctive uses of hypnosis in clinical medicine from the perspectives of diagnosis, therapy, and research. This course is open to all general physicians and specialists.

This course is followed by "Hypnosis and Psychiatry" which is open only to psychiatrists who have taken the basic hypnosis course or the equivalent. The course will consist of lectures, seminars, and case material to elaborate the various technics with which hypnosis can facilitate the psychotherapeutic process. This course will be given on Saturdays, January 4 through 29, 1969, from 10:00 A.M. to 5:00 P.M.

For further information and application forms write to: Melvin D. Yahr, M.D., associate dean, College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032.

Diabetes mellitus topic of symposium

The Brooklyn-Cumberland Medical Center is sponsoring a symposium on Diabetes Mellitus to be held October 16, 1:00 to 5:00 P.M., at the Brooklyn Academy of Music, 30 Lafayette Avenue, Brooklyn.

The program will feature the following topics and speakers: "What is Diabetes: A Disease Entity or Part of the Aging Process?," Charles Shuman, M.D., clinical professor of medicine, Temple University Medical School; "The Diagnosis of Diabetes: Value of Common Blood Tests and Mass Screening Program," Gerald T. Kent, M.D., associate clinical professor of medicine, Western Reserve Medical School; "The Use of Insulin on the Management of Diabetes Mellitus," Harold Zarowitz, M.D., clinical associate professor of medicine, State University of New York Downstate Medical Center; and "The Use of Oral Hypoglycemic Agents in the Management of Diabetes

continued on page 1902

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Mellitus," Sam Beaser, M.D., clinical associate professor of medicine, Harvard University Medical School.

There is no registration fee. For additional information contact: Stanley S. Bergen, Jr., M.D., chief of community medicine, The Brooklyn-Cumberland Medical Center, 39 Auburn Place, Brooklyn, New York 11205.

Gastroenterology topic of postgraduate course

The American College of Gastroenterology is sponsoring its annual course in Postgraduate Gastroenterology to be given at the Statler Hilton in Boston, Massachusetts, October 31 and November 1 and 2.

The course will feature advances in diagnosis and treatment of gastrointestinal diseases and a comprehensive discussion of diseases of the esophagus, stomach, pancreas, liver and gallbladder, and colon and rectum. Faculty members will be drawn from the medical schools in and around Boston.

For further information and enrollment write to: American College of Gastroenterology, 33 West 60th Street, New York, New York 10023.

Skin topic of lecture

Thomas Gibson, F.R.C.S., senior lecturer in tissue transplantation at the University of Glasgow, will give the seventh annual V. H. Kazanjian Lecture, entited "Skin," on November 7, at 5:00 P.M., at the New York University Medical Center, 550 First Avenue, New York City.

The V. H. Kazanjian lecture series is an integral part of the teaching program of the Institute of Reconstructive Plastic Surgery.

Herniated nucleus pulposus

Lumbar disk protrusion, contrary to general impression, is not restricted to the postpuberal population. Illustrative of this thesis, R. E. G. Bidwell, M.D., and C. K. Whittaker, M.D., writing in a recent issue of *Missouri Medicine*, present the case of a ten-year-old girl who suffered a nerve root compression from herniation of the fifth lumbar to first sacral vertebral disks on the right.

The authors feel that in cases such as these, if the patient does not respond to conservative management within seven to ten days, surgical removal of the disk should be performed. The primary goal is the decompression of the nerve root. As for outcome, the prognosis is excellent, although when a reflex has been lost for any considerable length of time, there is only about a 20 per cent chance of its return. About two thirds of the patients retain sensory deficits existing preoperatively. Hemilaminectomy, performed in the case presented, has been found to be a highly satisfactory procedure. At operation, the nerve root was found to be displaced by a large laterally ruptured disk extending medially to the midpoint of the spinal cord. After removal of the disk, the reflexes began to return to normal and muscle spasm subsided. In two months the patient was asymptomatic.

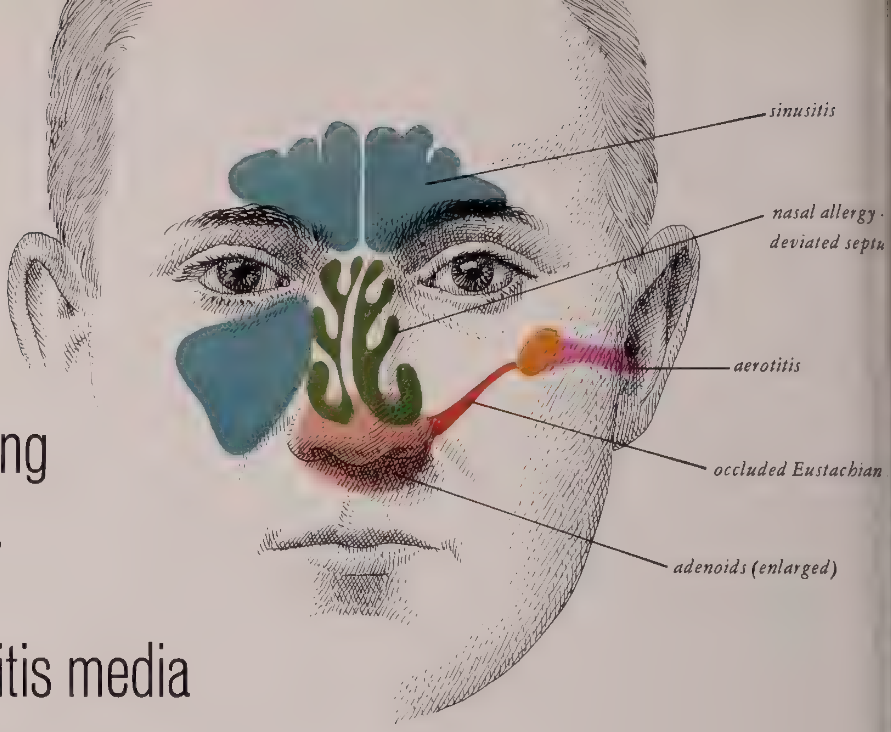
There are no signs pathognomonic for nerve root compression, and positive evidence of it must be sought. Typically, the patient will have pain and limp on the affected side. In this case, the child's right hip and posterior thigh pain was intensified by dorsiflexion of the foot and flexion of the thigh while the knee was extended. The Achilles tendon reflex in the right foot was decreased. This initial diagnosis was sciatic neuritis, but the patient was readmitted in one week with right paravertebral muscle spasm and associated scoliosis.

vol. 3, no. 2

DORSEY Season

A journal within a journal published periodically in the interests of better medicine by Dorsey Laboratories, a division of The Wander Company, Lincoln, Nebraska 68501. Address communications to Keith W. Sehnert, M.D., Medical Director.

this issue:
serous otitis media
an original article
by Robert H. Lofgren, M.D.



the complaining earache... key to serous otitis media

Robert H. Lofgren, M.D.
Associate Surgeon, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts

Serous otitis media is probably the most common ear problem in children, especially in the wintertime. Diagnosis is usually easy in adults, but may be quite difficult in children, especially the very young child where one has to depend almost entirely on the physical findings.

The symptoms of serous otitis are a fullness in the ear, a mild hearing loss and mild earache. The earache can best be described as a "complaining earache" instead of a "screaming earache" as found in purulent otitis media. A young child may be irritable and pull at the ear. In milder cases, and as the ear recovers, gurgling and popping noises can be heard in the ear.

On examination one may see a yellow tympanic membrane and if a fluid level is present the diagnosis becomes easy. However, the eardrum may be dull gray, or slightly pink, or even perfectly normal. Pneumomassage using a Siegle otoscope or a closed-head electric otoscope must be done on both ears, otherwise the diagnosis will be frequently missed. Attempted movement of the drum with the pneumatic otoscope produces either a sluggish motion of the drum or no motion at all instead of the easily movable normal drum. The Rinne test is negative and there is a 15-20 decibel conductive hearing loss. The bone conduction may be better than normal and an air-bone gap may exist even with the air conduction within normal limits. Occasionally one finds a false nerve deafness on the audiogram when thick glue-like fluid causes immobility of both the oval and round window. Both conditions return to normal when the fluid is removed, but they make the interpretation of screening audiograms very difficult.

There is no single cause for serous otitis. One factor always present is blockage of the eustachian tube, but this alone is not enough to produce fluid. There must also be an inflammatory reaction. Blockage of the eustachian tube may be caused by many conditions. In children the most common cause is enlarged adenoids. In the summer the next most common cause is allergy. Upper respiratory infections or influenza are common causes in the winter. Nasal allergy, acute and chronic sinusitis, nasal septal deformity and cleft palate can all cause eustachian tube obstruction. Some children may have a congenitally small eustachian tube, but fortunately they usually "grow out of the problem."

the first sign of a nasopharyngeal tumor is often a serous otitis. One must always rule this out in any adult who later in life develops repeated or persisting serous otitis. Causes sometimes overlooked are nasogastric tubes after surgery, simple obesity and cardiorenal disease, which may produce congestion in the mucosal lining of the eustachian tube. In recent years we have been seeing a new cause—acute otitis media, where the patient is adequately treated with antibiotics but where drainage has not been stablished either through the eardrum or down the eustachian tube. A sterile exudate is left in the middle ear.

The inflammatory response may be caused by a marked negative pressure as in air otitis from flying, or it may be from a mild bacterial or viral infection n the middle ear. Serous fluid is a good culture medium and will frequently go on to purulent otitis media, especially if the original blockage was caused by an infectious process such as acute rhinitis or denoiditis. When the infection heals there may be scarring in the middle ear mucosa. Mucous glands develop in this tissue and pour out a thick mucoid material. This ear usually looks normal until a pneumatic otoscope is used. The objectives in treating serous otitis are to remove the obstructing agent and to provide drainage from the middle ear. Often this can be accomplished by decongestants and nose drops. If large obstructing adenoids are present they should be removed. Sinusitis should be treated with oral decongestants or nose drops, plus antibiotics where indicated. Nasopharyngeal tumors should be treated. Allergies should be treated with antihistamines and, where indicated, by desensitization.

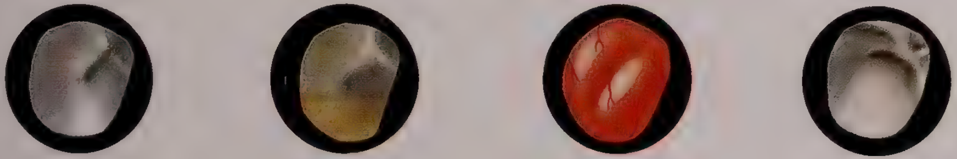
If the fluid does not clear with medical treatment within a week or two, a myringotomy should be done. If there is a question of active infection or if the fluid looks purulent, as is seen at the conclusion of acute otitis, cultures are taken. On adults this can be done in the office without anesthesia. It is no more painful than an intravenous needle for a blood test. A good safe topical anesthetic has a tremendous psychological value to the patient. Children under the age of 1 require no anesthesia. Between the ages of 1 and 3 anesthesia is not absolutely essential although a general anesthetic may be used to avoid the child's possible mistrust at follow-up examinations. I usually do the myringotomy at the same time as the adenoidectomy if the adenoids are enlarged. Once drainage has been established with decongestants or by myringotomy, positive pressure inflation of the middle ear is invaluable in forcing out the serous fluid and keeping it from reforming. The patient can do this himself by performing the Valsalva maneuver. This should be done several times a day, by taking a deep breath, holding the nose and blowing hard against the closed lips for a second or two.

In resistant cases where the fluid reforms as soon as the myringotomy heals, small polyethylene tubes are inserted through the myringotomy site. Insertion of the tubes, even in adults, usually requires an anesthetic. Good anesthesia can be obtained by infiltrating the canal wall with a local anesthetic, using a #27 needle. Once inserted the patient has no sensation of the tubes' presence. Be careful to caution the patient or parents not to allow any water to get into the ear canal while a myringotomy is open or a tube is in place. Water can be kept out by a pledget of lamb's wool in the ear canal or a cotton pledget thickly coated on the outside with petroleum jelly. I check these patients a week after a myringotomy to be sure it is healed and at two month intervals until the tubes have fallen out, usually within three to six months after insertion.

The mucoid type of fluid is so thick and tenacious that it is appropriately called a glue ear. It is aspirated only with difficulty through the eardrum, and occasionally must be removed through a tympanotomy. This thick, glue-like fluid is prone to recur, as the myringotomy usually heals long before the mucous membrane has returned to normal. Repeated myringotomies, as many as ten or twenty, were formerly required for this condition. Now polyethylene tubes are inserted initially when this thick, glue-like material is found. At times a subacute mastoiditis may accompany the serous otitis, which will necessitate a simple mastoidectomy before the condition can be eradicated. Usually the thin serous fluid readily responds to decongestants or to a myringotomy and removal of the eustachian tube obstruction. Occasionally, however, even serous fluid will repeatedly reform. For this, resection of the tympanic plexus of nerves which lies on the promontory of the middle ear has been carried out, as the tympanic branch of the glossopharyngeal nerve is the secretomotor nerve to the ear.

Failure to diagnose serous otitis is the most common cause of the recurrent, almost continuous otitis me-

Otoscopic Views



Normal *Acute Serous* *Acute Purulent* *Chronic Serous* dia seen in young children. In these cases a myringotomy will frequently provide a long-term cure without adenoidectomy or any other surgery. Failure to do this may allow the condition to go on to acute or subacute mastoiditis. Adhesive otitis media with scar tissue binding down the ossicles or tympanosclerosis may also result with permanent impairment of hearing. The prognosis for hearing with adhesive otitis or tympanosclerosis is usually poor. If the adhesions are removed, they reform, and the same is frequently true of tympanosclerosis even after a tympanoplasty. For many of these people a hearing aid is the only solution. The constant negative pressure in long standing serous otitis media may draw in either Schrapnell's membrane or the posterior superior portion of the eardrum forming a pocket to cause a chronic otitis media with cholesteatoma, which may not become apparent until twenty or thirty years later.

The non-medical complications of improper diagnosis or treatment may be even more serious. The irritable child, the frequent bouts of acute purulent otitis media with pain and fever, the expense of antibiotics and doctors, and the time lost from school or work affect the entire family.

In summary, serous otitis has many causes. There is a blocking of the eustachian tube and an inflammatory reaction in the middle ear mucosa, the latter usually caused by a mild infection. The treatment is to provide immediate drainage by decongestants and where necessary, by a myringotomy. The obstructing agent must be removed by surgery if it is adenoid or by oral decongestants, and antihistamines or nasal spray if it is an upper respiratory infection or allergy. Occasionally resistant cases require plastic tubes placed through the eardrum or other more radical surgery. Failure to treat properly leads to hearing loss which may be permanent, repeated acute otitis media or possibly even chronic otitis media with cholesteatoma.

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Books Received

*The following books were received during the month of May, 1968.**

Nephrons and Kidneys. By Jean Oliver, M.D. Folio of 116 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $28.

Structural Basis of Renal Disease. Edited by E. Lovell Becker, M.D. Quarto of 770 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $39.50.

Pathology of Leukemia. By George D. Amromin, M.D. Quarto of 448 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $26.50.

The Surgical Management of Rheumatoid Arthritis. By Robert L. Preston, M.D. Quarto of 579 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $23.50.

Neuroradiology Workshop. Volume III: Non-Neoplastic Intracranial Lesions. By Leo M. Davidoff, M.D., Harold G. Jacobson, M.D., and Harry M. Zimmerman, M.D. Quarto of 577 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $34.75.

Computers and Electronic Devices in Psychiatry. Edited by Nathan S. Kline and Eugene Laska. Octavo of 341 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $13.75.

Postadolescence: Theoretical and Clinical Aspects of Psychoanalytic Therapy. By Rudolph Wittenberg. Quarto of 138 pages. New York, Grune & Stratton, 1968. Cloth, $6.50.

Psychological Emergencies of Childhood. By Gilbert Kliman, M.D. Octavo of 154 pages, illustrated. New York, Grune & Stratton, 1968. Paper, $5.75.

The Elderly Patient. By Bernard A. Stotsky, M.D. Octavo of 160 pages. New York, Grune & Stratton, 1968. Paper, $5.50. (Boston State Hospital Monograph Series Number Three)

Adolescents in a Mental Hospital. By Ernest Hartmann, M.D., Betty Ann Glasser, M.S., Milton Greenblatt, M.D., Maida H. Solomon, B.S., and Daniel J. Levinson, Ph.D. Octavo of 197 pages. New York, Grune & Stratton, 1968. Paper. (Boston State Hospital Monograph Series Number Four)

Research Publications, Association for Research in Nervous and Mental Disease. Volume XLVI. The Addictive States. Edited by Abraham Wikler, M.D. Proceedings of the Association, December 2 and 3, 1966, New York, N.Y. Octavo of 520 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $24.

Ultrastructure of the Thyroid Gland. By A. Lupulescu, M.D., and A. Petrovici, M.D. Quarto of 168 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $8.25.

The Heart and the Law. By Elliot L. Sagall, M.D., and Barry C. Reed, LL.B. Quarto of 842 pages, illustrated. New York, The Macmillan Company, 1968. Cloth, $28.

Exploratory Concepts in Muscular Dystrophy and Related Disorders. Proceedings of the International Conference Convened by Muscular Dystrophy Associations of America at Arden House, Harriman, New York, October 22–27, 1966. Edited by A. T. Milhorat. Quarto of 420 pages, illustrated. Amsterdam, Excerpta Medica Foundation, 1967. Cloth, $25. (International Congress Series No. 147)

The Reach of Mind. Essays in Memory of Kurt Goldstein. Edited by Marianne L. Simmel. Octavo of 300 pages, illustrated. New York, Springer Publishing Company, Inc., 1968. Cloth, $9.00.

RASPAIL, Scientist and Reformer. By Dora B. Weiner. Quarto of 336 pages, illustrated. New York, Columbia University Press, 1968. Cloth, $11.

The Annual Survey of Psychoanalysis. Volume IX, 1958. Edited by John Frosch, M.D., and Nathaniel Ross, M.D. Octavo of 527 pages. New York, International Universities Press, Inc., 1968. Cloth, $12.

Annual Review of Medicine. Volume 19, 1968. Arthur C. DeGraff, Editor. William P. Creger, Associate Editor. Octavo of 540 pages, illustrated. Palo Alto, Calif., Annual Reviews, Inc., 1968. Cloth, $8.50.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

Tofrãnil®, imipramine hydrochloride

Indications: Tofrãnil is recommended for the treatment of depressive states of diverse psychopathology.
Contraindications: The concomitant use of this agent and monoamine oxidase inhibiting (M.A.O.I.) compounds is contraindicated. Hyperpyretic crises or severe convulsive seizures may occur. Potentiation of adverse effects can be serious or even fatal. An interval of at least 7 days after M.A.O.I. therapy has been discontinued should be allowed before this drug may be substituted. Initial dosage should be low, increases should be gradual, and the patient's progress should be carefully observed.
Warning: Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician, the potential benefits outweigh the possible risks, it should not be used during the first trimester of pregnancy. Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.
Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy. Because of its anticholinergic effect, caution should be observed in prescribing the drug for patients with increased intraocular pressure.
In rare instances, transient cardiac arrhythmias have occurred in hyperthyroid patients and in patients receiving thyroid medication when this compound was added to the regimen.
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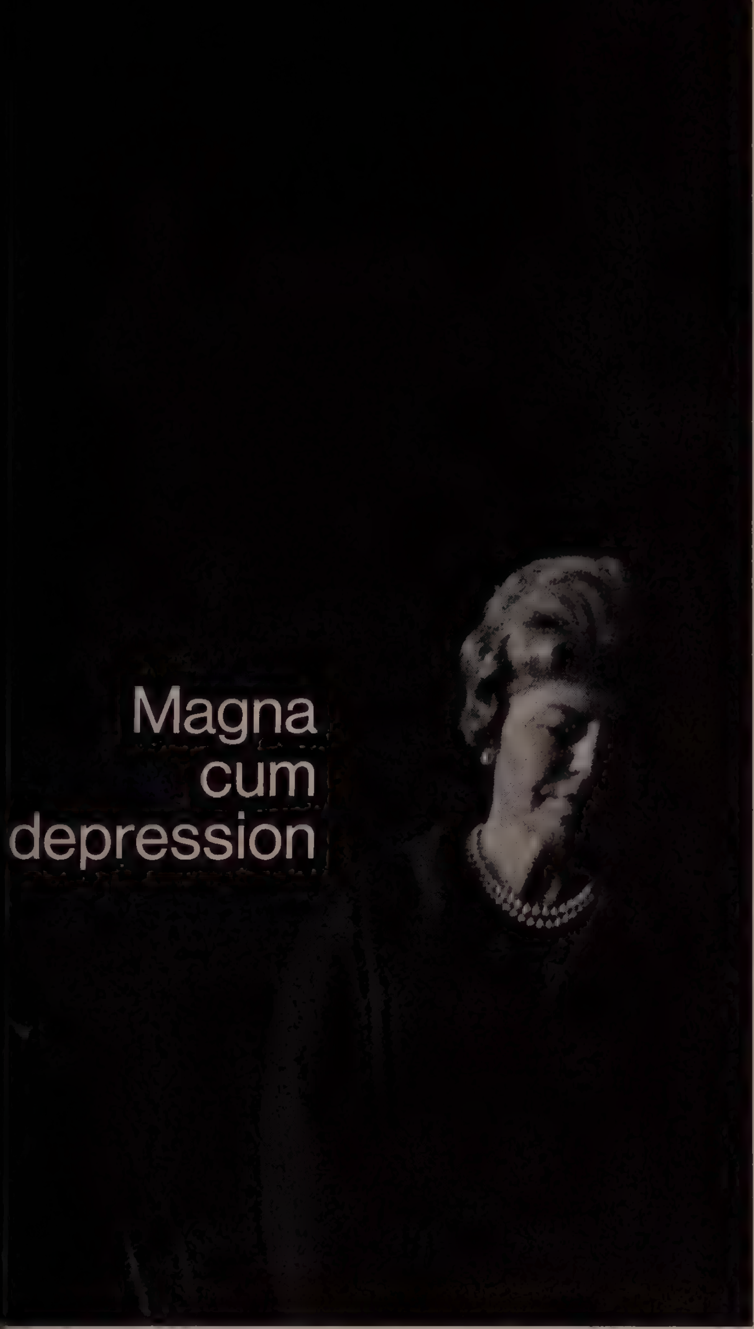

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Series Haematologica. Volume I, 1, 1968. Serum Groups. Edited by Kaj Gert Jensen, M.D., and Sven-Aage Killmann, M.D. Quarto of 161 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Paper, $9.50.

Cancer Chemotherapy. By Edward S. Greenwald, M.D. Octavo of 215 pages. Flushing, N.Y., Medical Examination Publishing Company, 1967. Paper, $6.00.

Family Planning. By J. F. Robinson, M.B. Second edition. Duodecimo of 71 pages, illustrated. Edinburgh, E. & S. Livingstone Ltd., (Baltimore, The William & Wilkins Company), 1967. Paper, $3.75.

The National Diet-Heart Study—Final Report. National Diet-Heart Study Research Group with the Approval of the Executive Committee on Diet and Heart Disease. Publication supported by Research Grant H-6007, U.S. Public Health Service, National Heart Institute. Quarto of 428 pages, illustrated. New York, The American Heart Association, 1968. Paper, $3.50. (American Heart Association Monograph Number Eighteen)

Cardiovascular Surgery—1967. Edited by C. Frederick Kittle, M.D. Council on Cardiovascular Surgery, American Heart Association, Scientific Sessions, San Francisco, Calif., October 20, 21, 22, 1967. Quarto of 217 pages, illustrated. New York, The American Heart Association, 1968. Paper, $3.00. (American Heart Association Monograph Number Nineteen)

Modern Treatment. Volume 5, Number 1, January 1968. Treatment of Congenital Hemorrhagic Disorders. Guest Editor Oscar D. Ratnoff, M.D. **Treatment of Disorders of Growth and Development.** Guest Editor Roberto F. Escamilla, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Published Bi-Monthly (six numbers a year). Paper, $16 per year.

Moniliasis in marital partner

The positive diagnosis of genital or crural moniliasis demands a search for diabetes mellitus as a precipitating factor. T. G. Rollins, M.D., writing in a recent issue of the *Portland Clinic Bulletin*, presents a case of a normal woman with refractory monilial vulvovaginitis which cleared when after about three months severe diabetes was discovered and treated in her husband. Since Candida albicans is known to flourish in an environment of glucose, either the elevated fructose from the seminal fluid or the glucose from the glycosuric-contaminated ejaculate, deposited in the patient's vagina, presented an environment favorable for the vaginal growth of C. albicans and the development of clinical moniliasis. Although the husband's diabetes was not the sole cause of the trouble, it was probably a major contributing factor in the development and persistence of the infection in the female. This view is supported by the events: The moniliasis cleared and did not recur after the diabetes mellitus in the husband was brought under control.

The patient was a married woman, thirty-nine years old, with vaginal discharge, vulvar pruritus, and dermatitis of two months duration. Potassium culture preparations were positive for yeast, and the cultures grew out C. albicans. After two weeks of local treatment for vulvovaginitis caused by C. albicans, she became free of the disease. Ten days later the trouble recurred, and she was treated for the following two months. About three months after the onset of her illness, she reported an illness of her husband. He had been losing weight for several months and had polyuria, frequency, weakness, thirst, and generalized pruritus. Urine cultures and smears were entirely negative for C. albicans. Found to have severe diabetes mellitus, the patient was given appropriate therapy, and his disease was brought under control over a period of two months. As noted, the C. albicans vulvovaginitis cleared in the female. She remained free of the disease over a five-year period of follow-up.

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Dangers in poorly designed medical electronic equipment and power sources

It comes as rather a shocker, and no pun is intended, to learn that there are no Federal, state, or local standards to regulate the design, construction, and electrical safety of equipment commonly used today in the practice of medicine. A potential for tragedy exists in this.

Engineering critics who have studied this subject point out two major flaws with dangerous potential: Faulty components in instrumentation and monitoring devices and wiring systems that do not provide maximum protection for the patient.

Basic to the problem is the fact that many hospitals and doctors' offices lack adequate grounding systems for their electric wiring. Isolation transformers, now mandatory for operating rooms, should be extended to all stations where electrical equipment is used.

Dr. Paul Stanley, professor of engineering sciences at Purdue University, as reported in *Electronic Design*, in the issue of September 1, 1967, cites a hair-raising incident as a result of faulty wiring. In setting up to take a cardiogram the technician received a severe shock every time she attempted to attach the leads to the patient. The problem was traced to a bed lamp frame that was shorted to its frayed a.c. line cord. The lamp was touching the bed frame and so was the patient's arm. Since the machine was grounded through a three-prong plug and the lamp was not, the full a.c. line voltage of 117 volts was passing through both the patient and the technician.

At present the danger of shock from electrical equipment attached to a person is not limited to hospitals and doctors' offices. It could extend to test equipment used in schools. One example was brought to light recently in a three-year study completed by the University of North Carolina for the Public Health Service.

The study was designed primarily to obtain information on the calibration and general operating condition of audiometers. It uncovered disturbing information about the safety of the machines. More than 25 per cent of them were found dangerous to operate. Two of the 100 machines tested had a potential of 117 volts on the outside case when plugged into the a.c. line, and 25 more units tested had enough potential on the case to produce a shock when touched. In addition, not a single machine tested met the study's calibration specification.

The audiometers tested were obtained from health departments, public schools, physicians and hospitals, military and industrial installations, the Veteran's Administration, and hearing-aid dealers.

The study traced the inaccuracy of most test instruments to owners or operators who apparently had been unaware of the need for periodic calibration.

Nearly half of the instruments had not been calibrated from the day they were purchased.

When technicians removed the back of one audiometer being used by a physician they found a rat's nest inside, constructed in part from bits of the instrument's wiring and insulation materials.

This is an example of poor medicine and is unsanitary as well.

A rose by any other name

The great perfume industry was founded on the fact that it is profitable to cover one smell with another.

The Citizens Committee to Keep New York City Clean proposed to the Mayor that in order to dramatize its campaign this year that perfume be added to the water used routinely to wash the City's streets. The idea was acceptable to the sanitation commissioner, who suggested that it would not be too difficult or expensive to add pine scent to the tanks of the mobile washers for one day to help the cause along.

We suggest a few refinements to the commissioner. Pine would be fine for Central Park and the rural areas of Canarsie. Why not add a little Quelque Fleur to the streets of East Greenwich Village and a few drops of Tabu around Lincoln Center in honor of its linkage with the music teacher embracing his pupil.

Some would feel it quite fitting to add a liberal dose of Lysol up around Morningside Heights.

The possibilities are endless. "Fun City" could really turn it on.

All power to the Citizens Committee and their just cause. We believe they are getting somewhere—there does seem to be a little more trash in the street corner baskets than in the gutter.

Announcement

1968 District Branch Meetings

Branch	*Date*	*Place*
FIRST	Sunday, February 11	The Americana, New York City
SECOND	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
THIRD AND FOURTH	Saturday, September 28	Holiday Inn, Lake George
FIFTH AND SIXTH	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
SEVENTH AND EIGHTH	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
NINTH	Monday, February 12	The Americana, New York City

burning
itching
discharge
of
trichomonal vaginitis...

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tablets/inserts

clinical cures • microscopic cures • culture cures

For the most widespread form of vaginitis the most widely successful therapeutic agent, Flagyl, is clearly indicated.

In trichomonal vaginitis, most physicians have reported a cure-rate of 95 per cent or more with Flagyl when infected male partners are treated concurrently and when treatment is repeated for occasional refractory infections in women.

This high rate of cure obtained with Flagyl is unparalleled. Only systemically active Flagyl reaches the hidden reservoirs of reinfection in male and female genitourinary tracts.

Indications: Flagyl is indicated only in the treatment of trichomoniasis in both the male and female.

Contraindications: Pregnancy; disease of the central nervous system; evidence or history of blood dyscrasia.

Precaution: Complete blood cell counts should be made before, during and after therapy, especially if a second course is necessary.

Side effects: Infrequent and minor side effects include nausea, metallic taste and furry tongue. Gastrointestinal disturbances, flushing and headache sometimes occur, especially with concomitant ingestion of alcohol. The taste of alcoholic beverages may be altered. Other effects, all reported in an incidence of less than 1 per cent, are diarrhea, dizziness, vaginal dryness and burning, dry mouth, rash, urticaria, gastritis, drowsiness, insomnia, pruritus, sore tongue, darkened urine, anorexia, vomiting, epigastric distress, dysuria, depression, vertigo, incoordination, ataxia, abdominal cramping, constipation, stomatitis, numbness or paresthesia of an extremity, joint pains, confusion, irritability, weakness, cystitis, pelvic pressure, dyspareunia, fever, polyuria, incontinence, decreased libido, nasal congestion, proctitis and pyuria. Elimination of trichomonads may aggravate candidiasis.

Dosage and Administration: In women: one 250-mg. oral tablet three times daily for ten days. A vaginal insert of 500 mg. is available for local therapy when desired. When used, one vaginal insert should be placed high in the vaginal vault each day for ten days; concurrently two oral tablets should be taken daily.

In men: When trichomonads are demonstrated, one 250-mg. oral tablet twice daily for ten days in conjunction with treatment of his female partner.

Dosage Forms: Oral tablets–250 mg.
Vaginal inserts–500 mg.

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following infection

B and C vitamins are therapy: STRESSCAPS B and C vitamins in therapeutic amounts...help the body mobilize defenses during convalescence...aid response to primary therapy. The patient with a severe infection, and many others undergoing physiologic stress, may benefit from STRESSCAPS capsules.

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Each capsule contains:

Vitamin B_1 (as Thiamine Mononitrate)	10 mg
Vitamin B_2 (Riboflavin)	10 mg
Vitamin B_6 (Pyridoxine HCl)	2 mg
Vitamin B_{12} Crystalline	4 mcgm
Vitamin C (Ascorbic Acid)	300 mg
Niacinamide	100 mg
Calcium Pantothenate	20 mg

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Spectrum of Liver Disease After Viral Hepatitis

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Brooklyn, New York

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VIRAL HEPATITIS, *potentially one of the most serious infectious diseases, is on the increase because of the greater number of blood transfusions and increased parenteral illicit narcotic usage. Particular emphasis in this report is given to proper diagnosis of chronic hepatitis and its variants, including fulminant hepatitis, posthepatic (unconjugated) hyperbilirubinemia, subacute hepatic necrosis, chronic active and self-limited hepatitis, chronic auto-immune hepatitis ("lupoid" and "plasma-cell" hepatitis), and postnecrotic cirrhosis. Although most patients recover from acute viral hepatitis, approximately 5 per cent have residual sequelae.*

VIRAL HEPATITIS IS potentially one of the most serious infectious diseases. Because of the greater number of blood transfusions and increased parenteral illicit narcotic usage, the prevalence of homologous serum hepatitis is probably increasing. Prospective studies have shown that as many as 8 per cent of patients developed icteric or anicteric hepatitis after transfusions.[1,2] The protracted course and often chronic illness observed after hepatitis accentuates its economic importance. In the military population, the hepatitis problem is one of even greater concern, since the annual incidence in our armed forces during the Korean conflict was as high as 3.5 per cent.[3] The true incidence of the disease in this country may be at least tenfold greater than the 40,000 cases reported annually.

There is much confusion over the diagnosis and ultimate prognosis of liver disease following hepatitis. Since hepatic dysfunction occurs in over 2 per cent of apparently healthy persons and as many as 5 per cent of male war veterans have abnormal liver function test results, the diagnosis of chronic hepatitis is frequently erroneously made.[4] The chronic sequelae include posthepatitic hyperbilirubinemia, chronic active and/or auto-immune hepatitis, asymptomatic chronic hepatitis, postnecrotic cirrhosis, and subacute hepatic necrosis (Fig. 1). The chronic sequelae may also be classified into persistent, recurrent, or progressive types. The latter group are most likely to develop permanent liver damage. Particular emphasis in this report is given to the proper diagnosis of chronic hepatitis and its variants, especially subacute hepatic necrosis and asymptomatic chronic hepatitis, because these

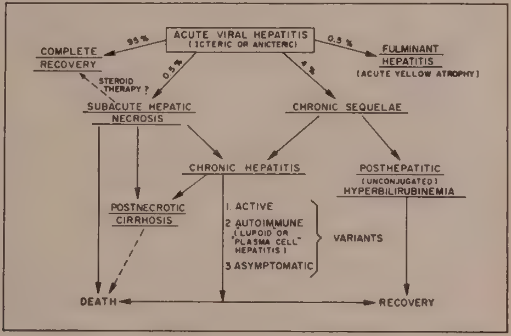
ACUTE VIRAL HEPATITIS
(ICTERIC OR ANICTERIC)
95 %
COMPLETE RECOVERY
0.5 %
FULMINANT HEPATITIS
(ACUTE YELLOW ATROPHY)
0.5 %
4 %
STEROID THERAPY ?
SUBACUTE HEPATIC NECROSIS
CHRONIC SEQUELAE
CHRONIC HEPATITIS
POSTHEPATITIC (UNCONJUGATED) HYPERBILIRUBINEMIA
POSTNECROTIC CIRRHOSIS
1. ACTIVE
2. AUTOIMMUNE ("LUPOID OR "PLASMA CELL" HEPATITIS)
3. ASYMPTOMATIC
VARIANTS
DEATH
RECOVERY

FIGURE 1. Natural history of viral hepatitis.

Presented in part at the 162nd Annual Meeting of the Medical Society of the State of New York, New York City, Section on Gastroenterology and Proctology, February 13, 1968.

latter two syndromes have only recently been recognized and have not received adequate attention in the medical literature concerning the chronic sequelae of hepatitis.

Complete recovery

Following an attack of viral hepatitis, including subclinical and anicteric episodes of the disease, about 95 per cent of patients fully recover within one to four months (Fig. 1). During this period there may be mild clinical or biochemical relapses usually associated with increasing ambulation, but the persistent or recurrent abnormalities are not of a sufficient duration to be consistent with a diagnosis of chronic hepatitis. There may be an increased tendency for an initial relapse with premature ambulation, particularly when liver function test results are significantly abnormal (such as serum transaminase greater than 50 units, sulfobromophthalein sodium retention after forty-five minutes more than 10 per cent, and total bilirubin concentration more than 3 mg. per 100 ml.). Subsequent relapses which may develop during the prolonged convalescence do not correlate well with physical exertion or other stress factors. However, with or without specific treatment including diet or limitation of physical activity, these patients eventually get well.

Fulminant hepatitis

As shown in Figure 1, a small proportion of patients die of fulminant hepatitis or acute yellow atrophy, usually within two to four weeks. There are multiple causes for this syndrome, in addition to viral hepatitis. Fulminant hepatic failure rarely occurs after eight weeks of onset of illness. Liver function studies must be assumed to be normal before the onset of this disease. Increasing jaundice with signs of hepatic coma, hemorrhagic tendencies, shrinkage of the liver, and rapidly deteriorating hepatic and renal function test results are paramount features of the syndrome. In this setting, hepatic coma is a useful clinical sign in evaluating the severity of the disease, especially if the previous health of the patient is known. Another helpful clinical sign is rapid shrinkage of the liver, where the size of the liver is determined by percussion at the right midclavicular line, between the upper border of clinical liver dullness to the percussible or palpable lower border during quiet respiration. Other, less common features of this disease include ascites, respiratory failure, and occasionally aplastic anemia.

Case 1. A nineteen-year-old Negro female was admitted to this medical center because of fever, chills, and backache of three days duration. Eight days earlier, July 11, 1967, she had spontaneously delivered a 7-pound, 11-ounce male infant at another hospital under spinal anesthesia. No other drugs had been given. The immediate postpartum course had been satisfactory, and she had been discharged on the fourth postpartum day. That same evening, fever, chills, and lower back pain had developed. She had also noted a brownish vaginal discharge, which persisted until admission. She had received her prenatal care in this medical center and had been in good health. On the day of admission, jaundice was not present. Positive physical findings included a small liver, which measured 10 cm. by percussion, and moderate generalized abdominal tenderness. Pelvic examination showed a parous introitus, a moderate dark brown vaginal discharge, and a healing median episiotomy. The cervix was tender on motion, and the adnexa were moderately tender bilaterally with fullness on both sides. The clinical impression on admission was acute postpartum endometritis and parametritis, which subsequently was proved pathologically by dilatation and curettage. Initial white blood count was 11,550 per cubic millimeter with 70 per cent neutrophils, 22 per cent lymphocytes, 7 per cent monocytes, and 1 per cent eosinophils. Urinalysis gave normal results. Hemoglobin was 12.2 Gm. per 100 ml. and hematocrit 36. Serologic tests for syphilis were nonreactive.

The patient received intravenous penicillin, 1 million units per day, on admission and apparently was doing well. Temperature, however, failed to return to normal until chloramphenicol (Chloromycetin) was also given intravenously (2 Gm. per day). Temperature subsequently returned to normal, but on the same day she complained of general malaise and moderate abdominal tenderness. Scleral icterus appeared for the first time. There was chest discomfort on deep respiration. Physical examination showed moderate generalized abdominal tenderness. A diagnosis of fulminant hepatitis was considered likely. Uniform hepatic dysfunction was found to be present with the most striking abnormalities limited to elevation of serum glutamic oxaloacetic transaminase to 3,660 units, total serum bilirubin concentration 18 mg. per 100 ml. (8.5 mg. per 100 ml. in the indirect fraction), prothrombin concentration greater than 12 per cent, thymol turbidity 5 units, cephalin flocculation 4 plus, serum albumin 2.5 Gm. per 100 ml., globulin

4.2 Gm. per 100 ml., alkaline phosphatase 5.8 Bodansky units, and cholesterol 192 mg. per 100 ml. A persistent leukocytosis was present. Lumbar puncture demonstrated no abnormalities. The patient was placed on 200 mg. of prednisone daily, by intravenous route. On the seventh hospital day, despite corticosteroid therapy and an afebrile course, she was noted to be extremely lethargic, irrational, and uncooperative. She was placed on a regimen for hepatic coma, including neomycin, cathartics, and enemas. The patient rapidly deteriorated over the next two days, with increasing jaundice and diminishing liver size by precussion being observed. She died on the ninth hospital day of cardiac arrest despite hypotension which was successfully treated with vasopressor drugs. The typical findings of fulminant hepatitis were observed at autopsy (Fig. 2). Her liver weighed 1,620 Gm. The kidney size and histology were unremarkable except for some tubular bile casts.

Because of the unfavorable prognosis in fulminant hepatitis, massive corticosteroid therapy has been employed in addition to the usual supportive measures but without any notable success. Current procedures to aid liver regeneration are under investigation in a variety of medical centers and include exchange blood or plasma transfusions, cross circulation, and extracorporeal liver perfusion. In this acute lesion, the potential beneficial effects of transplantation of the liver are minimal and better suited for patients with chronic hepatic failure.

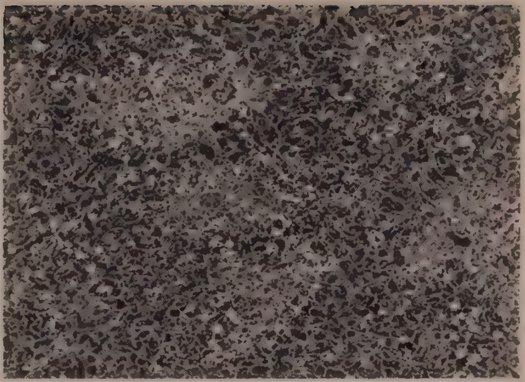

FIGURE 2. Section of liver obtained at autopsy showing parenchymal collapse and marked necrosis of liver cells typical of acute fulminant hepatitis. Some recognizable hepatocytes seen at periphery of liver lobules. Moderate canalicular bile plugging present (hematoxylin and eosin stain).

Posthepatitic (unconjugated) hyperbilirubinemia

There have been scattered reports indicating that nonhemolytic unconjugated hyperbilirubinemia may be a sequel of viral hepatitis.[5-8] Presumably, the cause is related to a functional hepatic defect affecting bilirubin metabolism, including its transport, or possibly an increased renal threshold for bilirubin after hepatitis. In a review of nonhemolytic unconjugated hyperbilirubinemia, the posthepatitic state could be ascribed to only 7 of 366 subjects as a cause for unconjugated hyperbilirubinemia.[5] A recent preliminary study of mild unconjugated hyperbilirubinemia questioned the existence of a true posthepatitic hyperbilirubinemia.[9] Nevertheless, although its incidence may be rare, it is extremely important to recognize this entity to avoid the pitfalls of overconcern by the physician and his patient. Too often these subjects are confused with cases of congenital origin (Gilbert's disease or constitutional hepatic dysfunction) and sent from one physician to another in search of a correct diagnosis.

The diagnosis is relatively simple if there is an antecedent history of hepatitis. In the absence of such a history, the diagnosis is one of exclusion. There are usually no symptoms or signs of liver disease, except for minimal, and often fluctuating, jaundice. Hepatic dysfunction is limited to isolated retention of unconjugated bilirubin. The total bilirubin concentration rarely exceeds 5 mg. per 100 ml. with the direct fraction less than 0.3 mg. per 100 ml., while congenital liver disease, with deficiency of glucuronyl transferase, is usually associated with total bilirubin concentrations greater than 5 mg. per 100 ml. The few liver biopsies performed in posthepatitic hyperbilirubinemia have had normal findings, but occasionally mild centrolobular fat infiltration may be seen. The prognosis is excellent. The bilirubin level may return to normal in a matter of months or years in most patients, although persistent hyperbilirubinemia after hepatitis has been documented.[5-8] No therapy is indicated except strong reassurance by the physician emphasizing the benign nature of the illness.

Subacute hepatic necrosis

Subacute hepatic necrosis is a clinical syndrome with a nonspecific clinical picture.

Its diagnosis is best established by percutaneous biopsy, and its recognition is important because it is a well-documented precursor of postnecrotic cirrhosis. This lesion may occur as a variant of acute hepatitis and not necessarily after a latent period. It is possible that fulminant hepatitis may represent an earlier stage of this entity. Liver biopsy establishes the diagnosis of subacute hepatic necrosis with evidence of parenchymal collapse and "bridging" between portal and central areas of the liver lobule.

Studies by Klatskin[10] and Tisdale[11,12] have brought attention to the importance of this syndrome since approximately one third of such cases eventually progress to postnecrotic cirrhosis. The cause of subacute hepatitis may be related to failure of the reparative process in acute viral hepatitis, but other causes are possible. The syndrome is not usually associated with auto-immune phenomena.

Although signs, symptoms, and hepatic function resemble those found in acute viral hepatitis, the diagnosis is suggested by persistent fever, anorexia, vomiting, possible development of hepatic coma, and elevated or rising bilirubin levels. Total serum bilirubin often exceeds 15 mg. per 100 ml., and serum transaminase shows prolonged elevation in the range of 500 to 2,000 units. Similarly, the alkaline phosphatase may show persistent elevation associated with low serum albumin and prothrombin activity. Abnormalities of the latter often prevent diagnosis by percutaneous needle biopsy. Since the syndrome is a pathologic entity, it is impossible to be certain of the diagnosis without histologic proof.

Liver biopsy demonstrates lobular disorganization with "bridging" between portal and central veins, parenchymal necrosis, degeneration, regeneration, inflammation, and stromal collapse with collagenization of the supporting stroma and vascular distortion.[10-12]

CASE 2. A sixty-five-year-old dentist complained of generalized weakness and pruritus two weeks prior to admission. Three days before admission he noted the onset of progressive vomiting, malaise, jaundice, and light stools. The generalized pruritus persisted. Positive physical findings were limited to scleral icterus and marked shock fist percussion tenderness over the right lower side of the chest cage. The liver was not palpable, and there were no masses felt in the abdomen. Initial laboratory findings included a white blood count of 16,600 per cubic millimeter with a normal differential count, total serum bilirubin concentration 7.9 mg. per 100 ml., serum albumin 3.5 Gm. per 100 ml., globulin 2.5 Gm. per 100 ml., serum glutamic oxaloacetic transaminase 384 units, serum glutamic pyruvic transaminase 740 units, lactic dehydrogenase 340 units, alkaline phosphatase 27 Bodansky units, blood urea nitrogen 35 mg. per 100 ml., and prothrombin time normal. Radiographic examination of the upper and lower gastrointestinal tract gave normal findings. A liver scan (gold-198) showed a mottled uptake appearance consistent with the diagnosis of hepatitis. Because of the persistence of leukocytosis and low-grade fever of approximately 100 F., a percutaneous liver biopsy was performed on the seventh hospital day which was interpreted as probable subacute hepatic necrosis, but pericholangitis because of extrahepatic obstruction could not be ruled out. The patient was then placed on 200 mg. of prednisone daily. During the next two weeks, the dosage of prednisone was progressively reduced to 40 mg. per day. Because of the persistent fever, rising serum transaminase, and alkaline phosphatase, an open liver biopsy and exploration were performed on the third week of hospitalization to exclude biliary tract disease. The surgical findings were similar to the needle biopsy performed two weeks earlier and demonstrated subacute hepatitis (Fig. 3). There was no biliary tract disease or extrahepatic obstruction found. Subsequently, despite continued corticosteroid therapy, the serum transaminase remained markedly elevated in the range of 700 to 1,000 units. Hemorrhage into the skin was observed during the sixth hospital week. Oliguria, azotemia, and prehepatic coma were noted in the seventh week. The patient died in hepatic and renal failure during the eighth week.

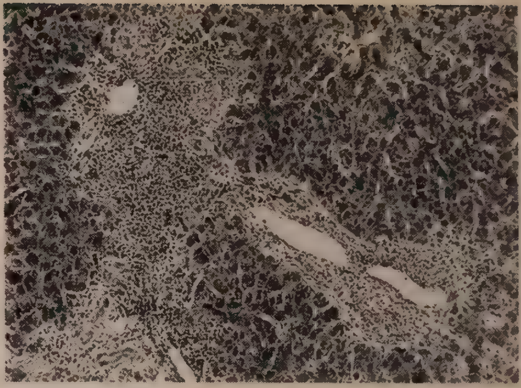
FIGURE 3. Section of surgical liver biopsy showing collapse and bridging indicative of subacute hepatic necrosis. Extensive inflammatory infiltration between portal and central areas of lobule present. Note liver cell degeneration and proliferation of fibrous tissue around these cells (hematoxylin and eosin stain).

PROGNOSIS. The prognosis of subacute hepatitis is poor, since death from hepatitis or development of postnecrotic cirrhosis is common. Early recognition of this disease may be helpful in determining the mode of therapy. Despite the fact that subacute hepatic necrosis is a relatively common pathologic entity, there have not been any prospective investigations of the possible beneficial role of steroid therapy in this syndrome. In addition to their anti-inflammatory action, steroids may reverse the early fibroblastic proliferation and collagen development in this lesion. Pilot studies performed independently by Klatskin,[13] Tisdale,[12] and by me have indicated some beneficial role of steroids in preventing progression of this lesion to postnecrotic cirrhosis. However, since the total number of patients studied is small, there remains inadequate proof of the efficacy of steroids. Further double-blind controlled studies in a large group of subjects treated with prolonged steroid therapy (six months to several years) eventually may determine the beneficial role of such chemotherapy in this lesion.

Variants of chronic hepatitis

Chronic liver damage of the nonalcoholic variety is found in approximately 4 per cent of patients who do not recover completely within four to six months after acute hepatitis or who have late, multiple, or prolonged relapses.[14-18] The variants of chronic hepatitis include: (1) chronic active (progressive) and self-limited (nonprogressive) hepatitis, (2) chronic auto-immune hepatitis ("lupoid" or "plasma cell" hepatitis), and (3) asymptomatic chronic hepatitis. The etiologic possibilities include persistence of viral infection within the liver; continuing hepatic damage, possibly caused by superimposed auto-immune reactions; ischemia due to vascular derangement caused by the initial attack; or reinfection with different strains of the hepatitis virus. In general, the incidence of chronic hepatitis is decidedly more prevalent in women. Chronic hepatitis appears to be less common after the epidemic form of the disease than after isolated attacks of hepatitis.

CHRONIC ACTIVE AND SELF-LIMITED HEPATITIS. Most of the patients with chronic hepatitis have minimal to obvious clinical signs and symptoms related to liver disease. The onset may be acute or insidious but resembles classic viral hepatitis. Usually the symptoms are subjective, as in hepatitis, including vague right upper quadrant pain, epigastric discomfort, anorexia, dyspepsia, and fatigue. Clinical signs include hepatomegaly, splenomegaly, and jaundice. The liver may be mildly or severely tender but is often normal in size. Peripheral stigmata of liver disease may not appear until the late stages of hepatic failure.

Hepatic function may indicate mild abnormalities including sulfobromophthalein sodium retention, increased serum transaminase, gamma globulin, and plasma iron levels. In severe cases, there is uniform hepatic dysfunction present. Liver biopsy demonstrates focal or diffuse parenchymal degeneration, necrosis, and regeneration of liver cells. Mononuclear infiltration of portal areas, proliferation of Kupffer's cells, and slight increase in portal fibrous tissue may be present. The diagnosis is based on a combination of clinical and significant biochemical evidence with confirmatory histologic findings by liver biopsy.

Approximately 85 per cent of patients recover within one to three years, while the remainder may progress to hepatic failure and/or postnecrotic cirrhosis.[14,15] An erroneous diagnosis of chronic hepatitis may be made when it is based solely on one clinical, biochemical, or histologic abnormality. For example, minimal hepatic dysfunction, consisting of abnormal flocculation or turbidity test results, is insufficient alone to diagnose chronic hepatitis. The main objection to these tests lies in the fact that they frequently give false positive values and may be seen in a variety of diseases for prolonged periods of time after cessation of hepatitis. The flocculation reactions depend principally on an increased level of gamma globulin in the serum and are also influenced by the lipoprotein fraction. Recent studies have shown that the serum immunoglobulin components may persist for at least one or two years after an acute attack of hepatitis.[19] Despite the persistence of the abnormal serum globulin levels, there is no adequate evidence to indicate that the serum level is a specific finding of chronic hepatitis since it occurs in many diseases, including acute and chronic infections, connective tissue disorders, dysgammaglobulinemias, certain skin diseases, and infectious mononucleosis.[19] Another nonspecific finding of chronic hepatitis is a slightly abnormal histology consisting of minimal increase in the cellularity of the portal areas without parenchymal change. Such changes on biopsy of the liver can be found in a variety of acute infectious diseases and are characterized as nonspecific hepatitis. This pathologic finding alone is not sufficient to make the diagnosis of chronic hepatitis. Moreover, a slightly palpable but nontender liver is also insufficient evidence for chronic hepatitis. The diagnosis of chronic hepatitis must be based on a combination of clinical and biochemical or histologic evidence and not solely on any one positive finding alone.

It is extremely difficult to differentiate between relapse and reinfection in chronic hepatitis. Unless the patient is followed carefully with serial liver function tests, especially serum transaminase tests, it may be impossible to differentiate a relapse from reinfection. I have observed three attacks of jaundice in a known heroin user, which were all self-limited and occurred over a seventeen-month period.[20] Havens[21] also reported three separate episodes of hepatitis at yearly intervals in a narcotic addict, suggesting that they represented infections with different strains of virus that are either immunologically unrelated or incapable of evoking sufficient antibodies to prevent infection. Tisdale[22] has observed 3 patients who had three isolated bouts of hepatitis within one year. The ultimate prognosis in active chronic hepatitis remains unknown. Presumably, only a few of these patients develop postnecrotic cirrhosis, while the majority eventually recover. This situation is entirely different from the previously described entity of subacute hepatic necrosis where postnecrotic cirrhosis is a common outcome.

It is important to differentiate between the chronic self-limited form and the progressive active variety of chronic hepatitis.[16] The latter is characterized by piecemeal necrosis reflecting the activation of the mesenchymal cells induced by liver cell injury.[16] The type of necrosis in chronic active or progressive hepatitis is the target of vigorous steroid therapy, while the self-limited form of hepatitis, without evidence of piecemeal necrosis, should not be treated by steroids. The dosage of corticosteroid therapy is usually adjusted in accordance with the transaminase levels. Usually, high doses of from 40 to 60 mg. of prednisone are started daily and gradually reduced to maintenance doses of from 5 to 10 mg. per day.

In addition to corticosteroid therapy, a high-carbohydrate and moderately high-protein diet are used. There is probably no specific indication for a low-fat diet, the administration of amino acid supplements, liver hydrolysates, vitamin B_{12}, or other vitamin therapy, if the patient is under good dietary management. Prolonged bed rest is not indicated, but excessive activity should be limited. A trial of bed rest therapy may document a return of abnormal serum transaminase to normal levels, but usually prolonged bed rest fails to influence the biochemical or clinical course of the disease. Unlike acute viral hepatitis, in chronic active hepatitis there have been no documented controlled studies to prove whether or not steroid therapy, adequate dietary intake, or limited physical activity play a decisive role influencing the natural history of the disease.

CHRONIC AUTO-IMMUNE HEPATITIS ("LUPOID" AND "PLASMA-CELL" HEPATITIS). Chronic active hepatitis, often associated with a positive L.E. (lupus erythematosus) cell reaction, has been described in a group of young patients, with eventual progression to postnecrotic cirrhosis.[23-29] A large number of cases of liver disease associated with a positive L.E. cell test result have been reported, and a number of other names have been suggested for this condition, including active juvenile cirrhosis, plasma cell hepatitis, and cirrhosis of young women. Although the syndrome occurs predominantly in young women, it may also be found in men and older women.

The etiology of this type of hepatitis may relate to nonresolution of acute viral hepatitis with release of excessive protein (gamma globulin) from damaged liver cells resulting in an auto-immune process with antigen-antibody interaction. The production of auto-antibodies results in further hepatic damage so that the patient is actually sensitive to his own liver tissue.[30]

These patients may have an insidious onset of symptoms, and the relationship to systemic lupus erythematosus and antecedent acute viral hepatitis is uncertain. In approximately 25 per cent of the cases, the L.E. cell is positive.[26-28] However, there does not appear to be an increased incidence of systemic manifestations of lupus erythematosus in patients with chronic active hepatitis whose serum shows a positive L.E. cell test result compared with those whose serum does not.[31] Presumably, the L.E. cell phenomenon reflects only an unusual immunologic response to chronic liver injury. L.E. cells have been seen secondary to acute hepatitis. Unlike systemic lupus erythematosus, renal and cutaneous involvement (butterfly facial rash) is rare. Frequently, the presenting symptoms are extrahepatic manifestations, arthritis, fever, hormonal disturbances including amenorrhea, a transient rash similar to erythema multiforme, and association with ulcerative colitis and thyroiditis. The hepatic symptoms are similar to those of chronic hepatitis. Clinical signs include hepatomegaly, splenomegaly, jaundice, and skin lesions. Hepatic function may be variable. Hypergammaglobulinemia exceeding 2 Gm. per 100 ml. is the most constant finding.

The diagnosis can be based on the following "auto-immune markers" as suggested by Mackay, Weiden, and Hasker[23]: hypergammaglobulinemia, the presence of circulating auto-antibodies including the L.E. cell factor (antinuclear factor), complement-fixing antibodies reacting with tissue antigens (cytoplasmic factor), lymphoid or plasma cell infiltration of the liver, a therapeutic response to corticosteroid therapy, and the association of hepatitis with other lesions thought to be caused by an auto-immune reaction. Evidence that the disease involves a complex alteration of the immune system is supported by the finding of anticytoplasmic antibodies in 80 per cent of the sera of patients with chronic active hepatitis.[30]

Liver biopsy demonstrates a characteristic hepatitis usually associated with postnecrotic cirrhosis. While chronic active hepatitis may be seen without evidence of hypergammaglobulinemia and various serum antibodies, the presence of an extensive chronic inflammatory infiltration, particularly lymphocytes and plasma cells, suggests an auto-immune disease. The early histologic lesion with periportal inflammation, degenerative parenchymal changes, and fibrosis usually leads to a well established postnecrotic cirrhosis.

CASE 3. An eight-year-old Negro female was admitted in June, 1965, to this medical center, complaining of fever, diarrhea, dark urine, and jaundice. These symptoms, accompanied by malaise, persisted for one week prior to admission. There was no history of nausea or vomiting. Positive physical findings were limited to icteric sclera and an enlarged tender liver palpable 6 cm. below the right costal margin. No spleen was felt. There was no peripheral edema. Significant laboratory findings included a hematocrit of 29, hemoglobin of 10 Gm. per 100 ml., white blood count 6,000 per cubic millimeter with a normal differential count, and total serum bilirubin concentration 7.3 mg. per 100 ml. with 2.8 mg. per 100 ml. in the indirect fraction. Serum glutamic oxaloacetic transaminase ranged between 125 and 258 units and serum alkaline phosphatase between 16.9 and 18.5 Bodansky units. Repeated studies of serum proteins demonstrated an elevated globulin in the range of 4.8 to 5.1 Gm. per 100 ml., with albumin in the range of 3 to 3.8 Gm. per 100 ml. Serum electrophoresis demonstrated marked hypergammaglobulinemia of 66 per cent (normal 15 to 20 per cent). Prothrombin time remained below 25 per cent and prevented a percutaneous needle biopsy from being carried out.

During the patient's eight weeks of hospitalization she remained on modified bed rest, but the abnormal liver function test results persisted and the hepatomegaly diminished only slightly. Because of the persistence of abnormalities in hepatic function and chronic jaundice following her discharge, she was readmitted for an open liver biopsy in December, 1965. Liver function tests at that time showed a total serum bilirubin of 6.2 mg. per 100 ml. with 2.1 mg. per 100 ml. in the indirect fraction, alkaline phosphatase 17.5 Bodansky units, and serum glutamic oxaloacetic transaminase 850 units. Total proteins showed a remarkable increase in the globulin fraction to 7.5 Gm. per 100 ml. Serum cholesterol was 162 mg. per 100 ml. The patient was mildly anemic with a hemoglobin of 11.3 Gm. per 100 ml. and hematocrit of 33. White blood count and differential were unremarkable. Repeated L.E. test results were negative. Examination demonstrated the presence of moderate ascites. Radiographic study of the esophagus revealed the presence of esophageal varices. Open surgical liver biopsy demonstrated active postnecrotic cirrhosis, moderate bile stasis, and a remarkable increase in plasma cells within the enlarged portal triads (Fig. 4). This predominant infiltration of plasma cells within the portal areas has been described in children as "plasma-cell hepatitis."[32] There were partially collagenized septa suggesting an older process,

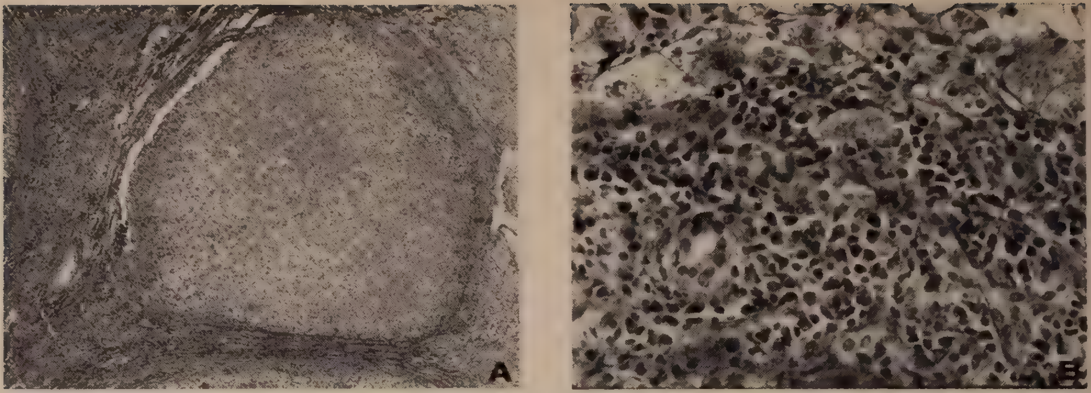

FIGURE 4. (A) Surgical biopsy showing active postnecrotic cirrhosis. Large scar at left incorporates multiple portal triads. (B) High-power view of (A) showing predominant infiltration of plasma cells in portal areas. Note degeneration of hepatic parenchymal cells at junction between cellular infiltration and hepatic parenchyma. (Hematoxylin and Eosin Stain)

although it was considered likely that the whole process, being approximately of six months duration by history, actually began as subacute hepatic necrosis.

Because of the persistent clinical and biochemical abnormalities, the patient was placed on a course of prednisone therapy, 40 mg. per day, which was tapered in four weeks to a dose of 20 mg. per day. Despite four months of corticosteroid therapy, hepatic function improved only moderately. In May, 1966, the patient was placed on azathioprine (Imuran) therapy (125 mg. per day) in addition to a daily dose of 2.5 mg. of prednisone. Despite eight weeks of azathioprine therapy, hepatic function test results failed to improve. Serum transaminase remained in the range of 500 to 700 units, and total bilirubin concentrations ranged between 6 and 8 mg. per 100 ml. The liver decreased in size and was palpable just at the right costal margin. After cessation of azathioprine therapy, prednisone therapy was continued in the range of 2.5 to 7.5 mg. per day. The patient was readmitted to the hospital in August, 1966, because of moderate ascites. Prednisone therapy was increased to 40 mg. per day, and the jaundice and ascites diminished.

At no time was the patient anicteric. Despite the lack of symptoms, hepatic dysfunction persisted. She was followed throughout 1967 in the outpatient clinics, remaining on corticosteroid therapy. In early 1968 the last total serum bilirubin was 3 mg. per 100 ml. with 0.7 mg. per 100 ml. in the indirect fraction. Serum transaminase was 285 units and repeated L.E. cell preparations gave negative results.

REPORTS OF THERAPY. It is of interest that the prolonged corticosteroid therapy failed to improve significantly the clinical or biochemical abnormalities present. Proof that such therapy influences the histologic lesion of chronic auto-immune hepatitis favorably is lacking. Recent studies have shown the beneficial clinical response to treatment with immunosuppressive agents in those patients who failed to respond previously to corticosteroid therapy.[33] It is conceivable that the immunosuppressive agents suppress a chronic virus infection or act like steroids by diminishing the interaction of immunologically competent cells, or antibody, with antigen in or on the target cells. Although there may be beneficial clinical and biochemical responses to corticosteroid or immunosuppressive agents, the progressive nature and ultimate unfavorable prognosis of this disease is probably not reversed by such therapy. A recent report that active nephritis with the wire loop renal lesion of systemic lupus erythematosus may occasionally be found in association with chronic active hepatitis is of particular interest.[34] These observations may further encourage a trial of immunosuppressive therapy in this disease.

ASYMPTOMATIC CHRONIC HEPATITIS. Persistent isolated elevation of serum transaminase up to one year after hepatitis has been described in a group of relatively asymptomatic children and termed "transaminitis," but the relationship of increased serum transaminase to chronic hepatitis remained unclear in the absence of liver biopsy studies.[35] Our previous studies demonstrated the high incidence of asymptomatic chronic hepatitis in a group of heroin users followed for prolonged periods after acute viral hepatitis.[20] The serum transaminase proved to be the most sensitive liver test to detect subclinical or persistent hepatitis in this group of subjects.[20,36] The incidence of asymptomatic disease is probably much greater than can be appreciated from the recent reports in the literature documenting this entity in a few patients.[18,20,36-38]

Detailed studies by me,[39] being reported elsewhere, have shown prolonged elevation of serum glutamic oxaloacetic transaminase which correlated with liver biopsy findings in 5 subjects followed for one to three years after clinical recovery from hepatitis. It was of interest that transmission of hepatitis was by the parenteral route in all cases. None of these subjects had clinical signs or symptoms of liver disease, which distinguishes this group from chronic self-limited hepatitis, as shown before. Hepatic dysfunction was limited to fluctuating abnormal transaminase levels, and only 3 subjects had minimal sulfobromophthalein sodium retention. Liver biopsy showed mild periportal inflammation with mononuclear cells, occasional minimal parenchymal necrosis, but no evidence of piecemeal necrosis, fibrosis, or distortion of lobular architecture. The abnormal condition was similar to that observed in chronic self-limited (nonprogressive) hepatitis, as shown before. Restriction of activity or trial of corticosteroid therapy failed to influence the transaminase levels which eventually returned to normal in some of the subjects. A high index of suspicion of subclinical liver disease can be confirmed by the consistent histologic picture found by biopsy, which is the only definitive way to make the diagnosis. Often the liver is neither tender nor palpable.

As a control group, heroin users, hospitalized for various medical reasons, were tested by biopsy as part of a continuing study to detect possible subclinical liver disease in chronic heroin users.[20] All the heroin users had normal transaminase levels and no clinical or biochemical evidence of hepatic disease. Liver biopsy was normal in the control group. The data indicated that continuing hepatic dysfunction after hepatitis, limited to elevation of transaminase, may be associated with definite, albeit minimal, histologic abnormalities indicative of chronic hepatitis. Despite the correlation between increased transaminase and incomplete healing, the ultimate prognosis for complete recovery may be good, as suggested by the return of transaminase to normal in some of these subjects.

A preliminary report by Redeker, Peters, and Yamahiro[40] has similarly focused attention on asymptomatic, unresolved hepatitis. These workers studied the course of icteric hepatitis in 475 cases and found 26 or 5 per cent with persistence of transaminase or sulfobromophthalein sodium retention for at least one year, but without clinical symptoms or pathologic findings of fibrosis or cirrhosis. Twenty-four of the 26 subjects had follow-up biopsies revealing persistent focal hepatitis without fibrosis and without evidence of subacute hepatic necrosis. Prednisone therapy and degree of physical activity did not influence the transaminase levels, supporting our own experience in asymptomatic chronic hepatitis.

Postnecrotic cirrhosis

There remains some question among a few investigators whether or not cirrhosis or other chronic liver diseases can be attributed to previous virus hepatitis.[41] However, most studies indicate that postnecrotic cirrhosis, often called posthepatitic cirrhosis, frequently occurs after subacute hepatic necrosis and less commonly after chronic hepatitis. Although as many as 10 per cent of all cirrhosis found at autopsy is of the postnecrotic variety, a large proportion of these are probably caused by the hepatitis virus. Postnecrotic cirrhosis has been documented as early as two months after acute viral hepatitis, particularly in the neonatal period, although in adults the latent interval is usually a matter of years. The clinical signs and symptoms are typical of cirrhosis and include splenomegaly, ascites, and portal hypertension. Anemia may be present. Hepatic dysfunction is often limited to hypergammaglobulinemia and sulfobromophthalein sodium retention, but in severe cases uniform hepatic dysfunction is present. Lobar, nodular, or granular deformities of the liver may be found at gross autopsy. The disease may be active or inactive. Usually there are wide zones of collapsed parenchyma which are critical for the micrscopic diagnosis. The size of the regenerative nodules is not significant for diagnosis.

CASE 4. An eighteen-year-old Negro female developed weakness, dark urine, and yellow sclera in May, 1965. This was initially noted by her schoolteacher. Because of the persistent weakness, fatigue, and jaundice despite bed rest, she was admitted to the medical center in September, 1965. Menarche had occurred at age eleven, but menses had disappeared at age thirteen. Positive physical findings on admission were limited to scleral icterus and a liver palpable at the right costal margin. There was minimal shock fist percussion tenderness over the right lower side of the chest cage. No abdominal masses were palpable.

The patient was placed in the hospital for approximately two months. The hemogram was unremarkable. Sickle cell test findings were negative. Uniform hepatic dysfunction was noted. Bilirubin concentration ranged between 2 and 6 mg. per 100 ml., cephalin flocculation was 4 plus, thymol turbidity 42 units, alkaline phosphatase 9 to 11.7 Bodansky units, serum glutamic oxalaocetic transaminase 349 to 600 units, serum glutamic pyruvic transaminase 200 to 400 units, prothrombin time 80 per cent, serum albumin 3.5 Gm. per 100 ml., serum globulin 5 Gm. per 100 ml., and serum gamma globulin by electrophoresis 44 per cent (normal 15 to 20 per cent). Multiple L.E. test results were negative. An open surgical biopsy was performed and demonstrated postnecrotic cirrhosis (Fig. 5).

The patient was placed on corticosteroid therapy, 40 mg. daily, and showed marked improvement in hepatic function tests. The prednisone dosage was reduced to 15 mg. daily, and she was followed in the outpatient clinic. In April, 1966, she noted increasing lethargy, anorexia, and progressive jaundice. On readmission to the hospital, positive physical findings included jaundice and a palpable nontender liver felt 1 cm. below the right costal margin. Hepatic function test results were similar to previous studies, except that the serum transaminase values were elevated between 400 and 800 units, and the total serum bilirubin concentration ranged between 8 and 14 mg. per 100 ml. After increasing prednisone therapy to 40 mg. per day, hepatic function improved. She was followed in the outpatient department after discharge. During the next two years, she received between 2.5 and 5 mg. daily of prednisone and remained asymptomatic. The liver was no longer palpable, but the serum transaminase values ranged between 100 and 400 units. She remained anicteric except for one episode of jaundice accompanied by serum glutamic oxaloacetic transaminase values of 1,000 units, associated with a one-week period of marked physical exertion. There was no radiographic evidence of esophageal varices. There have been no positive L.E. cell preparations. The most recent serum electrophoresis showed hypergammaglobulinemia with 40 per cent in the gamma globulin fraction. Serum globulin was 5.3 Gm. per 100 ml. and serum albumin 4.4 Gm. per 100 ml.

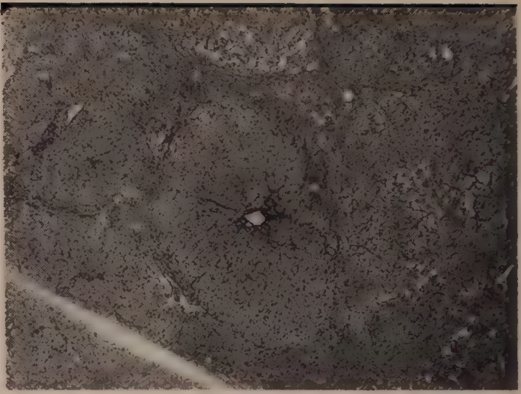
FIGURE 5. Surgical biopsy of liver showing irregular cirrhotic pattern (postnecrotic cirrhosis) with broad and fine fibrosis and minimal activity (hematoxylin and eosin stain).

Not all postnecrotic cirrhosis is associated with markers of auto-immune disease, and rarely the serum gamma globulin may be normal, despite active disease. The following case report is of interest for that reason.

CASE 5. A forty-two-year-old white male had had a well-documented episode of acute viral hepatitis in 1961 with serum glutamic oxalaocetic transaminase elevations as high as 1,200 units. Despite improvement in serum glutamic oxaloacetic transaminase values to 70 units, the patient was discharged eight weeks after onset of illness with a sulfobromophthalein sodium retention of 22 per cent. Six months later he was seen with malaise, weakness, and abdominal pains. Persistent hepatic dysfunction was observed, limited to elevation in serum glutamic oxaloacetic transaminase between 50 and 80 units and prolonged sulfobromophthalein sodium retention of 15 to 30 per cent. The patient remained anicteric and asymptomatic. Six liver biopsies were performed between 1962 and 1964, and all demonstrated active postnecrotic cirrhosis, despite continued corticosteroid therapy, 20 to 40 mg. of prednisone daily. As shown in Figure 6, there was progressive hepatic fibrosis over the two-year period. The clinical, biochemical, and histologic abnormalities persisted through 1965 when the patient was lost to follow-up. This patient did not demonstrate hypergammaglobulinemia, positive L.E. cell preparations, or other findings suggestive of auto-immune disease.

PROGNOSIS. The prognosis of postnecrotic cirrhosis is usually poor. Death after hepatic decompensation or bleeding varices due to portal hypertension is common Treatment must be supportive. There is no evidence that corticosteroid therapy is helpful in ameliorating the progressive his-

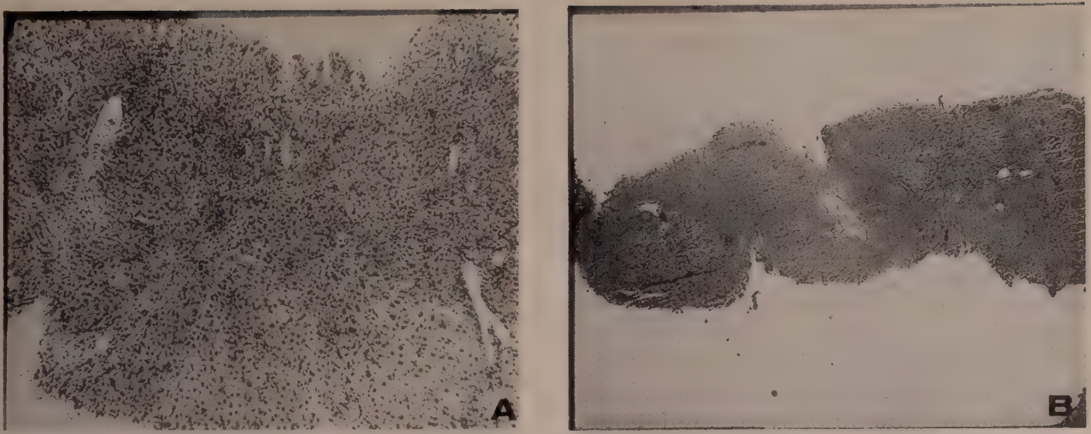

FIGURE 6. Percutaneous liver biopsy showing early, active postnecrotic cirrhosis. (A) Cirrhosis in 1962. Extensive infiltration of mononuclear cells, moderate necrosis, and loss of limiting plates of portal triads present (hematoxylin and eosin stain). (B) Cirrhosis in 1964 (Masson-trichrome stain).

tologic lesion, although symptomatic improvement may be noted. Liver biopsies in the last case report showed that prolonged steroid therapy failed to influence the abnormal condition of the disease. A portacaval shunt for bleeding esophageal varices may be indicated in those subjects with relatively good hepatic function. Further investigation with hepatic transplantation offers hope for the future therapy of these patients.

Summary

A classification of liver disease after acute viral hepatitis is presented. Despite the fact that most patients recover from acute viral hepatitis, approximately 5 per cent have residual sequelae. The clinical, laboratory, and pathologic features of the chronic sequelae are discussed. The importance of performing a percutaneous liver biopsy to recognize the syndromes of subacute hepatic necrosis and asymptomatic chronic hepatitis is emphasized, because their prevalence and importance have not received sufficient attention in the medical literature.

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Driving problems in United States

The use and number of automobiles are steadily increasing, and the U.S. government forecasts indicate that there will be 126 million licensed drivers in the U.S. by 1975.

There are already, in this country, 100 million drivers. In fact, the Metropolitan Life Insurance Company says that the number of drivers increased from 90.5 million to 102 million between 1961 and 1966, the last year for which figures were available.

The largest proportionate increases in the numbers driving occurred at ages under twenty and among those sixty-five years and older. There were approximately 10 million drivers at ages under twenty, or about 60 per cent more than five years ago. The number of elderly drivers rose by a third, to an estimated 8 million.

This rise has been accompanied by a steadily mounting number of fatalities. The death toll has climbed to a new high in each of the five years surveyed, from 40,800 in 1962 to an estimated 53,000 in 1966, while preliminary 1967 estimates hint that the number of deaths and the death rate due to motor vehicles will remain at about 53,000 and 27 per 100,000 population, respectively.

The motor vehicle fatality rate increases were greater among females than among males. A greater toll among drivers and passengers accounts for practically all of the higher motor vehicle accident mortality rates among both adolescents and adults. For boys ages fifteen to nineteen, the nonpedestrian motor vehicle fatality rate rose from 46.4 per 100,000 in 1961 to 57.6 in 1965, reflecting mainly an increase in the number of drivers at these ages. The fatality record also worsened appreciably for men at ages twenty-five and over. The corresponding rise in the female rate was generally greater. Among women ages twenty to twenty-four, this rate went up 40 per cent, from 12.9 to 18.1 per 100,000.

Developmental Dyslexia

Diagnosis and Remediation by Modality Blocking

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DEVELOPMENTAL DYSLEXIA IS *considered a specific, organically determined cerebral defect in the visual interpretation of verbal symbols and in associating sound with symbol. This is not usually associated with intelligence retardation and gross neurologic or primary emotional defects. It must be differentiated from symptomatic dyslexia, often caused by a visual perceptual lag. According to the modality blocking theory, learning, and especially learning to read, may be cut off or interfered with by the visual modality. In 2 cases described, a nonvisual learning approach was used, employing auditory, kinesthetic, and tactile modalities. The method warrants further investigation.*

DEVELOPMENTAL OR SPECIFIC dyslexia has been thoroughly explored in Critchley's[1] classic monogram. Most neurologists envision this entity as a specific, organically determined cerebral defect in the visual interpretation of verbal symbols and in associating sound with symbol. Usually, this is not associated with I.Q. (intelligence quotient) retardation and gross neurologic or primary emotional defects. It must be differentiated from symptomatic dyslexia, which results from a diversity of factors, organic and psychiatric, and which is often caused by a visual perceptual lag.

Developmental dyslexia was first described approximately seventy years ago by Morgan[2] in England. At first these afflicted individuals were considered stupid, then environmentally or emotionally deprived, and now have been discovered to have a normal I.Q. level and may in fact be extremely clever. Much confusion, however, remains in differentiating this disorder from other reading problems. It would appear that in specific dyslexia not only does the cause differ but also the prognosis may be graver and therapy more difficult.

This report describes our experience with a group of 12 individuals with specific dyslexia and presents 2 histories in detail. The criteria used in diagnosis by an interdisciplinary team and a new experimental technic of teaching such individuals to read efficiently is also presented.

Case reports

CASE 1. A thirty-eight-year-old married electrician, who supervised about 40 other electricians as a foreman in a large industrial plant, presented himself as having difficulty in reading. The birth and neonatal history were normal. There was no history of serious trauma or illness. His early growth and development were normal. He had attended school to the ninth grade and had had no trouble with mathematics or blueprints. His paternal aunt and his mother could neither read nor write. Little is known about his other aunts and uncles and their families. His four siblings, two brothers and two sisters, had no reading problems.

The general, gross, and soft neurologic examination gave normal results. The only anomaly apparent was that of mixed laterality. He was right-handed and right-footed but left-eyed. On a series of 10 subjective and objective tests for right-left orientation, he proved to be 40 per cent left-handed. A Schilder's extension test showed left-handed dominance. An electroencephalogram was not performed.

A Wechsler adult intelligence test showed him verbally to have an I.Q. of 122, a performance I.Q. of 112, and full scale of 119. The Gates test reading level was at the beginning of the fourth grade. On an oral reading test (Gilmore B),[3] he scored 4.4 in accuracy; that is, the ability to recognize words in context, and a 5.3 in comprehension; that is, the ability to answer orally a few simple questions of fact after each paragraph. He was not able to work beyond the sixth grade paragraph on the test, and his word recognition difficulty ranged from "Ned" to "prosperous." He substituted "being" for "bring," "frozen" for "freezing," and "look" for "like," but there were no inversions, insertions, or omissions.

On the Metropolitan, primary 11A, his scores were: word knowledge 3.7, word discrimination 3, reading 4.9, and spelling 2.3. There seemed to be no ready explanation for the disparity in grades between the Gilmore B[3] and Metropolitan tests, except that on the oral reading test (Gilmore B) the examiner is permitted to give some help. Since he was an otherwise intelligent adult, this may have been sufficient to improve his score. On the silent reading test he was strictly on his own, and his resources were too limited to cope with the reading problems it presented even though they were extremely elementary.

The tests thus suggested that the patient, while having no visual perceptual problems (normal Bender, Frostig, and so on test results), primarily had difficulty in organizing visually perceived material, perceiving it globally, and in seeing the interrelationship of parts of a perceived whole. With structure, he was able to deal with the part-whole relationship of a given visual stimulus. For example, on the performance part of the I.Q. test where analytic ability is necessary and where clues are provided by the nature of the material itself, he scored in the average range of ability. His common sense reasoning was exceptionally good, as were his arithmetical skills and vocabulary. He performed above average on tasks designed to measure factual information and verbal abstract ability.

As indicated later, this kind of student would be taught by some form of the VAKT method (utilizing visual, auditory, kinesthetic, and tactile stimuli) depending on what he could or would accept as a base in the hope of achieving facile and accurate word recognition.

On the theory that the visual input was faulty, however, he was given a nonvisual multisensory program (auditory, kinesthetic, tactile) AKT program. Blindfolded at first (later it was enough if he closed his eyes), he felt the letters representing the most elementary words he was unsure of while these were printed across his back several times.

Then he wrote the word and read it. Since his auditory input was clearly effective (he attributed much of all he had learned to listening), he was placed on a taped, programmed vocabulary building course at about the eighth-grade level.

Case 2. An adolescent, age fifteen, presented an unusual convergence of difficulties. He originally spoke Italian and still did so at home. English was a second language for him, but he spoke it effortlessly and without accent.

The birth, neonatal, growth, and developmental histories were normal. His handedness was forcibly changed at an early age, but he then broke his right arm and had to revert for a while to his previous left-handedness. He stuttered. At age eleven he suffered a concussion following which he may have had several syncopal attacks for about one year.

The family history was not well known because most of his family resided in Italy and communicated little with his parents.

He was right-handed, right-legged, and left-eyed. On a series of 10 subjective and objective tests for laterality, he performed 70 per cent left-handed. The Schilder's extension test proved left-handedness. The gross and soft neurologic examination showed otherwise normal findings. An electroencephalogram was not obtained. He performed the Bender-Gestalt and the Frostig tests faultlessly. Our testing indicated, however, that this boy primarily had difficulty in organizing visually perceived material. He perceived visual material in its global form. He could not see the interrelationship of parts of a perceived whole.

On a preliminary reading test, he scored 4 in both comprehension and vocabulary. Three months later, he scored 5.2 in comprehension and 4.2 in vocabulary. The improvement may have been attributable to the use of the nonvisual AKT procedure. In addition, on the theory that his command of two languages suggested a highly efficient auditory intake channel, he was placed on a taped, programmed vocabulary-building course at about the eighth-grade level.

Comment

Munn[4] has stated that "learning is said to occur whenever behavior undergoes incremental modification of a more or less permanent nature as a result of activity, special training or observation." Learning begins with the sensory stimulation in the main areas of touch, vision, hearing, taste, and smell. Children with specific learning disabilities have trouble in one or more of the avenues of receiving perception, either too much or too little; others do not make proper association of auditory and visual signals. The latter is the problem in specific dyslexia.

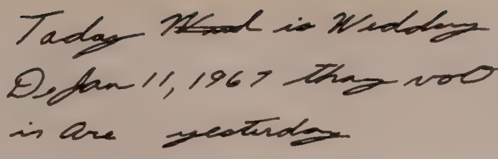
Whereas normally, on the basis of sensory stimulations and associations via conditioning, an orderly sorting process takes place, it is an inability to sort and screen out stimuli which is the prime difficulty in symptomatic dyslexia.[5] From the primitive perception to the more organized and better differentiated ones, structured Gestalten are formed. The ability to reason depends on cerebral integration, that is, the comprehension of guidelines underlying the connection between heterogeneous associations and objects. The concepts are then sorted out and coded in the central nervous system, and a "memory bank" is formed. Intelligence and maturation of the neuromuscular mechanisms, otherwise referred to in the literature as the motor basis of learning,[6] and motivation are important adjuncts to learning. The retention of concept or learning resulting from stimuli is measured only by the ability to make appropriate responses in the absence of stimuli. The growth of learning ability is gradual and imperceptible. Problems in learning occur at any and all the aforementioned levels. It seems quite likely that children with perceptual, associative, or cerebral deficits should have overlapping symptoms. In any event, their handicap makes them erratic; they perform normally in some fields and well below the norm in others.

The problem of the specific dyslexic, or word-blind, child would appear to be an example of an integration handicap. This condition is not associated with general mental retardation, emotional instability, or physical defect. The principal problem in specific dyslexia lies in the difficulty of flash recognition of the whole word and synthesizing words out of their component letter units. These dyslexic individuals cannot reconcile the sound of a word with the appearance of the word. Such individuals have difficulty in interpreting the sound of words and their meanings. This results in failure of language development.

We can best evaluate the dyslexic patient and measure the gap between the dyslexic patient's reading grade and his chronologic placement by employing various tests.

Bender-Gestalt visuomotor, Frostig visual perception, and Winter Haven visual perceptual screening tests can be employed, the results of which are normal.

Laterality tests determine laterality by a series of subjective and objective tests, such as cross hands, sleep position, nail polishing, preferred direction of lateral gaze, and so on. Most dyslexic patients show right-left disorientation and/or mixed laterality.



Today is Wednesday Jan. 11, 1967.
They voted in America yesterday.

FIGURE 1. Handwriting in thirty-eight-year-old developmental dyslexic patient.

Oral reading tests are conducted by listening to the child read aloud and recording errors made as in the Gilmore oral reading test.[3] Included are (1) phonetic sounding and vocalizing of unfamiliar words; (2) failure to recognize differences between words that look or sound alike (was, saw, yesturday, Saturday); (3) errors involving directional confusion, particularly reversals, such as was and saw, or inversions and rotations as well as errors in sequence; (4) substituting words in a story with similar context, omitting them when they are unnecessary to the story, or adding to embellish the story; (5) perseverating on certain words, particularly at the end of sentences and before the start of the next sentence; and (6) holding the paper at a 90-degree angle or upside down. On the basis of some of these errors, Monroe[7] has established a profile of errors for nonreaders.

In handwriting, despite the ability to copy accurately, the patients make characteristic errors in spontaneous writing or when writing to dictation. Dyslexic patients reverse, omit, and repeat words and letters, rotate letters, and misspell. They often telescope letters together (Fig. 1). Sometimes mirror image writing is found.

In number dyslexia, the patients cannot set down on paper dictated long numbers involving many digits. Thus 1,000,036 is written as 1,00,36 and so on. Yet our dyslexic patients were not retarded in arithmetic, although it may be an associated finding.

Confusion in spatial relations is common, especially difficulty in estimating differences in distances and heights.

Most of our evaluation is summarized in Tables I and II and in another article.[8] Specific dyslexia occurs predominantly in males. Critchley[1] feels that this condition

TABLE I. Summary of some data on 12 developmental dyslexic patients

Category	Number
Motor development	
Superior	1
Normal	6
Slow	1
Unknown	4
Language development	
Superior	0
Normal	3
Slow	6
Unknown	3
Predominant handedness	
Right	6
Left	6
Mixed dominance	11
Schilder's test for dominance (number showing reversal from apparent dominant hand)	
Left to right	3
Right to left	6
Fine motor incoordination	2
Rapid motor incoordination	2

is constitutionally and genetically determined and has postulated a dominant sex-linked genetic pattern in males with variable penetrance and expressivity so that a generation may be totally or partially skipped. In 8 of our children, there were predominant familial male learning problems, but the exact nature of the difficulties was impossible to ascertain.

These children and adults had most of the characteristics outlined (Tables I and II). They were neither myopic, presbyopic, or astigmatic. Frequent esophoria by history (6 patients) and 2 cases of color blindness were noted.

One adult and 3 children were tested optometrically. The optometric school utilizes functional tests of visual perceptual and integrative ability which include measurement of ocular motility, fixation, convergence, and accommodation relationships, eye and hand dominance, binocular fusion, and span and speed of perception. The optometrists felt that 3 of the 4 dyslexic children manifested some form, shape, size, and constancy difficulty. All 4 had mixed lateral dominance. Visual skills showed immature performance and insecure binocularity. Sight monocularity was preferred as stress increased.

Evidence is conflicting regarding these findings and the subsequent postulation of cerebral dominance irregularity as a cause of dyslexia. The eyes are paired organs with semidecussation of the optic nerves, and the bilateral control of eye movements seems to preclude the possibility of eye dominance relative to hemisphere dominance. It seems an illogical cause of a problem involving integration of visual and auditory stimuli. It would be of interest to evaluate normal and rapid readers to determine what validity such findings may have in the dyslexic patient.

No proved optimum training technic has been developed. We therefore felt intrigued by the modality blocking theory according to which learning, and especially learning to read, may be cut off or interfered with by the visual modality. The necessary corollary is that visual input must be blocked off and patients literally blindfolded at certain stages in the remediation process if they are to learn to read. This technic is in contrast to the customary approach which involves a combination of visual, auditory, kinesthetic, and tactile modalities.[9]

Cooper characterized his clinic population as falling into two groups, those responding to conventional visual-auditory methods and the rest that required the Fernald–Keller method or the VAKT approach.[9] Part of his detailed summary is valuable:

TABLE II. Age and gender of dyslexic patients

	Age (Years)						
Category	7	9	10	11	14	16	38
Finger agnosis							
Male	1	2	1	1	1	1	0
Female	0	0	1	0	1	0	0
Right-left disorientation							
Male	1	2	3	1	1	1	1
Female	0	0	1	0	1	0	0

> During Stage 1, the child makes use of several aids to learning. First, the word has meaning . . . . Second, the child sees the word written by the teacher, he sees it as he traces, he sees it as he writes, and he sees it in final type form . . . . When all modalities of learning are used, the child should learn.[9]

Our experience would suggest that in Cooper's second group, which is forced to use the visual modality, or in any similar group which is characterized as recognizing very few words at sight, many, if not most, of those who learn by this method do so despite the emphasis on the visual modality and not because of it and then only because of their own and their teacher's persistence.[9] No special comment is needed on the slowness with which this method achieves its results, nor on the fact that it sometimes seems merely to keep pace with chronologic change year by year. Bryant[10] points out "that remedial procedures often confuse and obscure the very learning they are attempting to bring about."

Montessori[11] refers to a child who to "enhance his appreciation of the tactile sensation. . . closes his eyes," and then, "to spare himself the exertion, he blindfolds himself with a clean handkerchief."

A similar but more recent example is found in the picture of a child shown feeling the outlines of letters with her eyes closed and which appeared in a recent article on dyslexia.[12] For the authors, the important thing was that it illustrated the kinesthetic-tactile approach; the closed eyes were incidental. Actually, its importance might lie in the child's apparently spontaneous elimination of visual sensory input as in the case of the Montessori child.

The direct theoretical base of the nonvisual AKT method was elaborated by Myklebust[13] who makes the point that the "psycho-neurosensory" systems can and sometimes do function "semi-independently." Children may learn what the letters look like but find it exceedingly difficult to learn what they sound like or the opposite. "When presented with one aspect of the word, the visual, they cannot convert it to the auditory." He believes that when two or more types of information are delivered to the brain simultaneously, a breakdown in neurologic processes occurs. Apparently not preceived up to this point was the possibility that to avoid such difficulties, the conflicting modality could be blocked off with constructive results at strategic stages in the learning process. Such is the purpose of the nonvisual AKT method. The visual modality was identified as the critical one because in the cases studied speech had developed in an acceptable fashion, suggesting that the auditory input system was working properly.

Nonvisual AKT follows the general outline of the established VAKT method except that the visual modality is not used for new material.[9,14] The eyes are covered by a blindfold.[15] Additional but minor modifications have been introduced to fill in the gap apparently caused by the blocking off of visual input. One is the use of the student's back, on which the letters are lightly traced by the teacher while the student does the customary tracing of three-dimensional letters with his fingertips. This seems to be without precedent so far as the literature is concerned; it has not apparently been used, even incidentally, in any reported procedure.

This technic was first adopted to reinforce a sense of left to right directionality[16] and to establish some limited kind of physical contact, analogous to guiding the hands of the blind. It was then observed that printing a word on the child's back with the fingertips seemed to touch off a "closed eye reflex" and to compel exactly the kind of "introjection" or focusing of the mental image needed by the nonreader.[17]

The second modification employed was the voicing of the letters by the student as he traces them. For some individuals, this also has the effect of focusing attention on the mental image of the word. The third modification is, of course, a combination of the first two.

In general, once a word has been mastered by the "non-V" method, it seems to be handled by the student with complete normalcy.

Parenthetically, it should be noted that this modification of the standard VAKT method does not seem to require the teacher's personal attention. An aide seems to do very well. It may also be possible to send it home for use there, not only to speed up learning but also to restore the child-parent helping relationship which may be badly distorted in these cases.

We can only speculate on the usefulness

of the "non-V" method in classroom or in current research. In the first case, spelling may well be the first area of use, with other areas following and with the blindfold yielding to the simple closed-eye technic.

Current research, as for example with the Edison Responsive Environment, may well find an avenue of approach to otherwise inexplicable impasses by means of modality blocking.

Summary

Two cases with developmental dyslexia of a group of 12 are described in detail, and learning theory is discussed.

The possibility that learning to read and possibly learning in general may be obstructed instead of helped by the uncritical and rigid incorporation of the visual modality at all times in the learning pattern of every individual can be of considerable significance.

Modality blocking suggests that there may be more opportunities for the specific treatment of reading and other learning deficiencies than have been suspected.

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Congenital Absence of Vagina

Psychiatric Aspects of Diagnosis and Management

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CONGENITAL ABSENCE OF *the vagina should be diagnosed at birth; the defect is easily identified. Vaginal construction must await the completion of adolescent growth, but early diagnosis makes it possible to deal with the irrational reactions of parents and patient and to facilitate conscious acceptance of the defect in a realistic light. Later on, in adolescence or young womanhood, emotional disturbances interfere with management, especially following vaginoplasty. Case histories of 9 patients with congenital absence of vagina are presented.*

CONGENITAL ABSENCE of the vagina is a rare anomaly estimated to occur once per 5,000 female births.[1] It is a dysplasia of the müllerian ducts, the primordia which give rise to the uterus, the fallopian tubes, and the upper four fifths of the vagina. The external genitalia and vestibule, originating from the urogenital sinus, are normal. The sex chromatin pattern is female, and the appearance of secondary sex characteristics on schedule indicates normal ovarian function.

With a few exceptions, the literature omits mention of the psychological consequences of CAV (congenital absence of the vagina). This is surprising in view of the frequency with which emotional disturbances interfere with management, especially post vaginoplasty. My findings and recommendations are based on a personal series of 9 cases seen in extended interviews and psychotherapy, 2 unpublished case protocols, and 6 cases from the literature (Table I).[2-5]

The typical history begins with an adolescent brought by her mother for primary amenorrhea or a young woman seeking premarital consultation. Hormones are frequently given before a pelvic examination finally is performed. At this point, CAV is mistaken repeatedly for imperforate hymen; if incised, a psychologically devastating iatrogenic emergency situation results. Yet the defect can be identified easily by simple direct examination of the infant and young child and should be diagnosed at birth.[6]

Whatever the reasons for the physician's failure, the mother is confronted by the agenesis several times daily in diapering and bathing the infant. Maternal ignorance of the normal anatomy stemming from repression of sexual curiosity or the unconscious refusal to acknowledge the defect (denial) bar its recognition. But what is the advantage of early diagnosis if vaginal construction must await the completion of adolescent growth? It resides in the opportunity to deal with the irrational reactions of the parents and patient and to facilitate conscious acceptance of the CAV in a realistic light. Parental reactions to congenital defects include guilt, anxiety, depression, disappointment, rejection, pity, and oversolicitousness. Therefore, without knowing specifically what is wrong, the little girl gets the message of defectiveness, with a lasting imprint on the self-image.

There was definite evidence of awareness of the anomaly prior to puberty in 5 of the 17 cases considered. Two of Masters and Johnson's[5] patients were diagnosed at ages six and eight respectively. Greenacre's[3] patient discovered it during sex play with

TABLE I. Findings in patients with CAV

Case Number	Age at Psychiatric Interview (Years)	Number of Sessions	Marital Status*	Occupation	Age at Discovery of CAV (Years)	Age When Informed of CAV (Years)	Reason for Gynecologic Referral	Initiated by	Reaction to Discovery of CAV	Treatment and Age (Years)†	Postdiagnosis and Postoperative Management Problems
Authors' series											
1	23	9	S	Laundress	15	Not known	Failure of penetration	Self	"Hermaphrodite"; eager for surgery	VL 22	Premature excessive coitus, interfered with healing
2	22 to 24	3	M	Domestic	16	16	Amenorrhea	Self	Placid acceptance	D 18, V 23	Premature coitus, delusional quest for menses and fertility
3	33	2	S	Hostess	17	17	Incidental finding	Physician	Reactive depression about sterility	DL 17	Premature termination of treatment; promiscuity
4	35	2	M	Executive	16	16	Amenorrhea	Mother	"Only half a woman"; denial; delay of surgery	V 30	None
5	27	16	Sep.	Secretary	18	18	Amenorrhea	Friend	"Girl without the hole"; laughing denial; delay	L 18, V 21	Protracted neurotic depression
6	16 to 20	87	S	Student	15	15	Amenorrhea	Mother	"Nothing"; reactive depression; delay	None	Recurrent depression, withdrawal from school
7	24	2	M	Housewife	10	17	Amenorrhea	Self	Denial, refusal of vaginoplasty	L 24	Promiscuity
8	39	4	M	Social worker	17	17	Amenorrhea	Self	"I refuse to be a freak"; insistence on surgery	VL 22	None
9	17	1	S	Student	15	15	Amenorrhea	Mother	. . .	None	Immaturity; tomboy; excessively dependent on mother
Unpublished protocols											
10	17	. . .	S	Student	16	16	Incidental finding	Physician	"Freak"; denial, delay of surgery	VL 17	Psychosis, depressive and paranoid postoperatively; self-removal of mold
11	23	. . .	D	Clerk	15	15	Amenorrhea	Mother	Denial	VL 23	None
Cases in literature											
12[2]	Middle age	. . .	S	Teacher	20	20	Amenorrhea	Self	Denial; welcomed "escape from burdens of womanhood"	None	Onset of incapacitating neurosis post discovery
13[3]	Not known	. . .	S	. . .	7 to 8	15	Discovery of CAV	Self	"Nobody"; angry withdrawal	V 15	. . .
14[4]	18	. . .	S and M	. . .	16	16	Amenorrhea	Mother	"Freak, neither boy nor girl"; denial and overcompensation	V 16, VL 18	Uncooperativeness postoperatively, reoperation required
15[5]	34	. . .	M	. . .	16	18	Amenorrhea	Self	Acceptance	VL 26	Unremarkable
16[5]	22	. . .	M	. . .	8	16	Discovery of CAV	Mother	Acceptance	VL 23	Unremarkable
17[5]	25	. . .	S	. . .	6	14	Discovery of CAV	Mother	Reactive depression	D 17	None; depression lifted as vagina deepened

* S, single; M, married; Sep., separated; and D, divorced.
† V, vaginoplasty; L, laparotomy; and D, dilators.

another girl at seven or eight. Patient 7 discovered the defect during masturbation at age ten and kept it from her parents, while in Case 1 the father knew there was something wrong but kept it from the patient. The operation of pervasive and powerful denial is the reason why the reactions to the physician's diagnosis of CAV are replete with painful confusion and shocked misunderstanding. For both patient and family resist the knowledge and then project the blame on the physician who attempts to tell them.

The same psychological factors that interfere with diagnosis are also responsible for the difficulties in management, manifested by delay or rejection of corrective procedures and lack of cooperation in postoperative routine. The daily use of dilators or of removal, cleaning, and reinsertion of a vaginal prosthesis mobilizes disgust and guilt, comparable to the reaction of normal women who are psychologically incapable of inserting a diaphragm. In 2 cases, 3 and 6, this could be traced directly to guilt over masturbation. Patient 6, who was seen over a period of four years, vacillated continually over vaginoplasty and finally confessed her conviction that the defect was a punishment for masturbation in childhood.

Negative attitudes to vaginal procedures result not only from denial of the defect and conflict over masturbation, but also from problems in psychosexual development, common in the anatomically normal female, as well as the additional factor of parental and husbandly opposition. The vagina is accepted and integrated into the body image in adolescence as the girl matures emotionally. This is a gradual process, facilitated by menstruation and subject to many interferences. Thus, corrective procedures for CAV performed before the girl is emotionally prepared to think of herself as a woman capable of coitus is akin to a premature confrontation of an anatomically normal adolescent with the sexual relationship. Yet delay of vaginal plastic procedures until engagement is most unwise for reasons discussed later. To steer between the Scylla of premature treatment and the Charybdis of excessive delay, the psychiatrist should be at the helm. The diagnosis of CAV is an absolute indication for psychiatric referral, and decisions about the timing of treatment are ideally determined in the course of psychotherapy. This should continue minimally for several months after vaginoplasty to secure the cooperation indispensable for a good surgical result.

Although Sargis *et al.*[7] reported striking relief of emotional disturbances related to the anomaly as the result of vaginoplasty in 4 highly motivated women, psychiatric evaluation in a follow-up of such women reveals an abiding sense of defectiveness, as in Case 8. Greenacre's[3] patient required a prolonged psychoanalysis after vaginoplasty in adolescence to change from an angry, withdrawn, muscular girl to a woman, responsive in coitus and eager to adopt children.

Delay of corrective vaginal procedures until engagement or marriage is not recommended. First feelings of defectiveness and inadequacy as a woman tend to inhibit normal dating, even if genital intimacy is not contemplated. Second, as a result of low self-esteem, these girls tend to seek out inferior or depreciated men. Third, absence of a functional vagina will attract a passive male who fears vaginal penetration and is likely to oppose or postpone corrective measures. Such men are likely to reject the masculine role of breadwinner and father. Sturgis'[4] case dramatically illustrates these points: The daughter of a wealthy manufacturer married a penniless Negro artist who was quite willing to remain home and keep house while the patient worked to support them. Four of the author's patients chose men they regarded as inferior, with objective justification (Cases 4, 5, 6, and 7). Two husbands opposed vaginoplasty (Cases 4 and 7), 1 preferred rectal penetration (Case 5), 2 opposed adoption (Cases 3 and 4), and 2 were supported by their wives (Cases 4 and 5).

Smolka's[8] follow-up study of 19 cases of vaginal agenesis includes findings and recommendations that are essentially in agreement with those mentioned. Inferiority feelings, reactive depressions, and suicide attempts were frequent. He recommends a personality evaluation and a thorough briefing of the patient prior to vaginoplasty. Operation is advisable at about age nineteen if there is no particular man in the picture; under no circumstances should surgery be delayed until after engagement or marriage.

Case reports

Case 1. A patient discovered the vaginal absence on her own at age fifteen and made repeated desperate attempts at coitus, including urethral penetration.* Vaginoplasty was enthusiastically accepted at twenty-two, which she experienced as the death of her "hermaphrodite" self and rebirth as a woman. However, doubts about her femininity were so strong that she was driven to premature and promiscuous coitus, asking each of her many partners whether or not she was as good as other women. Repeated tears of the vaginal vault resulted. Continually anxious about damage to the vagina, the patient feared that she would go crazy if anything happened to it. On contracting gonorrhea, the anxiety became intense, and she dreamt of transformation into a man—that her clitoris grew into a huge penis. Brief psychotherapy successfully reassured her doubts of femininity, with cessation of the promiscuity and a striking positive transformation in dress and grooming. Her vehement rejection of marriage and the mothering role yielded more gradually. Four and a half years after vaginoplasty, she became engaged and began investigating adoption procedures.

Case 2. A southern Negro woman of limited intelligence and low socioeconomic status seemed to accept the diagnosis of CAV at age sixteen placidly. Dilators, started at eighteen, were given up when regular coitus was initiated following marriage at age twenty-one. Vaginoplasty was performed at twenty-three at the husband's insistence, with remarkable feminization of her body image. However, rivalry with a married fertile younger sister who teased the patient about her barrenness prompted many clinic visits in a delusional pursuit of menses and fertility. Adoption of an infant girl twenty months after surgery decreased the pressure somewhat, but it was very likely that this woman would always feel defective and never really surrender the hope of menstruating and having her own children some day.

Case 3. CAV was diagnosed in this patient at age seventeen during a hospitalization for an appendectomy, and a reactive depression followed at the prospect of childlessness. Investigation of the amenorrhea had been delayed, ostensibly because late menarche was a familial trait. After an unsuccessful dilatation under anesthesia, Frank dilators were prescribed. The patient found their use offensive and broke off treatment. Over the next fourteen years, the patient had six or seven affairs and developed ample vaginal capacity. None of her three engagements lasted, and she remained chronically depressed with marked feelings of inadequacy as a woman.

Case 4. Since this patient was a tomboy through adolescence, failure of onset of menses was considered a great advantage. After a course of biweekly hormone injections, at age fifteen the diagnosis of CAV was made during a pelvic examination which had been scheduled as a hymenectomy. The patient completely repressed this information, so that the recommendation of vaginoplasty at age twenty-one in a premarital examination was a shocking surprise. Her own reluctance was reinforced by her fiancé's bitter opposition to surgery, and the operation was delayed nine years!

Case 5. In this patient, investigation of the amenorrhea was delayed until eighteen because of conscious unconcern. The patient awoke from the subsequent exploratory laparotomy, mistakenly believing that vaginoplasty had been performed. For the next three years, she laughed off her defectiveness, dubbing herself "the girl without the hole." Vaginoplasty was approached with the wish to die on the operating table, and chronic depression developed soon afterward.

Case 6. Diagnosis of CAV at age fifteen for this patient was a traumatic experience, the patient withdrawing into solitary anger for months. Chronically depressed since, exacerbations of feelings of worthlessness and futility have made her withdraw from school recurrently. In intermittent psychotherapy over a four-year period, the effects of denial and repression were obvious. Despite repeated explanations of the anomaly to this highly intelligent girl, her understanding was extremely hazy, and she was disinterested in clarification. Acknowledging her sterility one moment, she could speak of becoming pregnant the next. The patient chooses depreciated, passive-dependent boy friends, and has been unable to accept vaginoplasty.

Case 8. Very well organized and self-sufficient, this patient initiated investigation of the amenorrhea on her own and received two courses of hormonal therapy before the diagnosis was made at age seventeen. Her reaction was a refusal to be a freak, and it took her four years to persuade her gynecologist to perform the vaginoplasty. This woman has made a very good adjustment in marriage, raising an adopted child, and in a career. Yet it is quite clear that her life is devoted to counter the feeling of defectiveness by proving she is as good as anyone else, approximating normality as much as possible. This patient felt like a freak once again when associated genitourinary anomalies were discovered in her mid-thirties. The psychiatric interviews became unbearable for the same reason.

Case 10. Investigation of the amenorrhea was delayed until her younger sister's menarche. CAV was diagnosed after hormonal therapy at sixteen, but the mother's opposition delayed vaginoplasty until seventeen and a half. Despite repeated explanations, the patient expected menses and fertility to result and postoperatively became severely depressed and agitated.

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* Lapin[9] reports several cases of vaginal aplasia in which the urethra was markedly dilated as the result of repeated penile penetration.

On discharge four weeks post vaginoplasty, she ripped out the mold and spoke of entering a convent. Psychiatric hospitalization was required, and her psychotic depression with paranoid trends gradually improved. However, the traumatic removal of the mold and refusal to use dilators compromised the surgical result so that reoperation will probably be required in the future when the patient is psychologically able to accept the vagina.

Conclusion

Nine cases of CAV were seen in extended psychiatric interviews or psychotherapy. Conclusions are based on findings from this series, 2 unpublished cases reports, and 6 cases described in the literature.

CAV should be diagnosed at birth. Unfamiliarity with the anomaly, inadequate examination, and massive denial by parents and child delay diagnosis, typically until adolescence. The emotionally traumatic confrontation with the defect is frequently aggravated by the physician's lack of appreciation of its overwhelming impact. Psychological effects include reactive depression, markedly compromised sexual identity, impairment of self-esteem regulation, and efflorescence of denial and repression.

The diagnosis of CAV is an indication for psychiatric consultation. This should include the adolescent patient's parents and fiancé or husband in the older-age group. It is logical to assign to the psychiatrist the responsibility of timing the physical interventions in view of the difficulties in normal adolescent girls with acceptance and integration of the vagina into the body image and in further consideration of the specific psychological disturbances resulting from the anomaly. Timing of the vaginal procedures is ideally determined in the course of psychotherapy for these disturbances. Psychiatric intervention should continue for at least several months after vaginoplasty to ensure the cooperation indispensable for the optimal surgical result. Creation of a new vagina enables the patient to attract a psychologically healthier mate. Therefore corrective procedures should not be postponed until engagement or marriage.

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Primary Carcinoma of Ureter Associated with Diabetes

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PRIMARY MALIGNANT TUMORS of the ureter are quite uncommon, although they are no longer considered a rarity. They account for less than 2 per cent of all tumors originating from transitional epithelium. The up-to-date reported cases of primary malignant ureteral tumors do not exceed a total of 500.

In a recent review of the records of the Albert Einstein College of Medicine and Affiliated Hospitals for the period 1956 to 1966, we were able to find 13 cases of primary ureteral carcinoma. These cases are presented herein as an addition to the literature and are analyzed as regards to their symptomatology, diagnosis, treatment, and follow-up.

Clinical review

In 1922 Aschner found only 26 malignant tumors of the ureter reported in world literature. Scott, in 1943, could find only 59 cases and added 2 cases of his own. Abeshouse, in 1956,[1] in the most comprehensive review of ureteral tumors, collected 454 ureteral carcinomas from the world literature, including 12 cases of his own.

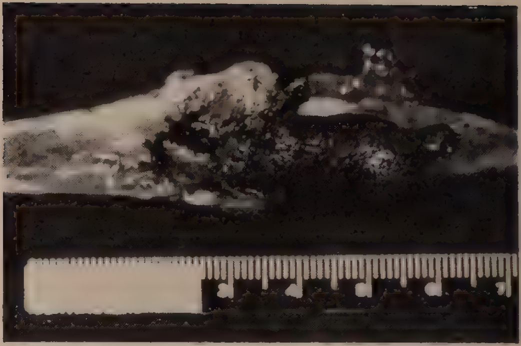

FIGURE 1. Open ureter showing fusiform swelling, thickened wall, and polypoid tumor covered by fresh blood clot.

Lucke and Schlumberger[2] found 8 cases in a series of 15,000 autopsies, while the most recent series were reported by McIntyre, Pyrah, and Raper[3] and Newsam.[4] When tumors of the ureter are found in association with carcinoma of the renal pelvis, they are regarded by some authors as metastatic, although others advocate that the pelvic tumors can be secondary from antiperistalsis and implantation of tumor cells in a retrograde direction. One of our cases was associated with a tumor of the renal pelvis, but there was a difference in the histologic grading between the two tumors.

The over-all incidence of primary malignant tumors of the ureter in urologic practice is reported by Abeshouse[1] as 1 : 3,690. In our series, there is a 1:1,500 ratio.

Pathology

Ureteral tumors may be single or multiple. They usually produce a fusiform swelling of the ureter with diffuse thickening of the wall. The tumors may have filiform projections or they may be polypoid. The lumen is partially or completely occluded by the tumor mass which may be covered by blood clots (Fig. 1).

Microscopically, they can be classified as (1) papillomas or our Grade I transitional cell carcinomas, (2) transitional cell carcinomas or our Grade II transitional cell carcinomas, and (3) squamous cell car-

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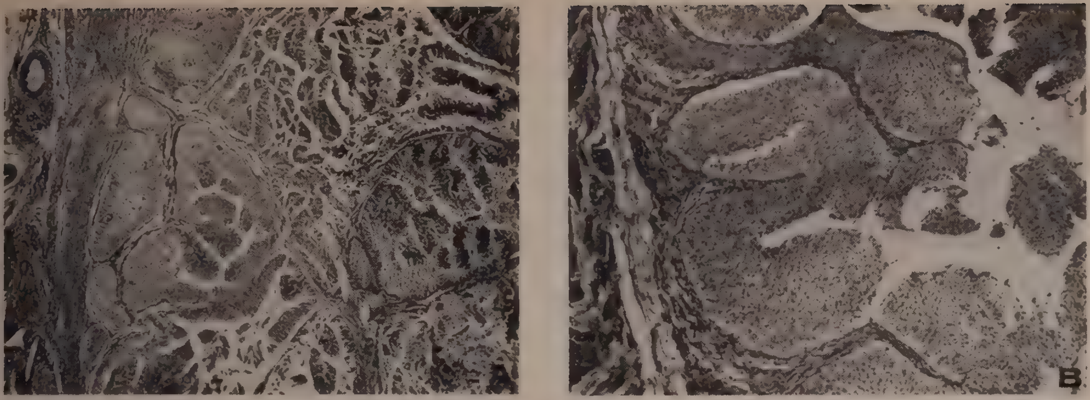

FIGURE 2. (A and B) Histologic sections reveal thickened wall with chronic inflammatory cells, layers of transitional epithelium supported by connecting tissue branches filling lumen of ureter (hematoxylin and eosin stain).

cinomas or our Grade III tumors. Adenocarcinomas are very rare curiosities. In our cases, all the tumors were of transitional cell type represented by delicate branches of connective tissue covered with several layers of transitional epithelium (Fig. 2). As the degree of malignancy increases, the cellularity of the tumor increases too, with a loss of polarity of the cells.

Pathogenesis

Three main theories have been proposed in trying to explain the spread of urothelial tumors: (1) The implantation theory (Albarran, 1902) implies that viable tumor cells from the parent tumor are transported downward by the urine or by peristaltic action and are deposited in the urothelium; (2) the lymphatic permeation theory (Hunt) has not gained popular acceptance; and (3) the multicentric origin theory (Ewing) is the generally accepted one.

According to the theory of multicentric origin, several centers in the urothelium are affected by carcinogens and produce neoplastic cells which appear simultaneously or at separate intervals. The frequent occurrence of bladder tumors, before and after surgery, with the ureteral tumors favors this theory. Four of our cases were associated with bladder tumors preoperatively and one a year after nephro-ureterectomy. One case was coexisting with a renal cell carcinoma, and in another a cortical adenoma of the removed kidney was present.

Etiology

A variety of factors have been considered to be the cause of the primary ureteral neoplasms.

Obstruction. Obstruction was a striking factor in the majority of the cases reported by Abeshouse.[1] Six of our cases had documented obstruction because of prostatic hypertrophy.

Infection. Nearly all of our cases had chronic urinary tract infection with positive urine cultures preoperatively and pathologic changes from chronic infection in the removed kidney and ureter.

Specific exogenous or endogenous carcinogens. Scott and Byrd were able to produce primary ureteral carcinoma in dogs by administering beta-naphthylamine.

Hormonal imbalance. It is rather interesting that 9 of our cases had consistently elevated levels of blood sugar. Two of them were frank diabetic patients, and 1 had carcinoma of the pancreas.

Abeshouse[1] claims that the activity of carcinogens is probably enhanced by the hydrostatics and mechanism of urination, influenced, of course, by the presence of obstruction.

Whether or not the increase of circulating glucose is playing any role will have to be investigated.

Symptoms

There is no symptom complex pathognomonic of ureteral tumors. However,

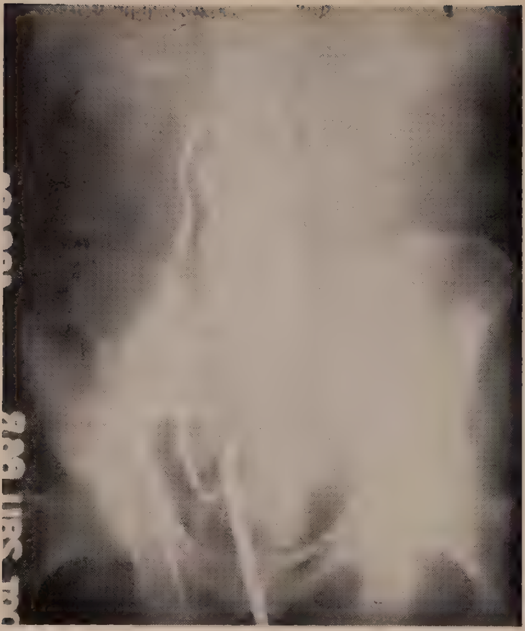

FIGURE 3. Retrograde bulb ureteropyelogram revealing classical goblet-shaped defect in right ureter (Case 13).

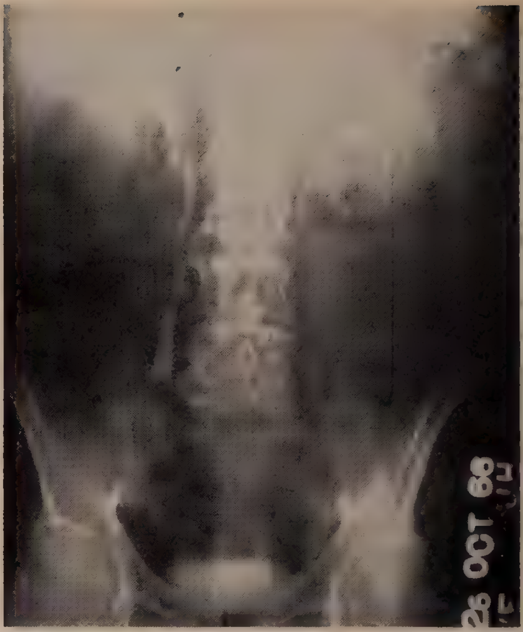

FIGURE 4. Intravenous urogram demonstrating filling defect at junction of middle and lower third of right ureter, with some degree of hydro-ureter and hydronephrosis (Case 13).

hematuria seems to be the cardinal symptom (75 per cent), followed by pain (36 per cent), and palpable mass (10 per cent). In 11 of our cases, gross painless hematuria was the presenting symptom.

Diagnosis

In our series, urine cytologic examination was carried out in 4 cases giving a positive diagnosis (Class III, suspicious malignant condition) in 1 case.

Cystoscopy is helpful when performed at the time of hematuria and may reveal hemorrhagic efflux or tumor protruding from the involved ureteral orifice. In only 3 of our cases was cystoscopy of diagnostic significance.

Retrograde ureteropyelography is the most dependable diagnostic aid. Ten of our patients were strongly suspected of having ureteral tumors on the basis of retrograde ureteropyelographic studies, while the studies were not performed in 3 patients.

The tumors of the lowest portion of the ureter present the greatest diagnostic difficulty, because many times the contrast medium runs back to the bladder during injection. Use of an obstructive ureteropyelogram and Trendelenburg position are quite helpful. Addition of a little indigo carmine in the opaque medium will ascertain its introduction to the ureter and save time and exposure of purposeless films.

The ureter should be regarded as normal only if its entire length can be visualized. Bilateral ureteropyelograms are imperative in cases of unexplained hematuria. Many ureteral tumors escape diagnosis because the urologist is satisfied with the finding of a vesical neoplasm to explain the presence of hematuria and fails to direct his attention to the ureters.

The characteristic signs of a ureteral tumor, as seen in retrograde studies, are: (1) narrowing or obliteration of the ureteral outline at the point of obstruction and an accompanying filling defect; and (2) a ring-shaped or goblet-shaped defect in the outline of the ureter accompanied by pre- and sometimes poststenotic dilatation of the ureter (Fig. 3).

Excretory urography is also quite valuable in the diagnosis of ureteral neoplasms. It usually directs attention to the site of the existence of the tumor; occasionally with delayed films, the point of obstruction in the ureter is seen. The usual findings are hydronephrosis or nonvisualization of the

TABLE I. Treatment, outcome, and survival of patients

Case Number	Sex	Age (Years)	Side*	Site†	Treatment**	Outcome	Survival (Months)
1	M	73	L	L	C.N.U.	Alive and well	43
2	M	71	R	L	C.N.U.	Alive and well	16
3	F	87	L	L	Resection of ureteral stump	Downhill with congestive heart failure	3 weeks
4	M	62	R	U	C.N.U.	Died with spread carcinoma	12
5	F	72	L	L	Biopsy only	Died of cancer of pancreas	2 weeks
6	M	70	L	L	C.N.U.	Died of leukemia	19
7	M	82	L	M	C.N.U.	Alive and well	62
8	M	71	R	M	Resection of tumor only	Died of gastrointestinal bleeding	10
9	M	76	R	M	C.N.U.	Alive and well	28
10	M	78	L	L	C.N.U.	Died of mitral insufficiency	22 days
11	F	73	L	M	C.N.U.	Died of cardiovascular accident	21 days
12	M	39	L	L	C.N.U.	Alive and well	53
13	M	58	R	L	C.N.U.	Alive and well	8

* R = right, L = left.
† L = lower third, M = middle third, U = upper third of ureter.
** C.N.U. = complete nephro-ureterectomy with bladder cuff.

ipsilateral kidney. In our series, intravenous urogram disclosed a nonfunctioning kidney in 7 cases and a suspicious ureteral lesion in 5 cases. A filling defect in the ureter was seen in 3 cases (Fig. 4).

Angiography in general is not a very gratifying diagnostic aid in ureteral tumors. On 4 of our cases aortography, alone or in conjunction with selective renal arteriography, and vena cava angiography were utilized. Definitive diagnostic aid was provided in 1 case where a "tumor vasculature" in the right ureter was seen in the aortogram and "extrinsic pressure" deformity in the lower third of the vena cava in the inferior vena cavogram.

Lymphangiography could be helpful in rather advanced cases.

Treatment

The highest survival rate and the lowest incidence of recurrence have been reported in cases where a complete nephro-ureterectomy with resection of a bladder cuff was performed in one stage. This procedure was performed in 9 of our cases.

The operative mortality rate is cited at 4.7 per cent in a series of 191 operations for malignant ureteral neoplasms reviewed by Abeshouse.[1] There were no operative deaths in our series.

The majority of recurrences (48 per cent) are seen in the incomplete operations at the ureteral orifice and adjacent bladder.

Vesical recurrences alone have been described as amounting to 36 per cent in a series of 74 cases studied by Kimball and Ferris and cited by Abeshouse.[1]

Survival

There are very few reports of five-year survivals in the literature. The longest reported survival for 1 case was 10.5 years (McIntyre, Pyrah, and Raper).[3] MacDougall (1961)[5] reported 1 case with 9.5 years survival. In our series, only 1 patient is alive five years following complete nephro-ureterectomy (Case 7, Table I).

Follow-up

Because of the frequent association of the ureteral tumors with vesical neoplasms and in view of the tendency of malignant urothelial tumors to recur or multiply, periodic re-examinations of the patients are imperative. The follow-up studies should include cystoscopy, excretory urography, and, when possible, urine cytologic examination.

Comment

Some interesting features were noted in our review of the 13 cases of ureteral carcinoma. In the majority of our patients, the tumor involved the lower ureter and was associated with chronic infection, distal obstruction, and elevated blood glucose levels. The factors of infection and obstruction have been incriminated in the causes of these tumors. Whether or not the presence of glucose in levels higher than normal is a contributory factor will need further investigation. Of course, it is known that diabetes or abnormal glucose tolerance curve are frequently associated with carcinoma of the endometrium.

Ureteral carcinoma was found coexisting with renal cell carcinoma, papillary pelvic carcinoma, bladder transitional cell carcinoma, and renal cortical adenoma. In 1 case a transitional cell carcinoma was found in the ureteral stump, eighteen years after ipsilateral nephrectomy for nephrolithiasis (Case 3).

In another case, Case 6, our pathologist reported chronic pyelonephritis with marked lymphocytosis in the removed kidney. Unfortunately, due attention was not paid to this, and the patient died nineteen months later with undiagnosed chronic lymphocytic leukemia found at autopsy.

The variety of coexisting urothelial neoplasms plus the fact that in 1 of our cases, Case 11, the ureteral tumor was multifocal, favor a multicentric origin of the ureteral tumors. This is the generally accepted theory (Ewing) and is endorsed by us.

The figures for survival from ureteral tumors are rather depressing. However, only 1 of the patients in this series died of documented widespread metastases of the ureteral carcinoma. Two patients are alive twenty-six months and 1, five years and two months, following complete nephro-ureterectomy.

Of course, prompt diagnosis and institution of treatment will undoubtedly prolong survival. The best acceptable treatment is complete nephro-ureterectomy as defined by Culp.[6]

Summary

Thirteen cases of primary carcinoma of the ureter were reviewed. Histologically, they were all of the transitional cell type, Grades I, II, and III. There were only 3 female patients in the series. The youngest patient was thirty-nine and the eldest eighty-seven. The commonest age group was in the seventh decade of life, the mean age being seventy-one.

The most frequent location was the lower third of the ureter (8 cases). The left side was more frequently involved (2:1).

The most helpful aid in diagnosis was the bulb retrograde pyeloureterogram, while angiography and urine cytology did not contribute definite diagnostic aid in this series. Intravenous urography was of definite diagnostic aid in this series. Intravenous urography was of definitive value in directing to the site of the pathologic lesion. Eight of the patients had elevated blood glucose levels, and 6 had obstruction because of prostatic hypertrophy. The presence of high glucose blood levels may be an important factor in the cause of ureteral tumors and will be further investigated.

Complete nephro-ureterectomy was the procedure of choice in 9 of the cases, removal of the tumor only was done in 1 case, and secondary removal of the ureteral stump was performed in 2.

The longest known survival was five years and two months. Only 1 patient died after a year with widespread metastases from ureteral carcinoma.

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Blood Eosinophil

Changes in Health and Disease in Children

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THE BLOOD EOSINOPHILS were first described by Wharton-Jones in 1846 as coarse granular cells.[1] Ehrlich in 1879[2] named them eosinophils because of the intense affinity of the cytoplasmic granules of these leukocytes for eosin stain.

The origin of these cells is still disputed. In mammalian species, eosinophils develop in the bone marrow. Whether they can develop elsewhere by heteroplasia of mesenchymal cells or at inflammatory sites is not clear.[3] Recent electron micrographic studies, however, have shown pseudopodial formation which enables eosinophils to pass through the intercellular junction of capillary vessels into the tissues.[4]

In the bone marrow, the earliest identifiable forms are myeloblastic or promyelocytic eosinophils. Eosinophilic promylocytes are similar to myeloblasts and contain 15 to 20 acidophilic granules. Metamyelocytes are smaller, and the nucleus is indented.[5]

Morphology

On blood smear, the round, mature eosinophilic granulocytes have a diameter of 12 to 15 microns. The mature cells usually have bilobed nuclei and large spherical eosinophilic granules. Triple or multilobulated forms are rare. Moderate nuclear hypersegmentation of eosinophils occurs as a rare hereditary anomaly in which the majority of the nuclei contain three or more segments.[6]

A shift to the left, with the appearance of juvenile forms, may be observed in this cell line when the number of white blood cells is increasing rapidly, but a shift to the right with nuclear hypersegmentation is rare among eosinophils.

Significant knowledge regarding the morphology of blood eosinophils has been gained from electron microscopic studies.[7] The cytoplasm of the mature cells contains relatively few mitochondria. Maturation is accompanied by a change in proportion of two characteristic types of cytoplasmic granules. All cytoplasmic granules in early cells are spherical and contain dense homogenous materials. The mature granules are angular and contain crystalloids. A distinct impression of transition from the spherical precursor to typical mature angulated crystalloid-containing granules is seen in most intermediate forms.[8]

GRANULES. The cytoplasmic granules are 0.3 to 0.7 micron in diameter and fully occupy the cytoplasmic portion of the cell. They appear yellowish-pink with Giemsa-Wright stain and are usually spherical or oval in shape. Each granule consists of a central area with a high refractive index and an outer zone which is less dense and appears to be separated from the cytoplasm by a membrane. In addition to the large granules, microgranules, not visible by light microscopy, have been observed by electron microscopy.[5]

The cytoplasmic granules of developing and adult eosinophils in human bone marrow have recently been shown to contain profibrinolysin (plasminogen).[9] Using the skin window technic in dogs, fibrin and fibrinogen were found to attract eosinophils selectively into an area of inflammation. These extravascular eosinophils contained profibrinolysin in their granules and fluoresced vividly when reacted with rhodamine antiprofibrinolysin.

Immature eosinophils appear to be a site for the synthesis of profibrinolysin, since mature eosinophils in normal blood appear to contain little or no profibrinolysin.

Distribution. By far the highest concentration of eosinophils is found in the bone marrow. In guinea pigs the bone marrow peripheral blood ratio of eosinophils is approximately 400:1.[1] The percentage of eosinophils in the bone marrow is estimated to be 4 per cent of the total cell population.[10]

Other tissues vary in their eosinophil content. Lung, stomach, and small intestine are rich in eosinophils, while liver, cardiac muscle, and kidney contain small numbers.[5] Abnormal tissue eosinophilia is classically associated with invasion by nematodes.

Eosinophil count. The irregular distribution of eosinophils in a blood smear makes calculation of the absolute concentration of eosinophils, from the proportion in the smear and total leukocyte count, inaccurate.[11] Absolute eosinophil counts have practical value, and direct counting in appropriate chambers has become a common practice. Fisher and Fisher's[12] and Pilot's[13] methods are the two most commonly used counting technics. Because of the small number of cells counted, the error in an eosinophil count is greater than the error in a total leukocyte count. The result is statistically more reliable when the initial count is high.[5] The normal range is 70 to 450 cells per cubic millimeter in healthy children,[14] which is similar to the range of 80 to 500 cells given by Thorn *et al.*[15] for normal adults.

The blood eosinophil count is not stable and is subject to the following physiologic cyclic variations: (1) Marked diurnal variations with low counts early in the morning and maximal counts late in the evening.[16] This cyclic variation is related to activity rhythm.[17] The precise mediating mechanism for such cyclic variations is not known. Removal of the adrenal glands of mice and untreated cortical insufficiency in man appear to abolish the characteristic cycle. Serotonin sharply potentiates the eosinopenic action of cortisone.[18] (2) Eosinophil counts vary with the seasons and are higher in the spring and fall.[19] (3) Emotional stress may be associated with a decrease in the total eosinophil count.[20]

Function

Most studies of eosinophil function have been indirect, recording fluctuations of blood eosinophil counts in response to disease processes or chemical stimuli. These investigations suggest that eosinophils play a role in inflammatory or allergic reactions, although eosinophilia can occur without demonstrable antigen-antibody reactions or inflammation.[5,21,22]

The eosinophilic effect of inducing various antigenic materials may be caused by the antigen per se or to the effect of the antigen-antibody reaction. The available data indicate that antigen itself is unable to produce eosinophilia. When an antigen is given to a sensitized animal, however, a number of active substances are released, especially if anaphylactic reactions occur. These include histamine, heparin, and possibly choline and other substances, any of which may be responsible for the eosinophilia which follows the reaction.[23]

Eosinophils also appear at the site of the inflammation, but less predictably, and the magnitude of the inflammatory eosinophil response does not parallel the available circulating eosinophils.[24] Riddle and Barnhart[9] recently reported that eosinophilic leukocytes can act as carriers for a lytic mechanism of importance in inflammation and wound healing. A specific chemical stimulus for mobilization of eosinophils into an area of inflammation appears to be provided by fibrinogen and fibrin or by degradation products of these proteins. They suggest that differences in the concentration of fibrin can explain the inconsistencies reported by others in their studies of acute inflammation.

Life span. In vivo and in vitro estimates of the life span of eosinophils vary widely.[25] In stored blood, the average survival rate is two to three days. In vivo studies have been reported, following the administration of steroids, with different results.[26] Labeling of eosinophils with isotopes to estimate their life span has not been carried out.

Fate. The fate of the eosinophil, like that of other leukocytes, is not clear. Degenerated cells appear to be phagocytized by wandering monocytes and histiocytes. Whether the cell nucleus or its cytoplasm undergoes degeneration first is not clear. Autolytic degeneration may result from a high content of cell enzymes.[5]

Factors affecting blood eosinophils. Many factors may increase or decrease circulating blood eosinophils. ACTH, corticosteroids, and epinephrine reduce the number of circulating eosinophils. Histamine and heparin, on the other hand, may cause eosinophilia. This effect of histamine is seen if its concentration in the blood remains high for a prolonged period.[1]

Eosinopenia may be a feature of the "alarm reaction."[27] Shock, for example, will produce eosinopenia, and absence of an eosinopenic response may be secondary to adrenocortical insufficiency. This observation may have considerable clinical value in evaluating adrenocortical responsiveness in a child with meningococcemia or other severe infections. In acute infections, such as pneumonia or meningitis, the eosinophil count may drop to zero at the onset of the disease, if the adrenocortical reserve is normal.[14] In contrast, a high eosinophil count in a child with severe acute infection may indicate a poorly functioning adrenal cortex and supports the possible value of supportive therapy with corticosteroids.

The mechanism of eosinopenia in the Thorn test after ACTH injection is subject to discussion. An intact and functioning adrenal cortex is essential for a response to ACTH. Godlowski[28] suggested that ACTH causes lysis of the eosinophils in the blood stream by direct action of the adrenocortical hormones released. Others believe that these hormones cause cell migration into tissues. Destruction of eosinophils by the reticuloendothelial system and decreased production are other suggested explanations for the effect of the ACTH-mediated adrenal hormone release.[29,30] In patients with Addison's disease and in adrenalectomized animals no eosinopenia follows ACTH injection.

The effect of epinephrine is variable. In asthmatic patients, eosinopenia occurs after epinephrine injection.[28] Thorn[15] found marked eosinopenia in human subjects four hours after the injection of from 1 to 5 mg. of epinephrine. Splenectomy does not change the result, but adrenalectomy in animals prevents the response, possibly because of the absence of the adrenal hormone response. The epinephrine effect is thought to be a result of stimulation of ACTH secretion.[31]

The induction of eosinophilia by histamine administration has received particular attention in the last two decades. Histamine is released under various physiologic and pathologic conditions and has been reported to have a chemotactic effect on eosinophils[32,33] Histamine has been clearly identified in white blood cells, and it has been postulated that eosinophils may be the chief carriers of histamine in man.[34] However, both histamine and eosinophils are more likely to be products of the allergic state. Increased concentration of histamine in tissue is followed by eosinophilia in the region involved. This effect may not be accompanied by eosinophilia in the circulating blood, since rapid passage of eosinophils from bone marrow through blood to a region where they are at once retained will not necessarily lead to a rise in the number remaining in circulation.

Heparin has a different reaction. A large quantity of heparin is required to produce eosinophilia. Intravenous doses of 6 mg. per kilogram can cause eosinophilia after fifteen minutes. This may be caused by impurity of the substance. If the heparin is filtered through fritted glass, this reaction does not occur.[23]

Clinical observations

Diseases more frequently associated with an increase in blood eosinophils in children are as follows. Nonetheless, estimates of the intensity of the eosinophilic response do not correlate closely with the intensity of the infestation or hypersensitivity.

NEONATAL EOSINOPHILIA. Matheson *et al.*[35] reported nasal eosinophilia in 30 per cent of 129 normal newborn infants in the first four days of life. Total blood eosinophil counts in these infants increased gradually until seven weeks, at which time the eosinophil counts declined sharply. By age ten months, the blood eosinophil count approached that of normal children.

ERYTHEMA NEONATORUM. Erythema neonatorum usually appears shortly after birth, beginning on the cheeks and spreading centrifugally. Harris and Schick[36] reported erythema neonatorum in 72 per cent of 228 newborn infants. The erythema usually changes to macules, papules, and pustules. Infants with pustules had significant eosinophilia in the peripheral blood. Smear of the pus-like material from the pustules revealed a myriad of brilliantly staining eosinophils with few or no neutrophils.

SKIN DISEASES. Exfoliative dermatitis, eczema, psoriasis, scabies, and ichthyosis may be associated with peripheral eosinophilia.[37] The highest eosinophil counts, up to 60 per cent of total leukocytes, have been observed in pemphigus and in dermatitis herpetiformis.[11]

ALLERGIC REACTIONS. Eosinophilia in allergic reactions may be induced by exogenous or endogenous antigens. Many kinds of physical or chemical trauma may be associated with an increase in eosinophils locally or in peripheral blood. Endogenous antigens may cause eosinophilia in auto-immune diseases. Periarteritis nodosa may show peripheral eosinophilia up to 80 per cent of the leukocytes.[38]

PARASITIC INFESTATION. Eosinophilia due to parasitic infestation, such as fungi, worms, protozoa, and arthropods, is produced when the parasite attacks the host's tissue. The most striking example is the eosinophilia associated with trichinosis. Eosinophilia appears about one week after ingestion of infected food and often reaches a maximum at the end of the third week. Eosinophilia may last as long as six months or even several years. Values as high as 85 per cent of leukocytes have been reported. In severe, fatal infections, however, eosinophilia is generally absent.[39]

Ascaris lumbricoides, hookworm, and Echinococcus are other frequent invaders. Intestinal parasitism is less regularly associated with eosinophilia. However, eosinophilia of from 10 to 30 per cent, or higher, of the white blood cell count has been reported.[40] In Ascaris and Taenia infections, eosinophilia occurs during periods of diarrhea or abdominal pain. Infestation with Oxyuris, Trichocephalus, Amoeba, and the flagellates are usually not associated with eosinophilia.[41]

Visceral larva migrans occurs mostly in children between the ages of one and three years with a history of pica and is caused by Toxocara canis. The usual manifestations include fever, cough, asthmatic wheezing, hepatomegaly, bilateral peribronchial infiltration, leukocytosis, and eosinophilia of 30 per cent or more. Serum albumin is decreased while total gamma globulin and immunoglobulin M are significantly elevated.[42]

PULMONARY INFILTRATE. Eosinophilia associated with pulmonary infiltrates includes tropical eosinophilia and is found mostly in children in India. The syndrome constitutes the triad of asthma-like bronchitis, severe blood eosinophilia, and lymphadenopathy. Additional characteristics include miliary pulmonary infiltrates and a remarkable response to arsenicals.[43] Transient pulmonary infiltration and eosinophilia (Löffler's syndrome) is an unusual allergic manifestation to a variety of antigens. In children it would appear to be most often a manifestation of helminthic infections.[44]

BLOOD-FORMING ORGANS. Eosinophilic leukemoid reactions, eosinophilic leukemia, chronic myelocytic leukemia, and chloroma are diseases associated with blood eosinophilia. In Hodgkin's disease the blood eosinophils are usually high, but not always. The differentiation of eosinophilic leukemoid reactions from eosinophilic leukemia deserves attention. The absolute count is not a reliable diagnostic aid, since very high eosinophilic counts may occur in the former and a "subleukemic" count in the latter. In both conditions, relative and absolute eosinophilia occurs with little or no shift to the left. Both conditions may be associated with abnormalities in the granules of the eosinophils and hypersegmentation of the nucleus, and both may be accompanied by fever and hepatosplenomegaly. These conditions can be differentiated by the reversibility and benign course of the leukemoid reaction, contrasted with the irreversibility and lethal outcome of eosinophilic leukemia.[5]

Spleen. Eosinophilia secondary to functional impairment of the spleen may be seen after the removal of the spleen or with autosplenectomy.

Familial and constitutional eosinophilia. An inherited anomaly, familial and constitutional eosinophilia, may occur in the absence of other known causes. It has been described in several generations of a family, occurring in otherwise healthy members.[45] The degree of eosinophilia varies among and within the families. It is transmitted as an autosomal dominant character.

Convalescence. As Lams stated in 1907,[46] eosinophils are an "index of convalescence." They increase during the recovery phase of most acute infections and after recovery from megaloblastic or iron-deficiency anemia.

Lymphopneumatosis cystoides intestinalis. Lymphopneumatosis cystoides intestinalis is characterized by abnormal collections of gas-containing cysts in the wall of the gastrointestinal tract of patients with a history of diarrhea, repeated infections, and general clinical debility. Eosinophilia of from 4 to 37 per cent was noted in the circulating blood of 4 patients who succumbed to disease.[47]

Infections. Scarlet fever is the most noteworthy of the infections in which moderate eosinophilia may occur. In the early stages of this disease, eosinophilia of from 5 to 10 per cent and as high as 17 per cent may be found.[48] This observation may aid differentiation from diphtheria in which condition leukocytosis occurs without eosinophilia. Eosinophilia also occurs in erythema multiforme but not in acute rheumatic fever.[49] Tuberculosis may be associated with eosinophilia.

Leukocytosis and severe eosinophilia. Choremis, Thomaidis, and Kattamis[50] reported 7 cases, ages five to thirteen years, 6 males, with total white blood cell counts of from 17,000 to 180,000 per cubic millimeter and 5,040 to 72,000 eosinophils per cubic millimeter. Three patients had gastrointestinal, 2 respiratory, and 2 dermatologic symptoms. The condition lasted about a week without treatment in all patients. All 5 children followed up recovered completely with persistent eosinophilia of from 4 to 10 per cent and no leukocytosis.

Miscellaneous. Eosinophilia may occur with the administration of certain chemicals, such as benzol, digitalis, camphor, and phosphorus. Metastatic carcinoma can cause an increase in circulating eosinophils.

Summary

Recent electron microscopic and biochemical studies have yielded new information concerning the morphology and function of blood and tissue eosinophils and their role in allergic and inflammatory reactions. However, the mode of action and the significance of the factors which affect circulating eosinophils need further study, particularly the interrelation between tissue or blood eosinophilia and histamine secretion. The presence of eosinophils in areas of inflammation and their fibrinolytic action which may promote wound healing is of great interest and warrants further study.

The relation of blood eosinophils to adrenocortical hormones has been established, and persistent eosinophilia in an acute infection or alarm reaction may indicate adrenocortical insufficiency. The mechanism for blood and tissue eosinophilia in parasitic and allergic reactions is not known, but their presence is diagnostically helpful.

Much remains to be learned about the origin, content, function(s), and the fate of these leukocytes.

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Correlation Conferences in Radiology and Pathology

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Editors
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Hoarseness, Dysphagia, and Gargle Laryngogram

Case history

Milton J. Bienstock, M.D.: A sixty-eight-year-old white man was admitted to St. Luke's Hospital Center because of hoarseness and dysphagia of three months duration. There had been an associated 15-pound weight loss.

Physical examination revealed no palpable lymph nodes in the neck. On direct laryngoscopy, an exophytic lesion was seen to replace the left lateral hypopharyngeal wall. The left arytenoepiglottic fold, false cord, and postcricoid region were also involved. Biopsy confirmed the clinical impression of a squamous cell carcinoma.

Radiographic discussion

Dr. Bienstock: A "gargle" laryngogram was performed shortly after admission. Cineradiographic and film study demonstrated a constant lack of filling of the left pyriform fossa despite careful study with various maneuvers to ascertain motion of laryngeal and hypopharyngeal structure (Fig. 1). Note in particular, how the "trumpet maneuver" failed to distend the left pyriform fossa (Fig. 1A). There was thickening of the left false cord, and impingement was noted on the left side of the vestibule. The lateral exposure indicated retropharyngeal extension (Fig. 1B).

The roentgen findings demonstrating a huge left lateral hypopharyngeal mass with retropharyngeal extension were confirmed on cineradiographic study.

Study of the laryngeal pathway demonstrated a definite asymmetry of the laryngeal ventricles. The right ventricle distended freely and appeared narrowed (Fig. 1C). During the phonation maneuver there was normal mobility of the right true vocal cord (Fig. 1D). In contrast, the left true cord appeared fixed and immobile. Thus, involvement and paralysis of the left true vocal cord was also a manifestation of the tumor. The subglottic area appeared relatively uninvolved.

The final roentgenographic impression was that of an extensive neoplasm primarily involving the left lateral hypopharyngeal wall, extending posteriorly and into the areas of the left vestibule, false cord, ventricle, and true cord. The subglottic area did not show evidence of disease.

Surgical discussion

Stanley Whitfield, M.D.: Surgery was performed through a U-shaped incision which extended from the level of the mastoid process on the left to the level of the greater cornua of the hyoid bone on the right and reaching to within 2 fingerbreadths of the suprasternal notch. An extension limb was made from the middle of the left limb of the incision to the tip of the left shoulder. The platysma muscle was

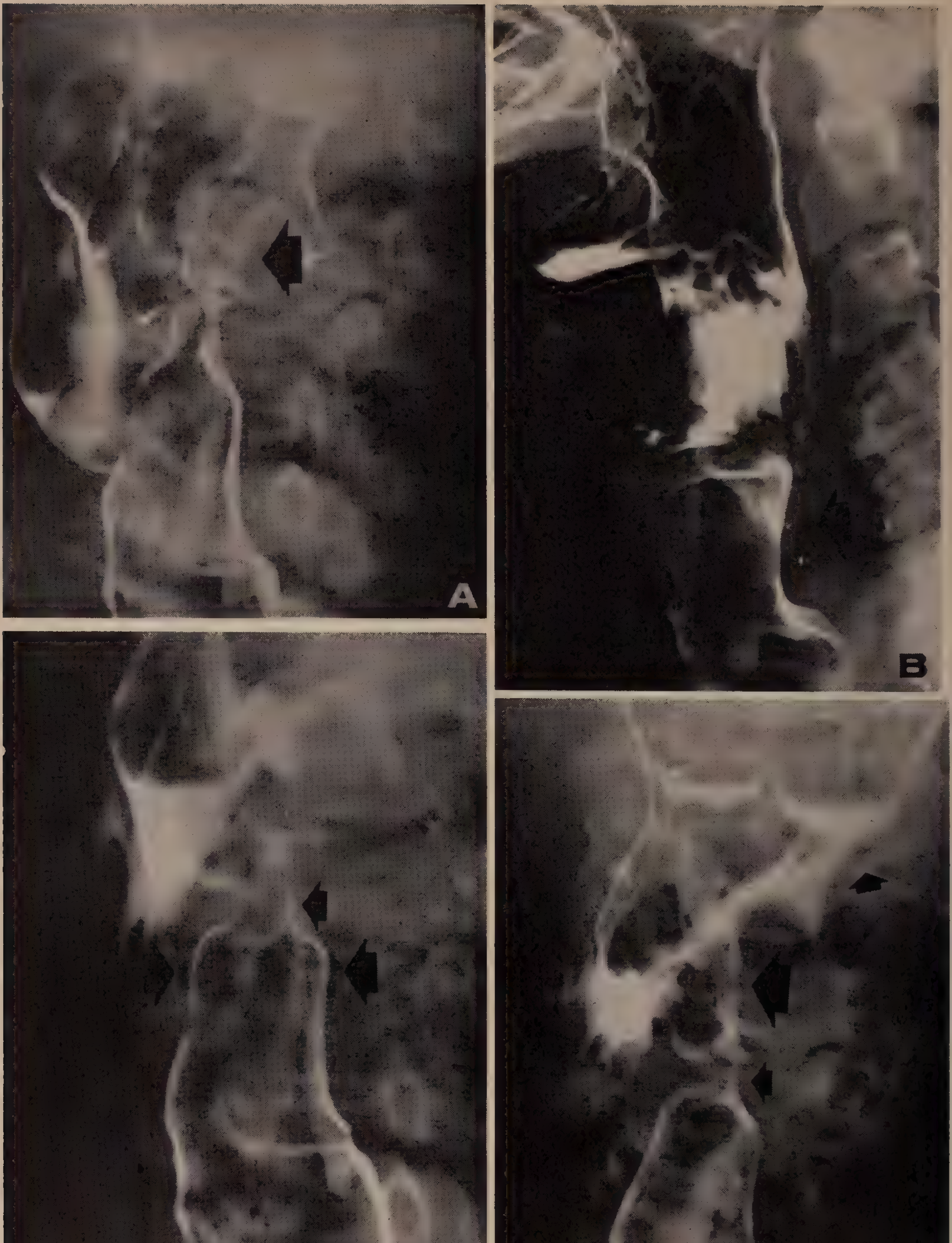

FIGURE 1. Double-contrast studies of larynx and pharynx. (A) Trumpet maneuver: Left pyriform sinus still fails to admit contrast material. Left false cord area (horizontal arrow) best seen on this study. Note irregularity and thickening by tumor involvement. Below this, left ventricle also appears involved. (B) Lateral film: Thick horizontal arrow indicates retropharyngeal involvement. (C) During inspiration: Left true cord (thin horizontal arrow) remains in same position as in phonation. This indicates paralysis. Subglottic area (bilateral horizontal arrows) free of disease. (D) During phonation: Vertical arrow denotes area

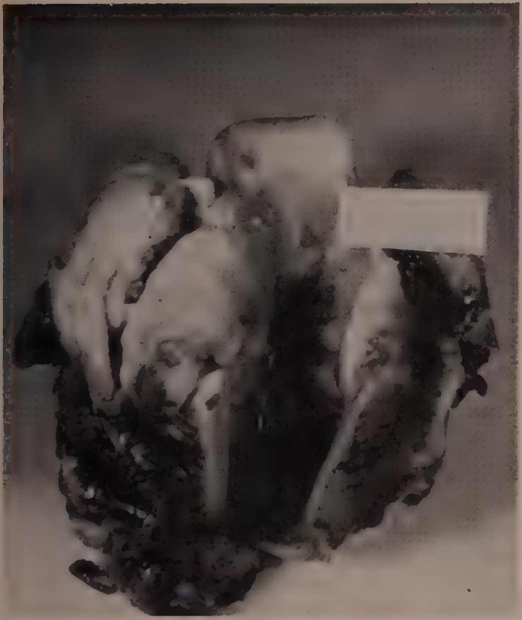

FIGURE 2. Gross specimen. Tumor fills pyriform sinus, extends to midline of epiglottis, invades laryngeal wall.

included in the skin flaps. Thereafter a routine laryngopharyngectomy with dissection in continuity of the left side of the neck was carried out with no attempt to conserve the accessory nerve.

No obviously metastatic nodes were palpated during the dissection, and a good margin was obtained around the primary lesion. Primary closure of the pharyngeal stoma was carried out without difficulty and the tracheal stoma sutured to the skin margins in the usual manner. The patient's postoperative course was routine and uneventful.

Pathologic discussion

Charles F. Begg, M.D.: The gross specimen, Figure 2, has been opened through the posterior wall. The lumen of the left pyriform sinus is almost completely filled with white, hard tumor which also invades the wall of the sinus and adjacent tissue, extends beneath the mucosa of the epiglottis as far as the midline, and invades beneath the laryngeal mucosa as far as the false vocal cord. The true vocal cord, on left in photograph, is not involved; tumor is seen, right lower corner, extending into the base of the false cord (Fig. 3A). Figure 3B shows the anastamosing cords of poorly differentiated squamous cells which form the tumor.

There was also a radical resection of ipsilateral cervical lymph nodes. Of 36 nodes recovered, only one from the middle third of the carotid chain contained tumor.

Comment

Dr. Bienstock: Carcinoma of the larynx presents no diagnostic problem when it is as far advanced as in our patient. Simple indirect laryngoscopy will usually permit accurate diagnosis.

The diagnostic dilemma is to define accurately the extent and limits of the lesion. Direct laryngoscopy can be misleading in the so-called "blind areas" which include the pre-epiglottic space, laryngeal ventricles, inferior vestibule, and subglottic area. Roentgen study is thus of great value, since these areas can be detailed quite adequately on laryngograms, as exemplified in the present patient.

Although positive contrast laryngography was described in 1957 and proved of value, it has not been as widely used in conjunction with tomography and soft-tissue studies as it should be.[1] This is perhaps related to the difficulty, both in time and effort, and inconvenience to patient and physician encountered in the classical approach to anesthesia and insertion of contrast material which necessitate active induction of local anesthesia by the physician in an uncomfortable gagging and coughing patient and the insertion of cannulas or catheters into the hypopharyngeal and laryngeal structures.

We have varied a simple method of laryngography originally described by Collard[2] and utilize it as the "gargle laryngogram."[3] The patient "gargles" the local anesthetic (Xylocaine) under observation during a five-minute period or until properly anesthetized. The patient is then studied fluoroscopically while contrast medium (oily Dionosil) is "gargled" in a similar

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of obstruction of left pyriform sinus. Thickened horizontal arrow denotes left false cord area which appears thickened and involved with tumor. Thin horizontal arrow denotes left true cord. Note its asymmetry in phonation.

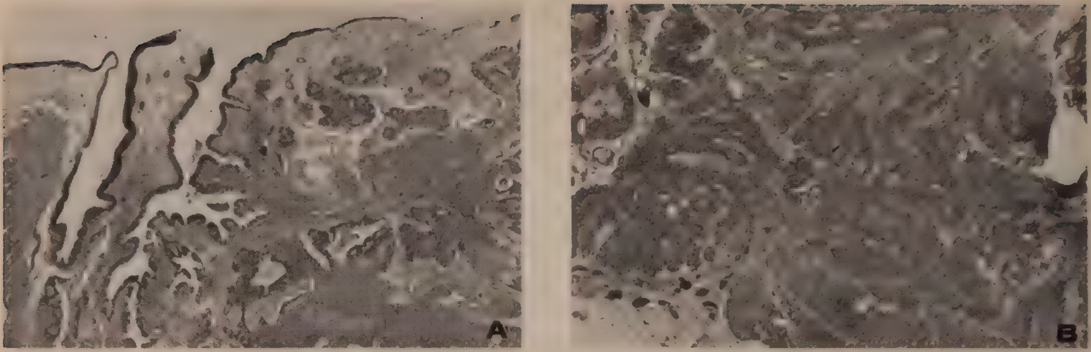

FIGURE 3. (A) Wall of larynx adjacent to tumor. True cord, left of figure, free. Tumor seen at base of false cord on right. (B) Tumor composed of anastamosing cords of poorly differentiated squamous cells.

manner. The contrast material usually enters the larynx without difficulty, and cineradiographic and film studies are performed. Special respiratory maneuvers are utilized. These include quiet inspiration (rhythmic nasal breathing), phonation (flat "eee" phonated by patient), Valsalva (expiration against a closed glottis), and the modified Valsalva or trumpet maneuver in which the patient blows through almost closed lips. Spot films and cineroentgenography are obtained during all maneuvers. The results as noted in the case presented here are extremely valuable and are easily obtained with the gargle technic of laryngography.

Our own experience now includes studies of more than 30 patients. In almost all cases a successful, relatively "atraumatic," and diagnostic laryngogram was obtained.

Three patients in the group had to be returned without a successful study during the development of proficiency in the technic.

Since many of the patients are old and quite debilitated, the results are astonishing! Furthermore, these simple studies are invaluable in gauging the results of surgical and radiation laryngeal therapy.

NATHANIEL FINBY, M.D.: The "gargle laryngogram" does not offer additional diagnostic information to other laryngographic technics, but its greatest value is making the examination easier to perform for both the patient and the physician. It also permits better cooperation of the patient during the "maneuvers" and cineradiographic study. Cineradiography has been a great advance in this regard, since physiology and mobility are more readily documented.

One should also point out that routine radiographic study without special contrast media but with tomography is very useful for study of the larynx. This aspect and routine barium study of the hypopharynx and esophagus have not been given their proper significance in this discussion to demonstrate more readily the ease and value of "gargle laryngography."

DR. BEGG: Squamous cell carcinoma of the pyriform sinus is rare compared with squamous cell carcinoma of the intrinsic portion of the larynx. Intrinsic carcinomas of the larynx have a somewhat better prognosis because of the paucity of lymphatic drainage to external structures. A tumor arising in the pyriform sinus, however, can readily enter regional lymphatics as happened in this case where one lymph node was involved with metastasis.

The patient was well one year following surgery. However, six months later, he reported that he was losing weight and coughing up blood. The patient did not return for examination, but we must assume that the lesion has recurred.

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Clinical Anesthesia Conference

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Hazards of "Crash" Induction-Intubation Technic

CRASH INDUCTION-INTUBATION is practiced frequently in patients with a full stomach to seal off the trachea rapidly and prevent pulmonary aspiration of gastrointestinal contents. The technic is associated with two distinct hazards as illustrated by the following case reports.

Case reports

CASE 1. A thirty-six-year-old woman was struck by an automobile approximately one-half hour after breakfast and sustained compound comminuted fractures with considerable bleeding in the lower part of both legs. She was brought to the operating room shortly after admission. Physical examination, other than the injuries to the extremities, showed normal findings. An intravenous infusion of lactated Ringer's solution preparatory to the administration of blood was started. The patient had received 50 mg. of meperidine hydrochloride in the emergency room and was given atropine 0.4 mg. intravenously as premedication. Since she was anxious and upset, it was decided to use a "crash" induction-intubation technic, that is to induce anesthesia rapidly prior to endotracheal intubation. Oxygen 6 L. per minute was administered by mask for two minutes. Then thiopental sodium 200 mg. and succinylcholine chloride 60 mg. were injected intravenously. Endotracheal intubation proved to be difficult and was not successful, and the patient vomited undigested food. She was immediately placed in Trendelenburg's position and suctioned thoroughly. There was no evidence of aspiration. The anesthesiologist allowed the patient to regain consciousness completely after which he convinced her to allow the endotracheal tube to be inserted prior to further anesthetization; this was accomplished with no difficulty. Thereafter, anesthesia proceeded uneventfully.

CASE 2. One year after cholecystectomy, a forty-two-year-old man was readmitted because of increasing abdominal distention and vomiting of ten days duration. He appeared chronically ill, dehydrated, and was vomiting fecal material. His abdomen was moderately distended with no audible bowel sounds. His blood pressure was 110/80, pulse rate 80, temperature 99 F., hematocrit 47, blood urea nitrogen 31 mg. per 100 ml., and chlorides were 75 mEq., potassium 2.7 mEq., sodium 125 mEq., and carbon dioxide 33 mEq. per liter. Radiographic examination confirmed the diagnosis of mechanical small bowel obstruction. A Cantor tube was passed but did not progress and was, therefore, used as a nasogastric suction tube. Intravenous fluid therapy was started, and within twenty-four hours, his electrolytes appeared to be corrected. Repeat hematocrit was 40 and the chlorides were 105 mEq., potassium 3.9 mEq., sodium 137 mEq., and carbon dioxide 25 mEq. per liter. Electrocardiographic findings were within normal limits. The patient was scheduled for exploratory laparotomy. Premedication con-

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Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, October 23, 1967. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

* Bastron, R. D., and Hamilton, W. K.: Perils of rapid induction techniques. J.A.M.A. **201**: 875 (Sept. 11) 1967.

sisted of atropine 0.4 mg. intramuscularly. On arrival in the operating room, the patient's blood pressure was 108/60, pulse rate 100, and respiratory rate 18. The nasogastric tube was draining copious fecal material. Anesthesia was begun with thiopental sodium 225 mg. followed by succinylcholine 40 mg., intravenously; ventilation with 100 per cent oxygen was carried out for fifteen seconds and a size 36 cuffed endotracheal tube was inserted easily. Immediately after intubation, blood pressure and pulse rate were unobtainable. Cardiopulmonary resuscitation was initiated at once. Although the vital signs returned rapidly, the patient never regained consciousness and died ten days later.

Comment

Pulmonary aspiration of gastrointestinal contents in patients undergoing anesthesia with a full stomach or intestinal obstruction may be caused by either regurgitation or vomiting. Regurgitation, a passive process, occurs most often during profound relaxation as produced by deep anesthesia or relaxant drugs. Vomiting, in contrast, is an active process caused by muscle contracture and characteristically occurs during light anesthesia, especially during prolonged induction. With a rapidly accomplished induction-intubation technic, the "vomiting stage" is bypassed. However, as in Case 1, intubation is not always successful at the first attempt, and the patient's state of narcosis may lighten to the point where vomiting occurs. Furthermore, to achieve the desired rapidity of induction, depressant drugs, such as the thiobarbiturates, are injected more quickly and in larger doses than are employed for the usual management of induction of anesthesia. Bastron and Hamilton* stated, and it is generally recognized, that "administration of lethal drugs at rapid rates while the evidences of drug effect are masked is a hazardous adventure." Although the second patient was a relatively young man, with no obvious signs of cardiovascular decompensation, his long-standing depletion of fluids and electrolytes decreased his ability to tolerate the rapid induction.

Insertion of the endotracheal tube prior to the administration of depressant drugs is safer in consideration of both vomiting and cardiovascular depression. Awake intubation necessitates good rapport between anesthesiologist and patient; the procedure itself and the rationale must be explained beforehand. The course of events that took place in the first patient demonstrates that awake intubation is feasible even in an apprehensive person. The use of topical anesthesia on the tongue and pharynx will largely decrease the patient's discomfort. The vocal cords, however, should not be anesthetized in order to maintain their protective reflexes. Awake intubation may be followed by a slow careful induction with provision of adequate ventilation and continuous monitoring of blood pressure and heart rate; cardiovascular depression may, thus, be prevented.

Number one hundred seventy-nine in a series of Clinical Anesthesia Conferences

Case Reports

Desquamative Interstitial Pneumonia with Hepatosplenomegaly and Laryngeal Carcinoma

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In 1965 Liebow, Steer, and Billingsley[1] called attention to a specific pulmonary condition in which, they felt, characteristic anatomic and roentgenographic differences as well as an apparently favorable response to corticosteroid therapy justified its separation from the general group of interstitial pneumonias. Designating the entity as desquamative interstitial pneumonia, they described 18 cases whose lung tissues histologically showed extensive desquamation of large alveolar cells in a "monotonously uniform" fashion. Clinically, 4 of these 18 patients had hoarseness; in none was hepatomegaly or splenomegaly found. In an addendum to the report, biopsy material from 14 additional patients was referred to, but full clinical information on these cases was not given.

In the only other significant series thus far to reach the literature, Gaensler, Goff, and Prowse,[2] added 12 instances of the syndrome, all confirmed by histologic examination of lung tissue. In none of the 12 were hoarseness, laryngitis, hepatomegaly, or splenomegaly mentioned.

Our report describes an additional case of biopsy-confirmed desquamative interstitial pneumonia with the thus far unlisted findings of (1) cancer of the larynx complicating a chronic laryngitis and (2) hepatosplenomegaly.

Case report

A sixty-seven-year-old white male was admitted to the Will Rogers Hospital on February 8, 1966, with the main complaints of weakness, fatigability, hoarseness, and exertional dyspnea. He had smoked since the age of sixteen, recently averaging 60 cigarets daily, but had been free of cough or symptoms of pulmonary disease until two years previously when he first noted fatigability and exertional dyspnea. One year prior to admission, hoarseness developed and persisted without remission; repeated examinations by an otorhinolaryngologist had shown "chronic laryngitis." Dyspnea gradually increased but remained purely exertional, unassociated with nocturnal distress. Cough was infrequent and rarely productive. The patient's chest x-ray film was noted to show a diffuse fine shadow in both lung fields, and the patient was referred for diagnostic tests. He had received prednisone intermittently over a six-month interval and was taking one to two tablets of dexamethasone (Decadron) daily at the time of admission. Past history and system review yielded no additional pertinent information.

Physical examination revealed the patient to be tall, muscular, and healthy in appearance; his voice was hoarse. Exertional cyanosis was apparent. The thyroid gland was full and diffusely palpable. Thoracic motion was excellent, and the patient was easily able to blow out a match through his widely open mouth. His lungs were clear to percussion and auscultation except for a few rales at each base. Cardiac examination was unremarkable. In the abdomen, a firm lower edge of spleen was easily felt 2 fingerbreadths below the left costal margin, and the liver edge, also firm and not tender, descended 3 fingerbreadths below the right costal margin on deep inspiration. Except for clubbing of all digits, the remainder of the examination was not remarkable.

Complete blood count and analysis of the urine showed normal results. Serum latex fixation reaction was negative. Total protein and albumin-globulin ratio were within normal limits, and values for serum bilirubin, glutamic pyruvic transaminase, cholesterol, and alkaline phosphatase were normal. Serum electrophoresis revealed a moderate decrease in total protein and albumin and an elevation of alpha 2 globulins; a broad gamma peak blending in with the beta peak was thought to be suggestive of chronic hepatic disease.

Pulmonary function studies on February 9, 1966, showed a vital capacity of 3,240 ml. (predicted normal 3,620), of which 1,760 ml., or 54 per cent, were expelled within the first second. Maximum breathing capacity was 78 to 84 L. per minute, 74 to 80 per cent of the predicted value. Residual volume was slightly increased to 3,210 ml., and the ratio of residual volume to total lung capacity was 44.7 per cent. Hyperventilation was present, being reflected in a tidal volume of 1,420 ml. and a minute volume of 15.6 L. Diffusing capacity was entirely normal. Arterial blood contained oxygen at a tension of 78.5 mm. Hg, carbon dioxide at 30.2 mm. Hg, pH of 7.45, and oxygen saturation of 95.5 per cent at rest. Oxygen saturation as measured by ear lobe oximeter was 93 per cent; after three minutes of exercise against 100 watts resistance on a bicycle ergometer, the saturation fell to 89 per cent.

Skin tests showed the patient to be nonreactive to tuberculin, histoplasmin, and coccidioidin.

Chest x-ray showed a fine mottled shadow to be diffusely scattered throughout both lungs, being most dense and pronounced in the middle and lower thirds and, by lateral x-ray film, posteriorly (Fig. 1). The diaphragm moved well, but some trapping was present on expiration in both infraclavicular regions.

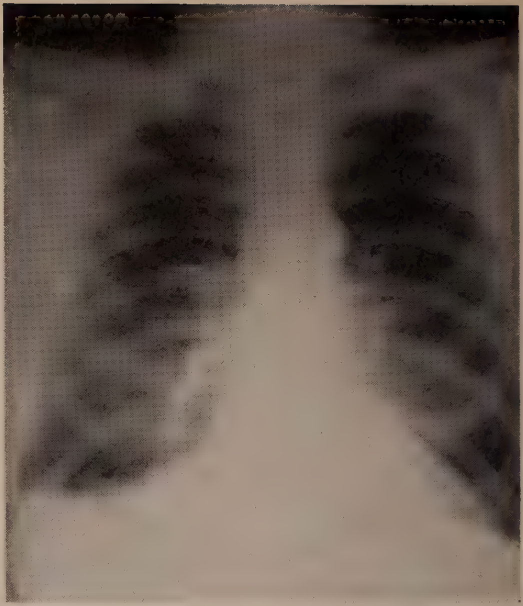

FIGURE 1. Chest x-ray, February 8, 1966, shows fine mottling diffusely scattered throughout both lungs, most pronounced at middle and lower thirds.

Following admission, therapy was continued with prednisone 15 mg. daily. Laryngoscopy, performed on February 21, 1966, showed the right vocal cord to be thickened and chronically inflamed and to contain a wart-like growth which was biopsied. Bronchoscopy on the same date showed no abnormalities.

Because diagnosis remained obscure despite extensive sputum and other studies, exploratory thoractomy with lung biopsy was performed on March 3, 1966. The right pleural space was normal in appearance. The lung revealed macular patches of darkened areas with a milk-like substance over the upper border and edge of the upper lobe as well as the anterior half of the lower lobe. These areas were nodular to palpation and had the appearance of dilated minor air spaces or alveoli.

Biopsy from the upper lobe showed the air spaces to be reduced in number, varying in size from 0.1 to 0.4 cm. in diameter. Some appeared cystic and contained thin mucoid secretion. Alveolar septa were thickened, coarse, and firm and contained a few small, poorly delineated, slightly

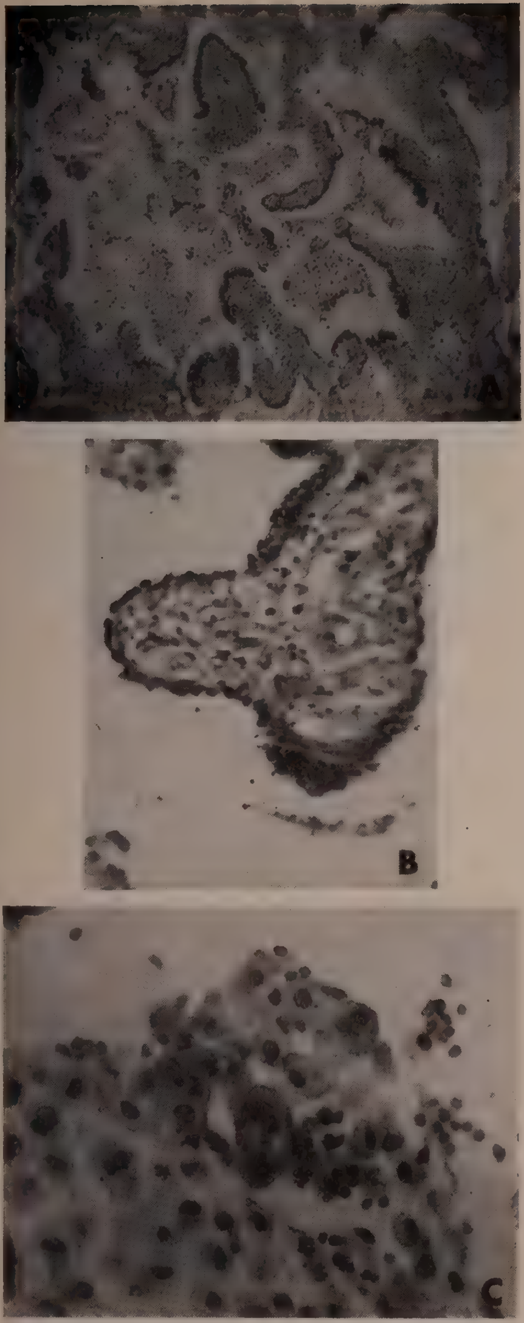

FIGURE 2. (A) Biopsy of lung: desquamative interstitial pneumonia. Atypical epithelial proliferation lining alveolar spaces; bronchial type and littoral cuboid accumulations in patchy distribution (hematoxylin and eosin stain). (B) Alveolar wall thickened by admixture of loose fibrillar collagen, reticulum, and lesser amounts of smooth muscle. Atypical epithelial proliferation of covering cells. (C) Desquamated pneumocytes and macrophages within alveolar spaces.

translucent white nodules. No necrotic foci were seen.

Histologically, the over-all picture was one of patchy overdistention of the bronchioles and atria, intra-alveolar cytorrhea of pneumocytes, and slight thickening of alveolar walls with littoral cellular hyperplasia of bronchiolar mucosa and alveolar cells (Fig. 2). Intra-alveolar cellular accumulations varied in amount and distribution, the predominant cells being large and round, 14 to 18 microns in size, with fairly dense, finely granular, and lightly eosinophilic cytoplasm. Nuclei were round or slightly indented and contained considerable amounts of chromatin; occasional large cytoplasmic (para-aminosalicylic acid-positive) vacuoles were located near the indented sides of the nuclei. Mixed with these pneumocytes were larger macrophages in which cytoplasm was coarsely granular (neutral fats) and nuclei relatively small and pale. A few eosinophils and a rare segmented neutrophil were also present. Considerable amounts of mucus filled the lumens of terminal bronchioles and adjacent atria. The pseudostratified columnar respiratory-type epithelium of the bronchioles and atria were greatly thickened and proliferative. The cells formed plaque-like accumulations, frequently appearing to have extended out into and lining the adjacent atria. The majority of alveolar septa were covered by large cells that corresponded to the free unattached intra-alveolar cells previously described. In some regions of littoral thickening, the cells resembled squamous cells.

Varying amounts of patchy acellular homogeneous or fibrillar thickening were noted within the alveolar walls, between capillaries and cells lining alveolar spaces; special stains showed this to be an admixture of collagen, reticulum, and elastic tissue. Lymphoid accumulations were prominent in peribronchial areas. The majority of arteries were thick walled but without thrombi. Cellular necrosis was not present, and no malignant changes were seen. No acute pneumonia was evident nor findings compatible with tuberculosis, fungus infection, proteinosis, siderosis, or sarcoidosis.

Approximately one fourth of the lung parenchyma appeared normal. The pathologist's impression was desquamative interstitial pneumonia.

In light of the biopsy diagnosis, prednisone medication was continued at a maintenance dose of 15 mg. daily.

Because the biopsy from the right vocal cord revealed epidermoid carcinoma in situ, repeat laryngoscopy was performed on March 25, 1966. This again showed a sluggish right cord with a whitish, wart-like lesion extending almost the full length of the cord.

On May 20, 1966, the right vocal cord was removed with a 5-mm. margin of normal mucosa on either side, through a vertical midline laryngeal incision. A tracheostomy was established at the time of surgery and closed on the second postoperative day. Histologically, the resected right vocal cord showed epidermoid carcinoma in situ, hyperkeratosis of mucosa, and dysplasia of mucosa. The patient was discharged on June 19, 1966, receiving 15 mg. prednisone daily and feeling improved. He spoke with a husky but fairly normal voice, and dyspnea was far less marked despite moderate physical activity.

The patient returned to the Will Rogers Hospital on October 3, 1966, for re-evaluation of his condition and possible discontinuance of medication. He had continued corticosteroid medication without interruption and had felt entirely well except for slight dyspnea on greater than moderate exertion. Cough had returned only during a brief upper respiratory infection six weeks earlier and had subsided during six days of oral antibiotic therapy.

By physical examination, he appeared well and in no respiratory distress. Digital clubbing was still present and appeared undiminished. The liver and spleen remained easily palpable as before and still were not tender.

The vital capacity was found to be 3,220 ml., or 89 per cent of the predicted value of 3,620 ml., of which 50 per cent could be expelled within the first second. Maximum breathing capacity was 77 L. per minute, 73 per cent of predicted. Residual volume was increased, and ratio of residual volume over total lung capacity was 48 per cent. Arterial blood examination showed the oxygen and carbon dioxide tensions and the pH to be entirely normal, and the oxygen saturation was 95.8 per cent at rest.

Chest x-ray film showed a diffuse veil-like density still present over both lower lung fields, but this appeared to be less in extent than at the time of the former admission (Fig. 3).

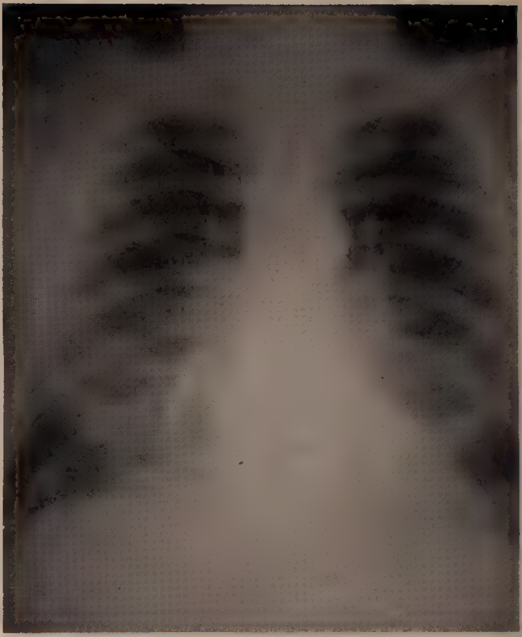

FIGURE 3. Chest x-ray, November 2, 1966, showing flattening of right side of diaphragm and blunting of costophrenic sulcus secondary to thoracotomy for lung biopsy, scattered bilateral densities of lesser extent than in Figure 1.

Liver function as judged by serum bilirubin, alkaline phosphatase, glutamic pyruvic transaminase, glutamic oxaloacetic transaminase, and lactic dehydrogenase remained within normal levels.

Because the hepatosplenomegaly remained unexplained and was thought possibly to be related to the patient's moderate, although never excessive, alcohol intake or possibly to other diffuse and systemic undiagnosed disease, an open-liver biopsy was performed on October 5, 1966. The spleen was palpated and thought to be smooth and of normal consistency. No gross abnormality of the liver was detected. Biopsy of the liver histologically showed normal architectural structure with no fibrosis or increase in connective tissue. The parenchymal cells surrounding the central veins showed slight changes characterized by a few intracytoplasmic neutral fat globules and fine, light brown lipofuscin granules (Fig. 4). No necrosis, granulomas, no changes characteristic of Laennec's

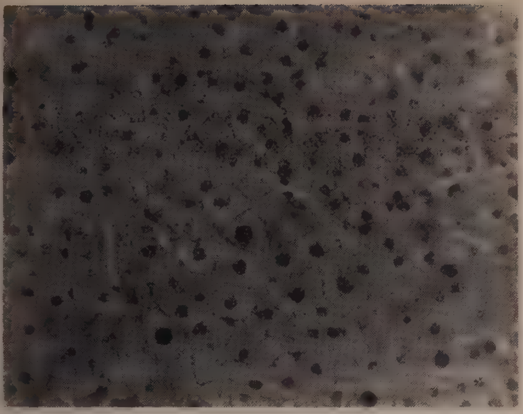

FIGURE 4. Liver biopsy. Fatty metamorphosis of mild degree.

cirrhosis, or alcoholic fatty deposition were seen.

Following liver biopsy, prednisone dosage was reduced by decrements of 2.5 mg. every four days until the medication was altogether discontinued on October 28, 1966. The patient remained well, active, and symptom-free and was discharged on November 4, 1966. Follow-up to January, 1967, showed the patient still to be well and under no therapy.

Comment

The case of desquamative interstitial pneumonia described in this report shares with previously reported cases many features now considered characteristic. Clinically, dyspnea and fatigue were the chief symptoms; cough was infrequent and rarely productive. As in 4 of the 18 patients listed by Liebow, Steer, and Billingsley,[1] hoarseness was present. Cyanosis and digital clubbing were significant physical findings, and fever was absent. Roentgenograms of the lungs showed a characteristic ground-glass opacification best seen in the basal portions of the lower lobes, posteriorly placed on lateral films. Physiologic tests revealed hyperventilation and restriction of vital capacity but normal diffusing capacity and no consistent evidence of obstructive airway disease. Arterial oxygen unsaturation was present, one of the most constant features of Gaensler, Goff, and Prowse's[2] series, without carbon dioxide retention. As in several of Liebow, Steer, and Billingsley's[1] cases, serum eecltrophoresis showed a slight elevation of globulin. Histologically, the abnormal condition seen in lung biopsy conformed to that previously described. Corticosteroid therapy was accompanied by unquestioned symptomatic improvement, with loss of cyanosis and greater exercise tolerance, and this improvement persisted after therapy was discontinued. Despite clinical improvement and possibly also in x-ray shadows in the lungs, however, no visible or measurable changes were noted in the patient's clubbing, the pulmonary functions, or arterial oxygen unsaturation, although it is possible that some clearing or improvement might have antedated hospital admission since the patient had previously received corticosteroids intermittently and at varying doses. In any event, substantial symptomatic relief resulted only after the diagnosis was established by biopsy and a sustained regimen of prednisone therapy imposed. Every treated case in Gaensler, Goff, and Prowse's[2] series is reported to have manifested striking and "dramatic relapse" when therapy was omitted or reduced, but this was not seen in our patient, possibly because therapy was uninterrupted for almost eighteen months and discontinued only after very gradual reductions with small decrements in dosage.

Our patient, at sixty-eight, is older than any in either Liebow, Steer, and Billingsley's[1] or Gaensler, Goff, and Prowse's[2] series. Of Liebow, Steer, and Billingsley's cases, only 3 of 18 were over sixty; of Gaensler, Goff, and Prowse's, only 1 of 12.

The patient described in this report shares with 4 of Liebow, Steer, and Billingsley's the clinical feature of prolonged hoarseness, presumably because of a chronic laryngitis. In our case, however, an epidermoid carcinoma of a vocal cord complicated the laryngitis and gave rise to the speculation that the basic diseased condition involving the respiratory tract may in other or future cases also prove precancerous. Since the major histologic changes involve the terminal bronchioles and the alveoli, one wonders if cancer of the lower respiratory tract may not also in time be seen as a complicating feature in desquamative interstitial pneumonia.

A second and as yet unreported finding in our case is that of hepatosplenomegaly, apparently asymptomatic and accompanied neither by jaundice nor alteration in liver function. The liver itself, actually observed during the surgical procedure of open biopsy, seemed normal in appearance and histologically showed only a small degree of fatty phanerosis, suggesting the possibility of metabolic dysfunction. No evidence of Laennec's cirrhosis or other disease was found, and the nature of the metabolic disorder, if any, is obscure.

Summary

A case of biopsy-proved desquamative interstitial pneumonia is presented, with symptomatic improvement following therapy with prednisone.

Cancer of the larynx, apparently implanted on a chronic laryngitis, was an interesting complication in this case. The possibility is raised of predisposition to malignant change enhanced by the basic tissue abnormality in this syndrome.

Hepatosplenomegaly was also present, although the reason for it is unexplained. Liver biopsy was helpful mainly in excluding obvious disease such as cirrhosis, and it showed only a minimal alteration possibly suggesting metabolic disorder.

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Serum Proteins in Infant Stools

Another Test for Protein–Losing Enteropathy

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HYPOPROTEINEMIA CAUSED by the loss of serum protein into the gastrointestinal tract has been the subject of many recent publications. This has been a direct result of the use of radioisotopes to study this problem. Albumin labeled with iodine-131 and chromium-51,[1-3] gamma globulin-I^{131},[2] iron-59-labeled iron dextran,[4] and polyvinylpyrrolidine-I^{131} [5] have been used to demonstrate shortened plasma survival of serum proteins, increased gastrointestinal permeability, and increased fecal loss of labeled proteins. A diet lacking long-chain fatty acids has been recommended for patients with protein-losing enteropathy caused by intestinal lymphangiectasia.[6]

An infant with protein-losing enteropathy, who expired at age six weeks, was found to have serum albumin in his stools by immunoelectrophoresis. The significance of this finding was then investigated by testing stools of normal infants for serum proteins by immunoelectrophoresis.

Methods

Fresh stool specimens were homogenized in ice-cold saline (230 mg. stool per milliliter saline), centrifuged, and the supernatant material studied by the standard immunoelectrophoresis procedure at pH 8.3 using agar-coated slides and antisera.* Precipitin lines found with goat antihuman serum were identified subsequently using antisera to specific human serum proteins.

Case report

A three-week-old boy was admitted to the hospital because he had had green watery stools since birth. He had been delivered after nine months gestation without complications. He had weighed 6 pounds 8 ounces at birth. His formula had been changed from concentrated liquid instant powder (Enfamil) to evaporated milk (Carnation) to another preparation (Hi Pro) during his first three weeks because of persistent green watery stools. He weighed 5 pounds 14 ounces on admission, appeared undernourished and slightly dehydrated, and was afebrile. He was 19 inches long, and his head circumference was 16 inches.

Admission laboratory studies were hemoglobin 16.8 Gm. per 100 ml., white blood count 17,500, normal urinalysis, carbon dioxide 22 mEq. per liter, chloride 115 mEq. per liter, sodium 144 mEq. per liter, potassium 2.6 mEq. per liter, and blood urea nitrogen 8 mg. per 100 ml. He was given nothing by mouth for forty-eight hours and given intravenous fluids. Subsequent determinations of serum potassium were normal. A concentrated liquid instant powder milk-free soya formula (ProSobee) was begun orally, and diarrhea recurred. Stool cultures failed to reveal a bacterial cause for the illness, but since Staphylococcus aureus was recovered from stools on 3 cultures, he was given erythromycin and later lincomycin therapy. Erythematous excoriated areas developed around his mouth and in the diaper area, resembling acrodermatitis enteropathica (Fig. 1). Because the green watery stools increased to 10 to 12 per day, his formula was changed to Lamb-base without improvement. By the twentieth hospital day, he had lost weight and required an incubator to maintain his temperature. During the last four days he was given cortisone, penicillin, methicillin,

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*Manufactured by Hyland Laboratories, Los Angeles, California.

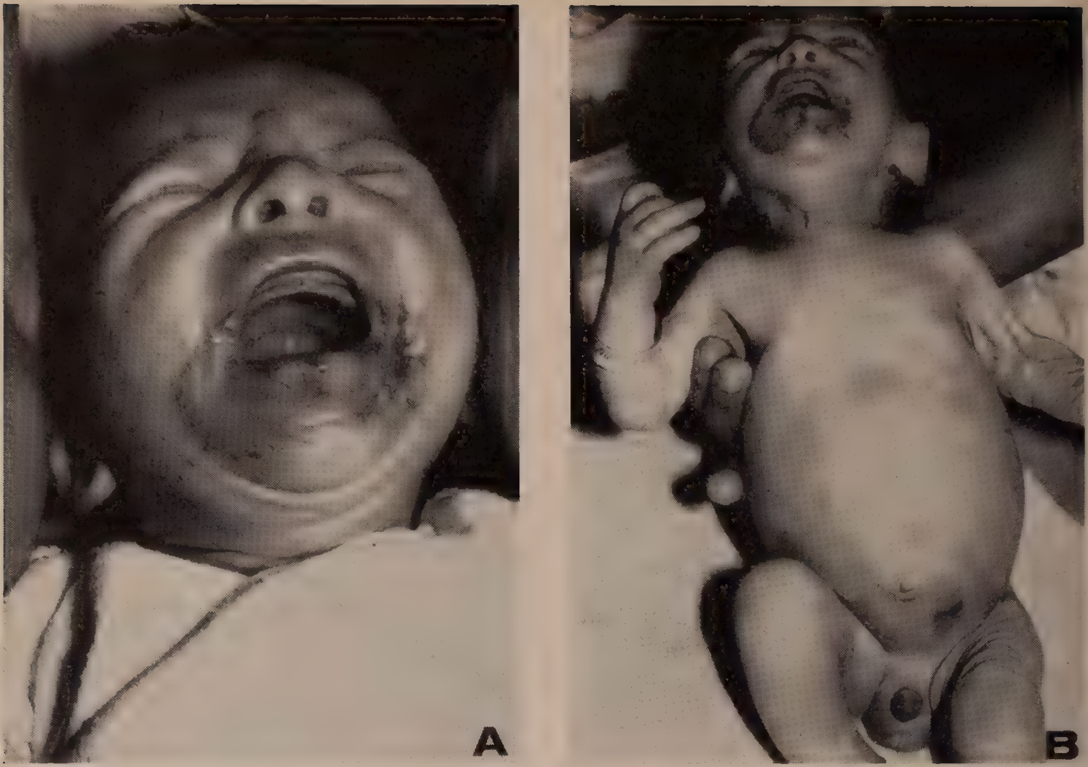

FIGURE 1. Erythematous excoriated areas, resembling acrodermatitis enteropathica. (A) Mouth area. (B) Diaper area.

and kanamycin sulfate because of suspected but unproved sepsis with overwhelming toxemia. He was given intravenous fluids, and oral feedings were continued. He became progressively weaker and finally developed edema, thrombocytopenia, hepatomegaly, and jaundice, and expired on the twenty-fourth hospital day. Permission for an autopsy was refused by his parents.

Blood and urine cultures and febrile agglutinins were consistently negative. His stools contained trypsin, even when diluted 1:100, and his sweat chlorides were 13 mEq. per liter. Serum immunoelectrophoresis detected normal B-lipoproteins, and his serum cholesterol was 137 mg. per 100 ml. A barium enema done two days before his death was interpreted as showing results consistent with congenital megacolon. His total serum proteins were 4.3 Gm. per 100 ml. on admission and remained between 2.8 and 3.8 mg. per 100 ml. during the remainder of his life. Serum albumin varied between 1.8 and 1.3 Gm. per 100 ml. Immunoelectrophoresis of his stools detected serum albumin as seen in Figure 2 but no globulins.

Comment

This infant had severe chronic diarrhea, undernutrition, decreased serum albumin, and albumin in his stools. When normal infants' stools were tested for serum proteins by immunoelectrophoresis, the data in Table I were obtained. Faint but definite precipitin lines which were identified as albumin and gamma G globulin were present in most infants' stools on the first day of life. By the fifth day, most bottle-fed infants no longer had their proteins in their stools, but between age one month and fourteen months they were again commonly detectable. Breast-fed babies differed from bottle-fed babies in that albumin and gamma A globulin were usually detectable in their stools. The identity of the beta globulin found in several stools is unknown. Antisera specific for B-lipoprotein, ceruloplasmin, beta IC globulin, and transferrin failed to produce precipitin lines with these stool specimens.

The amount of albumin in the stool of the infant with protein-losing enteropathy was definitely greater than that found in any of

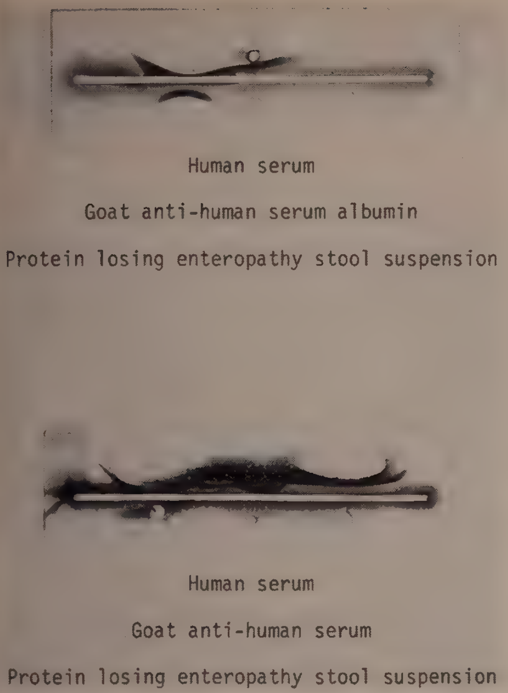
Human serum
Goat anti-human serum albumin
Protein losing enteropathy stool suspension
Human serum
Goat anti-human serum
Protein losing enteropathy stool suspension

FIGURE 2. Human serum and supernatant from stool specimen compared by immunoelectrophoresis. Goat antihuman albumin (upper) and antihuman serum (lower) placed in center trough after electrophoresis. Single precipitin line, stained with amido-schwarz dye, identified as albumin in both slides. Bottle-fed infants received concentrated liquid formula (Similac), and breast-fed infants did not receive supplemental milk feedings.

the normal infants, but exact quantitation by the radial diffusion method was not done.

Summary

These data are consistent with the concept that only trace amounts of serum proteins are normally present in stools and that breast milk contains gamma A globulin. Immunoelectrophoresis of stools is suggested as a direct convenient test for patients with protein-losing enteropathy.

TABLE I. Serum proteins in normal infant stools by immunoelectrophoresis

Age (Days)	Number of Specimens	Albumin	Beta Globulin	Gamma	
				A	G
1	11	10	1	0	8
3	10	7	0	0	4
5, bottle fed	10	1	5	0	0
5, breast fed	10	7	0	9	0
27, to 14 months	10	9	3	0	5

Acknowledgment. Miss Cecile Yonish provided technical assistance, and Miss Paula Poveromo helped obtain the stool specimens from our nursery. B. Grebin, M.D., kindly provided the photographs.

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On the Deaths of Playwrights in Baker's *Play-House Dictionary,* 1764

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In 1764 David E. Baker compiled his amusing and still useful compendium of "the lives and productions of every dramatic writer for the English and Irish theatres, including not only all those memoirs that have been formerly written, but also a great number of new lives and curious anecdotes never before communicated to the public." Although Baker's florid rhetorical excursions are frequently unpalatable to the modern reader, his quaint eulogies and occasional diatribes compensate his patient readers adequately for their tolerance of his inordinate romantic tendencies.

Among the most interesting of his anecdotes and reports are those concerned with the deaths of famous playwrights. Unfortunately, many of the biographic accounts of the deaths of renowned men are obviously subjective to the point of being incredible, but they shed light nevertheless on the relationships between writer and critic from the times of Shakespeare to the mid-eighteenth century.

Sketches of playwrights

For example, the antithetical reports on the death of Joseph Addison (1672–1719) clearly violate the principles of objective biographic reporting; apparently, they are the partisan views of admirers and detractors of the famed Addison. Baker, however, is an unstinted admirer of Addison whose death he attributes to the following sequence of events:

> In 1716, he married the Countess of Warwick, and in the ensuing year was raised to the high dignity of one of her Majesty's principal Secretaries of State. The fatigues of this important post being too much for Addison's constitution, which was naturally not an extraordinary one, he was very soon obliged to resign it, intending for the remainder of his life to pursue the completion of some literary design . . .but this he had no long time allowed him for the doing, an asthma, attended with a dropsy, carrying him off the stage of this world before he could finish any of his schemes.

Samuel Johnson describes Addison's final hours movingly in *The Lives of the Poets:*

> The end of this useful life was now approaching. Addison had for some time been oppressed by shortness of breath, which was now aggravated by a dropsy, and finding his danger pressing, he proceeded to die conformably to his own precepts and professions . . .Lord Warwick (his step-son) was a young man of very irregular life, and perhaps of loose opinions. Addison, for whom he did not want respect, had very diligently endeavored to reclaim him, but his arguments and expostulations had no effect. One experiment, however, remained to be tried. When he found his life near its end, he directed the young lord to be called, and when he desired, with great tenderness, to hear his last injunction, told him: "I have sent for you that you may see how a Christian can die."

This story may be apocryphal since other writers have defended Warwick's morality and, still more damaging, Walpole startled the world of letters by attributing Addison's death to brandy. Friends of Addison did not go as far as Walpole, but they did acknowledge that the "gentle moralist, whose bodily temperament was a sorry one as his mind was otherwise, had gradually been tempted to stimulate it with wine till he became intemperate in the indulgence." In addition, they do not rule out his use of other stimulants, nor do they reject the possibility that his physician might have prescribed them.

Although he finally died of the gout, Thomas Betterton, the foremost actor of the Restoration stage, enjoyed forty years of unmitigated marital bliss if Samuel Pepys is to be believed. According to the ubiquitous diarist, Betterton married in 1670, "one Mrs. Saunderson, a female performer on the same stage, who both as an actress and a woman was everything that human perfection was capable of arriving at, and with whom he, through the whole course of his remaining life, possess'd every degree of happiness that a perfect union of hearts can bestow." Pepys praised Betterton as the greatest actor of the age, a superb Hamlet, and the ingenious creator of 130 original roles. But Betterton's knowledge of Aristotelian tragedy should have warned him to beware of a fatal flaw in his character—pride in this case. Lacking medical art, he nevertheless attempted to usurp the physician's skill:

> . . . for having been suddenly seized with the gout, and being impatient at the thought of disappointing his friends, he made use of outward applications to reduce the swellings of his feet, which enabled him to walk on the stage, tho' obliged to have his foot in a slipper. The fomentations he had made use of occasioning a revulsion of the gouty humor to the nobler parts, threw the distemper up to his head, and terminated his life.

A playwright-actor, Barton Booth (1681–1733), turned down by Betterton as an apprentice, eventually won great fame as the Ghost in *Hamlet* and as Cato in the play of the same name by Addison. Booth, a gourmand, fell victim to a fever which lasted forty-six days without intermission. Happily, it was cured "thro' the care and skill of those great physicians, Dr. Friend and Dr. Broxholm, by whom he was attended." A complication, jaundice, disappeared not long after.

While attending a Council meeting in Parliament, Thomas Sackville Buckhurst, Earl of Dorset (1536–1608), died suddenly. His colleagues, suspecting foul play, ordered an autopsy, the findings of which allayed suspicion of foul play: "The suddenness of his death afforded some little grounds for conjecture and suspicion, but these were immediately put a stop to when on opening his head, the cause of his death was found to be a hydrocephalus, or little bags of water collected about the brain, which by this sudden bursting, must necessarily occasion the catastrophe that followed." Lord Buckhurst, an ambassador and statesman, has earned a place in literary history, for he shared in the first production of an English tragedy in blank verse, *The Tragedy of Gorboduc*.

William Cartwright (1611–1643), dramatist, actor, and divine, was included as "a son" by Ben Jonson. "My son Cartwright writes all like a man," wrote Jonson, and Pepys lauded Cartwright's interpretation of Falstaff in *Henry IV*. A Royalist in politics, Cartwright's play, *Ordinary*, satirized the Puritan regimen. A sermon, "An Offspring of Mercy Issuing out of the Womb of Cruelty," bears a title illustrative of the extravagant conceits of the period. Unfortunately, Cartwright died early in life. His biographer records that the young playwright . . . "was taken out of the world on the 29th of November following, 1643, by a malignant fever which then reign'd at Oxford. . . known by the name of Camp disease and was fatal to numbers besides."

Homecoming to foggy England after serving as attorney general in the balmy Bahamas for twenty years, playwright-poet Matthew Concanen (1701–1749) unable to adapt himself to his native climate, "fell into a galloping consumption, of which he died in a few weeks after his arrival in London." Pope had termed Concanen "a hired scribbler for the *Daily Courant*" in retaliation for Concanen's political attacks on him. Indeed, Pope included many of his literary and political opponents in his *Dunciad*, a vitriolic compendium of "fools" according to Pope.

Reports on the death of Abraham Cowley (1618–1667) vary considerably. Cowley, poet, dramatist, and a physician by government fiat, led a very exciting life. A secret agent for the Royalists during the Civil Wars, he was created an M.D. at Oxford by government order in 1657, an act which offended many of his friends.

When William Harvey, an intimate friend of his, died, Cowley wrote an elegy honoring him. In the latter years of his life, Cowley retired to study "simples." Baker reports that Cowley died because he did not seek medical advice after he had caught a cold:

> After an attack of fever, he seemed pretty well recovered from its symptoms, when one day, in the heat of summer 1667, he caught a most violent cold, which was attended by a defluxion and stoppage of the breath, which for want of timely care, by treating it as a common cold, and refusing advice till it was past remedy, took him off the stage of life.

The Dictionary of National Biography cites one report which attributes Cowley's death to his delight in the country and the field. The combination of complications arising from a fall which had injured his ribs and from his extended stay in the fields with his laborers proved his undoing, but Pope reports that Cowley succumbed from the effects of passing the night under a hedge after having come home late from a too jovial dinner. Pepys noted in his diary on November 18, 1663, that "Abraham do lie, it seems, very sicke still, but like to recover," but four years later Pepys recorded "Cowley is dead, who it seems, was a mighty civil, serious man; which I did not know before."

Although Pepys did not like Dryden's first play, *The Wild Gallant*, and other critics denounced the indecency of Dryden's early comedies, the poet-dramatist lived long enough to jeer his now obscure critics. A member of the Royal Society, Dryden wrote frequently of his scientific friends. Awarded an M.A. at the king's request, Dryden's literary contributions to English letters more than justified the king's recommendation. His wife, Lady Elizabeth Howard, survived him, but for the last four years of her life she was a lunatic "deprived of her senses by a nervous fever." Dryden, according to Baker, refused to have his mortified toe amputated by Dr. Hobbs, his physician.

> On the 19th of April, 1701, after he had been very bad with the gout and erysipelas in one leg; but he was then somewhat recovered, and designed to go abroad; on the Friday following he ate a partridge for his supper, and going to take a turn in the little garden behind his house in Gerard Street, he was seized with a violent pain under the ball of the great toe of his right foot; that unable to stand, he called out for help, and was carried in by his surgeons, when, upon sending for surgeons, they found a small black spot on the spot affected; he submitted to their present applications, and when gone, called his son Charles to him, using these words: "I know this black spot is a mortification. I know also that it will seize my head and they will attempt to cut off my leg; but I command you my son, do not suffer me to be dismembered." As he foretold, the event proved, and his son was too dutiful to disobey his father's commands. On the Wednesday morning following, he breathed his last, under the most excruciating pains.

But poor Dryden was not to be buried until three weeks later. As the funeral procession proceeded to Westminster Abbey, Lord Jefferys, the rakish son of the infamous Lord Chancellor Jefferys, stopped the hearse and insisted on sponsoring a more elaborate funeral. From there he hastened to Lady Elizabeth to obtain her permission to conduct the interment. The astonished lady refused this rude request; but after Jefferys insisted that he would not rise from his knees until his wish were granted, the poor lady fainted. Jefferys, pretending to have her consent, sent the body to Mr. Russell's undertaking establishment in Cheapside. Meanwhile, the Abbey was lighted up, the ground opened, and the choir and the bishop prepared for the services. But after waiting in vain for several hours for the procession to arrive, the Bishop dismissed the clerics, chorus, and gravediggers.

Mr. Russell, desirous of disposing of the corpse, begged Lord Jefferys to execute his proposed sponsorship of the funeral, but the young rake denied all responsibility for the affair, pretending that it was a drunken frolic. Dryden's son Charles then wrote to Jefferys to assume his stated responsibility for the burial, but Jefferys denied all connection with the affair. Lord Halifax and the bishop, the original patrons of the funeral, now refused to participate in the proceedings. Fortunately for the family, a friend of Dryden's finally gave the poet a resting place. Baker movingly describes the conclusion to this sorry episode:

> In this distress, Dr. Garth, who had been Mr. Dryden's intimate friend, sent for the corpse to the College of Physicians, and proposed a subscription; which succeeding, about three weeks after Mr. Dryden's decease, Dr. Garth pronounced a fine Latin

> oration over the body, which was conveyed from the College, attended by a numerous train of coaches to Westminster Abbey, but in very great disorder. At last the corpse arrived at the Abbey which was all unlighted. No organ played, no anthem sung; only two singing boys preceding the corpse, who sung an ode of Horace, with each a small candle in their hand.

Sir George Etherege (1635–1691), diplomat, courtier, song writer, playwright, and "playboy," wrote the first of a long series of Restoration comedies, many of which were branded as indecent by Richard Steele. Representing England in Germany, he offended the German court by making an actress his mistress. He bought his knighthood to persuade a rich widow to marry him. Called "Gentle George" by his friends, he was a libertine. Although reports of his death vary, Baker attributes his death to bacchanal frivolity, for "having treated some company with a liberal entertainment at his house there, where he had taken his glass too freely . . . flushed as he was, he tumbled down stairs, and broke his neck, and so fell a martyr to jollity and civility."

After George Farquhar accidentally used a real sword and stabbed a fellow actor during the performance of Dryden's *Indian Emperor*, his grief was so intense that he vowed never to act again. Suffering from a "settled illness" thereafter, complicated by a disposition "very splenetic and amorous," Farquhar was, nevertheless, the most popular of all Restoration playwrights. Actors and actresses vied for roles in his plays, but Farquhar became morose after losing his patronage. He wrote his *Beaux' Strategem* on his death bed, and lived only to hear of its brilliant success. He died at the age of twenty-nine (1707). His *Recruiting Officer* has been the model for many comedies and farces on military life; many critics deem it his best play. Baker supports the conjecture that Farquhar died dejectedly after losing patronage: "This distracting frustration of all his hopes fired itself so strongly in our author's mind, that it soon brought on him a sure tho' not a very sudden declension of nature, which at length carried him off the stage of life."

Although Robert Greene (1560–1592), poet, dramatist, and pamphleteer, signed himself as "R. Greene, Master of Arts and Student in Phisike" at the end of his *Planetomachia*, a pamphlet on plants, there are no extant records to indicate that he ever practiced medicine. Greene is well known for his allusion to Shakespeare as a "Shake-Scene" in his *Groatsworth of Wit*, but perhaps more interesting is his literary duel with the poet Dr. Gabriel Harvey, doctor of physicke and master of astrology. In "A Quip for an Upstart Courtier" Greene referred to Harvey's father as a lowly ropemaker and alluded unfavorably to Gabriel Harvey and his brother. Incensed, Harvey threatened to prosecute Greene for libel. The latter, alarmed, deleted the offensive portions, but Thomas Nashe attributes the deletion to the intercession of Greene's attending physician who begged the dying writer to omit or tone down the offensive passages since one of the brothers "was proceeded in the same facultie of phisicke he profest and willinglie he would have none of that excellent calling ill spoken of." The battle of letters continued for some time. Gabriel Harvey disparaged Greene in his "Four Letters and Certaine Sonnets," but Nashe came to Greene's defense in "Strange Newes." Finally, in July, 1593, Gabriel Harvey answered Nashe's "Strange Newes" in rhetoric reminiscent of the dynamic diatribes of Rabelais. Of Nashe, in *Pierce's Supererogation or a New Praise of the Old Ass*, Harvey proclaims:

> . . . . he is the sone of a mule, a raw grammarian, a babbling sophister, a counterfeit crank, a stale rakehell, a piperly rhymer, a stump-worn railer, a dodkin author whose gayest fluorishes are Gascoigne's weeds, or Tarleton's tricks, or Greene's cranks, or Marlowe's bravadoes; his jests but the dregs of common scurrility, the shreds of the theatre, or the offscouring of new pamphlets; his freshest nippitaty but the froth of stale inventions, long since loathesome to quick tastes. His only art and the vengeable drift of his whole cunning is to mangle the sentences of the *Four Letters*, hack the arguments, chop and change the phrases, wrench the words, and hale every syllable most extremely, even to the disjoining and maiming of his whole meaning.

Harvey's dissection of Nashe's literary art smacks more of the butcher's than the surgeon's art; but since Greene died in 1592, the disputants discontinued the debate after the publication of *Pierce's Supereroqation*.

Baker's account of Greene's death is repeated by many of Greene's biographic and critical commentators. The *Dictionary of National Biography* includes Baker's notice that Greene died "of a surfeit gotten by eating too great a quantity of pickled herrings and drinking Rhenish wine." A contemporary broadside on Greene's death in G. B. Harrison's *Elizabethan Journal* mentions wine but not pickled herring as causing the poet's death: "Robert Greene. . . is dead, having lain sick for a month of a surfeit which he had taken with drinking, and though he continually scoured, yet his body continued to swell upward until it swelleth him at the heart and at his face." But the unforgiving Gabriel Harvey, not being able to bear Greene's abuses, "did inhumanely trample upon him (Greene) when he lay full low in his grave."

The indefatigable Aaron Hill (1685–1750) who died in the "very minute of the earthquake, February 8, 1749, wrote domestic farce, tragedy, and opera, speculated in land and American plantations, and developed industrial processes in chemistry and shipbuilding. Admired by most critics, he was gently admonished by Pope in the following lines of *The Dunciad:*

> Then Hill essay'd; scarce vanish'd out of sight,
> He buoys up instant, and returns to light;
> He bears no token of the Sabler streams,
> And mounts, far off, among the swans of Thames.

Hill answered Pope more caustically in *The Progress of Wit, a Caveat for the Use of an Eminent Writer:*

> Tuneful Alexis, on the Thames; fair side,
> The ladies' play-thing, and the Muse's pride;
> With merit popular, with wit polite,
> Easy, tho' vain, and elegant tho' light;
> Desiring, and deserving other's praise,
> Poorly accepts a fame he ne'er repays,
> Unborn to cherish, sneakingly approves,
> And wants the soul to spread the worth he lives.

Today, Hill receives but two lines in Bernard Sobel's *Theatre Handbook,* whereas Baker rewarded him with eight pages. Of Hill's death, Baker reports:

> An illness seized him, from the tormenting pains of which he had scarce an hour's intermission, and after trying in vain, all the aids that medicine could afford him, he at last returned to London, in hopes that his native air might have proved beneficial to him; but alas! he was past recovery being almost wasted to a skeleton, from some internal cause, which had occasioned a general decay, and was believed to be an inflammation of the kidney the foundation of which must have been laid by his intense and indefatigable application of his studies.

The death of playwright Thomas May (1595–1650), who turned to Cromwell because he believed that the Queen had deprived him of the laureate, seems ludicrous when considered in the light of his zealous maneuvering for place and fame. A malcontent according to Baker, May "died suddenly in the year 1650, . . . for going well to bed, he was there found next morning dead, occasioned as some say, by tying his night-cap too close under his fat chin and cheeks, which choked him when he turned on the other side." Buried next to the historian, John Cambden, in Westminster Abbey, May's remains were exhumed after the Restoration and, along with the remains of other opponents of the royal line, were unceremoniously buried in a large pit in the churchyard of St. Margaret's in Westminster.

Roger Boyle Orrery (1621–1678), soldier, diplomat, justice, and playwright, was shrewd enough to fare well both under Cromwell and Charles. A brilliant strategist and a clever statesman, his political and military activities affected his health adversely. Baker's description of his illness is quaintly recorded:

> His Lordship's active and free course of life, at length, brought upon him some diseases and infirmities, which gave him much pain and uneasiness; and a fever, which fell into his feet, joined to the gout with which he was afflicted, abated much of that vigour which he had shown in the early part of his life.

Pepys did not care for his first viewing of Orrery's rhymed play, *Mustapha, The Son of Solyman the Magnificent:* "To a play at the Duke's called *Mustapha,* which not being good, made Betterton's part and Ianthe's but ordinary too, so that we were not contented with it all." But Pepys had a changeable critical mind, for on January 5, 1666, he termed *Mustapha* "a most excellent play for words and designs as any I ever did see." In 1678, Orrery's gout became unbearable. Leaving Ireland, he made his last voyage to England "for advice in the medical way." But since his disorder "was beyond the power of medicine, he breathed his last, on the 16th of October, 1678, . . .having given the strongest proofs of Christian patience, manly courage, and rational fortitude."

Thomas Otway (1651–1685) received only fifteen pounds for his masterpiece, *Venus Preserved*, of which Dryden wrote "the passions are truly touched in it." A soldier and unsuccessful actor, Otway is said to have died of starvation or of drink. Spurned by the famous actress, Mrs. Barry, poor Otway had little joy in life, and his passing was as wretched as his living if his biographers are to be believed. In Percy's *Anecdotes* (1832) the account of Otway's death is similar to Baker's obituary notice:

> He (Otway) went, as is reported, almost naked; and in the rage of hunger, finding a gentleman in a neighboring coffee-house, he asked him for a shilling. The gentleman gave him a guinea; which Otway going away, bought a roll, and was choked with the first mouthful.

Pope, however, wrote that Otway died of a fever, brought on by the violent pursuit of a thief who had robbed one of his friends, a story repeated in Spence's *Anecdotes* as follows: "Otway had an intimate friend, who was shot; the murderer fled toward Dover, and Otway pursued him. On his return, he drank water when violently heated, and so got a fever, which was the death of him." Whether by bread, wine, or water, poor Otway succumbed at the height of his genius, impoverished and unsung.

Another dramatic genius, Thomas Randolphe (1605–1635), lived fewer years than Otway. At the age of nine he composed in verse *The History of the Incarnation of Our Savior*. Ben Jonson recognized his brilliance and adopted him as one of his literary sons. In 1675, a critic anticipated Baker's obituary of Randolphe and attributed the poet's early death to debauchery and immoral living. Baker intimated in his short notice of Randolphe's death that creative people tend to transgress propriety, accused Randolphe of "being too like the generality of men of ability, somewhat addicted to libertine indulgences, and, in consequence of keeping too much company and running into fashionable excesses with greater freedom than his constitution could bear, he assisted in shortening his own days and died before he had completed the age of twenty-nine years."

Another roué, John Wilmot Rochester (1648–1680), was attached to the court of Charles II. So addicted to vice was he "that he was for five years together continually drunk; not indeed, all the while under the visible effect of liquor, but so inflamed in his blood, that he was never cool enough to be master of himself." Both his poetry and prose were occasionally racy; and although he wrote but one play, his critical broadsides had considerable influence in his milieu. Baker wrote briefly of Lord Rochester's pathetic finale: "By constant indulgence in sensuality, he entirely wore out an excellent constitution, before he was thirty years of age. Lord Rochester died. . . of mere old age before he had completed his 33rd year; quite worn down, so that Nature had not strength enough for a dying groan."

The author of *The Seasons*, James Thomson (1700–1748), died prematurely because he foolishly overheated himself while walking to Hammersmith and aggravated his weakened condition by taking a boat to Kew. The chill on the river gave him a feverish cold, which, however, he was able to cure with medication, but the fine weather "having tempted him to expose himself once more to the evening dews, his fever returned with violence, and with such symptoms, as left no hope for a cure."

Summary

Of the 18 playwrights discussed in this paper, only 2 lived beyond the age of seventy. Nine died before reaching the age of fifty, and 5 never saw their fortieth birthday. Some of them never knew want; others starved and froze in garrets. Although the medical reports of their deaths are sketchy and perhaps more literary than scientific, they do give the reader glimpses into the layman's views of medicine for the period 1564 to 1764.

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Lasers in Ophthalmology

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LASERS ARE ONE OF the most exciting developments in physical sciences and are in an area of intense investigation in ophthalmology. The word laser is an acronym; it is derived from the first letters of the words describing the process: light amplification by stimulated emission of radiation. Lasing action was first demonstrated in the relatively recent past, eight years ago in 1960, by Maiman. Since that time a large number of different types of lasers have been constructed and experimental studies of the application of laser devices, particularly in the field of ophthalmology, have proceeded at a rapid pace.

Operation and composition

The operation of a laser requires an active material that will respond with stimulated emission of radiation and an excitation source that will pump power into the active material. Since the first functioning laser, and the lasers generally employed in clinical ophthalmology utilize the ruby as the active material, a description of the operational characteristics of this particular laser will serve as a prototype for the general theoretic basis of lasing action. The excitation source, or optical pump, is a xenon flashtube. The lasing material is a ruby rod, the ends of which are parallel and act as reflecting mirrors. The ruby is artificially grown and has a controlled concentration of 0.05 per cent chromium oxide in an aluminum oxide crystal.

An explanation of exactly how the laser works is facilitated by understanding the energy levels of the chromium ions in the ruby. In their normal condition chromium ions have zero energy. A flashtube irradiates the ruby crystal. During the flash of the xenon tube, a number of chromium ions absorb energy and are excited to a higher energy state. The chromium ions in the higher energy state are not stable. When they drop spontaneously to a lower energy level, they characteristically discharge a photon. To start the decay process a random chromium ion, one that was perhaps inherently more unstable than others, will spontaneously emit a photon. This photon, by bombardment of chromium ions which are also at an unstable energy level, causes these ions to revert to a lower energy level with an associated emission of photons. In rapid sequence each chromium ion discharges a photon which in turn causes the discharge of more photons. Thus a chain reaction occurs in an extremely short time, as measured in microseconds, and results in a mass discharge of a large number of photons. This mass discharge is the final end product of the pulsed laser and manifests itself as an intense flash of light. The bright flash of light is associated with a return of the chromium ions to a zero energy state and, therefore, termination of laser action.

Laser characteristics

This type of ruby laser is employed in clinical ophthalmology. Two important characteristics of the laser emission are its monochromatic nature in the red portion of the visible spectrum and its short duration, generally less than one millisecond. From the biologic point of view, this short flash of deep red light, the laser emission, is transmitted with great efficiency by the optical system of the human eye. Consequently, little or no damage occurs to the cornea, lens, or the vitreous of the eye from energy absorption. An extremely high percentage of the energy is absorbed by the most external layer of the retina, the pigment epithelium. Histologic studies demonstrate that at the site of energy absorption an exudative reaction develops immediately after treatment. In the course of perhaps two weeks the exudative reaction is replaced by pigment proliferation with fibrosis. These changes represent a dense scar firmly binding the retina to the choroid at the treatment site.

Clinical photocoagulation

The procedure of effective clinical photocoagulation requires considerably more than an energy source. The ruby laser must be mechanically and optically associated with a suitable viewing and aiming system so that the coagulating beam may be directed to the area of abnormal condition visualized by ophthalmoscopy. A number of clinical photocoagulators employing the ruby as the energy source are currently available. The clinical technic is extremely simple and often can be performed on an outpatient basis. The pupil in the eye is dilated with a cycloplegic agent, and treatments are performed generally without discomfort to the patient with very nearly the ease of ophthalmoscopy. The reactions are immediately visible to the clinician through the ophthalmoscopic viewing device of the photocoagulator.

Initially the primary clinical role of laser photocoagulation is the treatment of degenerations and breaks of the retina to prevent their progression to retinal detachments. In a retinal detachment, the retina is already separated from the pigment epithelium and, therefore, the detachment itself is not amenable to photocoagulation therapy. However, small retinal detachments may be delimited by producing a scar tissue barrier. Laser photocoagulation is also useful to reinforce conventional surgical treatments in the management of retinal detachments. Reinforcing photocoagulation can be performed within a few days after retinal detachment surgery and appears to improve the success rate obtained in those procedures significantly.

Recently, in conjunction with fluorescein angiography, laser photocoagulation has proved to be of value in the treatment of selected vascular diseases involving the macular region of the retina. The fluorescein test demonstrates defects in Bruch's membrane which can be sealed with great precision by the laser, thereby re-establishing the serum and/or blood barriers between the retina and choroid. This application is particularly exciting because many of these diseases in the past appeared to represent irreversible degenerative syndromes which were not amenable to treatment and often progressed to a total loss of central visual function or visual acuity.

In diabetic retinopathy the primary role of the laser appears to be that of forming delimiting scar tissue barriers about areas of retinitis proliferans. Specifically, the ruby laser generally is not effective in destroying retinal blood vessels, and it does not appear to be applicable in the treatment of primary or metastatic tumors of the retina or choroid.

Modifying technics

Numerous investigations by physicists have uncovered important technics for modifying the basic laser process and have developed many new lasing materials. Some of these devices have unusual characteristics. Extreme power may be concentrated in the laser emission, the duration of the laser emission may be extremely short reduced even to the nanosecond (billionth of a second) range, the laser may be capable of continuous emission rather than pulsed action as in the classic ruby laser, and the wavelength of the emission may be located throughout a wide range of the electromagnetic spectrum.

Ocular hazards

Ocular hazards frequently are associated with these various devices depending on the power in the beam and on the wavelength of the emission. The latter is of particular importance in that it determines which structures of the eye will be subject to damage.

The carbon dioxide laser, for example, is a continuous action gas laser whose emission is located at 100,000 Å, in the far infrared region of the spectrum. The energy at this wavelength is highly absorbed by the cornea. Experimental studies have shown that a high-powered carbon dioxide laser produces devastating necrotizing corneal ulcers which actually may penetrate the eye. On the other hand, the Q-switched ruby laser is characterized by high energy in an extremely short time interval, but the emission is located at the same wavelength as the conventional ruby laser. The energy from this high-powered device is absorbed primarily by the pigment epithelium of the eye and often produces massive intraocular hemorrhages. Continuous gas lasers result from the employment of krypton or argon gas. A number of energy bands in the visible spectrum are emitted by these gases. Their primary effect is to produce small coagulations of the retina. Finally, the neodymium laser is a pulsed laser with emission located just beyond the visible spectrum at 10,600 Å. Its primary absorption is at the pigment epithelium, and therefore it produces coagulating lesions of the retina. If, however, high energy is concentrated at the cornea or the lens, scars of either of these tissues may be produced.

Predicted future

Lasers hold the promise of ever-increasing application to ophthalmology and medicine generally. The development of new lasing materials with their characteristic emission patterns and the rapid growth of laser technology lends credence to this expectation.

Sudden acute limp in children

In discussing some of the leading causes of sudden, acute limp in children, R. McDonald, M.D., writing in a recent issue of *Clinical Pediatrics*, excludes those underlying causes which develop more slowly, such as tuberculosis, osteochondrosis, slipped epiphysis, and osteochondritis. Among the main categories of causes for acute limp are injury, rheumatic conditions, blood diseases, and infections. Also, the pain which induces the limp may be because of referral from acute appendicitis or iliac adenitis. In diagnosis, the first step is to localize the pain. Where indicated, there must be appropriate investigations of the blood and cardiovascular system.

In acute rheumatic fever, the onset of limp may be quite sudden, and the symptoms may be fleeting joint pains, or one or more joints may be hot and swollen. In rheumatoid arthritis, although usually insidious, the pain may be sudden and hard to differentiate from acute rheumatic fever. In scurvy, aids to diagnosis are swollen bleeding gums around the erupted teeth; radiographic changes are typical. In hemophilia, pain may be caused by bleeding into soft tissue or a joint, usually the knee and ankle. In anaphylactoid purpura, the pain, most often affecting the knee and ankle, is usually not severe but may be acute enough to cause a limp. In sickle cell anemia, the pain, which may be severe enough to simulate acute osteomyelitis, is caused by intravascular sickling, stasis, and thrombosis in the vessels of the soft tissues or leg bones. In acute leukemia, bone pain is not uncommon if the disease is undiagnosed and untreated.

In acute osteomyelitis, x-ray films are of little value the first week, but later may show bony destruction. In acute infectious arthritis, commonly, a single joint is affected, often the knee. In congenital syphilis, hydrarthrosis of the knees, one of the later manifestations of congenital syphilis, may cause acute pain with a raised sedimentation rate. In brucellosis, joint movement, usually multiple, may be accompanied by fever, abdominal pain, and leukopenia.

Necrology

Isidore Adler, M.D., of Buffalo, retired, died on May 4 at the age of eighty. Dr. Adler graduated in 1913 from Cornell University Medical College. He was a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Carroll, M.D., of New York City, retired, died on May 23 at the age of eighty-three. Dr. Carroll graduated in 1908 from University and Bellevue Hospital Medical College. He was a consulting physician at St. Clare's Hospital where he had served as the first director of medicine. Dr. Carroll was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the New York Gastroenterological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George G. Davis, M.D., of Arcade, died on May 2 at the age of eighty-five. Dr. Davis graduated in 1907 from the University of Buffalo School of Medicine. He was a member of the medical staff at Wyoming County Community Hospital. Dr. Davis was a member of the American Academy of General Practice, the Buffalo Academy of Medicine, the Wyoming County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

James A. Glenn, Jr., M.D., of Glens Falls, died on April 29 at the age of sixty. Dr. Glenn graduated 1934 from Jefferson Medical College of Philadelphia. He was an attending radiologist at Corinth Hospital and a consulting radiologist at Glens Falls Hospital. Dr. Glenn was a Diplomate of the American Board of Radiology and a member of the Radiological Society of North America, Inc., the Glens Falls Academy of Medicine, the Radiological Society of New York State, the Warren County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Benjamin Stuart Gutelius, M.D., of Bradford, Pennsylvania, formerly of Dunkirk, died on May 4 at the age of eighty-two. Dr. Gutelius graduated in 1914 from the University of Michigan School of Medicine. He had been an honorary physician (inactive) at Brooks Memorial Hospital. Dr. Gutelius was a member of the Chautauqua County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Chauncey Warren Kenney, M.D., of Syracuse, died in April at the age of sixty-two. Dr. Kenney graduated in 1931 from Albany Medical College. He was an attending obstetrician at Syracuse Memorial Hospital. Dr. Kenney was a member of the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alvia Royce Morrow, M.D., of Cazenovia, died on April 28 at the age of seventy-two. Dr. Morrow graduated in 1924 from Syracuse University Medical College. He was a member of the Syracuse Academy of Medicine, the Madison County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Louis Nicholaus, M.D., of Rexford, retired, died on April 20 at the age of eighty. Dr. Nicholaus graduated in 1917 from Columbia University College of Physicians and Surgeons.

Thomas Edwin O'Brien, M.D., of Lockport, died on April 20 at the age of seventy-two. Dr. O'Brien graduated in 1921 from the University of Buffalo School of Medicine. He was an attending surgeon at Lockport Memorial Hospital. Dr. O'Brien was a member of the Lockport Academy of Medicine, the Niagara County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Solomon Schussheim, M.D., of Brooklyn, died on May 26 at the age of sixty-nine. Dr. Schussheim graduated in 1922 from Columbia University College of Physicians and Surgeons. He was director of surgery at Shore Road Hospital, a consulting surgeon at Kings Highway Hospital and the Hospital of the Jacques Loewe Foundation (now Community Hospital), and a consulting (affiliate) surgeon at Greenpoint Hospital. A Fellow of the American College of Surgeons, former chairman of the coordinating council of the five-county medical societies, a member of the Health and Hospital Planning Council of Southern New York, chairman of the Commission on Public and Professional Affairs (Medical Society of the State of New York), a member of the Council (Medical Society of the State of New York), Dr. Schussheim was also a member of the

Medical Society of the County of Kings (a past president and chairman of the board of trustees and a delegate to the American Medical Association), and a member of the American Medical Association.

Alexander Raymond Stevens, M.D., of Alstead, New Hampshire, formerly of New York City, died on June 1 at Seattle at the age of ninety-two. Dr. Stevens graduated in 1903 from Johns Hopkins University School of Medicine. A former professor of urological surgery at New York Hospital-Cornell Medical Center until 1946, before his retirement he had been a consulting urologist at Bellevue Hospital. Dr. Stevens was a Diplomate of the American Board of Urology, a Fellow of the American College of Surgeons, and a member of the American Association of Genito-Urinary Surgeons, the American Urological Association, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Alexander Thomson, M.D., of The Bronx, died on May 28 at the age of eighty-nine. Dr. Thomson graduated in 1915 from Rush Medical College. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ford Francis Truax, M.D., of Utica, died on May 26 at the age of sixty-four. Dr. Truax graduated in 1937 from the Royal College of Physicians and Surgeons of Edinburgh. He was an attending physician at St. Luke's and St. Elizabeth's Hospitals. Dr. Truax was a member of the Utica Academy of Medicine, the Oneida County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Male and female statistics

The number of adult women in the United States continues to increase more rapidly than the number of adult men. The Metropolitan Life Insurance Company reports that there were over 32.8 million women aged thirty-five to sixty-four in July, 1966, a gain of 2.1 million since April, 1960, and 6.6 million since April, 1950.

Moreover, their number is expected to exceed 34 million in 1975 and to reach 35.5 million in 1980. By contrast, the number of men aged thirty-five to sixty-four may increase from 31 million in July, 1966, to only 33 million by 1980.

The future growth of the female segment of the population is expected to vary considerably by age group. Most marked is the anticipated rise for women aged fifty-five to sixty-four, their number increasing by 25 per cent from 9 million in 1966 to 11.3 million in 1980. Women at ages thirty-five to thirty-nine will also be substantially more numerous in 1980 than at present. On the other hand, the number of women at ages forty to forty-four is expected to decrease by 9 per cent, reflecting the low level of births during the late 1930's.

At the prime of life, women will increase faster than men because of their lower mortality rates throughout the life cycle. This is particularly evident at ages forty-five to sixty-four, where women outnumbered men by about 1,400,000 in 1966. The disparity is expected to widen to over 2,200,000 by 1980. At that time, there may be 1,109 women for every 1,000 men at ages forty-five to sixty-four, compared with 1,073 per 1,000 in 1966.

The vast majority of the women are married and live with their husbands in their own homes. This proportion, four-fifths, decreases with advance in age as the number of women bereft of their spouses increases. Nevertheless, even at ages fifty-five to sixty-four, more than three-fifths live with their husbands in family units.

The role of women outside the home has increased greatly in recent years. More and more of them have been returning to the labor force after their children are settled in school or are old enough to be on their own. As a result, the proportion of all women aged thirty-five to sixty-four in the labor force has increased from 36 per cent in 1950 to 56 per cent currently. Moreover, it is expected that the proportion will be even greater in the future, exceeding 50 per cent in the 1970's.

There are now over 15 million women aged thirty-five to sixty-four in the labor force, of whom almost two-thirds are married. Of the total women at ages thirty-five to forty-four, well over two-fifths are currently employed or seeking work. The proportion is even higher, fully one-half, at ages forty-five to fifty-four, but diminishes thereafter.

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension

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DESERPIDINE
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Enduron: (methyclothiazide) A basic building block for mild hypertensives

METHYCLOTHIAZIDE
ENDURON®

Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

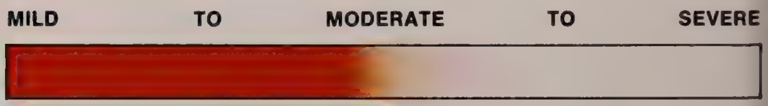
Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

ENDURON®

METHYCLOTHIAZIDE



See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension

DESERPIDINE
METHYCLOTHIAZIDE
ENDURONYL

Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

Once a day, every day

ENDURONYL®

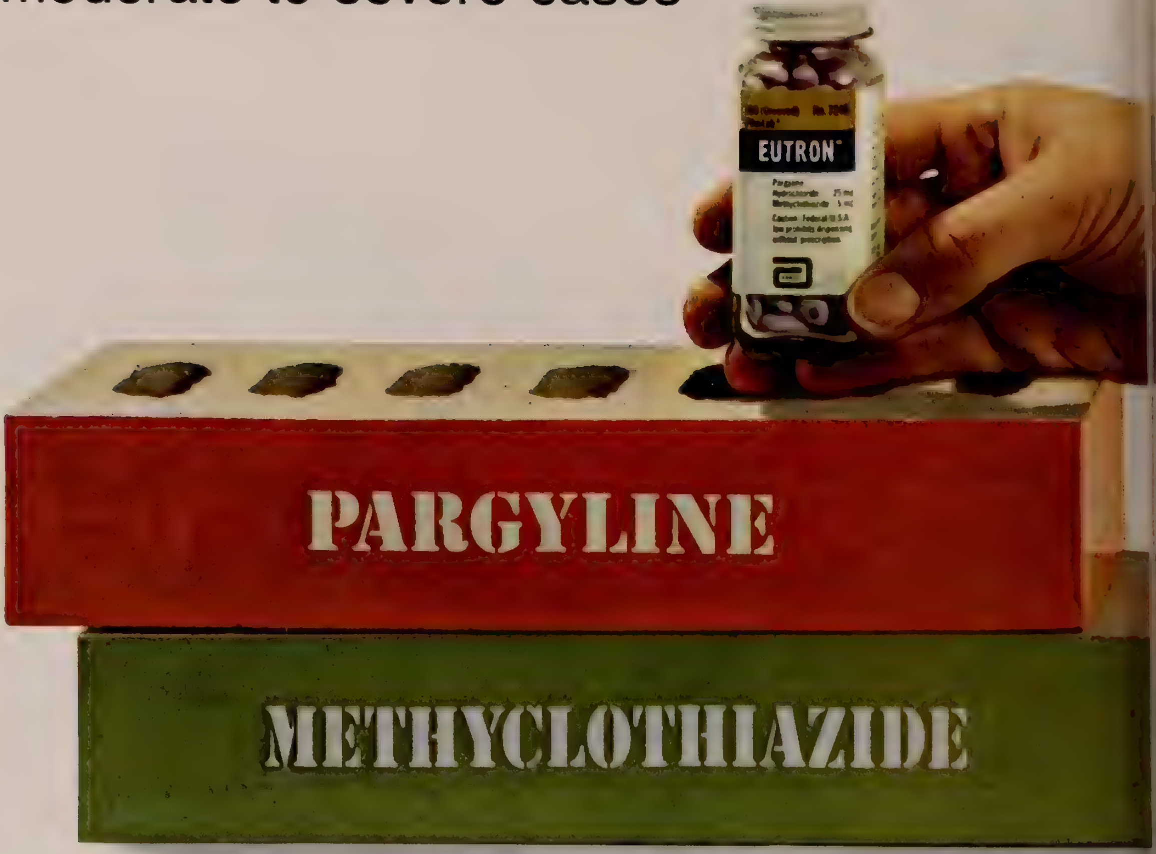
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.

MILD TO MODERATE TO SEVERE

See Brief Summary on final page of advertisement

801094

ENDURON®

METHYCLOTHIAZIDE

ENDURONYL®

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg.

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications—Moderate to severe hypertension.

Contraindications—Pheochromocytoma, paranoid schizophrenia, hyperthyroidism and advanced renal failure. Not recommended in malignant hypertension, children under 12, pregnant patients.

Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. 804438R

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Medical Schools

Albany Medical College

New professors and chairmen appointed. Ian H. Porter, M.D., has been appointed professor of pediatrics and chairman, Department of Pediatrics at Albany Medical Center. Dr. Porter is also the Hospital's pediatrician-in-chief. Last winter he was appointed director of New York State Health Department's Birth Defects and Genetics Institute and he will continue to serve in a dual capacity with the Medical Center and the Institute. Kurt F. Schmidt, M.D., assistant professor of anesthesiology, Yale University School of Medicine, effective August 1 will become chairman, Department of Anesthesiology at the Center, professor at the College, and the Hospital's anesthesiologist-in-chief. Dr. Schmidt succeeds Charles M. Landmesser, M.D., who is resigning as chairman after serving twelve years in the post but who will continue to serve on the faculty and staff at the Center. Theodore M. King, M.D., succeeded E. Jurgen Plotz, M.D., who resigned in 1967 to become chief of obstetrics and gynecology at the University of Bonn, assumed his new appointments as chairman, Department of Obstetrics and Gynecology at the Center, professor at the College, and obstetrician and gynecologist-in-chief at Albany Medical Center Hospital. Dr. King was formerly at the University of Missouri School of Medicine.

Columbia University College of Physicians and Surgeons

Awards presented. The Association of the Alumni of the College has selected two of its alumni and one member of the 1968 graduating class for outstanding awards. Louis M. Rousselot, M.D., Deputy Assistant Secretary (Health and Medical), U.S. Department of Defense, was awarded the Gold Medal for distinguished achievement in medicine. The Medal is the highest award the Alumni of the College can bestow on its graduates. Girard F. Oberrender, M.D., received the Silver Medal, presented each year to an alumnus who, over a period of many years, has rendered meritorious service to the College and the Alumni Association. Jack W. Spitzberg received the Bronze Medal and a check for $100 in recognition of his leadership and demonstrated interest in his medical school. This award is made by the Alumni Association on the recommendation of the senior class and faculty. These awards were presented on April 27.

Downstate Medical Center

Pediatric section opens. The pediatric section, part of a Federally-financed General Clinical Research Center, was opened recently. Eduardo Orti, M.D., associate professor of pediatrics, heads the unit. In-hospital medical care will be combined with intensive research into the symptoms, causes, and cures of children's illnesses in a special new 5-bed pediatric section.

Grants. A total of $203,523 was received during April, 1968, for 12 research grants and 1 contract. The awards provide for 5 new projects, renewal of 3 studies already in progress, and 5 supplements.

Lecture. The Annual Graduate Faculty Lecture was presented by Dr. E. J. Underwood, director, Agriculture, and Hackett Professor of Agriculture, University of Western Australia, on May 8. Dr. Underwood discussed "Trace Element Problems in Human Nutrition."

New faculty appointments. *Medicine:* Allan F. Lyon, M.D., clinical associate professor; *Obstetrics and Gynecology:* Maxwell Schram, M.D., clinical associate professor; Edward J. Schutta, M.D., instructor; and Helen D. Barnes, M.D., clinical instructor; *Ophthalmology:* Saebert L. Chamikles, M.D., clinical instructor; *Physiology:* Richard E. J. Dyball, M.D., instructor; *Psychiatry:* Morton Wachspress, clinical assistant professor, and Rubin Berlinerblau, M.D., instructor; *Radiology:* Joseph Giovanniello, M.D., and Richard L. Perry, M.D., clinical instructors.

Markle Scholar named. Bernard Gardner, M.D., assistant professor of surgery, has been selected the 1968 Markle Scholar in Academic Medicine by the John and Mary R. Markle Foundation of New York.

Faculty notes. Nathan Beckenstein, M.D., clinical professor of psychiatry, received the Brooklyn Hall of Fame Science Award from the Better Brooklyn Committee. Clarence Dennis, M.D., professor and chairman of surgery, was elected president, Society of Surgical Chairmen. Albert L. Deutsch, M.D., clinical assistant professor of psychiatry, was elected a member of the Executive Board, Eastern Group Psychotherapy Association, and was appointed consultant, Social Service Department, The Long Island College Hospital. Richard S. Gubner, M.D., clinical professor of medicine, received with Dr. Rees B. Rees the annual Mr. and Mrs. J. N. Taub International Award for Research in Psoriasis of Baylor University College of Medicine. Adrian Kantrowitz, M.D., professor of surgery, was elected president, American Society for Artificial Internal Organs. Leonard E. Meiselas, M.D., clinical associate professor of medicine, was elected vice-president, and Stanley L. Wallace, M.D., clinical associate professor of medicine, president-elect, of the New York Rheumatism Association. Jean R. Oliver, M.D., Distinguished Service Professor Emeritus, received the Homer W. Smith Award in Renal Physiology from the New York Heart Association. Irving Rubins, M.D., lecturer in psychiatry, was elected president, Long Island Psychoanalytic Society. Bernard Schwartz, M.D., Ph.D., associate professor of ophthalmology, has been appointed editor-in-chief, *Survey of Ophthalmology*. George I. Solish, M.D., assistant professor of obstetrics and gynecology, was awarded a Ph.D. in Human Genetics by the University of Michigan. Bruno W. Volk, M.D., clinical professor of pathology, was elected president, New York Pathological Society.

Mount Sinai School of Medicine

First Esther and Joseph Klingenstein professor of psychiatry. M. Ralph Kaufman, M.D., was installed on April 22 as the first Esther and Joseph Klingenstein Professor of Psychiatry. Lawrence C. Kolb, M.D., professor and chairman of psychiatry, Columbia University College of Physicians and Surgeons, was the principal speaker. Dr. Kaufman has been chairman of the Department of Psychiatry since the establishment of the School which received its charter from the State Board of Regents in 1963 and has served as psychiatrist-in-chief and director, Department of Psychiatry, The Mount Sinai Hospital, since 1945.

University of Rochester School of Medicine and Dentistry

New professor of medicine. T. Franklin Williams, M.D., a member of the medical faculty at the University of North Carolina, will become professor of medicine at the School and medical director, Monroe Community Hospital, on September 1.

Outcome for fetus of mothers receiving prednisolone during pregnancy

A study conducted by D. W. Warrell, M.D., and R. Taylor, S.R.N., S.C.M., and reported in a recent issue of *Lancet*, undertook to assess risks to the fetus on pregnant women receiving gluco-corticoids during pregnancy and to distinguish between such risks and those arising from the disease for which the steroid was given. Of 34 pregnancies in 30 women, using prednisolone before and during pregnancy, 8 resulted in stillbirths, and in another 9 the risk was such that skilled obstetric care was required to save the fetus. In the 34 controls, there was only 1 stillborn child, 3 premature births, and 30 healthy babies. This seems to demonstrate that fetal risk in mothers getting prednisolone appears to lie in the failure of placental function, manifesting itself either as a chronic process with a small fetus or as acute hypoxia in labor. Since none of these babies showed evidence of adrenocortical insufficiency, the effect is apparently not one of adrenal function, and experimental work suggests that the placenta is damaged by the gluco-corticoids.

Examined were records of patients delivered between the years 1961 and 1966 who were known to have received 2.5 to 30 mg. of prednisolone daily before conception and throughout pregnancy. Diagnostically, the distribution was asthma, 18; eczema, 6; and lupus erythematosus, 4; with a scattering of rheumatoid arthritis, sarcoidosis, ulcerative colitis, and urticaria. Each pregnancy in a mother who had been on prednisolone treatment before and during pregnancy was compared with a pregnancy in a patient not steroid-treated but having the same disease of a similar severity. The control also had the same parity and was of the same age within five years.

In the group of mothers on prednisolone treatment, 3 of the stillborn fetuses and their placentas were extremely small. These died before delivery could be contemplated. In 3 other cases, the infants underwent severe distress and died before they could be delivered. The other 2 fetuses were anencephalic, one of them a twin of a normal boy. Thus, of the 34 pregnancies in the women on prednisolone treatment, 17 babies were either stillborn or showed evidence of having been at considerable risk. The average birth weight of the entire group, live and stillborn, was 2.8 Kg. There apparently was no relationship between the fetal risk and the dose of prednisolone or between risk and duration of treatment with the drug. In the control group, the one baby that was lost suffered status asthmaticus in labor. The healthy babies from 30 pregnancies weighed an average of 3.006 Kg. at birth.

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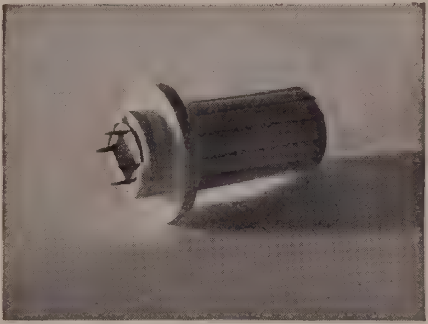

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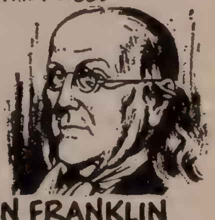

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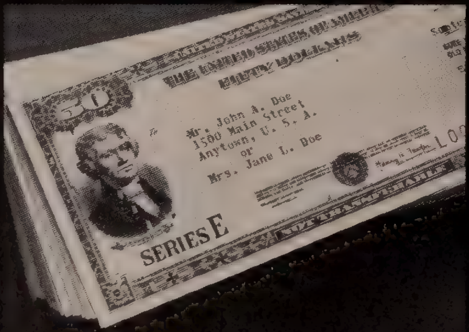

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The same Ovulen in the same low dosage... with the same low incidence of side effects and the same high degree of protection against pregnancy.

Note: Ovulen remains available in the familiar round Compack for those women who may wish to continue to use the traditional 20-day schedule. Be sure to specify Ovulen-21 to assure each new patient of the advantages of the new *Three Weeks On—One Week Off* schedule. She might appreciate your budget-minded authorization for a six-month supply (five Refills).

Indication — For oral contraception.

Contraindications — Thrombophlebitis or a history of thrombophlebitis or pulmonary embolism, liver dysfunction or disease, known or suspected carcinoma of the breasts or genital organs and undiagnosed vaginal bleeding.

Warnings — Discontinue medication pending examination if sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine occurs. Discontinue if papilledema or retinal vascular lesions occur. Since the safety of Ovulen in pregnancy has not been established, rule out pregnancy before a patient who has missed two consecutive menstrual periods continues the tablets. Consider the possibility of pregnancy at the first missed withdrawal flow if the recommended schedule has not been followed. The active ingredients in oral contraceptives have been identified in the milk of mothers receiving these drugs. The significance of this to the infant has not been determined.

Precautions — The pretreatment physical examination should specifically include the breasts, pelvic organs and a Papanicolaou smear. Endocrine and possibly liver function tests may be affected by Ovulen. Such tests should be repeated two months after stopping the medication if their results were abnormal in a woman taking Ovulen. Pre-existing fibroids may enlarge under the influence of progestin-estrogen preparations. Patients with epilepsy, migraine, asthma, cardiac or renal dysfunction, which conditions might be influenced, require careful observation because Ovulen may cause some degree of fluid retention.

Ovulen should be used with caution in patients with a history of cerebrovascular accident. Nonfunctional causes should be considered if breakthrough bleeding occurs. Adequate diagnostic measures are indicated in women with undiagnosed vaginal bleeding. Carefully observe patients with a history of psychic depression and discontinue the medication if depression recurs to a serious degree. Any possible influence of prolonged Ovulen use on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study. Carefully observe diabetic patients during Ovulen use since a decrease in glucose tolerance has occurred in a few such patients. Physicians should be alert to the earliest manifestations of thrombophlebitis and pulmonary embolism since such conditions occasionally occur in patients taking oral contraceptives. Use Ovulen judiciously in young patients in whom bone growth is not complete because of the effects of estrogens on epiphyseal closure. Age is no absolute limiting factor, although Ovulen use may mask the onset of the climacteric. Pathologists should be informed of Ovulen use when relevant specimens are submitted.

Side effects — The following adverse reactions have been observed in varying incidence in patients taking oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), change in weight (increase or decrease), changes in cervical erosions and secretions, suppression of lactation when used immediately post partum, cholestatic jaundice, migraine, allergic rash, rise in blood pressure in susceptible individuals and mental depression.

Although the following side effects have been reported in users of oral contraceptives no cause and effect relationship has been established: anovulation post treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme and nodosum, hemorrhagic eruption and itching. Thrombophlebitis, pulmonary embolism and neuro-ocular lesions have occurred in users of oral contraceptives, although a cause and effect relationship has been neither established nor disproved.

The following laboratory results may be altered by oral contraceptives: Bromsulphalein® and other hepatic function tests—increased; coagulation tests, including prothrombin, Factors VII, VIII, IX and X — increased; thyroid function — increase in protein-bound iodine and butanol extractable protein-bound iodine, and a decrease in T^3 values; metyrapone test and pregnanediol determinations.

Dosage and administration — One tablet of Ovulen-21 daily for 21 consecutive days, beginning five days after the onset of a menstrual flow (the first day of menstruation is counted as day 1), then discontinued for one week. If Ovulen is started later than day 5 after menses begins another method of protection is used until the first seven tablets have been taken. Subsequent 21-day courses are begun on the eighth day after the last tablet was taken in the preceding cycle. This three weeks on — one week off schedule is continued whether or not withdrawal flow has begun, flow has ceased or spotting or breakthrough bleeding has been experienced.

If one tablet is missed it is to be taken as soon as it is remembered and the next tablet at the usual time. If two consecutive tablets are missed the dosage is doubled for the next two days, then the regular schedule is resumed. If three consecutive tablets are missed a new tablet cycle is started on the eighth day after the last tablet was taken. For the best protection in the latter two instances instruct the patient to use another method of contraception until the next seven consecutive tablets have been taken. The possibility of ovulation increases with each successive tablet missed.

Postpartum administration — Non-nursing mothers may begin Ovulen immediately after delivery and nursing mothers after lactation is well established.

SEARLE *Before prescribing see Detailed Product Information.*
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Side effects, when seen, are typical of anticholinergic agents—dryness of the mouth, blurring of vision, etc.—and / or of chlordiazepoxide HCl—drowsiness, ataxia and confusion, particularly in the elderly or debilitated.

Before prescribing, please consult complete product information, a summary of which follows.

Indications: Indicated as adjunctive therapy to control emotional and somatic factors in gastrointestinal disorders.

Contraindications: Patients with glaucoma; prostatic hypertrophy and benign bladder neck obstruction; known hypersensitivity to chlordiazepoxide hydrochloride and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering Librium (chlordiazepoxide hydrochloride) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards. As with all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with either compound alone have been reported with Librax. When chlordiazepoxide hydrochloride is used alone, drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido — all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally with chlordiazepoxide hydrochloride, making periodic blood counts and liver-function tests advisable during protracted therapy. Adverse effects reported with Librax are typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

Dosage: Individualize for maximum beneficial effects. Usual maintenance dose is 1 or 2 capsules, 3 or 4 times a day, before meals and at bedtime. Geriatric patients—see Precautions.

How Supplied: Librax® Capsules, each containing 5 mg chlordiazepoxide hydrochloride (Librium®) and 2.5 mg clidinium bromide (Quarzan®) — bottles of 50 and 500.

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The Acne "Epidemic"

Acne is constantly present in epidemic proportions. At any given time 60% to 90% of teenagers are afflicted.[1]

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References: 1. Sulzberger, M. B., and Witten, V. H.: *M. Clin. North America* 43:887, May, 1959. 2. Hodges, F. T.: *GP* 14:86, Nov., 1956. 3. Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. 4. McLean, I. E. D.; Graham, K. T., and East, M. O.: *Practitioner* 189:82, July, 1962.

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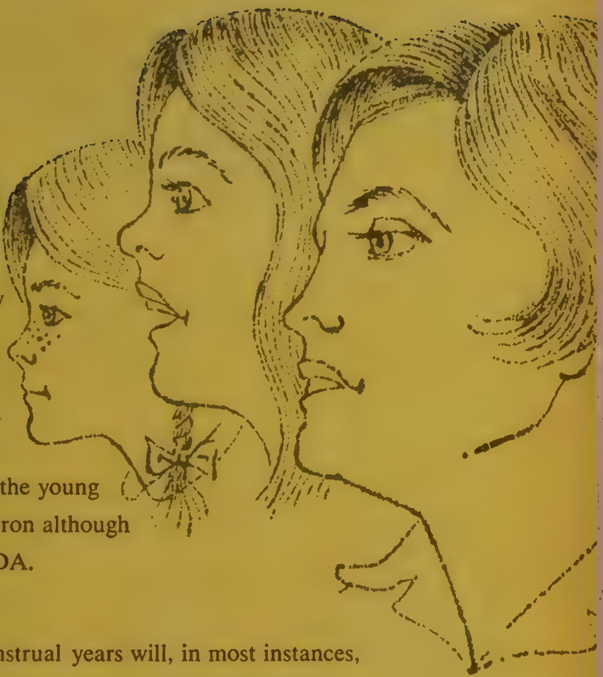
From menarche to menopause, negative iron balance can exist in otherwise normal women.[1-9]



In two-thirds of 114 "normally" menstruating, healthy college women studied[2], iron stores were precariously low or absent. Normal iron stores[3,7] in women range from 200 to 400 mg.—about half that of the normal male. Iron loss in menstrual blood varies widely among normal women[3-6]—ranging from 15 to 40 mg. An intake of the Recommended Dietary Allowance[8] of 2100 calories for the young adult female will, on the average, supply only 13 mg. of iron although the need may well be more[1,3,4,6] than 15 mg., the current RDA.

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References: 1. Finch, C. A.: Iron Balance in Man. Nutr. Rev. 23:129-131 May, 1965. 2. Scott, D. E., and Pritchard, J. A.: Iron Deficiency in Healthy Young College Women. Jour. Amer. Med. Assn. 199:897-900 Mar. 20, 1967. 3. A. M. A. Council on Foods and Nutrition: Iron Deficiency in the United States. Jour. Amer. Med. Assn. 203:119-124 February 5, 1968. 4. Herbert, V.: Iron and Iron Salts, Chap. 9, pp. 1394-1409. In Goodman, L. S., and Gilman, H. (eds.): The Pharmacological Basis of Therapeutics. 3rd edition. New York, Macmillan, 1965. 5. Hahnemann, B.M.: Iron Deficiency in Women. Med. Clin. N.A. 46:139-149 Jan., 1962. 6. Moore, C.V.: Iron and the Essential Trace Elements. Chap. 10. In Wohl, M.G., and Goodhart, R.S. (eds.): Modern Nutrition in Health and Disease. 3rd edition. Philadelphia, Lea & Febiger, 1964. 7. Pritchard, J.A., and Mason, R.A.: Iron Stores of Normal Adults and Replenishment with Oral Iron Therapy. Jour. Amer. Med. Assn. 190:897-901 Dec. 7, 1964. 8. Recommended Dietary Allowances. Sixth Revised Edition, 1964. A report of the Food and Nutrition Board, National Academy of Sciences, National Research Council, Publication 1146, Washington, D.C., 1964. 9. Beutler, E.: Tissue Effects of Iron Deficiency, pp. 256-272. In Iron Metabolism, Symposium. Gross, F. (ed.). Springer-Verlag, Berlin, 1964.

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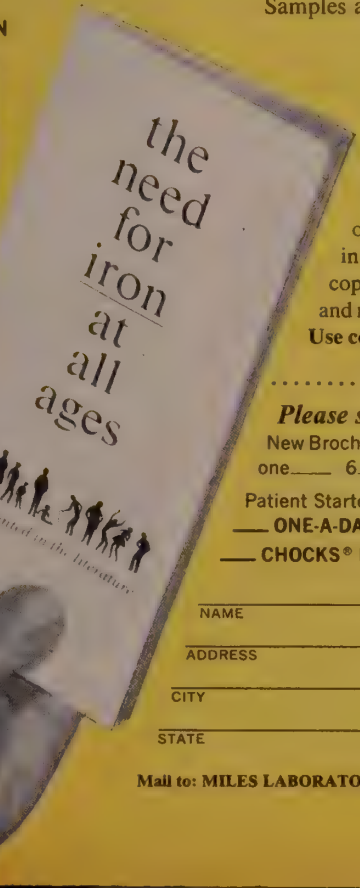
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COMPOSITION: Imferon (iron dextran injection) is a well-tolerated solution of iron dextran complex providing an equivalent of 50 mg. in each cc. The solution contains 0.9% sodium chloride and has a pH of 5.2-6.0. The 10 cc. vial contains 0.5% phenol as a preservative.

ADMINISTRATION AND DOSAGE: Dosage, based upon body weight and Gm. Hb/100 cc. of blood, ranges from 0.5 cc. in infants to 5.0 cc. in adults, daily, every other day, or weekly. Initial test doses are advisable. The total iron requirement for the individual patient is readily obtainable from the dosage chart in the package insert. Deep intramuscular injection in the upper outer quadrant of the buttock, using a Z-track technique (with displacement of the skin laterally prior to injection), insures absorption and will help avoid staining of the skin. A 2-inch needle is recommended for the adult of average size.

SIDE EFFECTS: Local and systemic side effects are few. Staining of the skin may occur. Excessive dosage, beyond the calculated need, may cause hemosiderosis. Although allergic or anaphylactoid reactions are not common, occasional severe reactions have been observed, including three fatal reactions which may have been due to Imferon (iron dextran injection). Urticaria, arthralgia, lymphadenopathy, nausea, headache and fever have occasionally been reported.

PRECAUTIONS: If sensitivity to test doses is manifested, the drug should not be given. Imferon (iron dextran injection) must be administered by deep intramuscular injection only. Inject only in the upper outer quadrant of the buttock, not in the arm or other exposed area.

CONTRAINDICATIONS: Imferon (iron dextran injection) is contraindicated in patients sensitive to iron dextran complex. Since its use is intended for the treatment of iron deficiency anemia only it is contraindicated in other anemias.

CARCINOGENICITY POTENTIAL: Using relatively massive doses, Imferon (iron dextran injection) has been shown to produce sarcoma in rats, mice and rabbits and possibly in hamsters, but not in guinea pigs. The risk of carcinogenesis, if any in man, following recommended therapy with Imferon (iron dextran injection) appears to be extremely small.

SUPPLIED: 2 cc. ampuls, boxes of 10; 5 cc. ampuls, boxes of 4; 10 cc. multiple dose vials.

See package insert for complete prescribing information.

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ANNUAL CONVENTION

Medical Society of the State of New York

FEBRUARY 9 through 13, 1969

The Americana, New York City

Scientific Program

Any State Society member who wishes to present a paper before a scientific section or a general session is requested to write to Bernard J. Pisani, M.D., Chairman of Scientific Program Committee at the address given below.

A short abstract of the proposed presentation should accompany the letter.

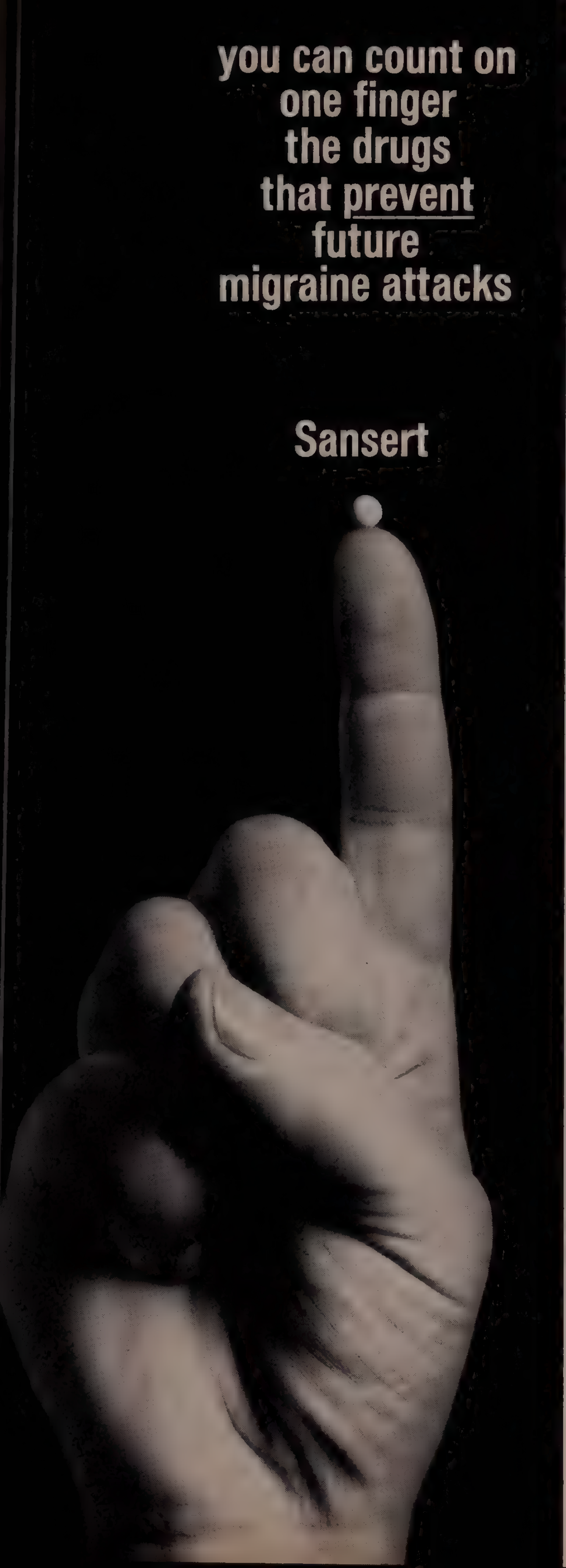
Scientific Exhibits

Requests for scientific exhibit space should be addressed to Albert H. Douglas, M.D., Chairman, Scientific Exhibits Subcommittee of Convention Committee, at the address given below.

Scientific Motion Pictures

Requests to present a motion picture in the motion picture theatre at the convention should be addressed to Kenneth B. Olson, M.D., Chairman, Motion Picture Subcommittee, at the address given below.

Address all communications to the chairman
Medical Society of the State of New York
750 Third Avenue
New York, New York 10017



Sansert is the only specific for the prophylaxis of migraine attacks.

Taken on a maintenance schedule closely supervised by the physician, it helps reduce the frequency and severity of future attacks, sometimes completely eliminating migraine from the patient's life.

This unique *preventive* is intended primarily for *severe* migraine sufferers: (1) the patient who experiences one or more attacks a week; (2) the patient whose episodes are so overwhelming and refractory to symptomatic treatment that preventive therapy is indicated regardless of frequency. It is important that the physician be familiar with the supervisory procedures required in the administration of the drug in order to minimize the possibility of adverse effects, particularly retroperitoneal fibrosis.

Contraindications: Pregnancy, peripheral vascular disease, severe arteriosclerosis, severe hypertension, coronary artery disease, phlebitis or cellulitis of the lower limbs, pulmonary or collagen disease, impaired liver or renal function, cachectic or septic states.

Warnings: Retroperitoneal fibrosis, a related condition (pleuropulmonary fibrosis), and cardiac murmurs or vascular bruits have been noted. Warn patients and caution them to report immediately cold, numb and painful hands or feet, leg spasms on walking, any type of chest, girdle or flank pain or other untoward symptoms. If symptoms develop, discontinue drug.

Interrupt therapy for 3–4 weeks every six months.

Precautions: Patients should remain under constant supervision and be examined regularly for fibrotic or vascular complications. (See **Adverse Reactions.**)

Surgical intervention can often be avoided since fibrotic manifestations and vascular shutdown have usually regressed upon withdrawal of drug. Cardiac murmurs have sometimes persisted.

Sansert is indicated for prophylactic treatment of vascular headache, not for the acute attack.

Adverse Reactions: 1) *Fibrotic Complications—Retroperitoneal fibrosis* may present clinically with general malaise, fatigue, weight loss, backache, low grade fever (elevated sedimentation rate), urinary obstruction (girdle or flank pain, dysuria, polyuria, oliguria, elevated BUN), vascular insufficiency of the lower limbs (leg pain, Leriche syndrome, edema of legs, thrombophlebitis). *Pleuropulmonary fibrotic complications* usually present clinically with dyspnea, tightness and pain in the chest, pleural friction rubs, and pleural effusion. *Cardiac fibrotic complications* usually present clinically with cardiac murmurs and dyspnea. One case of *fibrotic plaques* simulating Peyronie's disease. 2) *Vascular Complications—* Retroperitoneal fibrosis may result in vascular insufficiency of the lower limbs. Intrinsic vasoconstriction of large and small arteries may present with chest pain, abdominal pain, or cold, numb, painful extremities with diminished or absent pulses. Ischemic tissue damage is rare.
3) *Gastrointestinal Symptoms*—Nausea, vomiting, diarrhea, heartburn, abdominal pain. 4) *CNS Symptoms*—Insomnia, drowsiness, mild euphoria, dizziness, lightheadedness, hyperesthesia, unworldly feelings (described variously as "dissociation," "hallucinatory experiences," etc.). 5) *Dermatological Manifestations*—Nonspecific rashes, increased hair loss. 6) *Edema.* 7) *Weight Gain.*

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Films Reviewed

*These films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Cancer of the Skin. Sound, color, 16 mm., eighteen minutes.

This film was made at the University of Miami and illustrates several different skin cancers. Prevention and follow-up are stressed throughout.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

Cancer of the Stomach. Sound, color, 16 mm., twenty minutes.

This film depicts the role of symptoms and signs, barium radiography, and gastric analysis in arriving at a diagnosis of gastric cancer. The importance of early diagnosis and adequate therapy are demonstrated, as well as the role of pathology in determining the course and results of treatment. A hospital team discusses the geographic, racial, and economic variations in the incidence of stomach cancer for which causes have not been identified. Its increased incidence with advancing age and its association with pernicious anemia are mentioned. New detection technics under study are shown, including gastric photography, ultraviolet fluorescence, and radiographic recordings on videotape.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

Early Diagnosis and Management of Breast Cancer. Sound, color, 16 mm., nineteen and a half minutes.

This film demonstrates the essentials of a thorough periodic examination for early breast cancer, depicts the signs of cancer, and emphasizes the importance of the detection of tumors while they are still small. It presents the physiologic characteristics of breast cancer which promote early metastasis and the cyclic changes in the breast which complicate diagnosis. The indications for mammography are covered as well as the limitations of both mammography and thermography. Principles of surgical management and radiotherapy are demonstrated, and the roles of hormone therapy and chemotherapy are noted. A positive approach to prosthesis, rehabilitation, and follow-up is presented.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

A Second Voice. Sound, color, 16 mm., thirteen minutes.

This film was produced by the I.A.L. (International Association of Laryngectomees) with the assistance of the American Cancer Society. The film traces a patient from the time he is told he is to have a laryngectomy, through the pre- and postoperative stages, physical recovery, speech rehabilitation, and eventual total rehabilitation. Depicted are pre- and postoperative visits, speech therapy, family consultation, lost chord club meeting, return to work, and the I.A.L. annual meeting. The commentator describes the benefits and various projects of clubs and the I.A.L., all of which help lead the patient to total rehabilitation.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

Homefires. Sound, 16 mm., twenty-nine minutes.

This film presents the salient aspects of the Homemaker Service, showing the relationship between agency staff and their supervisors as well as the duties and responsibilities of the homemaker herself. Three case histories are presented to give the viewer a comprehensive picture of the important kinds of activities serviced by the homemaker, the people whose needs they fill, and the technics of professional and nonprofessional practices that are recommended in such programs.

Source and producer: International Film Bureau, 57 E. Jackson Boulevard, Chicago, Illinois.

LSD-25. Sound, color, 16 mm., twenty-seven minutes.

continued on page 2006

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* Film evaluations provided by the Committee on Audio Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman;* Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

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☐ Frequently NCME makes available published papers related to subjects presented on closed-circuit television.

A recent NCME hospital telecast presented Philip N. Sawyer, M.D., Professor of Surgery and Head of the Vascular Surgical Service at Downstate Medical Center, Brooklyn, N.Y., in a demonstration and evaluation of "Gas Endarterectomy."

In this program, Dr. Sawyer performs the operation on a patient with gross occlusion of the right iliac, femoral and popliteal arteries.

In Dr. Sawyer's view, gas endarterectomy has several advantages over mechanical methods: the operation can be completed faster, causes less damage to the arteries and offers a more successful outcome.

NCME is an independent network supported by Roche Laboratories to increase the use of closed-circuit TV for medical education under direct hospital and school control.

If your hospital or school does not participate in the biweekly NCME program, information on the cost-free service may be obtained by writing to
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10 mg. Methamphetamine Hydrochloride,
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The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.

the
secret
of
controlling
your weight

Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories. 801444

To
help you
control your
weight

Please see Brief Summary on next page.

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Brief Summary

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

ABBOTT

801444

continued room page 2002

This film is a documentary designed to convey the facts about LSD to the audiences concerned about the drug scene and its impact on youth.

Source and producer: Professional Arts, Inc., P.O. Box 8484, University City, California 91608.

Embryology of Human Behavior. Sound, color, 16 mm., twenty-eight minutes.

This film traces the development of behavior patterns in the human infant, showing how normal growth produces a progressive sequence of behavior patterns. The normal course of postnatal coordination of eyes and hands is depicted step by step and age by age. The laws of growth are applied to the study of normal, deviate, and deficient children, showing how a physician applies the method of development diagnosis. The visual interpretation of the systematic researches is by the well-known authority, Arnold Gesell, M.D.

Source and producer: International Film Bureau, 57 E. Jackson Boulevard, Chicago, Illinois.

Programmed Instruction and Aphasia Rehabilitation. Sound, 16 mm., forty minutes.

This four-part film is introduced with a brief explanation of the principles of programmed instruction and their application in the treatment of severely impaired aphasic patients. The remainder of the film demonstrates, through live clinical sessions with real aphasic patients, how the therapist can apply the principles of programmed instruction to the operations involved in language recovery: (1) imitation of movement, (2) visual recognition, (3) writing, (4) auditory comprehension, and (5) oral production. This film is intended for speech therapists and related personnel.

Source and producer: DuArt Film Laboratories, Inc., 245 West 44th Street, New York, New York.

Abstracts

Moore, G. E., and Kitamura, H.: Cell line derived from patient with myeloma, New York State J. Med. **68:** 2054 (Aug. 1) 1968.

A cell line from the peripheral blood of a patient with myeloma has been established and may be valuable for biochemical studies. It produces only lambda light-chain proteins. The morphologic and culture characteristics are described. The cells produce immunoglobulin.

Blum, L.: Ruptured aneurysm of abdominal aorta, New York State J. Med. **68:** 2061 (Aug. 1) 1968.

Immediate operation is indicated in any case of ruptured abdominal aneurysm, even when death is probable. Since survival without surgical intervention is unknown, a course of observation, particularly in a patient with a palpable aneurysm of the abdominal aorta, is unwise. Prompt recognition of the condition is paramount.

Abstracts in Interlingua

Moore, G. E., e Kitamura, H.: Un linea de cellulas derivate ab un patiente con myeloma (*anglese*), New York State J. Med. **68:** 2054 (1 de augusto) 1968.

Esseva establite un linea de cellulas ab le sanguine peripheric de un patiente con myeloma. Illo va possibilemente esser de valor in studios biochimic. Illo produce exclusivemente proteinas a leve catenas lambda. Le characteristicas morphologic e cultural es describite. Le cellulas produce immunoglobulina.

Blum, L.: Rupturate aneurysma del aorta abdominal (*anglese*), New York State J. Med. **68:** 2061 (1 de augusto) 1968.

Immediate intervention chirurgic es indicate in omne caso de rupturate aneurysma abdominal, mesmo quando le morte del patiente pare probabile. Viste que nulle caso de superviventia sin intervention chirurgic ha unquam essite reportate, un curso de observation—particularmente in un patiente con palpabilitate del aneurysma del aorta abdominal—es difficile a justificar. Un prompte recognition del condition es urgentemente desirabile.

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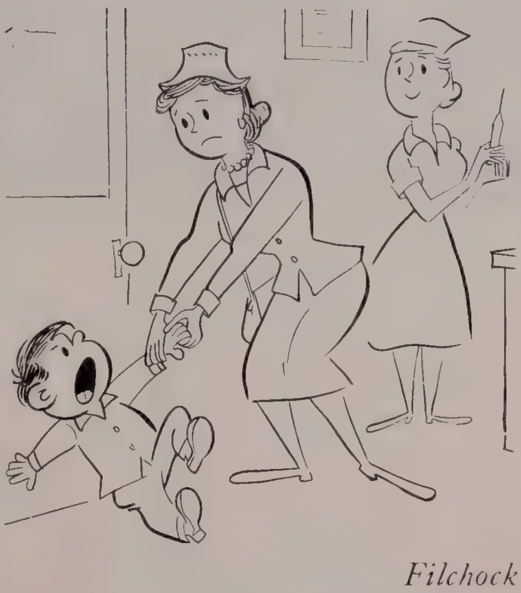

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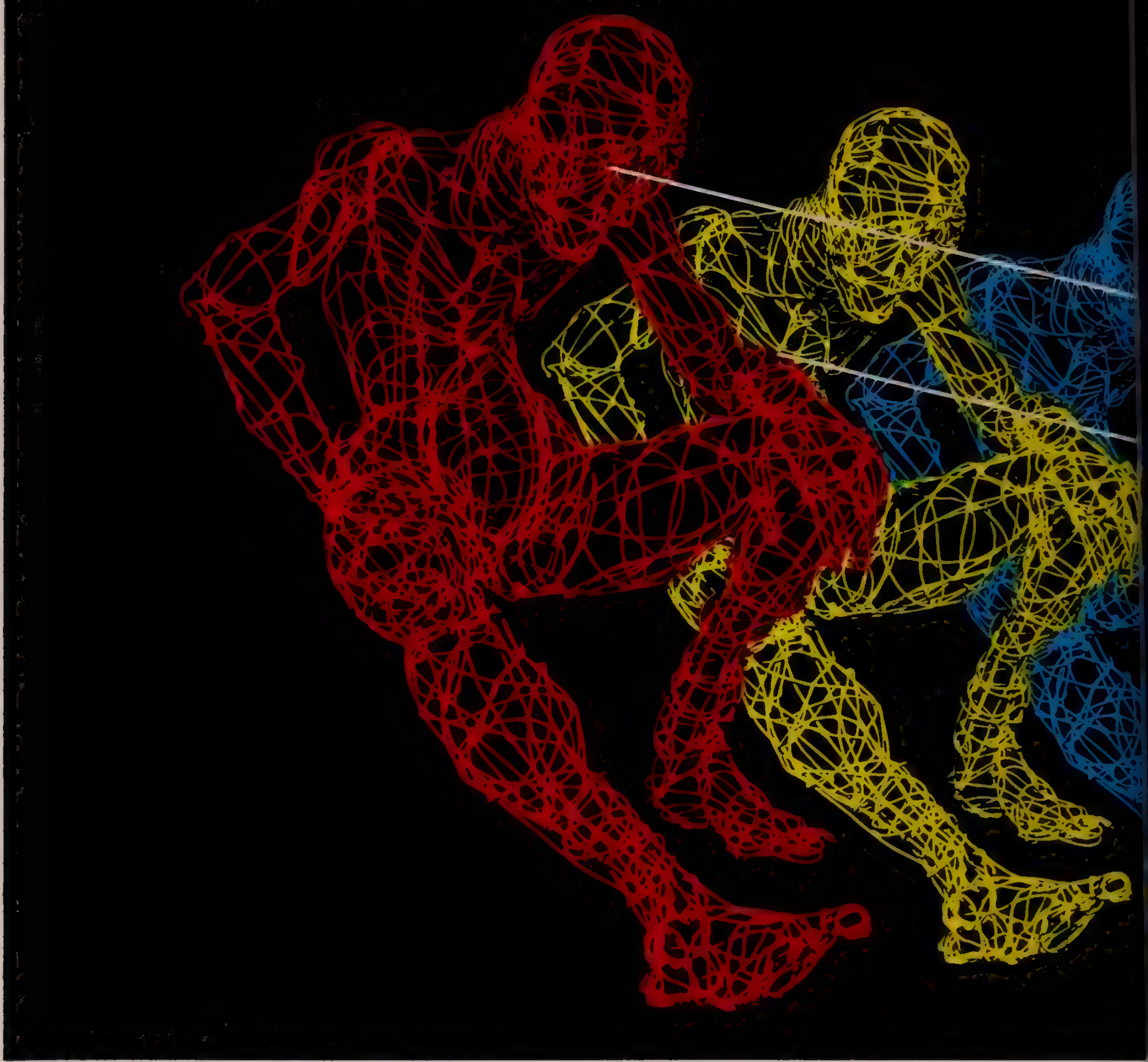
a comprehensive hematinic



Description: Each Pulvule® contains—

Special Liver-Stomach Concentrate, Lilly (containing Intrinsic Factor)	150 mg.
Cobalamin Concentrate, N.F., equivalent to Cobalamin	7.5 mcg.
(The total vitamin B_{12} activity in the Special Liver-Stomach Concentrate, Lilly, and the Cobalamin Concentrate, N.F., is 15 micrograms.)	
Iron, Elemental (as Ferrous Fumarate)	110 mg.
Ascorbic Acid (Vitamin C)	75 mg.
Folic Acid	1 mg.

Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinics, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

Precautions: Anemia is a manifestation that requires appropriate investigation to determine its cause or causes.

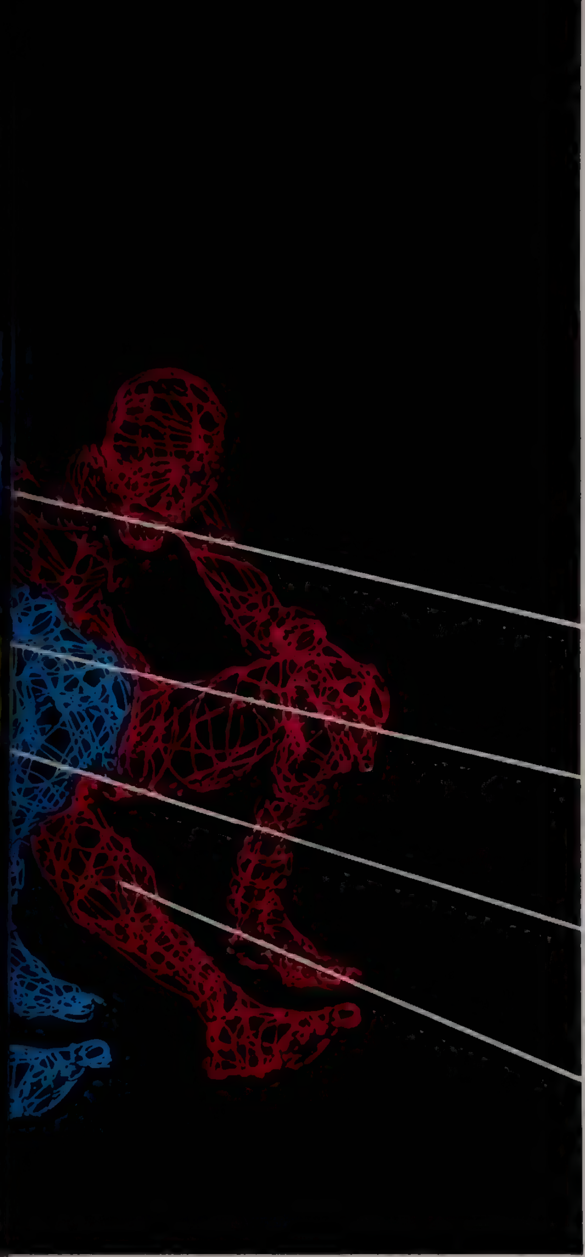
In pernicious anemia, the use of folic acid without adequate vitamin B_{12} therapy may result in hematologic remission but neurological progression. Adequate doses of vitamin B_{12} (parenteral, or oral with potent intrinsic factor as in Trinsicon® [hematinic concentrate with intrinsic factor, Lilly]) usually prevent, halt, or improve the neurological changes.

As with all preparations containing intrinsic factor, resistance may develop in some cases of pernicious anemia to the potentiation of absorption of physiological doses of vitamin B_{12}. If resistance occurs, parenteral therapy, or oral therapy with so-called massive doses of vitamin B_{12}, may be necessary. No single regimen fits all cases, and the status of the patient observed in follow-up is the final criterion for adequacy of therapy. Periodic clinical and laboratory

You can treat combined deficiencies with

Trinsicon®

—the multifactor hematinic



Vitamin B_{12} plus intrinsic factor (15 mcg. B_{12} activity)—helps provide adequate levels of this important vitamin.

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Ascorbic acid (75 mg.)—augments the conversion of folic acid to its active form and helps iron absorption.

Iron (110 mg.)—treats hypochromic anemia.

studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

In extremely rare instances, skin rash suggesting allergy has followed oral administration of liver-stomach material. Instances of apparent allergic sensitization have also been reported after oral administration of folic acid.

Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

How Supplied: Pulvules Trinsicon® (hematinic concentrate with intrinsic factor, Lilly), in bottles of 60 and 500. [032568]

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Medical Meetings

Septic shock topic of conference

A conference on the Dynamics of Septic Shock in Man, sponsored by the Albert Einstein College of Medicine in collaboration with the National Academy of Sciences and National Research Council, Division of Medical Sciences, will be held November 13 through 15 at the Albert Einstein College of Medicine, New York City.

The program includes the following topics: Background Patterns in Septic Shock; Respiratory Aspects; Oxygen Transport and Utilization; Metabolic Aspects; Cardiocirculatory Aspects; and Special Problems of Fluids and Burns.

For further information write to: S. G. Hershey, M.D., 1300 Morris Park Avenue, Bronx, New York 10461.

Glaucoma topic of seminar

The Glaucoma Referral Center of the Brooklyn Eye and Ear Hospital will conduct its semiannual seminar on glaucoma at the Hospital on November 18 through 20.

The seminar will be given by A. S. Rosenberg, M.D., D. Kravitz, M.D., and other hospital staff physicians. Particular emphasis will be placed on the use of the gonioprism and applanation tonometry. Tonography and the use of other diagnostic methods will be discussed, including the Maklakov tonometer and scleral suction cup, provocative testing, and visual field problems.

Practical experience will be given using cases selected from the Center and the eye clinic.

Registration fee is $75, and the course is limited to 6 ophthalmologists. For further information and enrollment contact: A. S. Rosenberg, M.D., Brooklyn Eye and Ear Hospital, 29 Greene Avenue, Brooklyn, New York 11238.

Upstate Medical Center offers course in ophthalmology

The Department of Ophthalmology of the State University of New York Upstate Medical Center, Syracuse, will present its nineteenth annual Postgraduate Course in Ophthalmology at the Hotel Syracuse, on December 6 and 7. The following guest lecturers will participate: J. Donald M. Gass, M.D., Miami, Florida; Thomas R. Hedges, M.D., Philadelphia, Pennsylvania; and John W. McTigue, M.D., Washington, D.C.

Tuition fee is $35 and includes daily luncheons and one dinner. Since the course is limited to 90 members, applications with checks will be accepted in the order in which they are received.

For further information and enrollment contact: James L. McGraw, M.D., State University of New York Upstate Medical Center, 766 Irving Avenue, Syracuse, New York 13210.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Food poisoning

Studies from the State of New York Department of Health have revealed that temperature is the key to preventing food poisoning. Bacteria which cause the digestive illnesses resulting from food poisoning grow rapidly between 68 and 155 F.

Therefore, these hints are given by the Department: (1) Hot foods, especially pork and poultry, should be served while still hot, at least 115 F.; (2) food to be served cold should be kept at under 50 F.; (3) if hot foods must be stored between cooking and serving, they should be stored at under 50 F. and then thoroughly reheated. Otherwise, bacteria will multiply and stay alive; (4) in preparing poultry, stuffing should be prepared separately and a turkey or chicken not stuffed; and (5) salad dressings should be stored cold and not added until serving time.

When do you read the journals, doctor?

Don't you wish you could keep pace with the fast-breaking developments in your field of interest? Perhaps you could if you did not have to spend so much of your time and energy on collections.

GHI Participating Doctors may not read the journals any more carefully than their colleagues, but they have less of an excuse. After all, for them, there are no collection problems with their GHI patients. GHI payments reach such doctors directly — and quickly, usually within five working days.

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Help the Needy!

A patient of advancing years may appear to "have everything," but may well be in need—*medically*. You know the symptoms. She's tired most of the time. Though there's nothing wrong with her organically, she suffers from general malaise. Lassitude has become her way of life...vague aches and pains her major concern.

Such a patient has entered the "Mediatric Age"—that stage of her life in which she's an ideal candidate for MEDIATRIC. This preparation provides the anabolic benefits of gonadal steroids, plus a gentle mood uplift and the nutritional support she's apt to need. MEDIATRIC is intended to help keep her more alert and active, and relieve general malaise...to help restore that sense of physical and emotional well-being that the elderly *deserve* to enjoy.

The estrogen component in MEDIATRIC is PREMARIN® (conjugated estrogens-equine), the orally active, natural estrogen so widely prescribed for its physiologic and metabolic benefits. The combination of estrogen and *methyltestosterone* can help maintain anabolic balance to forestall premature degenerative changes related to estrogen deficiency. MEDIATRIC also supplies a small amount of *methamphetamine HCl* to provide a gentle mood uplift, and nutritional supplements specially selected to meet the needs of the aging.

CONTRAINDICATION: Carcinoma of the prostate, due to methyltestosterone component. WARNING: Some patients with pernicious anemia may not respond to treatment with the Tablets or Capsules, nor is cessation of response predictable. Periodic examinations and laboratory studies of pernicious anemia patients are essential and recommended. SIDE EFFECTS: In addition to withdrawal bleeding, breast tenderness or hirsutism may occur. SUGGESTED DOSAGES: *Male and female*—1 Tablet or Capsule, or 3 teaspoonfuls Liquid, daily or as required. *In the female:* To avoid continuous stimulation of breast and uterus, cyclic therapy is recommended (3 week regimen with 1 week rest period—Withdrawal bleeding may occur during this 1 week rest period). *In the male:* A careful check should be made on the status of the prostate gland when therapy is given for protracted intervals. SUPPLIED: No. 752—MEDIATRIC Tablets, in bottles of 100 and 1,000. No. 252—MEDIATRIC Capsules, in bottles of 30, 100, and 1,000. No. 910—MEDIATRIC Liquid, in bottles of 16 fluidounces.

	Each MEDIATRIC Tablet or Capsule contains:	Each 15 cc. (3 teaspoonfuls) of MEDIATRIC Liquid contains:
Conjugated estrogens-equine (PREMARIN®)	0.25 mg.	0.25 mg.
Methyltestosterone	2.5 mg.	2.5 mg.
Methamphetamine HCl	1.0 mg.	1.0 mg.
Cyanocobalamin	2.5 mcg.	1.5 mcg.
Intrinsic factor concentrate	8.0 mg.	—
Thiamine HCl	—	5.0 mg.
Thiamine mononitrate	10.0 mg.	—
Riboflavin	5.0 mg.	—
Niacinamide	50.0 mg.	—
Pyridoxine HCl	3.0 mg.	—
Calcium pantothenate	20.0 mg.	—
Ferrous sulfate exsiccated	30.0 mg.	—
Ascorbic acid	100.0 mg.	—
		(Contains 15% alcohol†) †Some Loss Unavoidable

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Medical News

New York physician chosen president-elect of AMA

At the annual meeting of the House of Delegates of the AMA in the Fairmont Hotel, San Francisco, Gerald D. Dorman, M.D., New York City, was unanimously chosen president-elect of the AMA. He will take office in July, 1969, at the annual meeting to be held in New York City.

Dr. Dorman is a vice-president and the medical director of the New York Life Insurance Company. He is a graduate of Harvard and the Columbia College of Physicians and Surgeons. He also is a former president of the New York County Medical Society.

Link of leukemia to fallout denied

Radioactive fallout dumped on the Albany-Troy area during a rainstorm in 1953 caused a doubling of childhood leukemia over an eight-year period, said Professor E. J. Sternglass of the Department of Radiology, University of Pittsburgh. At the thirteenth annual meeting of the Health Physics Society, he said that the radioactive debris deposited in the rainstorm had come from a nuclear weapons test made in Nevada earlier that year.

His study found that there were 20 cases of leukemia in the one-to-ten age group during the eight years before the fallout and 42 cases in the same age group during the eight years following.

First deputy commissioner of the New York State Department of Health, Granville Larimore, M.D., said that the State had found no evidence to support the professor's theory. There was fallout around Albany and Troy in 1953, he said, but "not enough to produce serious effects."

A spokesman for the National Center for Radiological Health acknowledged that there had been reports of high radioactivity but said that there was "no systematic way of checking it out at that time as to whether or not it was high in comparison to other cities."

Personalities

Elected. William G. Hafner, M.D., director of the Rochester Regional Office of the New York State Department of Health, as president of the New York State Public Health Association.

Named. To the Advisory Committee on Health Care of the American People which will advise the AMA on present and future health care needs of the nation: Charles E. Odegaard, Ph.D., president, University of Washington, Seattle, chairman; Judge Warren E. Burger, United States Court of Appeals, Washington, D.C., vice-chairman; Charles B. Shuman, president of the American Farm Bureau Federation, Chicago; Thomas J. O'Donnell, S.J., director of the Jesuit Residence, Hot Springs, North Carolina; Kermit Gordon, president of the Brookings Institution, Washington, D.C.; Miss Ann Landers, newspaper columnist, Chicago; J. Irwin Miller, chairman of the board, Cummins Engine Company, Inc., Columbus, Indiana; John H. Johnson, president of Johnson Publishing Company, Inc., Chicago; and Edward Swayduck, president of Local One, Amalgamated Lithographers of America, New York City.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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"COKE HAS THE TASTE YOU NEVER GET TIRED OF."

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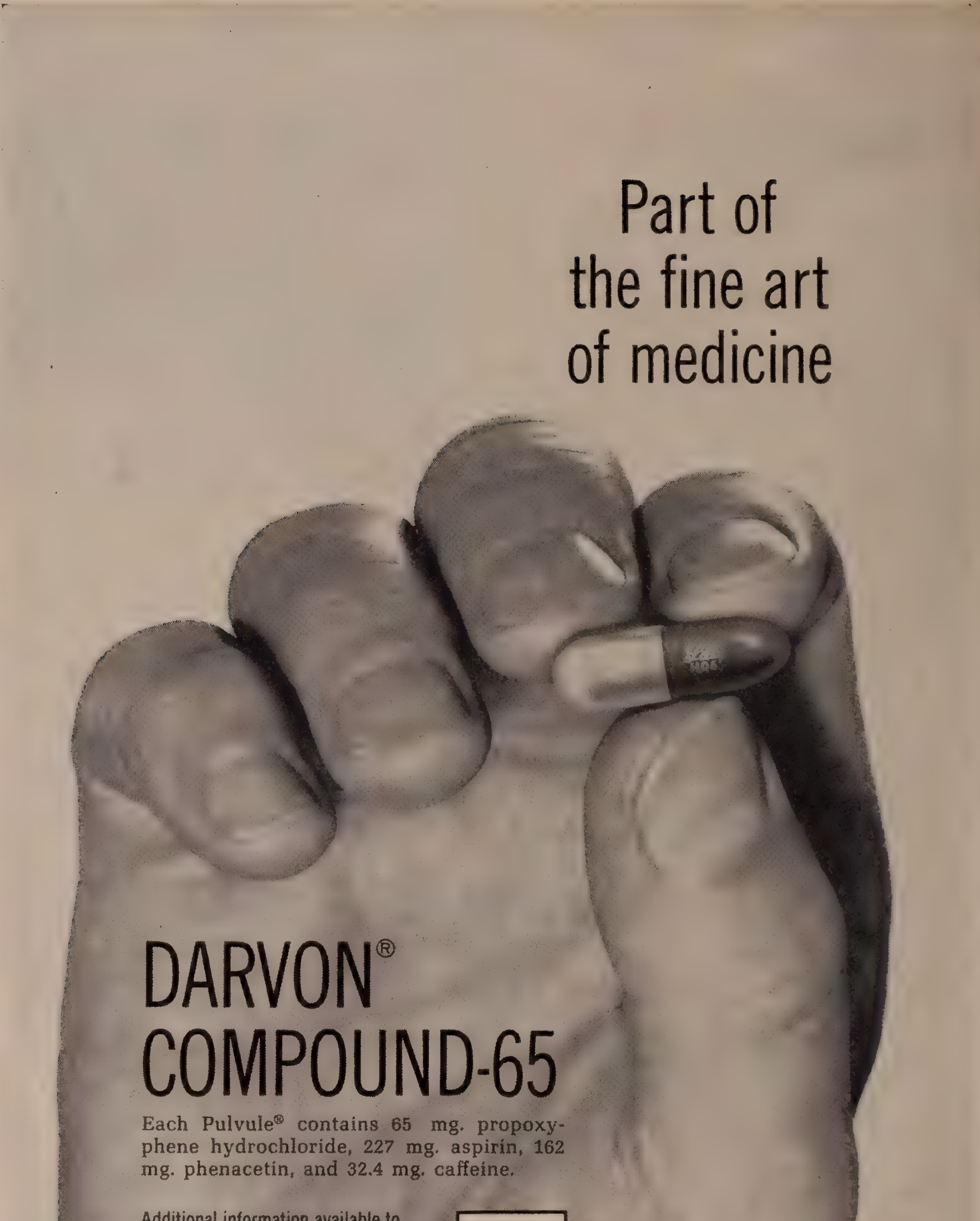

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Care in animal care

The use of animals in scientific experimentation has been a "cause célèbre" to many well-intentioned individuals and organizations for years. The emotional appeal has been well publicized. The efforts of responsible scientists to set high standards and humanely regulate practices have not been so well publicized.

The present furor in the mass communication media over organ transplants in humans recognizes that the groundwork for these successful technics was laid by animal experimentation.

Quietly, over a long period of years, the scientists have gone about putting their house in order in the matter of animal handling for experimental purposes.

In 1959, leaders in the American Association for Laboratory Animal Science (formerly the Animal Care Panel) seriously reviewed the "ethics" involved in the care of laboratory animals. A Committee on Ethics was appointed. Study by this ad hoc committee led to the recommendation that standards for care and facilities for laboratory animals be prepared as the first step necessary in any effective accreditation procedure. In 1960 the American Association for Laboratory Animal Science appointed a Committee on Standards and charged it with the responsibility of preparing a *Guide for Laboratory Animal Care*. Financial support from the U.S. Public Health Service led to the publication of the *Guide for Laboratory Animal Facilities and Care* by the USPHS in 1963. The second edition of the *Guide* was prepared by the Institute of Laboratory Animal Resources of the National Academy of Science in 1965.

In 1964, the following 16 leading scientific and professional organizations, American Association for the Advancement of Science; American Association of Colleges of Veterinary Medicine; American Association of Dental Schools; American Association for Laboratory Animal Science (formerly the Animal Care Panel); American College of Physicians; American College of Surgeons; American Dental Association; American Heart Association; American Hospital Association; American Medical Association; American Veterinary Medical Association; Association of American Medical Colleges; Association of State Universities and Land-Grant Colleges; Federation of American Societies for Experimental Biology; National Society for Medical Research, and the Pharmaceutical Manufacturers' Association, contributed moral and financial support in the sum of $30,000 for the experimental trial of the mechanism proposed by the American Association for Laboratory Animal Science for the accreditation of laboratory animal care and facilities.

During the trial, visits were made to 26 laboratory animal facilities including four veterinary schools, seven medical schools, three dental schools, four hospitals, and two pharmaceutical companies.

A new administrative unit to be known as the American Association for Accreditation of Laboratory Animal Care was established and incorporated with the following goals: The goals of the American Association for Accreditation of Laboratory Animal Care are to encourage optimal care for laboratory animals and to provide a mechanism of self-regulation by the scientific community. It is essential that laboratory animals are maintained under the best possible conditions, and that the vital freedom of the scientist is preserved in his research efforts to improve the health and welfare of animals and man.

This accreditation program has been well received. More than 100 institutions have sought accreditation thus far; and several hundred institutions have indicated their intention to seek such accreditation. These include medical, dental, and veterinary schools; hospitals, United States government laboratories; pharmaceutical companies; independent research laboratories; and other scientific institutions. Some of the leading research centers in the United States are included among the institutions already accredited.

The passage by Congress in 1966 of Public Law 89-544 (the Laboratory Animal Welfare Act) authorizes the "Secretary of Agriculture to regulate the transportation, sale, and handling of dogs, cats, and certain other animals intended to be used for purposes of research and experimentation. . . ." This act primarily concerns itself with dealers in dogs, cats, nonhuman primates, guinea pigs, hamsters, and rabbits.

It applies in lesser degree to animals held for experimental use in a research laboratory.

The important area of the humane handling and care of laboratory animals being prepared for experimentation, while on experiments, and during the post-experimental period are not covered by the above Act; these were and are the areas of principal concern in the program of AAALAC.

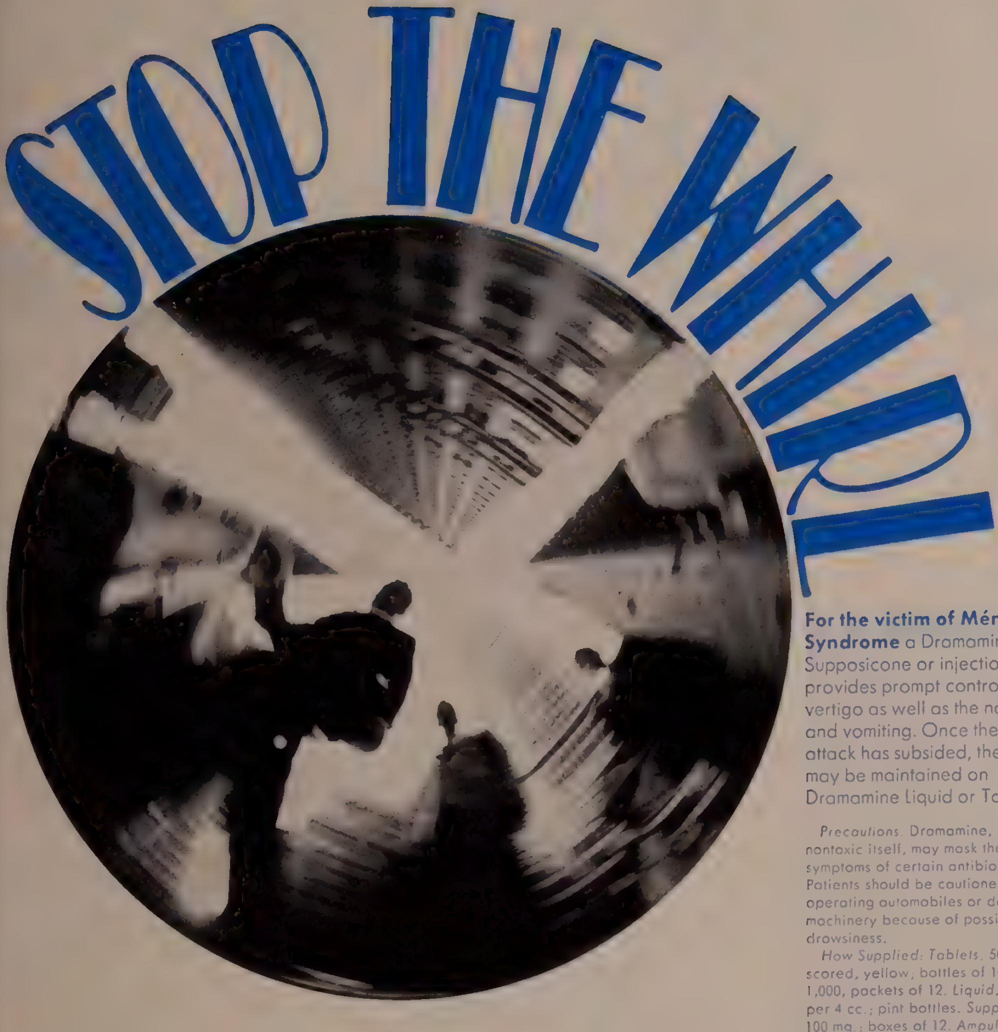
The objectives and program of AAALAC remain unchanged. The AAALAC program will improve laboratory animal care through self-regulation by the scientific community and will undoubtedly have a major influence in any future congressional consideration of the need for legislative regulation of animal research.

To be accredited by the AAALAC is the outward sign of inward humanitarianism. It is difficult to see how any laboratory whatever its size or purpose can dare to be without it.

Announcement

1968 District Branch Meetings

Branch	*Date*	*Place*
FIRST	Sunday, February 11	The Americana, New York City
SECOND	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
THIRD AND FOURTH	Saturday, September 28	Holiday Inn, Lake George
FIFTH AND SIXTH	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
SEVENTH AND EIGHTH	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
NINTH	Monday, February 12	The Americana, New York City



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Rheumatic Fever

Population at Risk

CHARLOTTE FERENCZ, M.D.
Buffalo, New York

Associate Professor of Pediatrics, State University
of New York at Buffalo School of Medicine

IN THIS PRESENTATION on rheumatic fever, I would like to consider the "other side of the coin"; that is, not the streptococcal infection which triggers and perpetuates the disease, but the population at highest risk of the disease, and, specifically, some epidemiologic factors which may be relevant to pathogenesis and which are certainly relevant to the problems in treatment and prevention.

Rheumatic fever is, like tuberculosis, predominantly a disease of the poor. Coburn[1] has proposed the concept that rheumatic fever is a "summation disease," requiring for its development the coincidence of an appropriate streptococcal infection in a host with, perhaps, a minor inborn aberration of metabolism, not significant in itself unless made evident by certain nutritional deficiencies. This latter factor may provide the link with poverty and its increasingly clear-cut association with rheumatic fever.[2] Since knowledge of adequate nutrition and the year-round availability of essential foods is a relatively recent achievement of advanced societies, the prevalence of the disease in all socioeconomic levels in the past is still consistent with Coburn's theory.

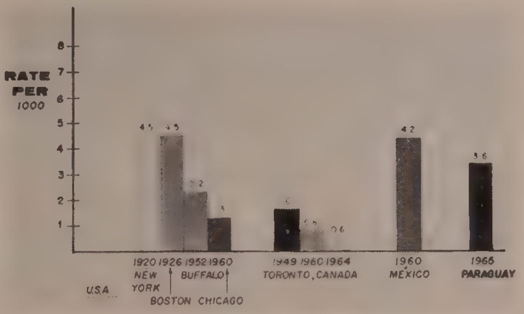

FIGURE 1. Comparative incidence of rheumatic heart disease.[3]

To consider the problem of rheumatic fever today, we should, therefore, re-examine the environment from which the patient comes and in which he will continue to live with his disease. This environment is not the sole domain of social workers and public health personnel. It is, I believe, of considerable medical interest with respect to factors inherent in the mode of life which predispose to disease and which so mysteriously disappear with a rising standard of living. These factors have not received the attention they deserve. After twenty-five years of investigation, treatment, and prevention of streptococcal disease, a different view of the rheumatic fever problem may well have some merit.

That rheumatic fever is more persistent and more severe among the poor is an observation on which there is general and international agreement. The prevalence of the disease is related far more to the standard of living than to any other identifiable environmental factor. In this hemisphere, the decline of the incidence of the disease began long before the introduction of antibiotics and has continued progressively thereafter (Fig. 1).

Surveys

Comparison of school surveys reveals a continuously lower prevalence rate of

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Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Pediatrics, February 14, 1967.

rheumatic heart disease in each successive study in the United States[4-7] and Canada.[8,9] Rates in less-developed areas, as in Mexico[10] and Paraguay,[3] are similar to our earlier findings. The Toronto Heart Registry, one of the most thorough and continuing surveys, illustrates the favorable trend.[9] Yet there is false reassurance in these figures. A breakdown of the Toronto data by wards reveals a fivefold difference between the rheumatic heart disease rates in the two downtown wards which contain the poor immigrant populations and the more peripheral areas of middle class residences.[11]

Thus, a more detailed look at our cities shows that the favorable over-all data reflect mainly the increased standard of living of the greater proportion of inhabitants. In the poor areas, which are, fortunately, dwindling, the disease rate may be as high as that found in underdeveloped countries.

In the city of Buffalo the Department of Health has defined a geographic area of a population at high risk with respect to items relevant to maternal and child health.[12] This was done by superimposing the wards with the highest rates for infant mortality, perinatal death, prematurity, birth, and obstetric complications of pregnancy. All these were considerably higher here than in the remainder of the city and significantly above the national average.

Our county hospital is located just at the edge of this area, and the patient population of our cardiac clinic is largely made up of its inhabitants.

A preliminary survey of the mode of life of these children reveals many problems, which I will not present in detail—they are known too well. They can be summarized in the terminology of Selye[13] as an excessive "stress of life." With respect to rheumatic fever, we can separate our considerations into two categories: those which are of possible pathogenetic significance and those which relate to patient care:

I. Possible pathogenic factors
  A. Crowding: high prevalence of streptococcal infection
  B. Suboptimal nutrition
    1. Careful dietary data
    2. Growth curves
    3. Serum proteins
    4. Serum phospholipids
    5. Serum alkaline phosphatase
    6. Erythrocyte enzymes
    7. 17-ketosteroid excretion
  C. Physical and emotional stress
II. Problems in treatment and prevention
  A. Poor environment for convalescence
    1. Inadequate rest
    2. Inadequate nutrition
    3. Inadequate protection from infection
  B. Lack of established routines: poor prophylaxis

Possible factors

It is not likely that a single factor will ever be found responsible for rheumatic susceptibility, but it is quite likely that there is a balance between exposure to streptococcal infection and various host factors which result in the development of the rheumatic state. One might, therefore, hope to quantitate at least certain features within this complex.

Many people too easily accept the concept that crowding and increased prevalence of streptococcal infection explain satisfactorily the higher prevalence of rheumatic fever among the poor. This does not seem likely. Streptococcal infection remains prevalent at all socioeconomic levels, and epidemiologic studies of schoolchildren have not confirmed a significantly higher infection rate in the poor.[14] Moreover, crowding in sleeping quarters and the intimate contact of children at play and in school have been found to be essentially similar in various socioeconomic levels.[15] Our own inquiries revealed that our patients lived in poor, but often surprisingly large, houses; the children were seldom at home; and thus, physical closeness was not an obvious factor.

In contrast, there were many indications of less than adequate nutrition in our patients. The family income was often so meager that even with the best of planning, a balanced diet could not possibly be assured for each child. In addition to the financial problem, carelessness, ignorance, and the desire for visible goods, car, television, and so on resulted in pitifully faulty diets in many homes.

Studies and technics

In an effort to evaluate objectively the nutritional status of the children, we have searched for parameters which can be accurately measured. Growth curves and serum protein determinations showed no gross abnormalities but should be more extensively studied. On the basis of previous work by Stollerman and Bernheimer,[16] Todd, Coburn, and Hill,[17] and their coworkers, we have begun a study of phospholipids, which these workers have found are depressed in rheumatic subjects. Since phospholipids are an important constituent of cell membranes and since they are also related to the inhibition of streptolysin S,[1,18] a possible derangement in rheumatic fever could be of great interest. Simple determinations of total phospholipid levels have, to date, revealed no consistent results in our hands.

One should consider other metabolic studies as well, which might reflect subtle alterations induced by suboptimal nutrition. Determinations of serum alkaline phosphatase, red cell enzymes, 17-ketosteroid excretions, and so on, have revealed abnormalities in these systems in children with chronic undernutrition who were apparently healthy and who had adjusted to the inadequacies of their diets.[19] Such parameters of metabolic disturbances have, to my knowledge, not been investigated in rheumatic children in this country.

Selye[13] classifies rheumatic fever as a disease of adaptation, a disease due to chronic "stress." Quantitation of physical and emotional stress is, of course, not easy, but we are aware of the role of emotional stress in the pathogenesis of chorea[20] and its importance in rheumatoid arthritis, a related disease.

Acute and chronic family stress was also noted among the factors which contributed to the susceptibility of streptococcal disease.[21]

Finally, it is only too clear that the poor environment impedes, and often defeats attempts at treatment, convalescent care, and effective continued prophylaxis. Even the most well-meaning and understanding mother may fail in the face of the disturbed, inadequate, and harassed life which surrounds her.

Thus, not only the pathogenesis, but also the management of the disease is intimately dependent on this difficult way of life and is relevant to the ultimate outcome with respect to the severity of resultant heart disease.

Conclusion

Thus, it is necessary to emphasize the role of the environment in the true significance of rheumatic fever and its consequences. It is necessary to remember that the epidemiology of the disease is not simply that of streptococcal infection and that far too little has been done to identify or quantify the host factors which form, after all, the very essence of the problem. Less than 1 per cent of streptococcal infections are followed by rheumatic fever. If there is to be a "new look" at rheumatic fever, its focus should be the population at highest risk and its central figure, the rheumatic patient, who must be viewed in the total context of his environment. The finding of "pockets of rheumatic fever" among our underprivileged population, the availability of sophisticated methods to quantify subtle metabolic disturbances, the better understanding of cellular function and of the interaction of emotional factors in host resistance and host response, and many other factors present opportunities for study not fully explored to date. All these considerations applied to the rheumatic fever patient may result in a new and intensified effort for a different and effective approach and, together with newer knowledge of streptococcal biology may, perhaps, bring about a final solution of the problem.

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SYMPOSIUM

Management of Patient with Transverse Myelopathy

Moderator
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Early Management of Spinal Cord Injury Patient

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THE GLOOMY PROGNOSIS in spinal cord injury had changed very little in five thousand years from its first mention in ancient Egyptian hieroglyphics until the advent of World War II. The establishment of special centers by the Veterans Administration in the United States and by Guttmann[1] in England with trained multidisciplinary personnel resulted in better understanding of the many specific problems and in more effective ways of treatment. Since many of these injuries are the result of diving or driving accidents, their incidence can be reduced only by stressing highway safety measures including the use of seat belts and shoulder harnesses and by stressing the dangers of diving into water of unknown depth. While the extent of damage to the spinal cord at the time of the accident is beyond control, the ultimate outcome greatly depends on the quality of early care the patient receives. With proper management, it has been stated, the longevity of the paraplegic patient should not be much different from the average of his age group.

Transportation

Great care must be used in transporting the injured person from the site of the accident to the hospital. Incomplete lesions frequently become complete during transfer to the ambulance, x-ray table, or bed. Movements that may increase bony deformity and spinal cord compression must be avoided. At least 4 persons are necessary to move the patient on to the litter. The position of the spine should be opposite to that of the force causing the injury, that is, slight extension when the accident resulted in sudden flexion of the spinal column. The neutral position is recommended where the direction of the force is unknown. The neck is immobilized with sandbags, Thomas' collars, or adjustable traction neck braces. The Transaver stretcher described by Limbach[2] has eliminated many unnecessary transfers. Similar good results were obtained by simpler plywood radiotranslucent stretchers, Stryker frames, or the double litter method used in Korea.[3] Body casts should not be used to transfer patients to the hospital because of the danger of decubitus ulcers. These fundamental principles should be made known not only to all physicians but also to the police and ambulance drivers.

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Decubitus ulcers

Decubitus ulcers, an altogether too frequent complication, can be prevented by good nursing care.[4] Prolonged pressure over any one area renders the skin ischemic, and, if maintained long enough, necrosis and decubitus ulcer follow. By scrupulous skin hygiene, protection to areas of bony prominences, and frequent turning of the patient day and night, decubitus ulcers may be avoided. Pillows, artificial or natural sheepskin, foam rubber, urethane foam, alternating pressure mattress, and floating the patient on a plastic film over a water bath have been used to prevent excessive pressure. For wheel chair patients, removable arm rests, appropriate seat cushions with local cutouts where indicated, and frequent rising from the sitting position are essential. The patients are taught to inspect their skin with a mirror to detect early signs of irritation and to avoid further pressure until irritation has subsided.

Contractures

Contractures result from inherent tendency of connective tissue to shorten. Passive range of motion to all joints can be started at a very early stage, followed by active and later resistive exercises to all the innervated muscles. Strengthening of the muscles of the upper extremities will aid in transfer activities, ambulation, driving a car, and other activities of daily living. Special mat exercises and work with short crutches precede standing between the parallel bars and eventual ambulation. Strengthening of the latissimus dorsi and of the trapezius muscles is feasible even with high thoracic lesions and may eliminate the need for a back brace. Except for cauda equina lesions, ambulation is limited to short distances because of its high energy costs and is used mainly for its metabolic effect and to get around narrow spaces.

Metabolism

Not only is there a negative nitrogen balance because of paralysis of large muscle masses, but also the calcium balance is negative in the early stages. Osteoclastic activity greatly exceeds osteoblastic function with resultant loss of calcium from the bones, leaving them fragile and resulting frequently in fractures from minimal trauma. The hypercalciuria frequently leads to urinary calculosis. Para-osseous ossifications, especially around the hips, may result in severe limitation of motion or even massive fusion. Surgical removal proved very disappointing in our experience, although other authors reported success when mature bone was operated on. These ossifications may occur as early as three weeks after injury and have been found even in patients who curtailed their dietary calcium intake.

Sympathetic nervous system dysfunction

Orthostatic hypotension is frequently found after recumbency, especially with lesions at the cervical or high thoracic levels. Treatment is effective and consists of gradual elevation on a tilt table, abdominal binders, elastic bandaging of the lower extremities, and ephedrine sulfate 25 mg. three or four times a day.

Periodic attacks of autonomic hypertension may occur in patients with cervical or high thoracic lesions.[5] The crises are marked by sudden rise of the blood pressure, excruciating headaches, flushing of the face, and nasal stuffiness. They are frequently precipitated by distention of the urinary bladder caused by a blocked catheter or spasticity of the pelvic floor. Emptying the bladder and slow intravenous administration of $^1/_2$ cc. of hexamethonium usually result in prompt relief. Oral dose of 62.5 mg. of hexamethonium (half tablet) before catheter change or enemas may prevent these attacks.

Rehabilitation goals

Rehabilitation goals may be set tentatively rather early and depend on level of the lesion, whether it is complete or incomplete, the patient's age, concomitant diseases, educational level, and work history, as well as avocational interests. The levels can be determined by x-ray, sensory, and motor examinations. Motor level is most important from a vocational point of view. Cervical cord lesions require much longer hospitalization, frequently permanent nursing care, and limit vocational potential to the rare individual with unusual talents or exceptional education.

Programming

Programming should be planned according to the individual patient's condition. Barring febrile episodes or other complications, a full program of activity will speed the patient's rehabilitation, stimulate his appetite, enable him to sleep better, reduce complications, and result in better patient cooperation.

Psychologic factors

All patients with spinal cord injury sooner or later undergo a period of self-mourning. While many show depression right after the spinal cord injury, some patients do not show it until several months later. These patients at first refuse to accept the permanency of the damage and hope through hard work to lick the problem. Phantom sensation below the level of the lesion at times deceives them into believing that recovery of function is on its way. When the finality of the situation is realized, they undergo the same reactive depression experienced by the majority at an earlier date. Rarely is this depression so severe as to cause an attempted "physiologic suicide" by refusing to eat. Most spinal cord injury patients recover their interest in life through the support provided by family, fellow patients, and a sincere interest and encouragement shown by each member of the rehabilitation team.

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Neurogenic Bladder in Traumatic Paraplegia

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ONE OF THE TRAGIC consequences of spinal cord injury is the development of a neurogenic bladder. As a result of the disturbance of bladder function, many urinary complications arise and constitute a lifelong threat to the paraplegic patient. Statistics show that renal disease is responsible for at least half the deaths among paraplegic patients.

The need for assiduous bladder care from the very beginning of paraplegia is of the utmost importance, and its unremitting continuance throughout the paraplegic patient's life should be emphasized. Many complications may thus be averted and rehabilitation of the patient greatly accelerated.

Neuroanatomic features

To understand the detrusor dysfunction in paraplegia, it is necessary to review briefly the neuroanatomic features which have a bearing on the physiology of normal micturition. The center for micturition is located in the second, third, and fourth sacral segments of the cord in the conus medullaris and is linked to the detrusor muscle by parasympathetic sensory and motor fibers which course in the pelvic nerves; together they form the spinal reflex arc for micturition. Sympathetic motor fibers originating from the eleventh thoracic to the second lumbar vertebrae in the spinal cord course through the hypogastric nerves to reach the trigone and bladder neck. Somatic lower motor neuron fibers start at the second to fourth sacral

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vertebrae (possibly 1 to 2 segments higher and lower) and travel through the internal pudendal nerves to the external urethral sphincter, external anal sphincter, and perineal muscles. Sensory fibers course along the corresponding sympathetic and somatic afferents. Higher medullary and supraspinal centers also exert some influence on the bladder, but knowledge concerning this is far from complete. Pathways descend from the higher centers via the corticospinal tract and eventually reach synapses in the lateral and anterior horns of the sacral segments where the functional lower motor neurons start.

The vesical sensations associated with micturition include: (1) sensation of a desire to void, (2) sensation that micturition is imminent, and (3) sensation of urine passing through the urethra. The sensation underlying the desire to void originates in the proprioceptors of the detrusor muscle. As bladder filling increases to a certain point, the muscle fibers contract somewhat more vigorously and intravesical pressure increases slightly more steeply, giving rise to a desire to void. The impulses travel via parasympathetic nerve fibers coursing in the pelvic nerves to the sacral cord at the second to fourth sacral vertebral segments and upward through the spinothalamic tracts to the thalamus, subcortex, and cortex. The sensation that micturition is imminent is different from the desire to void and originates in the urethra; impulses reach the spinal cord via the pudendal nerves and thence to the brain centers via the posterior cord columns. The sensation that urine is passing through the urethra comprises three components, namely, an awareness of the opening of the sphincter musculature, a feeling of something passing along the urethra, and a thermal sensation. The impulses from the urethra travel via the pudendal nerves; in the spinal cord the impulses of sphincteric movement and "something passing" ascend via the posterior columns, and the thermal impulses travel over the spinothalamic tracts to the brain.

In patients with total division of the spinal cord, the specific sensations indicating that the bladder needs to be emptied and that urine is passing through the urethra are no longer felt. Many patients, however, experience other sensations related to bladder filling, and they learn to interpret such sensations as an indication that the bladder is full. The most common of the substitute sensations is a vague feeling of abdominal fullness which results from an increase of intravesical and/or intra-abdominal pressure. Impulses subserving it reach the central nervous system through afferent nerves running in company with the sympathetic nerves and chains; these nerves eventually reach the spinal cord via the posterior roots in the upper thoracic region. The impulses then proceed upward via the posterior columns. Other substitute sensations may be elicited in the form of spontaneous tingling paresthesia in the region of the bladder, urethra, and vagina. A very full bladder may also cause frontal headaches, goose flesh, chills, sweating in the upper part of the body, or nasal obstruction as a consequence of autonomic hyperreflexia.

Classification of bladder dysfunction

There are two principal types of bladder disturbances encountered in paraplegia, namely, automatic (reflex) and autonomous (nonreflex) bladders. The automatic bladder occurs when there is complete severance of the spinal cord above the sacral micturition center, leaving the reflex arc of micturition undamaged. The patient has no control over the act of micturition which occurs automatically at intervals of up to three or four hours, but sometimes hourly or less. During the intervals between voiding, slight urinary leakage resulting from uninhibited bladder contractions may occur. The autonomous bladder results when the spinal lesion is lower down, causing destruction of the sacral center and/or the sacral nerve roots. The reflex arc for micturition is no longer intact, and any contraction of the bladder would be the result of impulses transmitted through an intrinsic nervous mechanism that lies wholly within the bladder wall. Such contractions, however, are of insufficient strength or duration to empty the bladder efficiently. Evacuation of the bladder can only be accomplished by abdominal straining or suprapubic manual compression.

Diagnosis

The urologist is initially called on to determine the extent of nerve damage to the bladder and estimate the subsequent effect of the cord injury on the physiologic status of the urinary tract.

Integrity of the autonomic and somatic activities of the spinal micturition center may be tested by the ice water test, bulbocavernosus reflex, external rectal sphincter test, and the anal reflex test. The ice water test is carried out by instilling 2 to 3 ounces of sterile ice water into the bladder through a urethral catheter. If reflex activity is intact via the pelvic nerves from the bladder to the conus medullaris and back, the bladder will immediately and forcibly contract, expelling the fluid and urethral catheter. The other tests ascertain whether or not reflex activity is intact via the pudendal nerves. For the bulbocavernosus test, the examiner slowly inserts a finger in the rectum and squeezes on the glans penis or pulls on the Foley bag catheter. If the reflex arc is intact, the sphincter ani should contract briskly. Contraction of the rectal external sphincter around the finger that has been introduced likewise indicates that reflex activity is present (external rectal sphincter test). Visual observation of contraction following pinpricking of the anocutaneous line constitutes a positive anal reflex test result.

Evaluation of the type and degree of vesical dysfunction and its over-all effect on the rest of the urinary tract necessitates a complete survey which includes cystometry, cystoscopy, cystourethrography, intravenous pyelography, estimation of residual urine, and urinalysis. None of the examinations is sufficient in itself; they must be interpreted in context.

CYSTOMETRY. Cystometry is a procedure designed to record graphically vesical activity during the introduction of fluid into the bladder. Of all the varieties of apparatus that have been used, the simple water manometer is as satisfactory as any. A graduated reservoir is equipped with a Murphy drip bulb. A manometer consisting of a glass tube is fastened to a meter stick. A catheter, a Y tube, and rubber tubing to connect the tube to the reservoir and manometer complete the equipment. Water is allowed to flow into the previously emptied bladder in a slow continuous flow to simulate physiologic diuresis. Manometric pressure levels are recorded after each 25 cc. fluid increment. Reflex contractile waves are noted and recorded in the graph. The points at which the patient first feels the desire to void and the onset of pain from vesical distention are also recorded. If the patient has neither expelled the catheter nor voided around it after instillation of 400 cc. fluid, he is asked to strain as in voiding. This final reading is designated as the maximum voluntary pressure.

The automatic bladder usually demonstrates a variable pressure curve, forceful detrusor contractions, no recognition of the normal urge to void, vague sensations of bladder fullness, and in high lesions flushing or sweating reaction in the upper part of the body when the bladder reflex is about to act. Patients with autonomous bladders have the following characteristics: increased vesical tone, minor reflex detrusor contractions rarely greater than 10 cm. water pressure, bladder capacity within normal range, no normal desire to void, and a feeling of discomfort in the suprapubic area when the bladder is full.

CYSTOURETHROGRAPHY. The cystogram is made by introducing radiopaque dye into the bladder under gravity at a height of 15 cm. When the flow of dye into the bladder ceases or backs up, the bladder is assumed to have reached its capacity. The catheter is then clamped and the amount of dye instilled recorded. Urethrograms are made by gently injecting the contrast medium through the urethra from an Asepto syringe at the external urinary meatus. Anteroposterior and oblique films are taken in both instances.

A cystogram is taken principally to determine the presence of vesicoureteric reflux. It also discloses changes in the bladder outline such as trabeculations, saccules, and diverticula. Urethrograms reveal the condition of the vesical neck and posterior urethra, as well as the presence of strictures and diverticula in the anterior portion. Spasm of the external sphincter may be demonstrated by the inability to dilate the posterior urethra by injection of the radiopaque dye from the external urethral meatus.

CYSTOSCOPY. A cystoscopic examination is of value in ruling out the presence of any organic obstructive lesion, such as prostatic hypertrophy or urethral stricture, which may contribute to an increase in outlet resistance. Sphincteric resistance may be recognized during the insertion of the instrument. Vesical calculi are detected and may be extracted during the examination. An estimate of the degree of bladder infection may also be obtained.

INTRAVENOUS PYELOGRAPHY. Intravenous urograms provide information on the anatomy of the upper portion of the urinary tract and function of the kidney. Back pressure from the bladder is demonstrated by ureteral and renal dilation. Impairment of kidney function is manifested by a delay in the appearance of the dye and diminished concentration.

ESTIMATION OF RESIDUAL URINE. Urine left in the bladder after voiding is termed residual urine. It is measured by inserting a urethral catheter after the patient has voided by detrusor reflex contraction or by abdominal straining and suprapubic manual compression. The normal bladder empties completely. Presence of residual urine signifies inefficient detrusor action and/or increased outlet resistance. Accurate determination of residual urine in the paraplegic patient with an automatic bladder is difficult to obtain because he generally cannot void effectively on command.

URINALYSIS. Microscopic examination of the centrifuged urine specimen provides an approximate indication of the extent of urinary infection. Paraplegic patients invariably show varying degrees of pyuria, ranging from a few white cells to foul, turbid urine loaded with leukocytes. Bacilluria is similarly a common feature and is always present when a catheter is in place. Urine cultures and antibiotic sensitivity tests are advisable.

Management

INITIAL TREATMENT. Immediately following injury of the spinal cord, there is loss of reflex activity below the level of the lesion, and consequently the patient develops urinary retention. Initial urologic management is therefore directed toward provision of adequate bladder drainage and prevention of bladder distention. Workers in paraplegic centers, however, differ in their advocacy of the most satisfactory method of bladder drainage in early paraplegia.

Continuous indwelling catheter drainage is most widely used and is our procedure of choice. A French 16-18 self-retaining Foley catheter (5-cc. bag) is inserted immediately following the onset of paraplegia and connected to a closed drainage system. Scrupulous care and replacement every week with strict aseptic precautions are essential. It should be borne in mind that bacteria can enter the bladder at the junction of the catheter and urethra, at the connection of the catheter to the drainage system, and at the end of the drainage system. Entry of bacteria at the meatus and along the external catheter surface may be lessened by cleansing the urethral meatus and adjacent surface of the catheter with benzalkalkonium (Zephiran) chloride once daily in the male and twice daily or more often as necessary in the female. Entry at the connecting tube can be avoided by the simple practice of not disconnecting the set. Routine bladder irrigations are not required, provided the patient maintains a high fluid intake. When irrigation has to be performed, it should be done with a completely sterile setup. The junction of the catheter and connecting tube should be bathed in alcohol or other bactericidal agent as it is disconnected. Entry of bacteria at the end of the set is prevented by the use of an interruption or air break at the end connecting with the urine receptacle, thus providing a barrier across which the organisms cannot migrate.

Intermittent catheterization is advocated by Guttmann[1] who reports that with this method, bladder activity reappears in two to four weeks in contrast to one or six months with other methods. Urine remains sterile in spite of the repeated catheterizations during this period. The patients are catheterized two to three times a day, under aseptic conditions such as those prevailing in a surgical operation. It would, however, seem that such a method can be adapted only in highly specialized centers because it is time consuming and requires highly trained personnel.

Cutaneous vesicotomy has been favored by Lapides, Ajemian, and Lichtwardt[2] who recommend the procedure within one to two weeks after injury. A vesicocutaneous fistula is created by means of a tube formed half of bladder and half of full-thickness skin, which remains widely patent and continuously drains the urine from the bladder into a bag. The method may provide excellent drainage of the bladder, does not require a foreign-body catheter in the bladder, and is potentially reversible, should normal vesical function return. Our experience with the procedure has been disappointing.[3] It has been difficult to make the bag adhere because the low position of the stoma prevents effective use of a belt strap. The difficulty is increased when the paralyzed patient slumps in a sitting position causing a deep skin crease in the lower abdomen. Calculi have also formed on the hairs which grow in the skin portion of the tube. Urethral leakage of urine may persist and require difficult closure of the bladder neck.

Bladder training. Bladder training has been de-emphasized. It usually consisted of intermittent clamping and opening of the urethral catheter together with a regulated fluid intake of a glass of water hourly from early morning to bedtime. The regimen was supposed to provide near physiologic conditions for the bladder by alternately stretching and emptying it, thus preventing permanent reduction of vesical capacity from fibrosis and accustoming the neurogenic bladder to filling and evacuating in a more or less normal manner. However, patients who submitted to bladder training did not become any more continent than the others, and neither did patients not subjected to bladder training experience any deleterious effect on their eventual vesical function.

Trials of voiding. Attempts are made to discontinue the use of the catheter as soon as the patient's general condition is stabilized and satisfactory. Trials of voiding are therefore carried out at the earliest possible time and every two weeks thereafter. The patients who have automatic bladders will void reflexly in many instances, but they will be unable to empty their bladders completely and will have uninhibited contractions and wet themselves. Such patients may try to initiate reflex evacuation of the bladder by tapping the suprapubic area, stimulating the rectum digitally, or striking some other trigger area. Patients with autonomous bladders may be able to empty moderately well with straining and Credés method, but many will be incontinent between voidings. Residual urine is checked frequently during the first few weeks after catheter removal.

The male who achieves urethral voiding is usually incontinent and will require some external appliance to collect the urine. A condom urinary appliance is the most practical. The condom is changed daily and is affixed to the phallus by skin cement. If this alone will not suffice, then elastoplast is placed around the condom for the entire circumference of the penis. The elastoplast band must be applied in such a manner as not to constrict the urethra and must allow for possible reflex erection of the penis. No satisfactory appliance has been developed for women. Fortunately, however, the woman has a much shorter urethra and is more able to expel the bladder content by straining and may be able to get on along satisfactorily well with the use of pads. The woman with a spastic bladder usually needs a permanent catheter.

High residual urine. The amount of residual urine is dependent on a balance between the expulsive forces of urination (detrusor contraction, abdominal straining, and suprapubic manual compression) and the outflow resistance (vesical neck, posterior urethra, and external sphincter). If a high residual urine (more than 100 to 150 cc.) is present in spite of seemingly adequate expulsive forces, there must be either a mechanical or spastic obstruction which should be relieved.

Transurethral resection of the vesical neck and prostatic urethra can lessen outlet resistance and has been of great benefit to many patients with large amounts of residual urine irrespective of bladder type and even in the absence of demonstrable bladder neck or prostatic urethral obstruction. The entire circumference of the vesical neck is resected and continued distally to the external sphincter, an attempt being made to remove all prostatic tissue present. This is not a destructive procedure, and if not effective, no harm has been done. Also, if further recovery of the cord occrus, the patient's recovery of vesical function would not have been complicated in any way. The procedure is generally not performed earlier than six months after injury.

In the patient with an intact sacral reflex arc, a large amount of residual urine may persist in spite of transurethral resections of the bladder neck and prostatic urethra. Further investigation is then indicated to rule out spastic obstruction by the urethral sphincters. Spasm of the sphincters may sometimes be demonstrated by cystourethrographic and sphinctero-metric studies. Procedures designed to weaken the urethral sphincter may then be carried out. Ross, Damanski, and Gibbon[4] advocate removing several strips from the posterolateral aspects of the external sphincter with the resectoscope.

More recently, Smythe[5] accomplished division of the external urinary sphincter using a knife electrode by making a longitudinal incision at the 3:00-o'clock and 9:00-o'clock positions from the distal end of the verumontanum to the bulbous urethra. The latter procedure is associated with less bleeding and is as effective as the former. For some time now we have found no need to resort to neurosurgical procedures such as pudendal nerve section, rhizotomy, or subarachnoid alcohol for the relief of sphincter spasticity.

Urinary infection. Urinary infection is an almost constant concomitant of the paraplegic state. Use of the indwelling catheter and the occurrence of residual urine after catheter drainage is no longer necessary are the chief factors in the causation and persistence of urinary infection. Chronic infection has remained uncontrolled in a large number of paraplegic patients and probably is the main factor responsible for the observed high incidence of pyelonephritis and renal insufficiency.

Long-term maintenance chemotherapy is ineffective as long as catheter drainage persists. Sterile urine culture is encountered only in the paraplegic patient who has not had a urethral catheter for awhile. Persistence of bacilluria after the catheter has been removed is generally treated for a prolonged period with antibiotics, preferably nitrofurantoin or long-acting sulfonamides. Broad-spectrum antibiotics are withheld unless bacilluria is associated with clinical sepsis such as fever and chills. Measures should be directed toward eliminating urinary stasis when associated with infection; otherwise, antibiotic therapy becomes a wasted effort.

Vesicoureteric reflux. Reflux in the paraplegic patient is caused by the combination of obstruction, infection, and possibly neurogenic ureteral dysfunction. Reflux may be associated with or without dilation of the upper urinary tract. At any rate, in whatever form it may appear, reflux is a warning signal of deterioration in the upper urinary tract. It facilitates passage of bacteria from the bladder to the kidney and perpetuates infection in the upper urinary tract.

A patient exhibiting vesicoureteral reflux should be carefully observed and intravenous urograms and cystograms performed every three months. Reflux without upper urinary tract dilation is treated initially with antibiotics if bacilluria is demonstrated. When dilation ensues, efforts are directed toward elimination of high residual urine by transurethral methods. Results with ureteral reimplantation in the bladder to correct reflux have been equivocal. Urinary diversion into an ileal conduit is indicated when reflux is associated with advanced dilation of the upper urinary tract.

Ileal urinary diversion. There is a growing tendency among urologists to bypass the bladder and urethra rather than to restore a reasonable vesical function, especially in private practice where hospital facilities are limited and hospital and medical costs are prohibitive to the patient. Moreover, regardless of the patient's financial status, facilities for care comparable to those available in paraplegic centers are not available at any price for long-term care of private patients. The commonest procedure for diversion of urine is the ileal conduit. Both ureters are implanted into an isolated segment of terminal ileum which empties into the right side of the abdomen from which urine is collected in a bag. It must be appreciated that creation of an ileal conduit is an irreversible operation. Our indication for urinary diversion is a rapidly deteriorating upper urinary tract in which it is fairly obvious that the lower tract dysfunction and lower tract fibrosis are producing continued obstruction and upper urinary tract destruction.

ELECTRONIC VESICAL STIMULATION. Electronic vesical stimulation in the treatment of neurogenic bladder in experimental animals and in man has been reported by several authors.[6,7] Among the problems in patient application of this device have been impaired electric excitability and contractility of the detrusor muscle and spread of the stimulus current to the striated muscle of the pelvic floor surrounding the vesical neck. The latter complication produces occlusion of the urethrovesical junction during stimulation. It would seem that if the proper device could be designed, the time for electronic stimulation of the bladder is early in the course of the disease, thus protecting the bladder from the deleterious effects of neurogenic dysfunction.

FOLLOW-UP CARE. The paraplegic patient must be followed with the utmost vigilance for the rest of his life. It should be impressed on him that his future well-being and chance of survival depend, to a large extent, on his willingness to cooperate fully in the follow-up examination. Intravenous pyelography and cystography should be made every year and residual urine measured every six months even when everything appears to be going well. It should also be borne in mind that dangerous lesions may develop insidiously, and a bladder that empties well is no guarantee for the permanency of good renal function.

Summary

The neurogenic bladder resulting from spinal cord injury gives rise to many urinary complications which constitute a lifelong threat to the paraplegic patient and accounts for at least half the deaths of these patients. The need for assiduous bladder care from the very beginning of paraplegia is of the utmost importance, and its unremitting continuance throughout the paraplegic patient's life should be emphasized.

A rational approach to the management of the neurogenic bladder based on the results of a thorough evaluation of patient's urologic status is discussed. The diagnostic tests and procedures involved in such an investigation are described.

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Restorative Management of Paraplegic Patient

Philosophy and Concept of Bracing

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PARAPLEGIA SECONDARY to injury of the spinal cord was recognized by physicians of ancient Egypt. There was then little concern with the long-term treatment of such patients since death usually ensued within a very short period of time. Even as recently as 1912, little progress had been made when the British military authorities reported a mortality rate of 95 per cent within a few weeks after spinal cord injury in soldiers of the Balkan War. The experiences during World War I were not much more encouraging. Eighty per cent of all soldiers who sustained spinal cord injury, both in the British and in the American forces, died within five to six weeks

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after injury from severe urinary infections and other complications. Interest in the treatment of spinal cord injury therefore dates back only to World War II, when improved methods of evacuation and transportation, newer advances in surgical technics, and, most important, the availability of antimicrobial therapy made treatment of such individuals possible.

Early accomplishments

Toward the end of World War II and during the postwar period, a number of specialized centers were established for the treatment of these patients. Enthusiasm ran high in medical and paramedical circles. "Total push" and "What's my score?" were bywords in the hospital milieu in which these patients received their total care. Based on metabolic studies[1] and various other observations, the concept that standing, weight bearing, and ambulation as a means of preventing bone disturbances and secondary metabolic complications was enthusiastically accepted, with the result that training the paraplegic patient to ambulate became an all-consuming passion with medical staffs charged with their treatment. Criteria for bracing at various levels of injury were laid down by authorities in this newly developed field of specialization.[2] It was soon apparent that certain important factors had to be considered in determining whether or not ambulation should be prescribed for a specific patient. Coonrad and Whitesides[3] stressed the need for taking into account the patient's physical reserves, his age, and whether the lesion was partial or complete. It was soon realized that the potential for ambulation of the patient with a partial lesion was far greater than that of a patient with a complete lesion, irrespective of the level of injury. These authors felt that individuals with complete transections above the tenth thoracic vertebra should be considered as wheel chair patients and that bracing for the purpose of crutch ambulation should not be encouraged. Hastings[4] stated that no patient with a complete lesion above the twelfth thoracic level should ambulate with crutches and braces, while Zankel, Sutton, and Burney,[5] studying a small group of patients, found no correlation between level of injury and ability to ambulate. They also concluded that the extent of injury, rather than the level, was a primary determinant of a patient's ability to walk. Long and Lawton[2] studied the relationship of the patient's functional residuals with the level of the lesion and related an individual's ability to walk with the level of injury. They also called attention to other factors which might have a bearing on the accomplishment of ambulation, such as spasticity, decubitus ulcers, urinary incontinence and infection, and motivation on the part of the patient. Gordon and Vanderwalde[6] carried out rather careful studies on the metabolic costs of ambulation with crutches and braces by the disabled patients. They found that the paraplegic individual walking with crutches and braces, using a swing-through gait at a speed of 88 feet per minute, this being equivalent to one mile per hour, required a physiologic output of five and a half to eight times the basal rate, a level of activity which they felt no individual could possibly maintain.

Controversy in technics

There has also been considerable controversy regarding the extent of bracing required to achieve functional ambulation. Covalt *et al.*[7] believed that patients with levels above the tenth thoracic vertebra should be fitted with long leg braces and a pelvic band with a Knight spinal attachment. Individuals with lesions below that level could get along with a pelvic band and long leg braces, and use of long leg braces alone should be reserved for patients with low lumbar or incomplete lesions. On the other hand, Abramson[8] has steadfastly held that pelvic bands and back braces attached to leg braces are rarely, if ever, necessary. He stated that the latissimus dorsi and the lower third of the trapezius muscles could be trained to replace the function of these attachments. He expressed the view that the use of the wheel chair as the sole means of locomotion had definite drawbacks and advocated a combination of crutch and brace walking and wheel chair locomotion as the most acceptable and practical approach in the majority of patients with spinal cord injury. Skill in the use of crutches and braces would permit an individual to get into restricted places and provide some degree of physical activity for the normally innervated parts of the body which could not be attained through the use of the wheel chair alone.

The value of weight bearing and crutch walking as a means of preventing osteoporosis and renal calculosis has found less acceptance in recent years and is therefore no longer considered a prime indication for crutch ambulation.[9] With the greater experience gained over the years and with the greater availability and acceptance of the automobile equipped with special hand controls and other assistive devices as a means of providing mobility for the patient with spinal cord injury, the need for crutch and brace ambulation has been seriously questioned by many workers in the field. Many centers are now advocating use of the wheel chair and the specially equipped cars as the most appropriate means of locomotion of the paraplegic patient and of course the quadriplegic individual too. Recent studies from a number of centers having wide experience in the treatment of patients with spinal cord injury and related disabilities suggest that fewer and fewer patients who were originally fitted with long leg braces continue to use them. Kaplan *et al.*[10] reviewed 91 patients who had received bilateral double bar long leg braces with or without pelvic band and Knight spinal attachments. Of these only 19, or 21 per cent, continued to use this equipment consistently, and the majority of individuals who continued to use braces were those with residual disability from poliomyelitis. Patients whose paralysis resulted from trauma or other disability showed a much lower percentage of continued usage. In another study dealing with 14 patients with lesions below the fourth thoracic vertebra who had been furnished with bracing, only 6 continued to use their braces.[11] In a survey conducted at the Spinal Cord Injury Center at Veterans Administration Hospital, The Bronx, of patients discharged between 1954 and 1963, it was found that less than one-third continued to use their braces at all and that the majority who used them did so only occasionally to permit standing for metabolic purposes once or twice a week.[12] A review of patients placed in a hospital at the same center in January, 1965, showed that there were 21 patients who had been furnished braces during their present or previous periods of hospitalization and had been trained in their use. Of these, only 1 individual, a patient with an incomplete lesion, continued to use his braces. All others had discarded them. The most common reason given for failure to use crutches and braces was that the patients derived little or no benefit from them since they were completely self-sufficient in all activities of daily living and were completely mobile by means of the wheel chair and use of their automobile.

The necessity for ambulation by means of crutches and braces is further reduced by the campaigns which have recently been begun by groups representing physically disabled individuals to eliminate architectural barriers in hotels, motels, theaters, and other public buildings to make such places readily accessible to wheel chair users. The results of these efforts appear encouraging.

New devices

The findings with respect to the use of assistive devices and orthoses for weakened or paralyzed upper extremities are not much better. Many devices have been developed by occupational therapists and by orthotists which are designed to improve hand and wrist function in individuals with lesions at the sixth to eighth cervical vertebral levels. While only limited information is available in the literature on the usage of such devices and the acceptance of them by patients, it has been our experience that in general patients will accept the simpler assistive devices which enable them to perform specific functions which otherwise could not be performed or could be accomplished only with the greatest difficulty. Such simple gadgets as wire splints to allow a quadriplegic patient to hold a cigaret or special adaptations on cigaret lighters, knives, forks, and spoons are readily accepted by the patient and continued in use more or less indefinitely. A number of sophisticated orthoses have been developed which utilize either the tenodesis effect of wrist extension for achieving hand function or which use external power such as shoulder motion or the carbon dioxide-activated device commonly known as the McKibben muscle.[13] These latter devices have had some acceptance in specialized centers with moderately good success. Generally, however, we are in full agreement with Bennett's[14] views that an assistive device will be used by the disabled individual only if, in his own opinion, it provides a significant degree of increased function which could not be otherwise achieved in a less complicated manner by substitutive motion. The best example of a device which meets this criterion is the driving cuff which has been specifically designed to permit the quadriplegic patient with injury at level of the sixth or even fifth cervical vertebrae to operate successfully the various controls on an automobile which has been adapted to meet the patient's needs. No patient has ever discarded such a device because it enabled him to perform a necessary or useful function which he could not perform in any other way.

Conclusion

The current concept of the prescription for orthotic devices should be in keeping with these points:

1. Long leg braces should be prescribed only for relatively youthful patients who have the stamina, motivation, and need to use braces for specific functional indications. The metabolic benefits which might possibly be derived from the standing posture can be much more easily achieved by simpler and less costly means.
2. Bracing should be prescribed only to the extent necessary. Overbracing should be discouraged since it adds weight to the patient and hampers motion. Underbracing will fail to provide the needed support and thus will fail to accomplish the desired result.
3. Energy requirements and other complicating factors should be considered in evaluating indications for bracing.
4. Orthotic devices should be of simple design, easy to operate, well fitted, and meet a specific functional need of the patient.

The inert material of mechanical devices and living tissue are not compatible. The role of the mechanical prescription of bracing is to seek the most compatible arrangement. To achieve this, excessive emphasis on the mechanical must give way to a complete consideration of biologic phenomena.

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Plastic Surgery in Paraplegic Patient

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THE PLASTIC SURGICAL conditions one encounters in the patient with transverse

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myelopathy are almost exclusively infinite variations of a single theme, the name of which is the pressure sore. Its other names are decubitus ulcer and, most commonly, bed sore. By whatever name you choose to call this condition, it can never be considered as anything but a very serious, at times fatal, complication requiring prompt and definitive treatment of either a nonsurgical or a surgical nature. It is always to be feared and never minimized or neglected because its effect can be disastrous.

Once more the truth of the old adage, "an ounce of prevention is worth a pound of cure" is borne out.

The era of surgical management of this condition is comparatively recent, dating back to about 1945. Prior to World War II, systematic organized rehabilitation programs for paraplegic patients had not been undertaken. Since the lesions themselves are generally of a disagreeable and somewhat unexciting nature surgically, the imagination was not stimulated to try surgical means of correction. The development of antibiotics at about this time may have enhanced surgical courage to the extent that operation on contaminated tissue could be done as an elective procedure with moderate safety. Significant findings of a nutritional nature, reported in 1943, wherein the use of amino acids and dextrose dietary supplements restored a mixed group of general surgical and paraplegic patients to a positive nitrogen balance thus enhancing the rapidity of wound healing, were of great value. Gradually, the technics of operation were improved until today the majority of surgeons dealing with these patients are convinced that the best results are obtained by using a single large pedicle flap consisting of full-thickness skin and subcutaneous tissue, nourished by a blood supply entering at one end of the mobilized flap.

Etiology

For some years now, I, along with many other people who have written on this topic, have stressed that the single most important factor in the formation of these sores is excessive pressure. Naturally, other elements play a contributory role, but unrelieved pressure for periods estimated variously at from two to twelve hours appears to be the major causal agent.

Important, too, is the lowering of the nutritional status of the patient, whether by infection, starvation, or inanition. Some writers feel that a disturbed metabolic state is necessary for both their formation and their chronicity. I would not dispute the importance of this disturbed metabolism on the continuation of ulceration and breakdown, but one might argue that it plays a less important role in their cause. We have all seen pressure sores develop within a few days in healthy young adult males suddenly immobilized through accident or disease.

Neurotrophic factors will be discussed more fully later. It is certainly likely that there are changes caused in local metabolism through disruption of nerve impulse transmission. Where there is some existing lower motor neuron innervation, it has been found that there is an increase in cellular activity owing to a more positive nitrogen balance.

The loss of subcutaneous fat and a diminished muscle mass are conducive to the development of undue pressure over bony prominences.

Anemia, hypoproteinemia, vitamin deficiency, and lowered skin resistance through poor personal hygiene may contribute to the development of a pressure sore or ulcer.

Carelessness on the part of attendants or the patient himself, whereby a "brush burn" may be inflicted by rapid passage of a body part over a sheet or traumatizing of the skin against the arm of a wheel chair, may cause skin damage. The chafing of casts and brace straps, the use of too small a wheel chair, or a poorly padded seat on the chair, have been responsible for the development of either superficial skin breakdown or ischemia of the part followed by tissue necrosis in the deeper layers. Even the time-honored alcohol rub, followed by dusting with talcum powder, has been implicated by some writers. Bateman felt that he could improve the results and save much nursing time by having pressure areas washed only twice a week, unless they were badly soiled, using no soap, alcohol rub, or talcum powder. Certainly the presence of normal skin oils, which are washed away by alcohol, soap, and water, does improve the resistance of the skin to superficial breakdown or chafing.

The rough removal of adhesive tape, poor protection of skin surfaces, burns by excessively hot bottles or lamps used to provide heat, and even the shearing forces acting on sacral and buttock skin by the simple maneuver of raising the invalid's bed to a sitting position are numbered among many extrinsic factors contributing to ulceration. Dampness of the bed clothes next to the skin, wrinkling of sheets, and presence of infection are all conducive to the occurrence of ulceration, and once infection is present in a wound, it makes such wounds much harder to heal.

Circulatory stasis and edema caused by impairment of drainage of protein from the tissues by the lymphatic vessels consequent on the loss of muscular activity may also contribute to the devitalization of the part and can be aided by either passive or active movement.

Nitrogen balance is hard to maintain in paraplegic patients or in anyone kept at strict bed rest for any length of time, because under such conditions the loss of protein metabolized through the urine is greatly increased.

But above all, I would remind physicians that unrelieved pressure, particularly over thinly padded bony prominences with its resulting ischemia leading to tissue necrosis, is in my opinion the major cause. All other conditions mentioned are contributing factors.

Sex distribution

Sex distribution is not difficult to assess. Since there is a much greater male exposure to the accidental hazards that cause transverse myelopathy in sport, industry, and war, it would seem that there is, purely as a result of this exposure, a higher male population of paraplegic patients than of the female.

Clinical feature

In general, it might be said that the ulcer may start as a small superficial lesion first involving the skin and later the various substructures; this form can frequently be treated successfully by the use of conservative measures if instituted early. The second form of ulcer may appear as an area of reddening of the skin with a small opening or no opening at all. However, beneath the surface, there is found widespread destruction in a cone-shaped area extending through all the layers of tissue down to and including the bone. The products of bacterial invasion and tissue breakdown form a foul-smelling, purulent discharge which in itself is destructive to new epithelium. A continuous discharge of this proteolytic material leads to protein deficiency, anemia, temperature fluctuations, malaise, and a general lowering of the constitutional status, thereby acting as a nearly self-perpetuating mechanism which will hardly ever heal by conservative therapy alone; if it does, however, the covering over the bony prominence will be so thin that it will be subject to almost certain breakdown. For this type of ulcer, the only solution, in my mind, is excision of the affected tissue and coverage with a thickly padded layer of skin, fat, and in some cases even muscle.

Treatment

It is possible to divide treatment into two major categories, one systemic and the other local, either of a conservative or a surgical nature. I will not concern myself with the conservative treatment, since that is not the purpose of this report.

Under systemic treatment, we must first concern ourselves with nutritional measures for the restoration of the patient's nutritional status. Of prime importance is the administration of a high-protein, high-caloric, and high-vitamin diet. In the presence of hypoproteinemia, development of ulcers is rapid and healing is slow. By restoring a positive nitrogen balance, healing of damaged tissues is facilitated. In practice, it has been found that it is unwise to operate on patients suffering from nutritional imbalance. A daily intake of 135 Gm. of protein in the form of lean meat, cheese, skim milk, protein hydrolysates, and amino acids is effective. Animal protein is preferable to vegetable. It may be necessary to supplement oral feedings by gastric tube or infusion, since the appetite of many of these patients is naturally poor because of their inactivity and invalidism. It is sometimes wise to reduce the fat intake and increase the carbohydrate content of the patient's menu. Vitamin supplementation by a geriatric formula type of vitamin compound has been found useful. There will be improvement in skin quality along with greater resistance to breakdown and infection. The general physical tone is heightened and appetite stimulated.

The serum protein level should be about 6 mg. per 100 ml. before undertaking any surgery, and correction of anemia by all the means we have available to us today must be accomplished. We frequently give blood transfusions before, during, and after surgery, and no surgery will be undertaken unless the hemoglobin level is at least 12 Gm. per 100 ml.

In 1965 I was asked to act as plastic surgery consultant at the Castle Point Veterans Administration Hospital, near Beacon, New York, where some 50 South Vietnamese military paraplegic patients were hospitalized for treatment and, if possible, rehabilitation. These were men who, for anywhere from one to four years, had been lying around in overcrowded hospitals, sometimes three to a bed, and for whom there was little or no future or hope. They were flown from South Vietnam with one stop in Hawaii accompanied by two of their own physicians, their nurses, and additional aides or attendants. They ranged in age from about seventeen to thirty-eight or thirty-nine. Surprisingly, their pressure sores, which were many and varied, were quite clean, but the color was a pale watery pink. All, almost without exception, were suffering from anemia, all were suffering from protein deficiency, and the result of years of malnutrition, probably in many cases since birth, was evident in their small stature and extremely thin bodies. Their diet had been principally rice with an ill-smelling fish sauce, occasionally supplemented by fish and, very rarely, meat. Many were suffering from intestinal parasites, malaria, or urologic conditions.

Of major concern in these cases, apart from the malnutrition and associated diseases, was the small stature of the individuals. We were confronted with pressure sores of a size found in the average American male, sometimes even more extensive, and yet many of these men had the physique of ten- or twelve-year-old boys. Thus, we were faced with the difficult problem of finding sufficient skin-fat coverage. Our usual methods of single rotation or transposition flap were not generally applicable, and we found ourselves making compromises, using two flaps of an interdigitating type from opposite sides of the ulcer. One of the disadvantages of this type of surgical coverage is that, inescapably, one does place a scar over pressure areas.

An interesting side light, as far as the nutritional problem is concerned, was the fact that we were not able to supply all the elements of their usual Vietnamese diet, and they were gradually weaned away from these dietary items, apart from rice which they received three times a day, to a substitution of American food items. A rather repulsive dish, which they appeared to enjoy, was frankfurters and beans doused in fish sauce.

This created an unholy smell which pervaded the hospital at mealtimes, but the meal apparently was enjoyed with great gusto by our patients.

Spasm was a frequent problem, sometimes uncontrollable. It is of course almost hopeless to try to do a flap closure of an ulcer located near a joint unless the spasms have been controlled by the means available to the neurologist and neurosurgeon. The constant movement of the joint is almost certain to be destructive of the flap, tearing it loose from its new location. We thus made it a rule that we would not do a flap closure in any patient with gross spasm. While it is true that erectile ability, which is present in from about 60 to 75 per cent of male paraplegic patients, is diminished or destroyed and the automatism of the bladder and bowel are interfered with, I believe that in most instances the sacrifice must be made if they are suffering from severe septic ulceration and desire to have treatment. To avoid this loss of sexual function in male patients, bilateral high amputation has been advocated, thus eliminating the need for neurosurgical intervention for spasm. This seems like a radical procedure and it is, and yet it has the advantage, not only of preserving the sexual function, but also of eliminating cumbersome, useless limbs which prevent the patient from moving easily in bed or in his wheel chair. When a patient is in his wheel chair, prosthetic limbs can be used to simulate the missing limbs for the sake of esthetics.

In preparing these patients for operation, we must first relieve pressure on the affected parts and at the same time prevent any other bony prominences from being subjected to undue pressure. There are many ways of doing this which I need not go into. The main thing is to implant in the patient's own mind the need for shifting position and relieving pressure from the affected areas. We do not believe that an inner spring type of mattress is as suitable as a foam rubber or plastic sectional mattress. Going a step beyond, the alternating pressure mattress or pressure pad in conjunction with the foam mattress seems to be even more useful. The Stryker frame with which physicians are familiar is of somewhat limited value. It does enable the patient to be turned with some ease, but unless he has very alert attendants, he can be left too long in one position and might even develop pressure sores in an unusual place, namely, the axilla, from the fact that his arms hang over the sides of the frame. A much more dependable and efficient method of improving circulation and pressure alteration is the revolving circular bed called the CircOlectric bed.* With this bed, the patient can assume an almost unlimited number of variations of position. It has the desirable additional advantage of stimulating circulation and muscle tone. Sheepskin or imitation sheepskin rugs, laid under the patient, have also proved beneficial. None of these, of course, is in itself a complete substitute for an alert patient and alert cooperative attendants.

Local preoperative treatment

Local treatment is aimed at securing a surgically clean wound. If this is obtained and the ulcer is not too large, epithelium will grow in from the side, the base will fill up from below, and finally a new surface of scar epithelium will cover the ulcer. Certainly this is to be preferred to an open wound because a closed wound cuts down on protein depletion, and the patient's general condition is improved. Sometimes we accomplish this type of improvement by performing a split-skin graft on a partially healed wound. We do not expect the skin graft or the scar epithelium to stand up under the trauma of abrasion or pressure, so that in both instances it is generally a temporary measure preparatory to definitive surgery. If the wound is dirty with sloughing components, we make certain that surgical and/or chemical debridement is carried out until it assumes a clean granulating state.

After using various methods of conservative therapy, we may find that there is healing of small or medium-sized ulcers. It is unusual for a large ulcer to resurface itself, and our feeling is that if conservative therapy has failed to secure complete coverage in a matter of about two months, it is far better to proceed to a surgical approach. We feel that early surgical closure offers more hope in the form of decreased morbidity rates and earlier rehabilitation, important factors in these patients from economic, social, and psychologic viewpoints. There is no question in my mind that only a small percentage of pressure sores can be treated adequately by conservative therapy.

Surgical treatment

The objective of surgical treatment is ablation of the ulcer and the scarred skin around it, including the removal or flattening of bony protuberances and the restoration of an intact skin surface with adequate subcutaneous padding at the site of former pressure sores. By all odds, the best coverage is obtained by the use of a large local pedicle flap of skin, fat, and occasionally muscle.

After having tried most of these methods in our earlier days, we have developed the strong feeling that they all lack the utility, simplicity, and ease of operation of the single rotation flap. By using these large flaps, we find that we can nearly always close the wound without resort to a split-skin graft on part of the donor area, although we would not hesitate to place such a graft if we found there was too much tension on the flap. All our patients are operated on under general anesthesia since they are usually very labile individuals; it is a source of reassurance to have a competent anesthesiologist supervising the electrolyte and whole-blood replacement and being able to give ample warning to the surgeon of the beginning of shock or the development of cardiac complications. In addition, there is a certain mental trauma to the patient who is operated on while in the wakeful state, which we would prefer that he not experience.

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* Manufactured by Stryker Manufacturing Co.

The full extent of ulcer and scarred surrounding skin must be encompassed in our dissection. Before the lesion is excised, the surrounding skin on all sides is tested for laxity and for lines of minimal tension, so that the flap may be fashioned in an area where these lines will facilitate transposition or rotation. Sometimes the desirable flap rotation cannot be utilized because of old scarring which interferes with the blood supply or because it might impinge on a potential future donor site for another ulcer in an adjacent area. We must always think in terms of the future in these patients and exert our best efforts along the lines of preservation of tissue. After the ulcer has been excised, the underlying bone, if there is a prominence or a projection, should be flattened so that it will no longer represent a pressure point. We do not believe in so-called prophylactic total ischiectomy in ischial ulcers but prefer partial ischiectomy. A flap or gently rounded ischial tuberosity surface is produced which still functions as a seating support. The flap is then outlined in ink, and our incisions are carried down to the deep fascia in most instances. The flap is carefully raised with gentle handling of tissues at all times. Bleeding is controlled by clamping and coagulation or tying. The flap is undermined until such time as it will move easily into position over the ulcer site. The surrounding skin edges are undermined for a distance of one to two inches, if necessary, all of which enables us to reduce the maximum size of the wound. The flap being swung into position, we frequently take tacking sutures from the base of the flap to the base of the wound which helps to relieve tension and gains a little more length; it is then sutured with two or three layers of sutures around its perimeter. If we can close the donor site with ease, we do so. If we need a skin graft, we take it from an area not subject to pressure and utilize it to cover the remaining portion of the donor site which is not closed primarily. We prefer to leave the operative site open or only lightly covered by a dressing. We drain all large surgical sites using the Hemovac or some form of intermittent wall suction. Postoperatively, all pressure must be relieved from the operated area for a period of four to six weeks. Drains are removed in seventy-two to ninety-six hours as a rule, and sutures are taken out in ten to fourteen days. The patient is allowed some weight bearing on the flap, as a test, at about the end of four weeks in some instances, six weeks in others. If any reddening occurs, the patient is immediately returned to his bed with all pressure being relieved. Throughout the entire retraining period, it must be emphasized over and over that the patient himself must be responsible for changing or altering his position in the wheel chair or his bed, as the case may be. Frequent changes of position are absolutely essential for the remainder of these patients' lives, whether they are subjecting an operative area or an undamaged area to weight bearing.

A brief description of another type of pressure sore, where the plastic surgeon may need to work in cooperation with the urinary surgeon, is represented by the following example. This patient, a South Vietnamese soldier, demonstrated a wide fistula occurring along the penile urethra. He did not know how it developed, and since he had had it when he arrived in the United States, one can only assume that it is possible that there was undue pressure externally from a folded catheter in the region. There was undoubtedly pressure of some sort, and the fistula showed no evidence of spontaneous healing. This was a source of great worry and psychologic trauma to this patient, even though his back and sides were covered with much more serious and larger pressure sores. It was also a constant source of annoyance to the nurses because, despite the catheter in place, there was some leakage on coughing or other form of abdominal pressure, so that frequent changes of linen were necessary. We decided to treat this almost as one would treat a hypospadias, and a genitourinary surgeon diverted the urethral stream by performing a suprapubic cystotomy. Despite the use of mechanical suction, there was some residual urine, and still some leakage occurred. Consequently, two procedures were necessary before complete closure was obtained.

The plastic surgeon may also encounter problems other than pressure sores. Occasionally, we are asked to do cosmetic surgery on the face or nose of our female patients, and if by so doing we can enhance their personal esteem, we have no hesitation in complying. These patients deserve every bit of assistance that we can render.

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Orthopedic Management of Transverse Myelopathies

Reconstruction, Stabilization, and Release of Spasticity*

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The patient with transverse myelopathy or cord transection presents many challenges to the orthopedic surgeon. These patients vary in age from the newborn child to the aged individual. Their disability may result from congenital spinal anomaly, trauma, infection, tumor, or degenerative central nervous system disease. The disorder may be precipitous or insidious in development. The paralysis, sensory deprivation, and spasticity may have been permitted to distort and cripple for years before any systematic approach to rehabilitation is started. A rational approach to these severely disabled patients from the onset of their disease can eliminate many of the worst complications and permit a useful, happy life to supplant seemingly hopeless invalidism.

The spinal patient is not a spinal animal. He or she has will, enthusiasm, and potential. By marshalling medical, surgical, nursing, and administrative skills from the beginning of the disease, these potentials can be fulfilled and tremendous burdens lifted from the patient, the family, and the community. The key must be an organization which includes all necessary components, under unified direction, with proper political support. The surgical procedures to be discussed are of little value if the patient is never brought to a proper treatment environment and if rational solutions to post-treatment problems are withheld. Other states and other communities provide these services. The government, with proper guidance, should see that available agencies and agents work together to make early and long-term care available to the spinal patients before physical deterioration and psychic dependence become irreversible.

Orthopedic surgical care in spinal cord disease is aimed at reversing or stabilizing the disease process when possible. In addition, significant improvement in the spastic state can be effected with relatively simple surgical measures. The surgery of the spinal axis will be reviewed briefly. A survey of available peripheral procedures will follow.

Following spinal fracture with myelopathy, stabilization is usually necessary only in the cervical spine. If skeletal instability or extensive cervical paralysis is present three months after the injury, the cervical spine should be fused. The anterior approach is quite useful in this situation. Rarely, persistent back pain or progressive spinal cord deterioration require stabilization lower in the spine. The posterolateral spinal fusion and the circumduction fusion offer excellent solutions to the spinal segments which have little re-

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maining posterior bone after previous laminectomy.

The patient must not be permitted to remain supine for months awaiting the decision to fuse the spine. In cervical cord injuries, the patient may be safely mobilized in a cast six weeks after the injury. If x-ray films show abnormal motion at the affected level after another six weeks, fusion should be performed without further delay. The goals are a pain-free stable spine with no chance of increasing myelopathy.

Tuberculosis of the spine may lead to abscess formation and vertebral body collapse with cord involvement despite antibiotic therapy. The spinal cord disease is produced by granulations, extradural abscess, and occasionally by posteriorly displaced sequestra from the vertebral bodies. Rare tuberculomas are seen as cord tumors and are diagnosed in retrospect. It is important to treat tuberculosis with paraplegia by anterior decompression when rest, immobilization, and antibiotics do not quickly reverse the spinal cord signs. Spinal fusion by anterior or posterior approach should be effected during the course of treatment.

The peripheral manifestations of transverse myelopathy include paralysis; spasticity with contractures, fixed and functional; para-articular ossification; pressure ulcerations, with and without underlying osteomyelitis; and spastic dislocations of toes, knees, and hips, occasionally with sepsis. Treatment will vary with the age, stamina, and potential of the patients, and with the duration and severity of the disease.

Basic axioms

A series of patients with these disorders have been treated at Bellevue and University Hospitals. These basic axioms have been followed in determining suitability for surgery.

1. Early release of contracted components is indicated when passive manipulation cannot produce a satisfactory position and range of motion.
2. Cast correction in the presence of anesthesia and spasticity is extremely hazardous and is best used with care after surgical release of major contractures and/or reduction of spastic forces.
3. Since spontaneous return of function is rare, prolonged delay in treatment usually leads to deterioration.
4. In the absence of volitional function, reduction of spasticity will not produce motor power. The patient and family should be so informed.
5. The underlying disease which leads to neurologic disorder often does not contraindicate surgery. Limited procedures may be performed with minimal anesthesia and little risk. In the young, extensive procedures may be performed if adequate support is assured.
6. Complex peripheral stabilizations and tendon translocations will not improve function in the quadriplegic patient.
7. Myelodysplasia in the child may be accompanied by foot and hip deformities which should receive immediate orthopedic care concomitantly with any neurosurgical care. The effect of paralysis and spasticity on the growth of bone must be considered and stabilizations and releases performed as indicated in these cases.
8. When a deformity interferes with the application of a needed brace or the use of a chair, that deformity should be corrected.

In the past three years, 26 patients with spinal cord disease have required surgical procedures in the New York University Orthopedic Surgery service at Bellevue Hospital. Thirteen were adults and 13 were children. Two adults had late trauma requiring anterior cervical fusions for stabilization of the neck. The 11 remaining adults underwent a total of 22 procedures. These were 5 bilateral adductor tenotomies, 3 with obturator neurectomies. There were 4 bilateral hamstring tenotomies and 2 bilateral tendo achillis lengthenings. Bone procedures included one Girdlestone hip resection, 2 ischial tuberosity resections, 1 subtalar arthrodesis in a mild diplegia following transverse myelitis, and 2 wrist fusions.

One wrist fusion was designed as a base for functional tendon transfers. The fusion was successful, but the tendon transfers to the fingers were not. Fusion of claw toes was successful in 1 case.

Other procedures included one elbow release, one finger flexor release, and a single case of bilateral above-knee amputation.

The most common cause in the adult cases was trauma, in contrast to the children in whom myelodysplasia was the most common cause. Of the 13 children, 9 were spina bifida patients and 4 had traumatic myelopathies.

In the children, skeletal procedures were more frequent than in the adult cases. There were 22 operations. The soft-tissue operations consisted of 2 hip releases (1 bilateral), 2 bilateral adductor tenotomies, 5 hamstring tentomies (4 bilateral), 1 tendon transfer to the heel cord, and 2 bilateral extensor hallucis transfers to the first metatarsal.

The skeletal procedures consisted of 7 subtalar arthrodeses in 5 children, 1 femoral osteotomy and 2 tibial osteotomies.

Two deaths occurred in this series. These were caused by sepsis produced by ascending genitourinary tract infection. One was in an adult and the other in a child. Both deaths followed surgery by several months. There were no local wound complications.

Comment

The procedures utilized in the management of spasticity are designed to release fixed contractions and to weaken spastic muscles. Reduction of spasticity is a by-product of tendon releases since the shortened muscle is no longer a source of afferent stimulation from its muscle spindles. Selective denervation with nerve capping to prevent regeneration is useful to control both spasticity and clonus. Chemical nerve block with dilute phenol is developing as a technic to reduce spasticity with the hope of preserving some volitional control. This technic is most likely to be effective and selective when the nerve is exposed surgically prior to the chemical bath.

In contrast to a series of hemiplegic patients, the patients with myelopathies present lower motor neuron lesions in the upper extremities secondary to spinal cord trauma and considerable deformity about the hips and knees.

Upper extremity lower motor neuron paralysis is best managed by splinting when only the wrist dorsiflexors are functioning. Occasional patients will benefit from tenodesis of the finger flexors and extensors accompanied by a metacarpal bone block to keep the thumb in opposition with interphalangeal stabilizations when indicated. The major effort should be to strengthen the wrist extensors without stretching the finger flexors.

When spasticity of the fingers and wrist is severe, the affected tendons should be released or lengthened. Intrinsic spasticity can be released by a resection of the triangular conjoined tendon of the lumbricales and interossei in the proximal phalanges. Spasticity of the median innervated musculature has been treated by phenol block at the elbow at Rancho Los Amigos Hospital, Los Angeles, California, with some success.

When spasticity of the elbow flexors and/or shoulder adductors is deforming, the biceps, brachialis, and pectoralis major are easily divided.

The spastic deformity at the hip is flexion and adduction. When this is bilateral, nursing can be difficult. Pressure ulcers are frequent, and the patient may not be able to assume the prone position. Obturator nerve blocks with 1 per cent lidocaine (Xylocaine) can give a good indication of the effect of obturator neurectomy. In absence of masked abductor spasticity, obturator neurectomy should accompany adductor tenotomy. When para-articular ossification produces ankylosis of the hip, a Girdlestone hip resection is indicated so that the patient may sit easily and assume the prone position. When severe flexion attitudes of the hips and knees are present, alcohol wash of the spinal cord to eliminate all motor activity should precede orthopedic procedures.

Flexion contractures of the knees will interfere with standing. If the patient has no trunk control and is to be permanently chairbound, contractures up to 90 degrees can be tolerated. Heel pressure increases with increasing deformity and will lead to ulceration unless avoided when the patient is in bed. The prone position must be encouraged.

Amputation of the limb is to be considered only in the presence of septic arthritis of the hips or knees and with occasional neglected cases with massive gluteal and sacral decubiti. The weight of the limbs can be well used to distribute pressure from the ischii in the sitting position. Trunk balance is reduced when the limb is taken, and the patient's self-image is further damaged.

Incomplete spinal cord lesions may produce a syndrome of severe ankle clonus without fixed Achilles tendon contracture. When this occurs, the patient cannot stand; there, denervation of the gastrocnemius has been quite useful. When gastrocnemius contracture is present, a selected gastrocnemius recession and soleus fascial release, similar to the Strayer operation in children, can be effective.

In a walking patient, Achilles tendon lengthening is to be done with great care since overweakening will reduce gait effectiveness. Many bedridden patients with equinus deformities can be given some ambulation potential by simple sectioning of the Achilles tendon to permit bracing with a fixed ankle.

The surgical treatment of pressure ulcers must include resection of bone protuberances beneath the ulcerations. This is obvious when deep wounds have involved bone and osteomyelitis has developed; it may be less so when the ulcer is small. Resection of the ischii need not be total unless the disorder is severe. A combined plastic and orthopedic approach is often used in dealing with these problems. It is best if they are avoided by a vigorous alert nursing staff in a center devoted to these cord lesions.

Conclusion

The orthopedic surgical approach to transverse myelopathies is but one facet of a team problem. Reconstruction, stabilization, and release procedures should be visualized in the total concept of therapy from the moment that treatment is instituted. Nursing, medical, neurosurgical, orthopedic, urologic, psychiatric, and administrative problems must be the concern of all those in whom the care of these patients is entrusted. Early release operations should be undertaken whenever contractures block progress. The reduction of spasticity is a challenge which is partially met by presently available technics including tendon lengthening and release, neurectomy, and chemical blockade. These difficult cases often can be significantly improved.

Reluctant Patient

Special Problems in Psychologic Treatment of Patient with Myelopathy*

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REHABILITATION PSYCHOLOGY is an expanding speciality within the field of rehabilitation medicine. The rehabilitation psychologist approaches the rehabilitation patient in his traditional role as diagnostician, therapist, and research scientist. The developed tools and technics of clinical psychology, intelligence and projective psychodiagnostic tests and psychotherapy, are applied in the management and treatment of the patient. The specific physical impairments of the rehabilitation patient will, however, render it necessary to adapt and revise such standardized and clinically validated diagnostic technics. Psychotherapeutic treatment of the rehabilitation patient also presents special problems for the psychologist. In response to such problematic characteristics, new therapeutic technics are necessary to supplement and perhaps replace more traditional therapeutic approaches based on psychoanalytic theory and procedures.

With the brain-damaged patient, it is obvious that traditional psychotherapeutic technics will not be effective, especially if the patient manifests major speech impairment. Thus, clinical and experimental evaluations as to the nature of the organic impairment are being conducted.[1] On the

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basis of information and insights derived from such empirical and clinical studies, the psychologist attempts to develop specific diagnostic insights and technics applicable to brain-damaged individuals. He as well endeavors to use such information in the treatment of the patient's salient symptomatic problems.[1]

The nonbrain-damaged patient, suffering from myelopathy, also poses special challenges to the rehabilitation psychologist. Such a patient is a reluctant patient. The literature indicates his more than average tendency to deny, initially at least, his problems, even the manifest physical symptoms which arise out of his illness.[2] In respect to emotional problems, of either premorbid cause or arising concomitantly with the disability,[3] such denial tends to be much greater. Psychologists working with patients suffering from spinal dysfunction report that only a very small percentage of these patients are willing to enter the psychotherapeutic relationship. As few as 2 per cent, and seldom more than 5 per cent, of the inpatient population of a rehabilitation ward are receptive to intensive psychotherapy. This finding may not appear remarkable inasmuch as it is doubtful that higher proportions of the general population seek or enter psychotherapeutic relationships. However, clinically and psychometrically, it is often obvious that rehabilitation patients are very much in need of psychotherapeutic consultation, not only to help them to adjust better to general environmental conditions, but also to motivate more involvement in the rehabilitation program. We have found that the resistance of the rehabilitation patients is far greater than that of members of the nonhospitalized population, even in the presence of striking emotional symptoms such as depression, agitation, withdrawal, and so on.

In fact, the rehabilitation patient often appears quite phobic toward the staff psychologist and psychiatrist and will often avoid contact with them.

We have, for this brief discussion, isolated four factors which contribute to this strong reluctance on the part of rehabilitation patients regarding psychotherapeutic treatment. These are briefly discussed at this point.

Factors

Socioeconomic class. At Bellevue Hospital, we may attribute some of the phobic attitudes of the patients to their membership in a lower income, educational, and sociologic group. Members of this group seldom encounter psychiatrists or psychologists except in highly negative circumstances. For most such individuals, the psychiatrist or psychologist enters into their life space only in times of major emotional disturbance or breakdown requiring institutionalization or as a consequence of their involvement with law-enforcement agencies. Thus, they see the psychologist and psychiatrist as negative authority figures who tend to stigmatize one with labels or incarcerate one in institutions. Thus, at Bellevue Hospital, some of this resistance to contact with psychologists or psychiatrists is explicable on the basis of social norms and stereotypes arising out of the specific experiences of members of a given sociologic background. However, although such patients tend to be more phobic than members of the middle class socioeconomic group, our experience indicates that major reluctance and recalcitrance to psychotherapy is encountered even in middle class rehabilitation patients who normally are the most amenable to psychological consultation.

Denial and pseudohysteria. As noted, denial of illness or of the symptoms of disability is often present, especially during the early stages of the disability.[2] In our own research, we have expanded the concept of denial as being only one aspect in an elaborate syndrome of resistance to recognition of emotional problems on the part of rehabilitation patients suffering from myelopathy. We have called the syndrome "pseudohysteria," and we conceive of it as being almost functionally autonomous, arising concomitantly with chronic disability and not necessarily rooted in the premorbid personality problems of the rehabilitation patient.[3,4]

Illness and inadequacy guilts. In previously formulated clinical and theoretic evaluation, we have hypothesized that the chronically ill person develops inordinately strong feelings of guilt arising out of heightened inadequacy feelings and the patient's interpretation of the cause of his illness.[5] Illness has historically been associated with moral guilt and punishment. Such association still exists in the contemporary mind. Rehabilitation and somatopsychologic literature discusses the effects of this factor on the reactions of the rehabilitation patient.[2] However, another related association is seldom discussed in the literature and then appears to be only vaguely and incompletely understood. The severely ill person also suffers from considerable feelings of inadequacy. That inadequacy feelings are associated with moral guilt and may generate moral guilt feelings does not appear to be discussed or adequately understood. Yet such inadequacy guilt appears to be a major factor in the intrapsychic as well as interpersonal reactions of the rehabilitation patient. The patient thus suffers from guilts of two types in terms of their cause, illness guilt and inadequacy guilt. However, on the emotional experience level, these generated guilts are both experienced as moral guilt, the sense of being "bad." Illness guilt and inadequacy guilt may potentiate each other and together greatly influence the reactions of the patient in the treatment situation, especially in respect to his motivation. Chronically ill individuals thus are greatly afraid of "exposure" of their strong guilt feelings and facing that most unpleasant sense of guilt. This would contribute decidedly to the rehabilitation patient's reluctance to enter a therapeutic relationship which goes contrary to his need to repress, deny, and withdraw from such unacceptable feelings.

NONSALIENCY OF PSYCHOLOGICAL PROBLEMS FOR THE REHABILITATION PATIENT. We must be aware that the rehabilitation patient does not see himself as a "psychiatric" patient. The psychiatric patient admitted to a psychiatric hospital generally sooner or later knows why he is there. He may not want to face the fact that he is psychiatrically disturbed, but he knows that he is in a psychiatric hospital. Despite any paranoid orientations on his part, he senses that the staff is trying to be helpful regarding his problems. Reluctant as he may be to face his problems, it is normatively proper and understandable for him to talk with psychiatrists and psychologists. In fact, he has very little choice. He must talk with the staff members either to alleviate his problems or to be discharged from the hospital. Having already been admitted to the psychiatric hospital, any experienced stigma is already a fact. Thus, reluctance to face one's problems is often superseded by the pressing need to deal with the situation which is already unpleasant and unbearable. The patient who is admitted to a rehabilitation service, however, does not see the psychological problems as salient. He comes with a disability which is often quite painful, very real to him, very concrete, and for which he is asking treatment. He wants to be helped to work, to use his body, and to be able to talk so he can return to his home and possibly to his vocational pursuits. He may have had psychological problems, and he may have realized that psychotherapeutic consultation may have been helpful. But after the trauma of disability, such psychological problems seem rather vague, diffuse, and unimportant now that he cannot adequately utilize his body. His immediate problem is to get well physically. Everything else must be brushed aside to work on this problem. Certainly we know that disabled people sometimes, at least initially, deny their physical disabilities as well. But gradually such denial of physical symptoms is weakened or destroyed in most cases. The rehabilitation patient is also in that type of institutional situation which obviously treats physical problems, and the saliency for him of his physical problems is re-enforced by the very setting in which he is involved. This notion of saliency might be best exemplified by one incident which occurred years ago at University Hospital. A psychologist was required to give a full psychological test battery to an elderly Jewish woman who had complained for years of cardiac symptoms but for which no physiologic basis had been discovered. It was suspected that she had a cardiac conversion hysteria, and thus she had been sent for psychodiagnostic evaluation. The psychologist began with the first question of the Wechsler adult intelligence scale which is an item of the information test: "Who is the president of the United States?" The woman looked at the psychologist quizzically and than irately said (partly in English and partly in Yiddish), "Are you crazy? I have a heart condition and you ask me who is the president of the

United States of America." One can readily understand the position of this woman. She was coming to the hospital for "heart treatment." She did not see herself as hysteric, and thus when asked questions which were apparently unrelated to her symptom and nonsalient to her, she became irate and indignant. In many ways the position of the psychologist and the attitude of the patient in the rehabilitation service are similar.

Psychotherapy

In view of the noted reluctance on the part of the rehabilitation patient to enter individual psychotherapeutic relationships, how can the psychologist help the patient and extend his psychodiagnostic and research roles in the rehabilitation situation? It is apparent that new technics and adaptions of old procedures for both diagnosis and treatment must evolve. By use of insights derived from both research and clinical experience, the psychologist must strive to reach the reluctant patient. At present, however, less direct and less intensive forms of psychotherapy are feasible:

EMERGENCY AND BRIEF PSYCHOTHERAPY. Despite the characteristic phobic reaction of the patient, he will, when he is disturbed, fairly readily allow a member of the psychiatric or psychological staffs to work with him. Thus "emergency" and "brief psychotherapy" are quite feasible.

INDIRECT THERAPY. Although the psychologist is often limited in his direct contact therapeutically with the patient, he can create a therapeutic atmosphere through staff discussion, primarily through seminars with physical therapists, occupational therapists, nurses, and other members of the staff who have daily contact with the patient and toward whom the patient exhibits relatively little reluctance or feelings of threat. This approach has been found to be quite successful at the Bellevue Rehabilitation Medicine Department.

GROUP THERAPY. Although patients are reluctant to involve themselves in individual therapeutic relationships, they sometimes manifest more interest in group discussions with a member of the psychology staff regarding salient environmental problems facing them. During the course of such discussions, almost inevitably personality and emotional factors arise and are more easily accepted as salient during the discussion. Various institutions report some success in working with members of the families of patients in a group and thus can indirectly exert a therapeutic effect on the patients through management and personality insights obtained by the families of the patients.

WARD PSYCHOLOGISTS. If the patient will not go to the psychologist, perhaps the psychologist must go to the patient. Although such a procedure is anathema to widely held canons of traditional psychoanalytic psychotherapy, it may be a necessary adaption to the special characteristics and problems of the rehabilitation population. At Bellevue Hospital, we have assigned one psychologist to each ward. Aside from their normal diagnostic, consultative, research, and administrative functions, the ward psychologists are encouraged to develop daily casual relationships with all patients on the ward without pressing their psychotherapeutic services. As the psychologists become known to the patients as individual human beings, such familiarity appears to lessen the threat and consequent phobic reaction of the patient to the psychologist. The patients are consequently less hesitant to seek out the psychologist in times of stress and then to continue into more intensive relationships as such relatively brief and even casual conversations involve them. The fact that the psychologist is present on the ward and talks to all patients also appears to remove the stigma of association with the psychologist, an especially pressing problem for the lower socioeconomic group. The psychologist, by being present on the ward, becomes more aware of the daily problems faced by individual patients and renders himself more accessible not only to the patients but also to other members of the staff who are also likely to react on the basis of emergency needs of the patients.

ASSERTIVE PSYCHOTHERAPY. We are considering, but have not yet systematically implemented, a program of mandatory regular visits with the psychologist for each patient on the ward. Theoretically it may be possible to pierce the pseudohysteric defense system by such an approach. Continued contact with the psychologist, albeit reluctant at first, may very well encourage many patients, especially those most in need of therapeutic help, slowly to accept the psychologist in his therapeutic role. Again the fact that all patients see the psychologist may help to remove the fear of stigma of such association with the psychologist. Such an unconventional therapeutic approach may represent a needed adaptation and revision of psychotherapeutic procedures with potential psychotherapeutic patients in the rehabilitation setting.

ORIENTATION OF PATIENTS TO THE ROLE OF THE PSYCHOLOGIST. It is necessary to orient a patient as to what the psychologist does and how he can be of help since the patient's perception of the psychologist, parallel to that of the general population, is vague and full of misconceptions. It is also quite helpful if the physiatrists, who represent the main authority figures in the rehabilitation setting, are very clear regarding the specific roles of the psychologists, the specific problems encountered by the psychologists in the rehabilitation setting, and the need for their help in making salient for the patient the psychological factors in their illness while stressing their need for cooperation in physical medicine and rehabilitation.

Rehabilitation psychology is a young speciality. In the last decade, considerable research and clinical and theoretic evaluation have been initiated. Much has been done in this area to help us to understand the nature of the challenges posed by this particular population. It is sometimes understandably discouraging to attempt to use procedures which are known to be helpful with patients who are reluctant. However, the reluctant patient cannot afford a reluctant therapist.

Summary

The rehabilitation psychologist approaches the rehabilitation patient in his traditional role as diagnostician, therapist, and research scientist. The specific characteristics of the rehabilitation patient render it necessary for the psychologist to adapt and revise his standardized and clinically validated diagnostic technics. Psychotherapeutic treatment of the rehabilitation patient also presents a major problem and challenge for the psychologist since rehabilitation patients appear phobic to individual psychotherapeutic contact. Four factors which contribute to this strong reluctance on the part of the rehabilitation patient regarding psychotherapeutic treatment are discussed: (1) socioeconomic class, (2) denial and pseudohysteria, (3) illness and inadequacy guilts, and (4) nonsaliency of psychological problems for the rehabilitation patient.

Despite this reluctance on the part of the rehabilitation patient toward individual psychotherapy, less direct and less intensive forms of psychotherapeutic influence are feasible: (1) emergency and brief psychotherapy, (2) indirect therapy, (3) group therapy, and (4) the influence of ward psychologists.

Also being considered is a form of "assertive psychotherapy" which may pierce the pseudohysteric and phobic resistance to psychotherapy on the part of rehabilitation patients. The need to orient patients as to the role of the psychologist is also discussed. In this respect, it is necessary that the physiatrists play major roles in orienting the patients to available psychological services. It can be discouraging to attempt procedures known to be helpful with patients who are reluctant.

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Cell Line Derived from Patient with Myeloma*

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Cell lines derived from biopsy tissue or the buffy coat from patients with Burkitt's lymphoma,[1-3] various leukemias and lymphomas,[4-7] other malignant conditions,[8] and normal persons[9] have been reported. The production of complete immunoglobulins seemed to be a universal characteristic of these human hematopoietic cell lines.[10,11]

The latter statement has to be modified, however, as a result of the observation that a cell line derived from a patient with myeloma produces only lambda light-chain proteins.[12] The present report is a summary of morphologic and cultural characteristics of this cell line which may be valuable for biochemical studies.

Case report

A sixty-one-year-old man was placed in a hospital because of severe back pain. A diagnosis of multiple myeloma was established, and the patient was transferred to Roswell Park Memorial Institute on May 31, 1966. A definite diagnosis could not be made from several bone marrow studies, and there were no plasma cells in smear preparations of the peripheral blood. The serum protein level was 9.4 Gm. per 100 ml., with 3.6 Gm. per 100 ml. albumin, and an electrophoretic analysis revealed an increase in globulins and lipoproteins. Bence Jones protein was not found in the urine except by electrophoresis.

The diagnosis of myeloma was confirmed by biopsy of a tumor mass on the chest wall. Cell cultures were set up from the biopsy tissue and the bone marrow, but none survived more than several weeks except for fibroblasts. On June 16 leukapheresis was done with 2 units of blood, and 15 cultures were started. Several original cultures were combined, and an increase in growth rate and number of cell clumps was noted sixty-six days later. The cell culture became self-sustaining. It was designated RPMI cell line 8226.

Methods

The general methods used for establishing and maintaining human hematopoietic cell lines have been described previously.[13] The production of immunoglobulins was detected by staining the cells with fluorescein-conjugated antihuman globulin, and specific antisera against the various classes of immunoglobulins were prepared by accepted technics.[10,12] The myeloma cells, RPMI 8226, were grown in static cultures (Roux bottles) and in various kinds of suspension cultures including spinner flasks, fermenters, and trophocell units.[14]

The culture media used for defined studies included RPMI 1603 and 1640, supplemented with 10 per cent volume in volume fetal calf serum.[9] As will be noted, this cell line was grown for many months in medium RPMI 1603 unsupplemented with any macromolecules.

Cells were prepared for electron microscope by gentle centrifugation, immediate fixation of the cell pellet in 2.5 per cent glutaraldehyde for thirty minutes, and immersion in 1 per cent osmium tetroxide. Following dehydration, the cells were embedded in Epon mixture and sectioned, and the sections were restained with 2 per cent uranyl acetate for sixty minutes and dilute lead citrate for ten to fifteen minutes.

Observations

Morphologic characteristics. The cultured cells resembled those of the broad

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spectrum of lymphoblastoid cells in other lines derived from peripheral leukocytes. No typical mature plasma cells were seen, but there were immature cells with deep-staining cytoplasm, cells that might be called "plasmablasts." The heavy basophilic staining of the cytoplasm was the only evidence of rapid protein synthesis. Binucleate and trinucleate cells occur in this line (Fig. 1A), but such cells have been seen in most of our cultured human hematopoietic cell lines and do not have specific significance. The size and morphology of single nucleated cells ranged from small "lymphocytes" to large immature lymphoblastoid cells (Fig. 1B). The modal cell diameter (Coulter counter) was 12.5 microns, and the modal cell volume was 1023.7 cubic microns. The multinucleate cells were 10 to 20 microns in diameter.

Electron microscopy of many of the cells revealed a circumnuclear arrangement of swollen endoplasmic reticulum, characteristic of immature plasma cells (Fig. 2). Similar but less developed changes in the endoplasmic reticulum have been noted in only a few isolated cells of other hematopoietic cell lines.

Other cells (Fig. 3A) had features of primitive lymphoblasts and intermediate stages, with nuclear characteristics of lymphoblasts and cytoplasmic alterations resembling those of immature plasma cells (Fig. 3B). Again, no mature plasma cells were noted.

A CELL LINE *from the peripheral blood of a patient with myeloma has been established and may be valuable for biochemical studies. It produces only lambda light-chain proteins. The morphologic and culture characteristics are described. The cells produce immunoglobulin.*

No virus particles were observed during the examination of nearly 1,000 cells.

CHROMOSOME STUDIES. A majority of our cultured human hematopoietic cell lines have a normal diploid karyotype. In a few such cell lines, however, abnormal chromosomes have been noted. So far, these abnormalities have been found in cell lines derived from patients with leukemia.

Cells of RPMI 8226 had a sharp mode at 39 chromosomes. Chromosome patterns were tabulated by Fjelde and confirmed by Kitamura (Table I). Figure 4 represents the most common karyotype. Note that pair of A1 is absent, as was the case with most metaphase cells examined. Both A2 and A3 are normal. One chromosome is missing from group B. The number of chromosomes in group C varies between 14 and 15. The missing chromosome has not been identified. Furthermore, three elements are missing from group D. E16 and E17 are monosomic in spite of the disomic E18. Only three

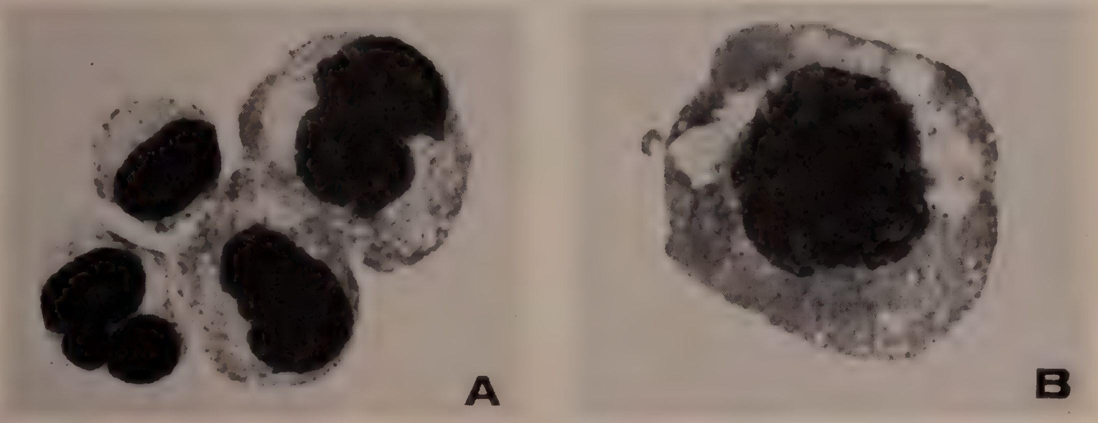

FIGURE 1. Cultured cells. (A) RPMI cell line 8226 derived from patient with myeloma. Cluster of single and multinucleated cells with mottled staining of cytoplasm not unlike immature plasma. (B) Large, flattened immature cell with many nucleoli and no evidence of cytoplasmic differentiation. Note smaller cell which resembles mature lymphocyte. (× 800)

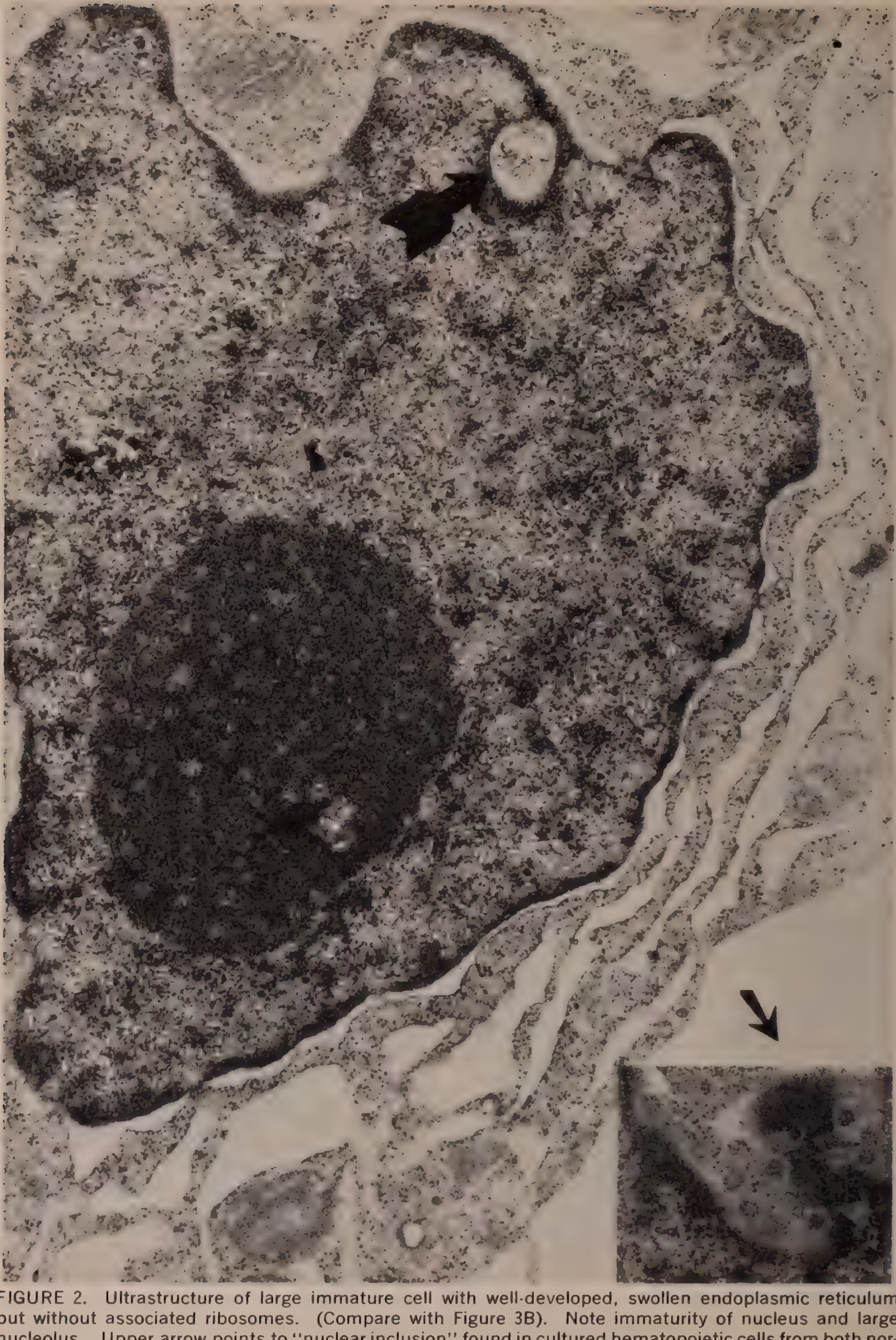

FIGURE 2. Ultrastructure of large immature cell with well-developed, swollen endoplasmic reticulum but without associated ribosomes. (Compare with Figure 3B). Note immaturity of nucleus and large nucleolus. Upper arrow points to "nuclear inclusion" found in cultured hematopoietic cells from both normal persons and those with leukemia and other malignant conditions. Lower arrow indicates group of tangentially sectioned nuclear pores (× 20,000).

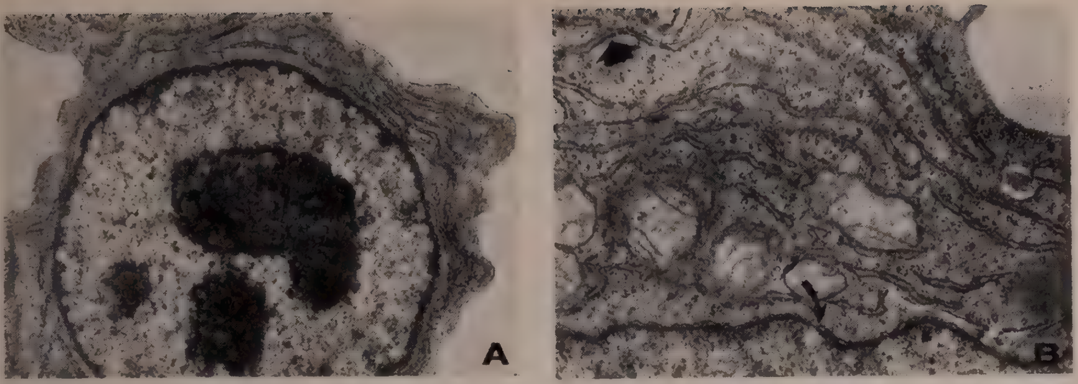

FIGURE 3. Lymphoblastoid cells (A) cell with several large nucleoli and prominent circumnuclear endoplasmic reticulum. This could not be distinguished from similar ones found in hematopoietic cell lines derived from normal persons (× 11,500). (B) Section of slightly more mature cell of cell line RPMI 8226. Note extensive development of endoplasmic reticulum lined with ribosomes (straight arrow). Nuclear pore designated by curved arrow (× 17,500).

chromosomes are present in group F and four in G1Y. The Y chromosome was not identified in any metaphase, as might be expected.

In addition to the chromosomes with normal morphology, three abnormal chromosomes were usually present. The first was a large submetacentric chromosome with a secondary constriction in the long arm. The second abnormal chromosome was characterized by subtelocentricity of the centromere and a remarkable secondary constriction in the long arm. The last marker chromosome was submetacentric and slightly shorter than pair A2.

These abnormalities have remained constant for approximately one year in culture. Nevertheless, there are other peculiar alterations in the cells when they are cultured on agar. It is possible that the karyotype will prove to be unstable. This finding will be reported separately.

BIOCHEMICAL STUDIES. In contrast to the presence of complete immunoglobulins and one or several subunits in all of the other cultured human lymphoblastoid cell lines, the cells and media of cultures of RPMI 8226 contained only lambda light-chain proteins.[12] The amount of this type of protein ranged from 5 to 30 mg. per liter of cell-free "exhausted" medium.

Culture characteristics. The cells of RPMI 8226 differed from those of most of our cell lines derived from the buffy coat of peripheral blood in adhering firmly to glass surfaces. Cells recovered from the media represented a mixture of cells of varying maturity, as well as dying cells. The doubling time of the cells growing in static cultures in medium 1640 supplemented with 10 per cent fetal calf serum ranged from forty to eighty hours.

The cells grew poorly in suspension cultures unless an excess of cells was present to cover the dependent glass surfaces. When the serum supplementation was reduced to 1 or 2 per cent, the cells less adherent to the glass provided good suspension cultures.

It was found that the cells would grow—without an adaptation period—in RPMI medium 1640, 1634, and 1603 in the absence of serum. The cells grew slowly but steadily in suspension cultures lacking serum. The average generation time was about one hundred thirty hours, and a cell viability of 85 to 90 per cent was maintained. Subsequently the cells have been

TABLE I. Chromosome patterns, September, 1967

	Number of Chromosomes								
Sample	35	36	37	38	39	40	41	42	Polyploid
1	1	1	4	22	50	1	. . .	1	20
2	. . .	. . .	1	10	78	1	. . .	. . .	10

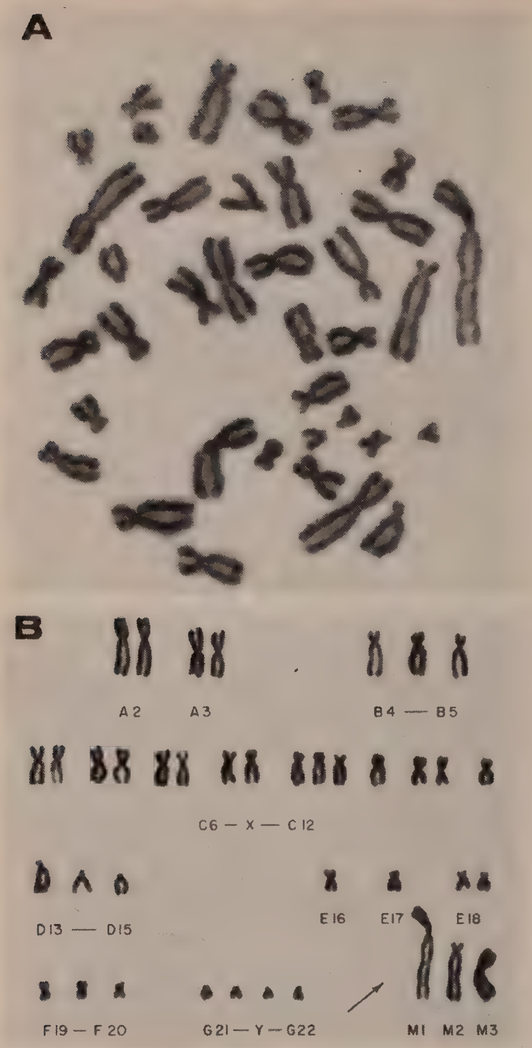

FIGURE 4. (A) Chromosome preparation from RPMI cell line 8226 with predominate set of 39 chromosomes. (B) Karyotype of RPMI 8226. Note three marker chromosomes.

grown in defined media in fermenter and trophocell units for several months without alteration in growth rate. The growth of this cell line in media lacking any macromolecules or serum is very promising to biochemists interested in the synthesis of immunoglobulins.

Comment

All of more than 100 human hematopoietic cell lines derived by us from peripheral blood and studied by Tanagaki *et al.*[10] and Matsuoka *et al.*[12] produced one or more kinds of immunoglobulins. Similarly, observations of immunoglobulin synthesis in both short- and long-term cultures of cells from lymphoid tissues have been made by others.[11,15-17] Despite some reports to the contrary, the preponderance of published reports supports the view that lymphoid cells, including plasma cells, are a major source of immunoglobulins. A wide variety of substances has been used for stimulating immunoglobulin production of lymphoid cells in vitro. These have included vaccines, foreign cells and sera, phytohemagglutinins, and pokeweed extract. Recent reports by Ripps and Hirschhorn[18] and by Wakefield *et al.*[11] provide summaries of pertinent research.

Lymphoid cells from both normal and malignant sources have produced immunoglobulins. For example, cell lines derived from Burkitt's lymphoma have some abnormal morphologic characteristics, but whether or not all of the lymphoid cell lines derived from patients with leukemia and the lymphomas are composed of abnormal cells cannot be verified. All but a few of the 200 human lymphoid cell lines being maintained by us have normal diploid karyotypes, and no distinctive morphologic or biochemical characteristics permit separation of normal and abnormal elements.

A preliminary note from our laboratory reported evidence that specific antibodies can be provoked in an in vitro system.[19] In 1963 Elves and Wilkinson[20] suggested how this goal could be attained. The efficiency of such a response to various antigens will require further study.

The distinctive production of a specific kind of protein by cell line 8226 provides some indication that perhaps distinctive qualities of other hematopoietic cell lines will be found.

Lymphoid cells from both normal persons and those with malignant conditions have maintained a rapid growth rate, twenty- to forty-hour doubling time, for over one year and thus do not have a finite life span which characterizes the growth of normal human fibroblasts, in the culture environment used at present.

A number of myelomas in mice have been intensively studied,[21,22] but no long-term cell lines have been established from them. Nevertheless, these transplantable myelomas have provided information relevant to studies of myeloma in human patients. The mouse myelomas produced only a single class of light chains and maintained the ability to synthesize this end product for many transplantation generations over a period of years.[23] Likewise, at this Institute, Tanigaki *et al.*[10] and Matsuoka *et al.*[12] have found that cell line 8226 produces only lambda light polypeptide chains and has continued to do so for more than a year and a half.

It is generally accepted that the myeloma cell is a neoplastic version of a plasma cell. The retention of a unique appearance by all elements of cell line 8226 was not observed. The amount and degree of development of the endoplasmic reticulum paralleled the numerous "transitional" stages of benign plasma cells, which in morphologic features form a continuous spectrum with lymphoid cells and the more primitive lymphoblastoid cells. Some hematologists have reported similar lymphoid-like myeloma cells. Additional information on this controversial subject has been reviewed by Maldonado *et al.*[24] The great variation in the cyto-architecture of cultured lymphoid cells derived from Burkitt's lymphoma and normal human cells stimulated by phytomitogens was noted by Douglas, Borjeson, and Chessin.[25] Similar observations have been made of mouse lymphocytes.[26]

We have seen a few lymphoid cells with plasma cell-like characteristics in most of our human hematopoietic cell lines, but such cells never exceeded 1 or 2 per cent of the cell population. Further, the ultrastructure of such cells rarely included a swollen and distended endoplasmic reticulum, but only the circumnuclear arrangement of the endoplasmic reticulum. A deeply stained nucleus, eccentric location of it in the cell, and a prominent Golgi apparatus were seen in many lymphoblastoid cells could not be used as distinguishing feature. Similarly, a lack of a correlation of immunoglobulin production with the nucleolar features of lymphoid cells and plasmacytes illustrated by Smetana, Lane, and Busch[27] was not helpful in distinguishing between the immature cells that predominate in our lymphoblastoid cell lines and those in the myeloma cell line. In any event, the spectrum of cells of cell line 8226 included lymphoid cells that could not be distinguished from those found in other cell lines. The biochemical specificity of its exclusive production of lambda light polypeptide chains and our inability to separate clones with a different end product provided the only evidence of the homogeneity and individuality of this cell line.

The culture of human lymphoblastoid cells in chemically defined media will be reported separately. As was mentioned earlier, the growth of these immunoglobulin producing cells in defined media is very helpful in immunochemical investigations. A series of myeloma cell lines would permit critical comparative studies of their sequences of amino acids, as well as possible alteration in the cytoplasmic modifiers of globulin synthesis. The possibility of providing an immunologic attack on myelomas by lymphocytes sensitized to the patients' light chains or by a specific antimyeloma serum should be considered.

Summary

A myeloma cell line has been established from cells from the peripheral blood of a patient with myeloma. The cultured cells have a plasmablastoid ultrastructure and produce only lambda light chains. The cells can be grown in chemically defined media.

Acknowledgment. We wish to thank S. Toshima, M.D., for his electron microscopy work in Figure 2.

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Headaches due to extracranial neoplasms

Although neoplasm is not a frequent cause of headache, it should be considered as a possibility in the differential diagnosis of every chronic headache associated with persistent otalgia and a sore throat. P. D. Kenan, M.D., writing in a recent issue of the *North Carolina Medical Journal*, observes that in the diagnosis of headaches, there is no substitute for thorough history and examination of the patient, both physical and neurologic. If true sinus trouble is suspected as a cause, x-ray examination is a necessity. Until proved otherwise, the patient with a headache accompanied by neurologic signs has an intracranial aneurysm, a neoplasm, or an erosion at the base of the skull.

Headaches caused by extracranial neoplasms generally involve the fifth, ninth, and tenth nerve pathways. Lesions of the mouth, nasopharynx, oropharynx and tonsils, hypopharynx, larynx, and base of the tongue are all more common than malignant neoplasms of the sinuses and middle ear. Pain is usually not an early symptom of any of these lesions. On the contrary, headache is generally a late symptom and may indicate an erosion of the base of the skull. These lesions usually begin insidiously as silent tumors. Pain, when present, is usually a deep ache rather than throbbing or superficial. Referred pain to the ear through the ninth and tenth nerve pathways is common in all these conditions. When cervical nodes are present, tumors of the head and neck and infections should be ruled out in that order before more benign causes of headache and sore throat are considered. Malignant lesions involving the sinuses most commonly arise in the maxillary sinuses and next most commonly in the ethmoids. Frontal and sphenoid cancers are quite rare. However, mucoceles arising in the frontoethmoid complex and the sphenoid sinuses are not especially rare and are generally associated with pain and often visual signs. Surgical exploration and removal is the treatment of choice for these lesions with uniformly good results. Unfortunately, malignant tumors of these areas are usually diagnosed late and may not be amenable to anything other than palliative therapy.

Ruptured Aneurysm of Abdominal Aorta

IMMEDIATE OPERATION *is indicated in any case of ruptured abdominal aneurysm, even when death is probable. Since survival without surgical intervention is unknown, a course of observation, particularly in a patient with a palpable aneurysm of the abdominal aorta, is unwise. Prompt recognition of the condition is paramount.*

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LITTLE MORE THAN a decade has passed since ruptured aneurysm of the abdominal aorta became a remediable condition. Prior to consideration of its clinical aspects, it would be appropriate to review its medical past.

History

It is a matter of record that aneurysms were treated surgically two thousand years ago.[1] By the year 1557, Vesalius was evidently able to make a correct diagnosis and prognosis in a patient with a pulsating tumor of the back. The autopsy confirmed this clinical achievement.[2]

In the early eighteenth century, Lancisi's detailed case presentations revealed a comprehensive knowledge of the morbid anatomy and clinical course of aneurysms throughout the body.[3] His erudition embellished a first-hand experience as clinician and pathologist. There are specific references to ultimate rupture as the cause of death in several cases of abdominal aneurysm.[3] Also at the end of the same century a worthy sequel by Scarpa,[4] a fellow countryman, further defined the cause and treatment of aneurysms.[4]

In the first decades of the nineteenth century, the remarkable treatises of Hodgson[5] and Guthrie[6] emphasized rupture as the ultimate fate of abdominal aneurysms. By 1847, Crisp[7] in his superb monograph on vascular surgery was able to present a biometric survey of this condition. Of 59 cases of aneurysm of the abdominal aorta, he found 51 occurred in males and 8 in females. Out of a total of 56 patients followed to the time of death, 35 died because of rupture, 12 died of unknown causes, and 9 of other causes.

By midnineteenth century, the treatise of Broca,[8] famous pathologist and surgeon, could serve as a reference book for a century to come. However, imminent discoveries in anesthesia and the control of infection were to open up the field of abdominal surgery. The result of making this body cavity accessible to surgery was to divert surgical interest from blood vessels until well into the twentieth century.

In the intervening years, between the midnineteenth and midtwentieth centuries, abdominal aneurysms continued to engage the academic interest of the pathologist and the diagnostician.[9-11] Case reports continued to appear, and the symptoms caused by rupture into the bowel or the retroperitoneum were studied because of the importance of differentiating this hopeless condition from less serious lesions of the intestinal tract and the genitourinary system.[12-19]

The transfer of this lethal curiosity into the sphere of operative therapy was the result of the same fundamental contributions that led to the vascular surgery of today. The steps in this progression are as follows: First, Carrel's studies in experimental blood vessel repair at the opening of this century were of only peripheral interest to the clinical surgeon who was then making great strides in thoracic and abdominal surgery. However, these studies were to bear fruit in the years to come and were never totally forgotten. Second, the development of angiography by Dos Santos[20] and his colleagues offered a definitive, reasonably safe technic for accurate

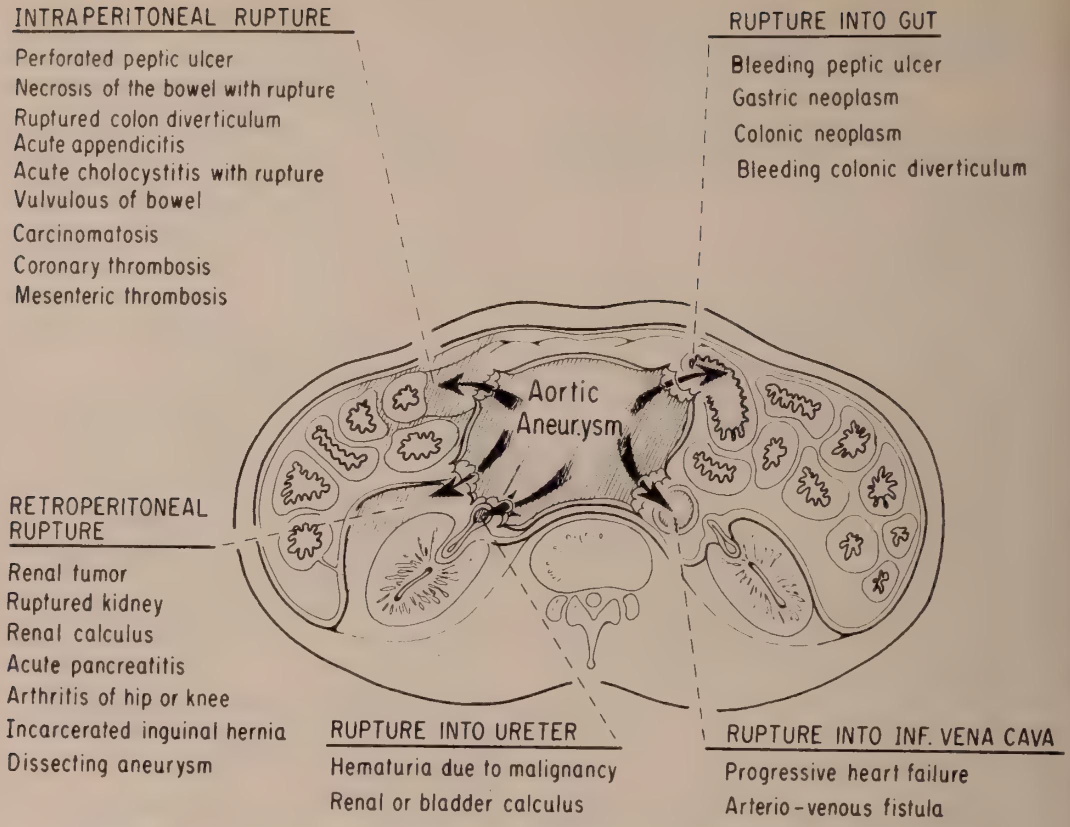
INTRAPERITONEAL RUPTURE
Perforated peptic ulcer
Necrosis of the bowel with rupture
Ruptured colon diverticulum
Acute appendicitis
Acute cholocystitis with rupture
Vulvulous of bowel
Carcinomatosis
Coronary thrombosis
Mesenteric thrombosis
RUPTURE INTO GUT
Bleeding peptic ulcer
Gastric neoplasm
Colonic neoplasm
Bleeding colonic diverticulum
Aortic Aneurysm
RETROPERITONEAL RUPTURE
Renal tumor
Ruptured kidney
Renal calculus
Acute pancreatitis
Arthritis of hip or knee
Incarcerated inguinal hernia
Dissecting aneurysm
RUPTURE INTO URETER
Hematuria due to malignancy
Renal or bladder calculus
RUPTURE INTO INF. VENA CAVA
Progressive heart failure
Arterio-venous fistula

FIGURE 1. Diagram of mechanics of aortic rupture and resultant differential diagnoses.

evaluation of the anatomic state of blood vessels throughout the body. With refinements and accumulated experience, even functional information was to be gathered. Third, the stable, nontoxic, mensurable, anticlotting agent, heparin, became available. This was contributed by Best[21] coincidental with the first successful ligation of a patent ductus arteriosus. Fourth, the use of human homograft as a conduit in vascular surgery was introduced by Gross *et al.*[22] Finally, the development of a plastic prosthesis satisfied the surgeon's need for an instrument that could be incorporated in the body tissues as a substitute for or to bypass a hopelessly diseased vessel. A prosthesis which was easy to handle, inexpensive, readily available, and easily sterilized was made possible by Voorhees, Jaretzki, and Blakemore.[23]

There remained only the proper professional climate to bring an exciting technical feat to fruition as a successful surgical procedure. The pioneer work of Blakemore[24] and DeBakey *et al.*[25] created an environment in which surgeons considered surgery on blood vessels as much within their province as surgery on the other viscera. Finally, the electrifying feat of DuBost, Allary, and Oeconomos[26] in successfully resecting an abdominal aneurysm with homograft substitution set the stage for conquering the ruptured aneurysm by surgery. This was finally accomplished in 1954 with improved results ever since.[27]

Clinical course

A typical description of a patient with ruptured aneurysm of the abdominal aorta is that of an elderly person, usually male, who is in shock, anuric, and beset by agonal pain in the flank or abdomen. There may be a history of pulsating abdominal tumor to help make diagnosis easy. In its absence, however, the finding of a distinct pulsation in the upper part of the abdomen with or without fullness of the flank offers no difficulty in diagnosis.

The physiologic state is determined by the rate of escape of circulating blood

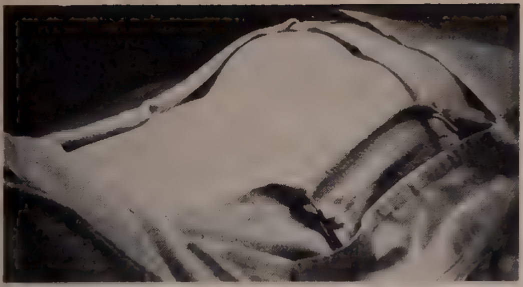

FIGURE 2. Patient with enlarging pulsating abdominal tumor in ruptured aortic aneurysm.

from the ruptured sac into the surrounding tissues. Where leakage is slow there may be little change in the patient's general condition for days or weeks. It is the direction of the leakage, whether intraperitoneal, intestinal, or retroperitoneal, that determines the symptoms. Curiously it is in the group of cases offering diagnostic problems that the higher salvage rate is feasible, since the physiologic deterioration rate within this group is slowest. Clinical recognition must be based on the direct relation between the nature and direction of the rupture and the varying symptoms.

Intraperitoneal rupture. Patients with intraperitoneal rupture show the highest mortality rate. Irreversible shock sets in because of the rapid loss of circulating blood volume. In those few fortunate cases where hemorrhage is sufficiently slow because of mechanical reasons to permit surgery, the differential diagnosis is to be made from the symptoms in the peritoneum and the rapid changes in the general condition of the patient. This includes perforated peptic ulcer, volvulus of the intestines, acute pancreatitis, coronary thrombosis, superior mesenteric thrombosis, and acute gangrenous cholecystitis with perforation.[28-31] With a slower loss of blood and lesser systemic change, the differential diagnosis must include acute appendicitis with rupture, perforated small bowel, perforated colonic diverticulum, twisted ovarian cyst, and internal strangulated hernia (Fig. 1).

Correct diagnosis rests, as always, on suspicion. Where the possibility of a leaking abdominal aortic aneurysm is considered, a high degree of diagnostic accuracy is usual. Repeated search for a pulsating tumor, particularly after restoration of normal blood pressure levels by early treatment, such as infusion and transfusion, is essential (Fig. 2). Each differential diagnosis has its own clinical and laboratory traits which tend to appear as the time of observation increases.

The roentgenograms, usually flat plate films taken of the patient in various positions, are as important as any other test. The finding of calcium in circular outline, the increasing separation of the ureters, where an intravenous pyelogram is feasible, the obliteration of the psoas muscle shadow, and the appearance of air and fluid levels with varying degrees of ileus, are all part of the clinical work-up. In long-standing aneurysm, erosion of vertebral bodies may be discernible on a lateral view of a roentgenogram. Long before this became a practical matter, these roentgen diagnoses were described in detail.[32-34]

Repeated blood counts, blood volume estimations, central venous pressure, electrocardiographic tracings, thoracic and abdominal roentgenograms, and blood electrolyte and enzyme studies are all part of the diagnostic attack. Also abdominal puncture can be of value.

Finally, where definitive diagnosis cannot be made and the patient's condition demands immediate action, exploratory laporatomy in the presence of obvious signs of abdominal disease must be performed.

At the time of autopsy it is disconcerting to note the considerable number of patients with intraperitoneal rupture who were not operated on.[35]

The penalty for delay in diagnosis is exemplified by the experience of Gryska, Wheeler, and Linton[36] who reported there were no survivors among those patients with ruptured abdominal aneurysm presenting symptoms of shock with anuria.

Retroperitoneal rupture. The most common avenue of escape for blood leaking from an abdominal aneurysm is into the retroperitoneum. The mechanical situation may be such that the seepage will continue for weeks, giving rise to symptoms occasionally diagnosed as orthopedic lesions of the hip, or knee, or spine, and chronic urinary tract disease.[37-39] A case was reported of laminectomy being performed for supposed vertebral disk

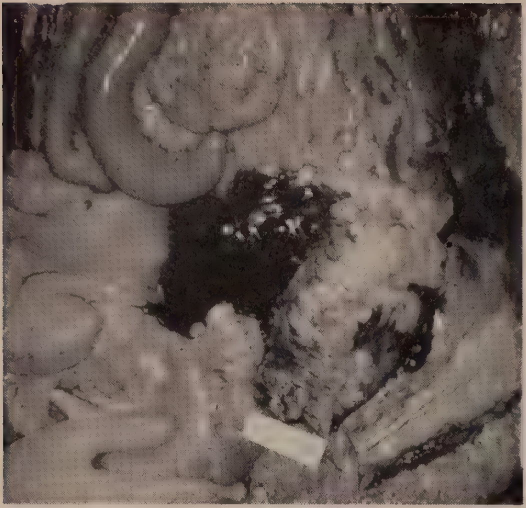

FIGURE 3. Aortic aneurysm showing minimal retroperitoneal hematoma in early rupture.

disease and also a case of urinary cystotomy being performed for supposed calculus.[40]

If the blood courses inferiorly along the psoas major muscle, it may collect in the groin, as in Pott's abscess of the spine, or lead to surgical interference for incarcerated inguinal hernia.[41]

It is rather common for the initial diagnosis of renal stone in the left kidney to be made in patients seen in the early stages of retroperitoneal rupture (Fig. 3). Where there is a corroborated history of aneurysm or where a pulsating tumor is palpable there is no problem in diagnosis. However, where a mass is temporarily or never palpated, this diagnosis can be difficult to make. A salient point is the presence of shock and the rather rapid or progressive deterioration of the patient's condition beyond that seen in any of the urinary or orthopedic conditions considered in the diagnosis. Here again close observation and a high degree of suspicion are essential.[42]

Rupture into intestine. For anatomic reasons, the commonest site of occurrence of rupture into the intestine is the duodenum, although all of the hollow viscera have been subjected to this complication.[43-51] The rupture may be precipitous with rapid exsanguination into the bowel, shock, and death (Fig. 4). Interestingly, this is not true of the majority of these aortointestinal fistulae.

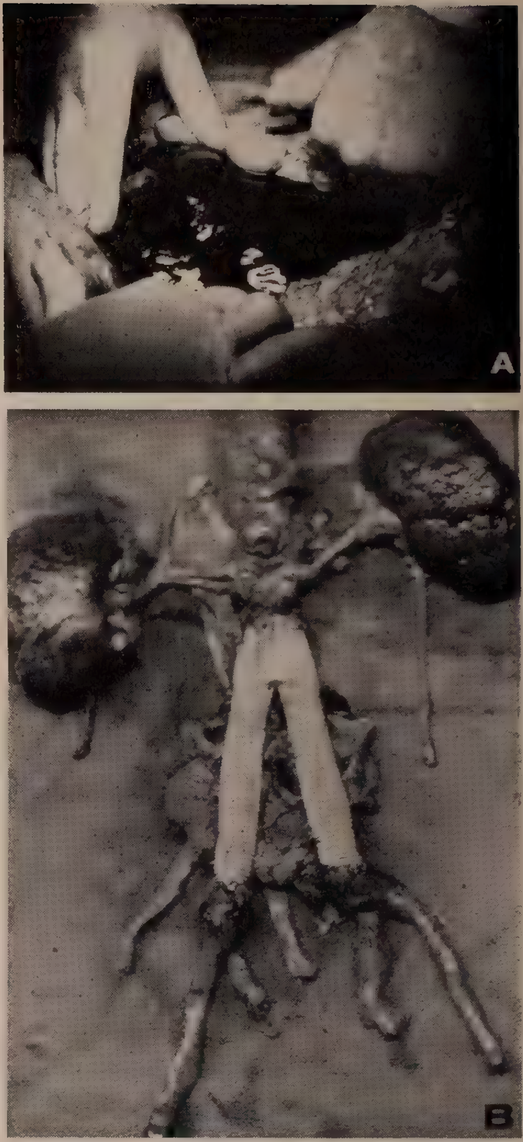

FIGURE 4. (A) Laparotomy showing bulging posterior peritoneum pushed forward by escaping blood from ruptured aneurysm. (B) Autopsy findings on patient in (A) whose death on fifth day was caused by renal failure and pneumonitis.

The leakage can be sufficiently slow to continue for weeks and lead to mistaken diagnoses of bleeding peptic ulcer, or neoplasm, or diverticulum of the colon. Where hematemesis or melena are associated with a pulsating abdominal mass, suspicion alone can rapidly lead to an accurate evaluation. In the absence of a mass, the diagnosis can be difficult.

In a collective review, Baumler[52] demonstrated that only 9 of 52 cases of aortic rupture into the bowel were followed by death within twenty-four hours. The majority lingered on for days and weeks, one patient suffering repeated hematemeses over a period of four months. At the time of publication in 1961, there was no reported survivor.[52] The first successful operation occurred in 1964.[50]

Rupture into inferior vena cava. The creation of a fistula with the inferior vena cava leads to increasing, frequently rapid heart failure. Here again suspicion is the basis for accurate diagnosis which is comparatively easy because of the dramatic nature of the physical signs.[53,54]

Rupture into the ureter has occurred but is unusual.

Surgery

The mortality rate was expectedly high during the first few years of surgery for ruptured abdominal aneurysm. There is good reason to believe that the mortality rate throughout the country was higher than the approximately 50 per cent survival rate reported by various pioneering institutions at that time.[55–57]

In addition to the temporal factor and variation in surgical skills, an important statistical element is the confusion in nomenclature. If the term "ruptured" is to be restricted to mean those critically ill patients in whom large amounts of blood are found in the abdomens, there will always be a high mortality rate due to physical deterioration. These patients die because of shock, or cardiovascular collapse, or from a belatedly recognized heart failure, renal insufficiency, or pneumonia. If, however, the term "ruptured" includes those patients with minimal leakage of blood encountered during an elective operation or of sudden onset in a patient hospitalized for observation, then understandably the mortality rate shows significant improvement. The rationale for operation was well established before it became technically feasible. Estes[58] found that 63 per cent of 102 patients died because of rupture and confirmed the earlier findings of Kampmeier[59] who reported that 31 of 38 patients with abdominal aortic aneurysm died of rupture. Zech and Merendino[60] concurred.

Recently biometric doubt has been cast on this attitude. Klippel and Butcher[61] followed 30 patients with aneurysm and reported 9 to be alive five years after discovery of the condition. A total of 21 patients had died, of which only two deaths were due to rupture. They conclude that surgery should be reserved as prophylactic treatment for those lesions 6 cm. or more in size or for those obviously getting larger. This view was shared by Schatz, Fairbairn, and Juergens[62] and was recently brought up for consideration by Bernstein, Fisher, and Varco.[63]

The majority opinion is unqualifiedly for immediate operation in any case of ruptured abdominal aneurysm even where death as the result of surgery is probable.

As for the unruptured aneurysm, improved surgical knowledge and technical skill places a grave responsibility on those who feel that they can safely and wisely observe these patients indefinitely.[64] It is difficult to understand how any physician who has had experience with a case of ruptured aneurysm can follow these patients with equanimity and be satisfied with an estimate of the condition of the lesion based on the tactile accuracy of his fingers.

Summary

1. Ruptured aneurysm of the abdominal aorta is a remediable condition.
2. Survival of the patient without operation is unknown.
3. The successful results from surgical procedures have significantly increased in the last decade.
4. With improvement in treatment, the importance of prompt recognition of this condition has become paramount.
5. Observation of a patient with a palpable aneurysm of the abdominal aorta is a radical form of treatment. Surgery is the conservative approach.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

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Kaposi's Sarcoma

Present Concept of Clinical Course and Treatment

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KAPOSI'S HEMORRHAGIC sarcoma is unique and is probably the most bizarre of all tumors. This is especially true with regard to its predilection for the skin; its distribution as to age, sex, geography, and race; and its clinical variations. Its clinical course and appearance are still much the same as in the original description by Kaposi in 1872. However, as a result of numerous recent reports on observations of the disease from all over the world, many new facets have been added to our knowledge of this tumor.

Formerly considered a relatively rare disease, it is now apparent that the reported incidence of Kaposi's sarcoma is becoming much higher. In 1953, when we were writing an article on this disease, there were fewer than 500 cases cited in American and European literature.[1] Shortly afterward, Dutz and Stout in 1960[2] collected 1,256 cases. A great portion of this experience originated in South and Central Africa where there is a high incidence of Kaposi's sarcoma among the Bantu natives. This volume of clinical material has afforded an opportunity for the application and evaluation of newer forms of anticancer therapy (Table I). In addition, a considerable amount of new information has accumulated regarding the pathogenesis, natural history, and racial and geographic incidence of Kaposi's sarcoma.

TABLE 1. Comparison of results in treated and untreated cases[3]

Result	Treated (Per Cent)	Untreated* (Per Cent)
Complete regression	9 (15)	2 (8.3)
Improvement	27 (45)	3 (12.5)
Recurrence	9 (15)	...
No change	7 (11.7)	3 (12.5)
Worse	5 (8.3)	12 (50)
Died	3 (5)	4 (16.7)
TOTAL	60	24

* Untreated patients followed from one month to ten years (average three and one-third years).

Kaposi's sarcoma is generally classified as a malignant blood vessel tumor; however, it is presently conceived of as an atypical sarcoma. While the tumor is thought to be multicentric, in some instances there appear to be actual metastases. Approximately 12 to 15 per cent of patients on autopsy are proved to have fatal visceral lesions. Every organ of the body has been implicated including the eye and bone, the only exception being the ovary. In 75 to 85 per cent of cases the primary tumor arises in the skin; however, in 30 per cent of Lothe and Murray's[3] cases, the primary tumor occurred in an internal organ, without subsequent involvement of the skin (Table II).

Racial and geographic incidence

Until a few years ago, it was believed that Kaposi's sarcoma occurred primarily in the Jewish race and in the peoples of Eastern Europe, from Italy, Russia, and

TABLE II. Distribution of tumor in 19 cases with autopsy[3]

Site	Number of Cases
Skin	13
Intestine	15
Suprarenal	6
Lymph nodes	14
Salivary gastrointestinal	2
Liver	6
Heart and pericardium	5
Lung	4
Oral cavity	6
Muscle	2
Appendix	2
Breast	1
Pancreas	2
Spleen	3
Kidney	2
Epididymis	1
Trachea	1
Tongue	2
Thyroid	1
Stomach	1
Eye	. . .
Bone	. . .

TABLE III. Geographic and racial distribution

Country	Per Cent All Cancers	Per 100,000
Johannesburg	. . .	. . .
Bantu	8.0	1.6
Capetown	. . .	0.18
Tunisia	0.04	. . .
Congo	12.8	. . .
Uganda	4.9	3.1
Chicago	0.6	. . .
U.S. White	. . .	0.081
U.S. Negro	. . .	0.103
Sweden	. . .	0.18

Poland. This is no longer valid. This statistical misconception of racial incidence is reminiscent of the situation with regard to Buerger's disease, which was originally considered to have its highest incidence among Russian Jews (later proved untrue) because the clinical material had been reported from clinics drawing their cases from a population having the same racial preponderance. McCarthy and Pack[4] found 83 per cent of their patients to be Jewish and Italians. Regardless of nativity, and on a geographic basis, Eastern Europe was represented by 74 per cent, practically all of whom were Jewish and Italian patients. Rothman[5] also supported this belief of racial distribution. These observations, however, were on a relatively small number of cases, and unfortunately there were no statistics on the proportions of these races in the New York population from which they were drawn. Against the likelihood of this type of racial incidence is the fact that cases are now being reported from countries all over the world. The lesion has been increasingly observed in postwar Germany, which has a reduced Jewish population, while it appears to be very rare in Israel, India, and China.[6] It also has been thought to be rare in the American Negro, while at the same time an extremely high incidence has been found among certain groups of Negroes of Africa.

That there is more to the problem of predisposition to Kaposi's sarcoma than racial differences can be attested to by the variations of incidence that occur within one continent, namely, Africa. Here a high incidence is found among Central and South African Negroes, as distinct from the paucity of cases found in West Africa. Oettle's[6] statistical survey has revealed marked geographic variations in the incidence among the Bantus of Africa. The crude incidence rate per 100,000 per annum ranges from 12.8 per cent for all cancers in the Belgian Congo, to 3.1 in Uganda, to 0.37 per cent in the West African Negro, and 1.6 in the Bantus of Johannesburg (Table III). At the same time, members of the white and colored (mixed) races and Indians living with these people were not involved at all. The tumor registry of the University of Chicago (1946 to 1960) showed a total of 13,700 cancers, of which there were 8 instances of Kaposi's sarcoma, a crude incidence rate of 0.06 cases per 100,000 people or 1 in 2,000; while in Johannesburg the total number of cancers among the Bantus was 12.8, or approximately 200 times more frequent than in Chicago.[5] According to Dorn and Cutler,[7] the crude incidence rate per 100,000 per annum for white males in the United States is 0.081, Negro males 0.103, Swedes 0.28, and Finns 0.02 per cent. On the basis of these statistics there is a crude incidence in African males of 20 to 40 times that found in white males of the United States. Thus, the striking differences between races in various parts of the world would strongly indicate the interplay of geographic, environmental, hereditary, and biologic differences.

Age and sex

In this country, Kaposi's sarcoma has been considered a disease of adults, commonly occurring beyond the age of forty with the peak incidence between fifty and seventy years of age. The disease predominantly afflicts males. It is estimated that less then 10 per cent of cases occur in females.

Kaposi's sarcoma rarely affects children; however, in Africa, Davies and Lothe[8] have noted that 4 per cent of their series of 281 cases occurred in children under eleven years of age, the peak concentration being between two and four years of age. When it does occur in children, the prognosis seems to be most unfavorable. The African experience with the disease in children shows that many of them have no cutaneous lesions. In the African child the classic symptoms are tumors of the eyelids, lacrimal glands, parotid, and salivary glands, as well as gross involvement of the superficial lymph nodes. In Africa, the disease occurs in young adults as well as in those past age forty, so that the incidence curve, on the basis of age, begins to rise in childhood on a straight line to old age, an age curve that is indicative of that found in the incidence of the lymphoreticular group of lesions rather than that of neoplasms.

Clinical course

Some aspects of Kaposi's sarcoma are:

A. Laboratory findings
   1. Blood chemistry
   2. Blood count
   3. Hyperglycemia
   4. Monocyte-eosinophil anemia
B. Dissemination
   1. Direct extension
   2. Multicentric origin
   3. Bloodstream
C. Causes of death
   1. Cachexia
   2. Bronchitis
   3. Bronchopneumonia
   4. Intercurrent infection
   5. Hemorrhage
   6. Perforation of intestine
   7. Hemolytic anemia
   8. Heart failure
   9. Erosion of pulmonary artery
   10. Coexistent disease

Kaposi's sarcoma originates in the skin in the majority of patients. The initial lesion most frequently appears in the skin of the extremities as a bluish-red macule. Primary lesions may appear on any surface of the skin, including such areas as the pinna of the ear, tip of the nose, penis, and breast, as well as the oral mucous membranes. The macules slowly grow to form indurated plaques and, later, nodules and tumors. As the condition progresses, both lower extremities become symmetrically involved in a stocking-like distribution. Similarly, on the hands, the lesions spread from the fingers over the dorsum of the hands, the palms, the forearms, and arms. In 60 per cent of the cases, there is an extensive board-like edematous involvement of the lower extremities. Varicose veins, sclerosis, and ectasia are predominantly present in the legs. As the disease progresses, there is eventual extension to the viscera.

Progression is variable. One or a few lesions may exist for long periods of time before others appear. At other times, multiple lesions appear in rapid succession before a period of quiescence supervenes. Over-all, there is a general progression with extension of the disease process on the skin and in the internal organs. Bluish to brown and blackish discoloration is associated with all of the lesions. The edema is not ordinarily a pitting edema since it is located in the dermis and not in the subcutaneous tissue. The disease, especially in the early stage, is generally not associated with objective symptoms. Occasionally, there may be itching, or the patient may complain of pain in the legs. For the greater part, the nodules and tumors do not tend to ulcerate, but in the later stages of the disease, ulceration and hemorrhage ensue. Lymphadenopathy is common in all phases of the disease and may or may not occur with accompanying skin lesions. The nodes may or may not contain actual tumor cells. The oral cavity at times may show invasion by the tumor cells of the tonsils, larynx, and pharynx. Bone may also become involved. Formerly, it was believed that all extracutaneous lesions were metastatic. It is now known that the primary tumor may originate in practically any organ of the body, and in some cases the skin may never become involved. Primary Kaposi's sarcoma has been described in the heart, kidney, intestine, lymph nodes, eye, ear, nose, and nasopharynx.[3]

Ample autopsy studies now indicate that (1) the disease is frequently multicentric in origin, (2) the paravascular distribution of the tumor in many instances indicates that there can be extensive spread by direct extension, (3) evidence of invasion of the blood vessels demonstrates the possibility in some instances of spread via the blood stream, and (4) embolic spread in the veins has also been reported.[9]

The not uncommon finding of primary tumors located in the viscera and unassociated with cutaneous manifestations gives weight to the view that Kaposi's sarcoma is probably a systemic disease of multicentric origin, often of prolonged duration, and only in a few instances associated with actual metastases.

The cause of death has included extensive Kaposi's sarcoma with cachexia, bronchitis, bronchopneumonia, septicemia, hemorrhage from various sources, perforation of the intestine, hemolytic anemia, Kaposi's tumor of the heart, erosion of the pulmonary artery with hemorrhage, and finally, coexistent disease such as lymphoma, carcinoma, or some type of intercurrent infection.[3]

In a review of the autopsies of 19 African cases, Lothe and Murray[3] found every organ of the body to be involved with the exception of the eye and bone, and these latter organs have also been found to be involved according to other autopsy reports (Table II). In this series there was a total of 85 organic lesions, demonstrating the widespread dissemination and extensive organic involvement of this disease. Thirteen patients showed involvement of the skin; 15 showed involvement of the large or small intestine; 6 showed tumors of the adrenals and liver; 5 showed involvement of the mesenteric glands; and 4 showed tumors of the lung. All other organs of the body were involved but with less frequency. Of these 19 patients, 6 showed no involvement of the skin, but only of the internal organs; 4 showed only skin lesions; while in the remaining 9, there were both visceral and skin lesions. While bone involvement was not evident in these cases, skeletal lesions do occur, often appearing in the bones of the extremities which are involved by the tumor.

Edema

The cause of the edema appearing in the extremities is not clearly understood. It is a nonpitting edema, indicating fluid accumulation in the dermis and not ordinarily arising in the subcutaneous tissue. In time, the board-like edema is followed by fibrosis of the dermal and subcutaneous tissue which manifests itself as a complete board-like hardness. While the extremities appear very much like those found in lymph or venous stasis, the limb is usually warm, and it does not seem to be an obstructing edema. On autopsy, there is no generalized dilatation of the lymphatic vessels of the interstitial tissue of the limb that would suggest proximal lymphatic block nor is there evidence of vascular blockage.

The significance of the common presence of edema is concerned with the possibility that some underlying circulatory deficiency may be a predisposing factor in the development of the disease. This is of further interest because of the similarity to postmastectomy lymphangiosarcoma, first described by Stewart and Treves,[10] which develops in the edematous arms of patients following radical mastectomy for cancer of the breast. Whereas, in Kaposi's sarcoma the edema of the extremities sometimes precedes the visible or palpable evidence of tumor formation, Palmer[11] has demonstrated radiologically the presence of subcutaneous tumors, not yet clinically evidenced in such patients, thus indicating that once edema is present, it is likely that the disease process is already present, although not developed to the stage of being clinically detectable.

Association with second primary tumor

One of the most unusual features of this disease is the exceptionally high frequency with which some type of second primary cancer is found. It may be of a related origin, such as malignant lymphoma, or leukemia, or some type of primary carcinoma having an entirely separate histogenesis.

A number of cases have now appeared in the literature, including those reviewed by

Pack and Davis[1] in which the disease occurs concomitantly with mycosis fungoides, Hodgkin's disease, lymphosarcoma, giant follicular lymphoma, leukemia, and various forms of carcinoma. In addition, about 40 to 50 per cent of the cases of Kaposi's sarcoma are associated with diabetes mellitus. Similarly, Oettle,[6] in a collection of 314 cases of leukemia or lymphoma associated with some form of malignant neoplasm, found 7 per cent to be associated with a concurrent Kaposi's sarcoma.

More recently, O'Brien and Brasfield[12] found that 28.5 per cent of 63 patients with Kaposi's sarcoma died of a second primary cancer. Included in this group were those in whom death was due to a lymphoblastoma. They concluded that the mortality rate resulting from a second primary cancer was a greater threat to life than the disease itself. Even considering the fact that the mean age of these patients at the time of the original diagnosis was the seventh decade, 80 per cent occurring in the sixth, seventh, and eighth decades, this is still a greater cancer mortality rate than would be projected in a normal population of that age. Eleven of their patients who died with the disease had a mean survival time of nine years. The second primary tumors found in these cases included 5 cases of Hodgkin's disease, 3 of lymphosarcoma of the colon, and 1 each of multiple myeloma, malignant melanoma, and carcinomas of the prostate, trachea, tongue, pancreas, and breast. Berg[13] recently analyzed 4,667 cases of lymphoma, leukemia, and myeloma from the tumor registry of Memorial Hospital for Cancer and Allied Diseases, New York City, for evidence of associated primary cancers. Among these patients were 4 with associated Kaposi's sarcoma; 3 were women with lymphosarcoma, Hodgkin's disease, and myeloid leukemia, respectively, and 1 was a man with Hodgkin's disease.

Pathogenesis

Five basic histologic patterns are encountered: inflammatory, angiomatous, granulomatous, sarcomatous, and lymphoblastomatous. One or more of these may be present in varying degrees. The characteristic histologic pattern consists of whorled bundles of spindle cells in a bed of vascular and lymph channels of varying size and degree of differentiation, with a moderate number of mitotic figures and infiltration of plasma and lymph cells, as well as the deposition of hemosiderin, foci of necrosis, and areas of fibrosis. Almost every type of tissue cell that appears in and about lymph and vascular vessels may be present. While there is disagreement on the pathogenesis of this disease, histologically there is a characteristic pattern. The spindle cell is a characteristic feature, and on the determination of its origin depends the clue to the histogenesis of this tumor.[9,14] Various attempts to reproduce Kaposi's sarcoma experimentally in all its characteristic phases has met with failure. Inoculation of patients with tumor tissue, as well as inoculations of animals, have been unsuccessful.[14] White and Stewart induced numerous benign and malignant tumors, some multicentric, with the administration of azo compounds and hydrocarbons.[15]

Tissue cultures have been attempted without conclusive results.

Almost every type of cell found in the pathologic tissue of this disease has been considered as a possible origin of the spindle cell. Most of these have now been excluded on the basis of morphologic and histochemical properties, leaving the most likely possibilities that the spindle cell of Kaposi's sarcoma is derived from either (1) Schwann's cells of the adventitia of blood vessels, (2) perivascular primitive mesenchymal cells, or (3) cells of the reticuloendothelial system.[9]

The most recent studies on the histogenesis of the spindle cell in Kaposi's sarcoma have been made by Hashimoto and Lever,[16] and using the histochemical technics and the electron microscope, support the view that the tumor arises from the vascular periepithelial cells and rule out the idea of a Schwannian cell origin. Niemi and Mustakallio,[17] from the University of Helsinki, studied the tissues from three tumors. They are of the opinion that the roundish histiocytes present in the early phase of tumor growth and the characteristic spindle cell of the later stage of the tumor were the same cell but in a different stage of transitional development into a fibroblast. They concluded that this cell belongs to the adventitial mesenchymal cells of the blood vessels.

Treatment

Surgical excision of early solitary tumors seems to yield good results; however, in most instances, one is dealing with a disease in which there are multiple lesions so that surgery soon becomes an inadequate means of attack. Fortunately, tumors of Kaposi's sarcoma, especially in the early vascular stage, are radiosensitive, and the development of multiple superficial lesions lends itself well to treatment with superficial irradiation. When the lesions become indurated and fibrotic, they lose their sensitivity. Many lesions may be kept under control by inducing the patients to present themselves over long periods of time so that superficial irradiation may be applied to the multiple lesions as they occur. Deep-seated tumors, neoplasms of the bone, and those involving the lymph nodes and the viscera are treated by supervoltage irradiation.

When the disease becomes generalized or a large tumor involves one organ, such as an arm or a leg, it becomes a difficult problem that cannot be managed by either radiation therapy or surgery. Cases in this category are now being treated by various forms of local and systemic chemotherapy as follows:

A. Intravenous injection
    1. Nitrogen mustard or mechlorethamine (HN_2)
    2. Vinblastine sulfate
B. Intra-arterial injection
    1. Nitrogen mustard
    2. Radioactive yttrium-90 (Y^{90})
C. Intra-arterial infusion
    1. Methotrexate
    2. Fluorouracil (5-FU)
    3. 5-fluoro-2-deoxyuridine (FUDR)
D. Extracorporeal perfusion
E. Intralesional injection
    1. Vinblastine sulfate
    2. Vincristine
F. Topical
    1. Vincristine

Intravenous injections of mustard, previously employed, have been found to be only palliative, producing short periods of partial and temporary regression, without real over-all control of the disease. Numerous drugs and antimetabolites, such as cyclophosamide (Cytoxan), penicillin, sulfapyridine, chloroquine, urethane, steroids, sex hormones, and others, have been given orally, only to prove essentially ineffective. Recently, Scott and Voight[18] employed an antitumor drug, vinblastine sulfate, given intravenously to 3 patients who showed complete regression of the disease for from one to four years.

Regional chemotherapy, which has been devised for antitumor attack in other forms of cancer, has been applied to the treatment of Kaposi's sarcoma in a limited number of cases on an experimental basis.

Surgical technics have been employed whereby the administration of massive doses of a chemical can be so controlled as to confine the effects to a limited area without introduction into the general system. The chemical is introduced by intra-arterial injection or infusion and by intra-arterial isolated perfusion. These technics are applicable where the disease process involves an extremity or where there is massive tumor formation confined to a limited area. Resolution following such procedures is observed within two weeks and continues for several months. There is often alleviation of pain associated with the advanced stages of the disease, but the edema does not always resolve. All of these technics are essentially in the experimental stage. The drugs that have been employed are: nitrogen mustard, methotrexate, 5-fluorouracil, and 5-fluoro-2-deoxyuridine.

Cook[19] treated 60 cases with intra-arterial mustard with improvement shown in 45 per cent of the patients. There was complete regression in 13 per cent with an average duration of 23.8 months. A total of 22 per cent experienced objective evidence of improvement for an average period of 7.7 months.

Monaco and Austen[20] employed isolated perfusion with nitrogen mustard in 2 cases. One patient showed an excellent result after ten months. The second patient's condition remained quiescent for six months after which time amputation was necessary. Lawrence[21] achieved for more than one year an excellent response in 1 patient treated by regional perfusion. Klein[22] was able to achieve partial control in 1 patient with large fungating ulcerations by repeated doses of intravenous vinblastine sulfate. In another patient in whom vinblastine sulfate did not succeed in arresting the course of the disease, topical application of vincristine sulfate to a large exophytic lesion seemed to be effective. Intralesional administration of vinblastine sulfate and vincristine sulfate appeared to control lesions in a third case.

Summary

The treatment of Kaposi's sarcoma by these surgical and chemotherapeutic technics is still in the experimental stage. While a relatively small series of cases have been reported, it seems to offer the possibility of a new means of attack on the localized advanced stage of the disease.

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Beekman-Downtown Hospital and
Gracie Square Hospital
New York City
October 31, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by SEYMOUR FINK, M.D.

Rapidly Increasing Jaundice in Elderly Female with Diabetes

Case History

Salvacion H. Garcia, M.D.: A seventy-nine-year-old white female was admitted to Beekman-Downtown Hospital because of anorexia and generalized pruritus of two weeks duration.

Eleven years previously, the patient had been admitted to the hospital with a history of constipation for three years and progressive difficulty in passage of stool for three days. She had had hypertension for many years, but did not require medication. She also had an asymptomatic enlargement of the thyroid gland for many years. She had undergone a hysterectomy in 1936 for postmenopausal bleeding. On her first admission, physical examination showed a blood pressure of 210/140; the patient appeared obese but in no acute distress. The right lobe of the thyroid was enlarged, firm, and nontender. There was evidence of sclerosis of the radial arteries; the heart and lungs were not remarkable. Rectal examination showed external hemorrhoids with a fecal impaction. The urinalysis was not remarkable. The hemoglobin was 15.1 Gm. per 100 ml.; white blood cell count 3,800 per cubic millimeter with 59 per cent segmented forms, 21 per cent lymphocytes, 11 per cent monocytes, and 9 per cent eosinophils. X-ray film of the abdomen showed only calcific densities in the lower part of the pelvis, which apparently were phleboliths. Following relief of the fecal impaction, barium enema and sigmoidoscopic examinations showed negative findings. The patient was discharged four days after admission.

One year following discharge from the hospital, the patient was seen by her private physician for chest pains, shortness of breath, and fatigue, with mild orthopnea and some swelling of the face. The blood pressure was 220/130; the physical examination was not remarkable, and the white blood cell count was 7,050. The electrocardiogram showed beginning left ventricular hypertrophy. A basal metabolic rate was reported to be plus 24.

During subsequent follow-up, the blood pressure remained in the vicinity of 170/100 during continuance of medication for hypertension.

In 1960, the patient was admitted to another hospital because of chest pain and dyspnea with evidence of pneumonia shown on x-ray film. Following discharge, the patient was continued on digitalis, diuretics, and medication for hypertension.

In 1962, a thyroid evaluation test showed a radioactive iodine (I^{131}) uptake of 9 per cent; scintiscanning of the neck was reported to show diffusely enlarged thyroid gland with as much activity in the concentrating portion of the lateral lobes as in the isthmus. The I^{131} uptake rose to 54 per cent twenty-four hours after administration of thyroid-stimulating hormone, with uniform increase in activity throughout the thyroid gland shown on scintiscan.

The impression at that time was colloid adenomatous goiter with an isthmal functioning adenoma.

In early 1965, she was found to have mild diabetes and was given chlorpropamide (Diabinese), one tablet daily. The patient's condition remained essentially unchanged until February, 1966, when within two weeks time she developed generalized pruritus, anorexia, nausea, increased constipation, and easy bruising of the skin. She was seen by her private physician and immediately referred for admission to the hospital.

Physical examination showed the blood pressure was 140/90; the pulse was 70; the respirations were 18 per minute; and the temperature was 98.4 F. The patient was obese and moderately jaundiced with excoriations and scattered ecchymoses over the extremities, chest, and abdomen. The sclerae were icteric. There was bilateral eighth-nerve deafness. A nodule 3 cm. in diameter overlay the isthmus of the thyroid. The left carotid pulse was not easily felt; the right carotid pulse was strong. The heart and lungs were not remarkable; the abdomen was obese; and the liver edge was nontender and 2 fingerbreaths below the right costal margin. There was a trace of pitting edema in both lower extremities.

The hemoglobin was 12.4 Gm. per 100 ml., the hematocrit 37, and the white blood cell count 8,700 with 54 per cent segmented forms, 8 per cent nonsegmented forms, 32 per cent lymphocytes, 3 per cent monocytes, and 3 per cent eosinophils. The platelet count was 290,000 per cubic millimeter. The urinalysis showed a specific gravity of 1.022; many bacteria were demonstrated on microscopic examination.

The blood urea nitrogen was 21 mg., the fasting blood sugar 130 mg., and the total bilirubin 8.4 mg. (direct 6.2 mg.) per 100 ml.; thymol turbidity was 1 unit and the alkaline phosphatase 2.8 units. The plasma prothrombin time was 15.5 seconds (control 15). The twenty-four-hour urobilinogen excretion was 6.1 mg. (normal 0 to 4 Gm.). The leucine aminopeptidase was 468 units (normal 0 to 250). The flat x-ray film of the abdomen showed a soft-tissue density in the right upper quadrant separate from the liver and kidney, suggestive of an enlarged gallbladder. The barium enema examination showed negative findings. The gastrointestinal x-ray film series demonstrated an hiatus hernia, extrinsic pressure on the inner aspect of duodenal loop, and extensive atherosclerosis involving the aorta and several intra-abdominal branches (Fig. 1). The duodenal deformity suggested enlargement of the pancreas. The sigmoidoscopic examination revealed negative findings to 25 cm.; stool fragments were noted to be soft and clay colored (not barium).

During the eighteen days in the hospital, the patient remained afebrile and continued to have constipation and pruritus. By the tenth hospital day, the total bilirubin had risen to 12.4 mg. (direct 9.6 mg.) per 100 ml.; the thymol turbidity was 1 unit; and the alkaline phosphatase increased to 11.8 units. Surgical exploration was advised, but the patient and her family refused.

Three weeks following discharge, the patient was admitted to another hospital because of continued pruritus, weight loss, and deepening jaundice. At that time, physical examination showed a blood pressure of 100/60, marked icterus, generalized ecchymoses, and unchanged enlargement of the thyroid gland. The heart sounds were distant with a faint systolic murmur at the apex and at the aortic area; the lungs were clear. The abdomen was obese; the liver edge was palpated 4 to 5 fingerbreadths below the costal margin with tenderness in the epigastrium. The spleen was not palpable; there were no abdominal masses. The hemoglobin was 7.9 Gm. per 100 ml., the hematocrit 23, and the white blood cell count 14,900 with 80 per cent neutrophils, 2 per cent band forms, 15 per cent lymphocytes, and 3 per cent monocytes.

The patient remained semistuporous, was nauseated, and vomited coffee-ground material. Her condition deteriorated, and she died the morning of the day after admission.

Discussion

Seymour Fink M.D.*: In a clinicopathologic conference, the discusser can try to ferret out a point which the clinician

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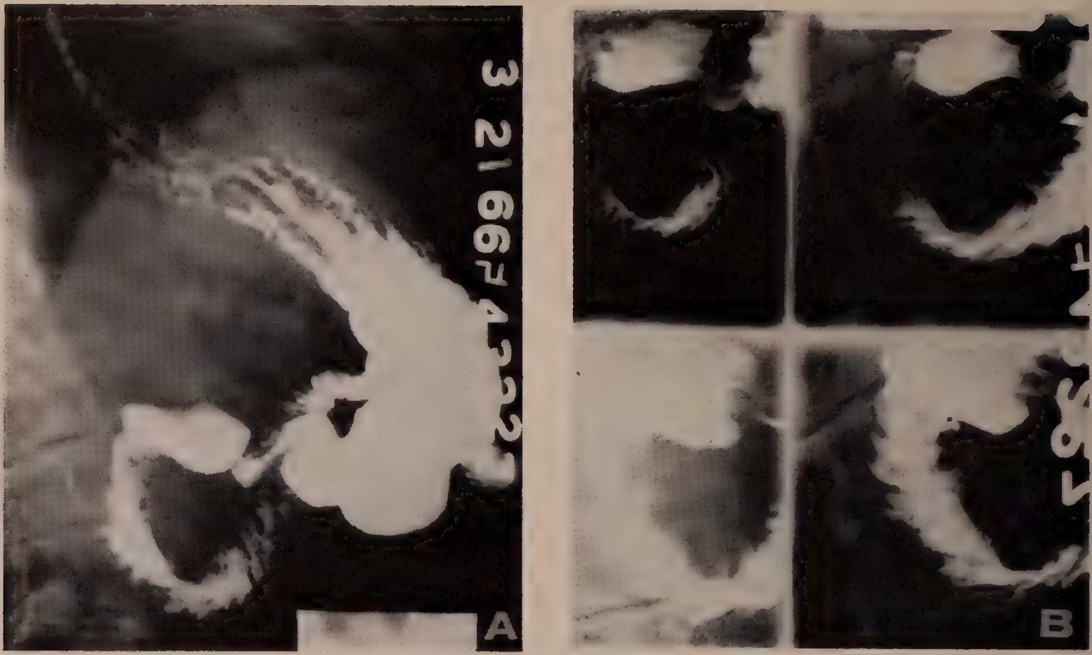

FIGURE 1. Gastrointestinal x-ray film series showing (A) small hiatus hernia and extrinsic pressure on medial aspect of duodenal loop, and (B) duodenal loop showing reverse-three (epsilon) sign.

has missed and which may lead to the correct diagnosis of an obscure disease process. However, when the facts point to a diagnosis that seems very obvious, then we become suspicious and wonder what the pathologist could possibly come up with? I find myself in the latter situation.

I shall begin by saying that this patient most likely has a carcinoma of the pancreas with a Courvoisier gallbladder. At the time of the first hospital admission ten years before her demise, she was hypertensive, had a large thyroid, and had had a hysterectomy. Although she had a leukopenia of 3,800, with 11 per cent monocytes and 9 per cent eosinophils, I shall dismiss this as subsequent studies showed normal results. A year later, she was seen because of chest pain, shortness of breath, fatigue, mild orthopnea, and some swelling of the face. Again, the blood pressure was elevated, and the basal metabolic rate was slightly high. Seven years prior to final hospital admission, she was treated for pneumonia and was continued on digitalis, diuretics, and medication for hypertension. Two years later, I^{131} uptake was 9 per cent which is low, in contrast to the previous high basal metabolic rate. After the patient received thyroid-stimulating hormone, the uptake rose to 54 per cent, which would suggest a pituitary insufficiency. The scan indicated an isthmal adenoma which was "warm." I do not believe that this was a carcinoma of the thyroid or that it had any relationship to the subsequent events. Incidentally, she had no gastrointestinal symptoms until shortly before her admission to the hospital when she developed anorexia, generalized pruritus, exhaustion, increase in constipation, and easy bruising of the skin. Physical examination revealed she was moderately jaundiced, and the liver was enlarged 2 fingerbreadths. Certainly with these findings and with the onset of a painless jaundice in an elderly person, a diagnosis of carcinoma of the head of the pancreas would most naturally come to mind. The elevated direct bilirubin suggests an obstruction while the normal thymol turbidity and prothrombin times would indicate no parenchymal damage. We are not told about the serum transaminases nor serum protein level. The elevated urobilinogen in the urine may be expected in hepatitis, hemolytic states, partial biliary obstruction, and in cases of liver damage. Since I can find no evidence of these conditions and since the elevated urinary urobilinogen was not confirmed on repeat study, I will dismiss this result also. Exclusive of laboratory error the initially normal alkaline phosphatase in the case of obstructive jaundice is disturbing, but subsequently, it rose to 11.8 units along with a rising direct and total bilirubin. The leucine aminopeptidase is elevated in a variety of hepatobiliary diseases, so that I find it of no help in establishing a diagnosis.

We are told that the results of the barium enema and sigmoidoscopic examinations were normal, that the gastrointestinal series indicated extrinsic pressure on the medial aspect of the descending duodenum, and that the flat plate film indicated an enlarged gallbladder. Would you review the x-ray films, Dr. Vasilas?

Anthony Vasilas, M.D.: The flat plate film of the abdomen reveals no enlargement of the liver; however, there is a shadow which is thought to be the gallbladder, not markedly enlarged but somewhat distended. The remainder of the abdomen is unremarkable, except for advanced osteoarthritic changes of the spine and vascular calcification. We have no evidence of calculi in the region of the gallbladder, common bile duct, or pancreas. The barium enema examination was unremarkable. No polypoid filling defects were noted within the colon; the terminal ileum was well outlined as was the ileocecal valve. The gastrointestinal series reveals the stomach and duodenal bulb to be unremarkable (Fig. 1). The duodenal loop is not widened, but there is evidence of extrinsic pressure on the medial aspect of it; the mucosa has been effaced with a "reverse three," the Greek epsilon sign. This latter finding indicates an enlarged head of the pancreas, and carcinoma in that region should be considered.

Dr. Fink.: Although the gallbladder was not palpable in this obese patient, I will accept the x-ray film evidence of its enlargement.

After an eighteen-day stay in this hospital, the patient was discharged, having refused surgery. She was admitted to another hospital three weeks later and expired the day after admission. During the three-week interval, her condition continued to deteriorate with increasing jaundice, pruritus, and weight loss. The liver was further enlarged to from 4 to 5 fingerbreadths. The blood pressure dropped to 100/60 and the hemoglobin to 7.9 Gm. per 100 ml. We are not told of any obvious or occult blood in the stools to indicate gastrointestinal bleeding, but she did vomit coffee-ground material before death.

The major difficulty in this type of clinical problem is to determine whether the obstruction is within the liver and therefore is jaundice to be treated without surgery, or whether the process is extrahepatic and, therefore, is jaundice to be treated by surgery. Since the operative risk in patients with intrahepatic disease is extremely high, this is obviously not merely an academic exercise in differential diagnosis. In addition to the studies done in this particular case, other avenues of investigation would include liver biopsy, celiac axis or superior mesenteric angiography, liver scan, pancreatic scan, percutaneous transhepatic cholangiography, duodenal drainage and cytology, and secretin studies. Since the patient was jaundiced, an oral cholecystogram or intravenous cholangiogram would be of no value.

In considering the differential diagnosis in this case, the medical causes of intrahepatic cholecystasis, such as hepatitis, drug reactions, or post-necrotic cirrhosis would not explain the roentgen findings of a large gallbladder and the extrinsic pressure on the medial aspect of the descending duodenum. If a stone in the common duct were the cause of obstructive jaundice, I would expect to find a past history of biliary tract disease, with recurrent gastrointestinal symptoms. According to Courvoisier's law, obstruction of the common bile duct caused by stones would give a contracted gallbladder whereas an obstruction caused by neoplasm should result in a dilated gallbladder. Pancreatitis could explain the enlargment of the head of the pancreas, but again there is nothing in the clinical course in the way of gastrointestinal symptoms that would be consistent with pancreatitis. An inflammatory mass in the region of the head of the pancreas secondary to a perforated duodenal ulcer and producing jaundice is uncommon and should have been accompanied by abdominal pain. With carcinoma of the gallbladder, most patients have cholelithiasis and, therefore, would have a past history of biliary tract disease. In the presence of carcinoma of the extrahepatic bile ducts, the serum bilirubin is usually much higher than in this case, about 25 mg. per 100 ml.; the gallbladder is less likely to be enlarged, since the carcinoma is often above the junction of the cystic duct and common bile duct. In cases of carcinoma of the ampulla of Vater, abdominal pain and gastrointestinal bleeding are much more common and jaundice tends to fluctuate in intensity which is usually not true with carcinoma of the common bile duct or pancreas. The gastrointestinal film series in ampullary carcinoma may show the inverted three sign, some filling defects, or proximal dilatation of the duodenum. Hepatoma is frequently associated with abdominal pain, and on x-ray film one would expect to see the right diaphragm displaced upward and the stomach displaced to the left and downward. Enlarged nodes producing extrinsic pressure and complete obstruction of the bile ducts are extremely uncommon.

Such nodes can be due to carcinoma, metastatic from a distant primary site; to tuberculosis, other inflammatory diseases, and lymphosarcoma; but there is nothing to suggest these entities.

So, I must return to carcinoma of the head of the pancreas as my first diagnosis. Everything fits so well that I am bothered, but I will stick to this diagnosis. The patient had mild diabetes mellitus, and I believe that the hyperglycemia was an early sign of a carcinoma of the pancreas. In view of the enlarging liver, I must consider metastatic disease of this organ. The coffee-ground vomitus may be explained by erosion of duodenal blood vessels by the pancreatic carcinoma.

A final word: About a year ago, I discussed a case at one of these sessions and made a diagnosis of carcinoma of the pancreas; however, the pathologist found a carcinoma of the common bile duct near its termination, with penetration into the head of the pancreas.[1] I wonder if lightning is going to strike twice on the same discusser?

HAROLD H. COPPERSMITH, M.D.: Did Dr. Fink say that the gallbladder was enlarged?

DR. FINK: No, it was not palpable, but if a gallbladder without dye is visible on x-ray film, it would have to be enlarged.

DR. COPPERSMITH: If this turns out not to be carcinoma of the head of the pancreas, it ought to be.

DR. FINK: The reverse-three sign of Frostberg, the epsilon sign, of course raises the question of carcinoma of the ampulla of Vater rather than carcinoma of the pancreas; however, we are not told anything about blood in the stool which we might find in ampullary carcinoma, although there was coffee-ground gastric contents. Remember, too, that carcinoma of the head of the pancreas can cause bleeding by eroding into the duodenum or into the stomach.

It is not uncommon for carcinoma of the pancreas to present symptoms of duodenal ulcer on x-ray film because the carcinoma can erode the duodenum and even create a niche which resembles an ulcer.

CHARLES M. KARPAS, M.D.: Roughly 25 to 30 per cent of carcinomas of the pancreas erode into the gastrointestinal tract.[2]

JOHN T. FLYNN, M.D.: It is hard to be sure how significant an episode of gastrointestinal bleeding is. About three quarters of severely ill hospital patients, especially older ones, will have some bleeding with almost any long-standing chronic disease.

GEORGE SCHREIBER, M.D.: On the flat plate film of the abdomen, I do not see any gas in the stomach. Were the films taken with the patient in an upright position?

DR. VASILAS: No, in the supine position. The fundus is posteriorly located and so, on these particular films, would appear to be filled with fluid secretions rather than air.

RAJENDER K. ARORA, M.D.: I was considering a phenochromocytoma in view of the blood pressure fluctuations and the diabetes, but I would like to know whether or not these fluctuations could have been caused by medications for hypertension.

DR. FLYNN: All the clinical information that we have is outlined in the protocol.

DR. FINK: A patient who is bleeding intermittently is liable to show fluctuations of blood pressure.

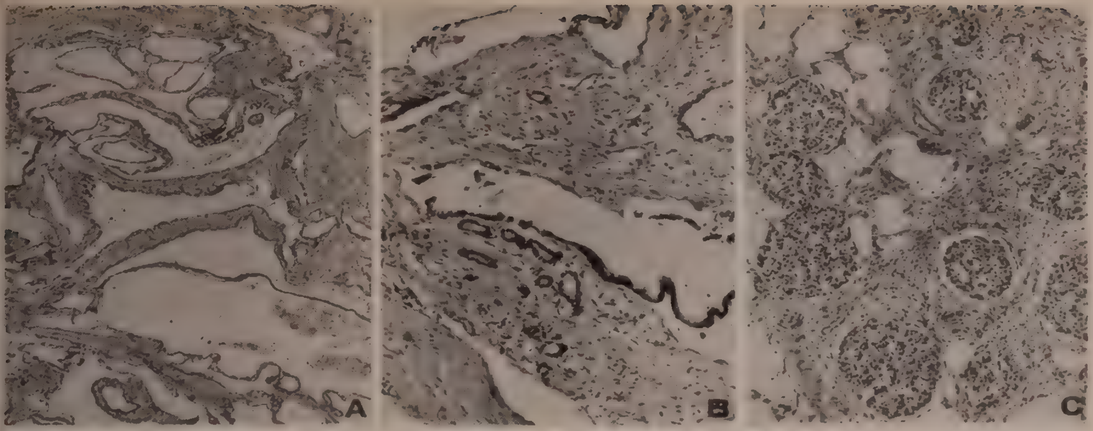

FIGURE 2. (A) Low-power microscopic view showing loculated appearance of pancreatic cystadenoma. (B) Section of cystadenoma showing epithelial lining and remnant of acinar structures within trabeculae (hematoxylin and eosin stain). (C) Section of pancreas showing replacement of acinar glands by fibrous and fatty tissue, with preservation of and relative increase of islet tissue (hematoxylin and eosin stain).

Clinical diagnosis

Carcinoma of the head of the pancreas

Dr. Fink's diagnoses

1. *Carcinoma of the head of the pancreas*
2. *Diabetes mellitus, mild*

Pathologic report

David Sohn, M.D.*: Dr. Fink very ably came to the conclusion that this elderly woman had a neoplasm of the head of the pancreas, an enlarged gallbladder, diabetes, obstructive jaundice, and bleeding. On all of these diagnoses, we are in full agreement. The only point at which we diverge is whether the patient had a malignant neoplasm or a benign one, because, interestingly enough, this patient had a benign neoplasm, a cystadenoma, involving the head of the pancreas. The lesion was a multiloculated cystic structure about 6 cm. in largest dimension. The largest of these loculations measured about a centimeter in maximum size, although most were 2 to 3 mm. They involved virtually all of the head of the pancreas. The common bile duct and pancreatic ducts were obstructed in their terminal portions. Their proximal portions were dilated as were the hepatic ducts. Microscopic sections taken through the pancreatic tumor showed the loculations to be walled off by trabeculae of varying thickness and interspersed with occasional acini of varying size which are quite characteristic of this type of tumor (Fig. 2A). Dilated acini were filled with material which varied from viscid to watery and was turbid, clear, or bloody. The cysts are lined by epithelium ranging from cuboidal to columnar (Fig. 2B). Glenner and Mallory[3] have studied extensively the histogenesis of this type of neoplasm, and they relate the malignant potentialities of these growths to proliferation of the lining cells with papillary hyperplasia. The stroma is sparsely cellular and contains numerous vascular spaces. Dr. Fink mentioned the subject of arteriography or selective angiography,[4] and Bockus[5] feels that the vascular components in this type of tumor can be used to diagnose it in living patients by means of angiography.

In the tail of the pancreas, the duct was dilated many times its usual size. There was extensive replacement of pancreatic parenchyma by adipose tissue with a relative increase of ducts and fibrous tissue. The acinar component of the pancreas had virtually disappeared, and most of the remaining cellular structures were pancreatic islets (Fig. 2C). Actually this patient had experienced the experiment of Banting and Best, namely pancreatic duct occlusion with effacement of acinar components and persistence of only residual islets.

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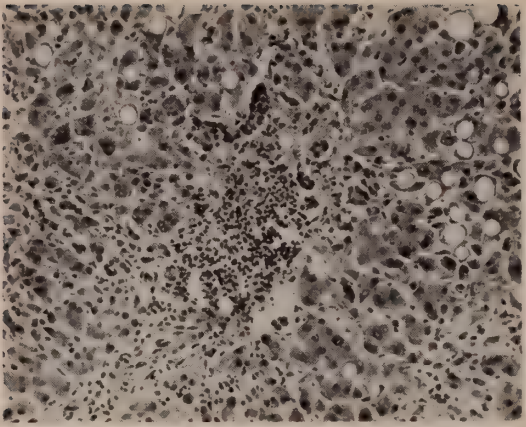

FIGURE 3. Section of liver demonstrating lymphocytic infiltration within portal triad and extending into lobules (hematoxylin and eosin stain).

The liver weighed 1,650 Gm. Microscopically, the architecture was essentially intact, but there were distinct zones of rarefaction in the periphery of the lobules. Fatty infiltration was extensive. There was definite bile stasis with numerous bile plugs present in canaliculi, within ductules, and within the von Kupffer cells. The portal areas contained numerous mononuclear inflammatory cells (plasma cells and lymphocytes) which extended irregularly into the periphery of the lobules (Fig. 3).

The patient's lung showed emphysematous changes and foci of organizing pneumonia which consisted of macrophages, other chronic inflammatory cells, and occasional acute inflammatory cells. The thyroid was enlarged due to a colloid adenoma. Although this patient did have blood in the lumen of the jejunum and ileum, no bleeding site was demonstrated. The bleeding was most likely caused by oozing and probably could be related to her hepatic changes.

Dr. Flynn: Dr. Sohn, how often does the pathologist find this lesion at post mortem, not just as an incidental finding but as the cause of the patient's major clinical symptoms?

Dr. Sohn: Very rarely, if it is a true cystadenoma of the pancreas. The cystadenoma represents fewer than 10 per cent of cystic lesions in the pancreas, although it is probably the second most common cystic lesion of that organ. A total of 70 or 80 per cent of cystadenomas are in the tail or body of the pancreas and, therefore, are incidental lesions.[6] Piper, Remine, and Priestly[7] studied the Mayo Clinic cases over a fifty-year period and found only 4 which involved the head of the pancreas. Frantz[2] found 1 in about every 2,000 surgical specimens; therefore, they are certainly not common lesions. Incidentally, about 90 per cent of the patients are women.

Dr. Fink: The one thing which disturbed me was the rapid clinical deterioration of the patient. This woman lived only seven and one-half weeks from the time of the onset of her gastrointestinal symptoms. I feel more strongly in favor of a diagnosis of malignant disease when there is a rapid demise.

Kurt Shalsha, M.D.: I think, if other circumstances had permitted, this patient would have been saved by an operation. These are the cases which have an excellent result from cholecystojejunostomy.

Dr. Flynn: The patient's refusal to undergo surgery should not affect a clinical decision as to the proper course of action to be taken. Certainly surgical exploration and determination of the true nature of an obstructive common duct lesion is needed in cases similar to this one. I wonder though if the surgeon were to perform a cholecystojejunostomy, would you suggest that he biopsy this pancreatic mass, Dr. Fink?

Dr. Fink: This is a point we have brought up before at another conference. Biopsy of pancreatic masses is fraught with some danger because of fistula formation, but I think that there are times when the surgeon is hard pressed and needs a tissue diagnosis. Here, the surgeon might forego a biopsy since this lesion had less than the usual hardness found in a carcinoma of the head of the pancreas. Perhaps he could detect this cystic characteristic or palpation even though he could not possibly exclude entirely a cystadenocarcinoma. Dr. Sohn, at autopsy did this lesion feel different from the usual carcinoma of the head of the pancreas?

Dr. Sohn: I did not entertain the possibility of a cystadenoma at the time of autopsy, but I think it could have been diagnosed. The surgeon who operates on this type of case has a difficult problem. The pancreas, remember, is deep in the belly, a retroperitoneal structure which is not easily visualized and not easily accessible to palpation.

But, I suspect that a surgeon thinking of this lesion might very well make the diagnosis, because these tumors have a multinodular surface with a thin capsule and are rubbery to feel, in contrast to the hard surface of a carcinoma.

Dr. Fink: Suppose the surgeon explored the abdomen and found this cystic lesion, and he was now convinced this was not the usual carcinoma of the head of the pancreas. He still is faced with the problem of distinguishing this lesion from a cystadenocarcinoma of the head of the pancreas, and perhaps he might be tempted to biopsy this. If, irrespective of the true nature of the lesion, he is not going to do an extensive resection but only a palliative procedure, such as a cholecystojejunostomy, then it would make little difference whether the lesion was a cystadenoma or a cystadenocarcinoma.

Basil Moumgis, M.D.: Don't you feel that for this lesion to produce changes in the body and tail of the pancreas it was present for some time before it obstructed the common duct?

Dr. Sohn: Yes, it must have obstructed the pancreatic duct for a considerable time and only toward the end obstructed the common duct.

Dr. Schreiber: If you had a cancer of the pancreas which produced such an obstruction, would you not expect some back pain?

Dr. Fink: No. We know a very high percentage of such patients do have pain, but many with obstructive jaundice due to pancreatic carcinoma never have pain.

Dr. Flynn: Dr. Fink, you point out that the major portion of the acinar tissue had disappeared and was replaced by fibrous tissue. Now, if we then decide to utilize the serum amylase or leucine aminopeptidase in our diagnostic evaluation, what values would we expect to find in the presence of a disintegrated and disappearing pancreas?

Dr. Fink: The leucine aminopeptidase test result is positive in so many conditions of pancreatic-biliary tract disease that I find it of no real value in distinguishing one lesion from the other. With obstructive jaudice, it is found to be high regardless of what the cause is. As far as the acinar destruction is concerned, this was going on for some time.

I would like to point out that amylase does not disappear entirely from the serum in cases of complete pancreatic destruction. The enzyme is formed also by other organs, such as the salivary glands, the liver, the fallopian tubes, and possibly by striated muscle, and it may be stored in fat depots.[8] Therefore, in advanced pancreatic insufficiency, the amylase concentration in the serum may be at a low level, but it will not disappear entirely. In this circumstance, of course, you would expect the secretin test result to be positive, with little or no amylase in the pancreatic drainage fluid and no rise in the serum level during the test. Unluckily for us diagnosticians, these same findings can occur in perfectly normal individuals.[9]

Hugo Paganelli, M.D.: I think we all need to be reminded from time to time that secretin increases the pancreatic secretion of water and bicarbonate only. If you are using pure secretin, then any increase in amylase in the pancreatic secretion is caused only by a washing-out effect. If the secretin preparation happens to contain some pancreozymin, as it sometimes does, then the latter substance may be responsible for any additional amylase in the pancreatic juice. Incidentally, if you use the combined secretin and pancreozymin test and find a significant rise in serum amylase or lipase, you have fairly strong evidence for pancreatic duct obstruction.

Joseph S. Rechtschaffen, M.D.: It is also interesting to note that the amylase that comes from the liver is usually associated with the albumin fraction of the serum proteins; the portion that originates in the salivary glands and pancreas is usually associated with the gamma globulin in the serum. Perhaps we can begin to make some differentiations clinically on the basis of additional studies of this sort.

Dr. Fink: Incidentally, we are hard pressed to explain her diabetes mellitus in view of the intact islet tissue.

Dr. Sohn: We know that islets are present; we do not know whether or not they were functioning.

I would like to come back to Dr. Arora's comment about a possible pheochromocytoma, inasmuch as the patient had a ten-year history of hypertension. Frantz[2] described a patient at Presbyterian Hospital who was suspected clinically of having pheochromocytoma and who proved to have a cystadenoma of the pancreas. The patient had marked elevation of her blood pressure periodically, and at operation, manipulation of the cystadenoma of the pancreas gave rise to a hypertensive crisis.

Frantz says that this is the only case of which she is aware, but in our case, we may have been dealing with some relationship between the hypertension and the cystadenoma.

Anatomic Diagnoses

1. *Cystadenoma of the head of the pancreas with obstruction of common bile duct and pancreatic duct*
2. *Hepatic bile stasis*
3. *Pericholangitis, chronic, marked*
4. *Chronic pneumonitis*

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Death rates due to poisoning

Nearly a million persons accidentally swallow poisonous materials annually in the United States. Of this number, about 2,100 die and many more sustain permanent and crippling injuries, according to the Metropolitan Life Insurance Company.

Since 1963 the death rate from such poisoning has remained at nearly 11 per million population, which is 16 per cent higher than in 1960, suggesting a worsening situation in recent years. This increase in deaths due to accidental poisoning by solid and liquid substances has occurred primarily at the young adolescent and adult ages. At ages fifteen to twenty-four, the 1965 death rate from this cause was 7.6 per million among males and 3.4 among females, representing increases of 36 and 100 per cent, respectively, over the mortality rates five years earlier. At ages twenty-five to forty-four, the corresponding death rates have increased about two-fifths in each sex, while at ages forty-five to sixty-four, the rate has remained the same for men but has risen sharply for women.

At the preschool ages, such fatal poisoning has decreased markedly in recent years, but the danger continues greater among very young children than at any other period of life.

Since 1963 the barbiturates and their derivatives have been the leading causes of fatal poisonings. In 1965 they accounted for 18 per cent of all accidental deaths due to poisoning among males and 35 per cent among females. Between 1960 and 1965 the deaths attributable to these drugs increased by three-fourths among males and doubled among females. Barbiturates take their largest toll at the adult ages. The recent rise in fatalities because of these drugs has been greatest at ages forty-five to sixty-four, where they were responsible for 257 deaths in 1965.

The loss of life from nonbarbiturate drugs and medicines has also shown an uptrend. The sedatives and the analgesic and soporific drugs in this category caused one sixth of all fatal accidental poisonings in 1965. In that year, they were responsible for 202 deaths among males and 148 among females, representing an increase of about 150 per cent for males and 70 per cent for females as compared with 1960.

On the other hand, deaths from the ingestion of wood, denatured, or other alcohol dropped sharply from 357 in 1960 to 201 in 1965. The new figures account for 14 per cent of fatal poisonings among men and 4 per cent among females, in contrast to 26 and 13 per cent, respectively, in 1960.

Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Burns from Needle Electrodes of Electrocardiogram Monitor

INCREASED USE OF electronically powered monitoring devices has contributed significantly to the care of patients during anesthesia and operation. At the same time, however, the problem of electrical hazards inherent in the use of these devices has not been emphasized sufficiently. Accidents to patients from electrical or electronic devices may be placed into two categories: electrocution and electrical burns.[1,2]

The following 2 case reports illustrate two mechanisms by which burns can develop at the site of needle electrodes.

Case reports

CASE 1. A sixty-nine-year-old man with adenocarcinoma of the rectosigmoid was scheduled for abdominoperineal resection. Physical examination and laboratory results were unremarkable. Prior to operation, three 25-gauge needles were inserted subcutaneously in the lateral aspects of both arms and the left thigh, fastened with adhesive tape, and attached to the corresponding cables of an operating room cardioscope which was positioned to the right of the operating table. Lead II of the electrocardiogram was monitored. A Bovie electrosurgical unit was set to the left of the table and a well-jelled ground plate placed under the patient's buttocks. Anesthesia was induced with thiopental sodium and maintained with nitrous oxide-oxygen and intermittent doses of meperidine hydrochloride via an endotracheal tube. Muscle relaxation was accomplished with intermittent increments of d-tubocurarine. During the operative procedure, the patient's position was changed from supine to lithotomy. When the surgical drapes were removed at the end of surgery, second-degree burns of approximately 2 cm. in diameter were noted at the site of the three needle electrodes. Check of the Bovie ground plate revealed that only one small area of the patient's back made contact with the plate, and that with the non-jelled edge. The burns were treated with bacitracin ointment and were healed within one week leaving insignificant scars.

CASE 2. A sixty-three-year-old woman was scheduled for exploratory laparotomy because of gastrointestinal bleeding three years after a Whipple resection. Physical examination and laboratory results were within normal limits except for a low hematocrit. In the operating room, three 25-gauge needles were inserted subcutaneously and fastened with adhesive tape in the lateral aspects of both arms and the middle third of the left thigh. The needles were connected to the corresponding cables of an operating room electrocardiogram-electroencephalogram monitor placed to the left of the operating table. Leads I and II of the electrocardiogram were monitored alternatingly on the oscilloscope. Endotracheal anesthesia was carried out with a thiopental sodium-nitrous oxide-oxygen-halothane sequence. Respirations were controlled

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with a volume-cycled ventilator, and intermittent injections of d-tubocurarine were used to provide muscle relaxation.

Prior to the surgical preparation of the abdomen, a Bovie electrosurgical unit was positioned to the left of the operating table, and a cautery ground plate was placed under the patient's buttocks.

Following four hours of surgery, the anesthesiologist noted the appearance of circular red areas, 1 and $1^1/_2$ cm. in diameter, respectively, around the needle electrodes fastened on both arms. Investigation of the area around the needle in the left leg, which was underneath the surgical drapes, revealed an erythematous lesion, approximately $1^1/_2$ cm. wide and extending distally for about 8 cm., with small bullae in the center. Monitoring of the electrocardiogram was discontinued. The operation, which consisted of vagotomy and ligation of bleeding vessels, terminated one hour later. The position of the electrical wires was then examined, and it was found that the cable to the electrocautery handpiece was crossing the leg electrode of the electrocardiogram, separated from it by two layers of drapes. The burn lesions were covered with bacitracin ointment. The patient was taken to the recovery room awake, but in poor general condition. She expired from her primary disease on the second postoperative day.

Comment

Heat produced by an electrical current, I, depends on I^2R, where R is the electrical resistance or impedance of the circuit, such as tissue. From a physiologic standpoint, the incidence and severity of an electrical burn is determined by the amount of current and the size of contact with the electrodes. A small area of contact, as in needle electrodes, represents a high impedance connection. When a large current flows through this small area, a large amount of heat must be dissipated by a small amount of tissue, and a burn occurs.[2]

When a Bovie electrosurgical unit is defective or inadequately grounded, the current seeks a pathway through other parts of the body and will exit through monitor leads or other avenues of low resistance. This presumably happened when the first patient was placed in lithotomy position, and the ground plate was not properly repositioned. In newer models of Bovie units, the electrical circuit is so constructed that a warning buzzer will sound if the patient is not properly grounded; this, however, adds the potential hazard of a further circuit.

When a Bovie line (high current, high frequency) is energized, a radiofrequency current may be induced in a monitor lead lying in close proximity. This phenomenon, which is independent of grounding circuits or insulations, apparently was operative in the second patient.[3]

The following precautions will decrease electrical hazards to patients:

1. All electrical and electronic devices used throughout the hospital must be checked periodically to insure proper condition.
2. When application to the patient is in progress, a final check to insure proper function and grounding is essential. Special attention should be given to the ground plate of electrosurgical units to assure proper positioning and adequate application of conductive jelly.
3. High-power lines and monitor leads should not be in close proximity. It is best to place different devices on opposite sides of the body.

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Electrocardiograms of the Month

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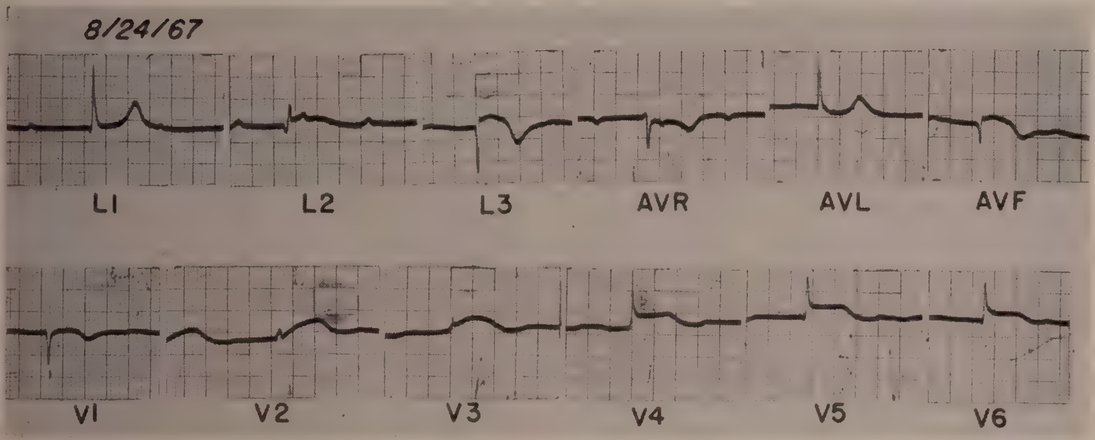
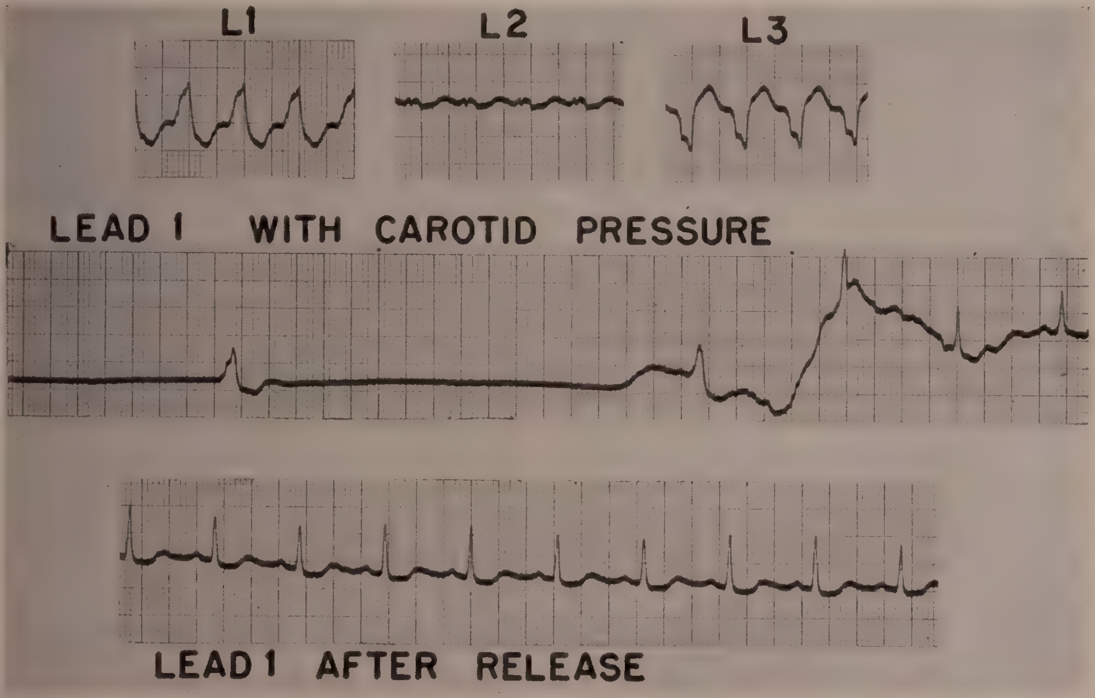

8/24/67
L1
L2
L3
AVR
AVL
AVF
V1
V2
V3
V4
V5
V6

QUESTION 25. This tracing was obtained following an episode of chest pain and nausea in a fifty-seven-year-old man. What is the diagnosis?


L1
L2
L3
LEAD 1 WITH CAROTID PRESSURE
LEAD 1 AFTER RELEASE

QUESTION 26. A sixty-year-old man entered the hospital with palpitations. What is the rhythm? In strip 2 carotid sinus pressure was applied. What is the explanation for the subsequent sequence of events in strips 2 and 3?

Electrocardiograms of Month

ELUCIDATION

Question 25. Leads 3 and aVf reveal deep Q waves with S-T elevated and T inverted. The S-T segments are elevated from V_2 to V_6. Note that the P waves are not conducted. Complete heart block is present, occurring with an acute posterolateral infarction, a rather common combination. The heart block disappeared after three days, and the patient made an uneventful recovery.

Question 26. The rate is 150 per minute. The QRS measures 0.16 second. The rhythm is perfectly regular. Since no P waves are visible, it is difficult to determine whether the rhythm is supraventricular tachycardia with aberrant conduction or ventricular tachycardia.

Carotid sinus pressure is often useful in establishing the diagnosis. Here the maneuver produced cessation of all cardiac activity followed by a single escape beat with a QRS configuration similar to that during tachycardia. Regular sinus rhythm then appears with normal ventricular conduction. Supraventricular tachycardia will either not respond to carotid pressure or the rhythm will break to the normal mechanism. Ventricular tachycardia is unresponsive to carotid pressure. The widened QRS during the tachycardia was caused by transient intraventricular conduction delay of the left bundle branch block variety.

Complications of indwelling venous catheters

Writing in a recent issue of the *American Journal of Surgery*, R. B. Doering, M.D., E. A. Stemmer, M.D., and J. E. Connolly, M.D., feel that in recent years there has been a mounting number of reports warning about the hazards associated with the use of indwelling venous catheters. As reported, the incidence of such complications is as follows: phlebitis, 30 to 40 per cent; thrombosis, 9 to 22 per cent; sepsis, 10 to 16 per cent; pneumothorax, 0 to 20 per cent; pulmonary embolism, 0 to 10 per cent; and catheter embolism, rare. There were two fatalities due to catheter emboli and three due to unrelated disease. In the rest of the group, the catheter was not visualized. Three patients were lost to follow-up but were asymptomatic at discharge. The rest were asymptomatic at the time of follow-up, the periods ranging from three months to a year.

Indwelling catheters should not be used routinely, but reserved for patients who must have prolonged intravenous infusions, for surgical or critically ill patients when a dependable venous cannula is needed, or for central venous pressure monitoring. All catheters should be radiopaque. They should be measured before puncture and on removal. They should never be withdrawn through a sharp bevel needle. As sites, areas of flexion should be avoided, especially in restless patients. The catheter should be securely fixed to the skin at the site, preferably with a ligature.

A tourniquet applied immediately high on the extremity should be done and appropriate roentgenograms taken. As soon as the catheter is localized, it should be removed surgically. Embolus to the vena cava, heart, or pulmonary artery should be promptly treated surgically because conservative treatment is associated with a high mortality rate. If the catheter is not radiopaque, surgical exploration may be successful in locating it. Venograms, cavagrams, and angiocardiograms may help. If the catheter is not found, the patient should be closely watched and frequent radiograms and electrocardiograms taken. Any suggestion of embolus to the right side of the heart constitutes an indication for an exploratory thoracotomy if the patient's condition permits.

Case Reports

Acute Abdominal Disease During Drug Withdrawal

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IN THE DETENTION INSTITUTIONS of the City of New York Department of Correction, an appreciable percentage of the admissions of adolescents and adults, male and female, are drug addicts, dependent on an opiate, usually heroin. From January 1, 1965, to December 31, 1967, there were 290,146 admissions to the institutions of the Department of Correction, of whom 45,649 or 16 per cent were opiate addicts. Generally, either on admission or within twenty-four to forty-eight hours thereafter, many addicted inmates exhibited the syndrome of abrupt opiate withdrawal including vomiting, abdominal cramps, diarrhea, rapid pulse, and leukocytosis because of withdrawal of their drugs.

In the detention institutions, the withdrawal syndrome is treated with tranquilizers, barbiturates, and antiemetic, and antidiarrheic drugs. However, no opium derivatives or synthetic narcotics are administered. If the withdrawal symptoms are nonresponsive to the therapy available at the detention institution or if the symptoms are unduly severe, the inmate is transferred either to the Rikers Island Infirmary or to the prison ward of a New York City hospital where methadone hydrochloride or other opiates and intensive supportive therapy is available.

During the period of January 1, 1965, to December 31, 1967, 5 cases of acute abdominal disease were encountered in inmates during their opiate withdrawal processes. Four of the patients had perforated gastrointestinal ulcers, and 1 patient had acute pancreatitis. The signs and symptoms of abdominal disease in these 5 cases were masked by the concomitant withdrawal syndrome and led to incorrect or delayed diagnoses. Each of the cases terminated fatally. The clinical courses of these 5 cases are reported briefly to alert physicians to the problems of differentiating serious abdominal conditions in addicts having signs and symptoms referable to the abdomen during their withdrawal syndrome.

Case reports

CASE 1. A male, age thirty-nine, was admitted to a City of New York Department of Correction institution on November 14, 1965. When medically examined on admission, he presented abdominal and other symptoms which appeared to be caused by abrupt opiate withdrawal. He gave a history of heroin addiction for a period of twenty years and of taking about 8 bags of heroin daily, often supplemented with phenobarbital during the last four years. The last dose of heroin had been taken about twenty-four hours prior to his admission to the institution. He gave no history of prior abdominal disease. He was medicated with chlordiazepoxide hydrochloride, chlorpromazine hydrochloride, and phenobarbital. Subsequently he visited the institution's physician twice daily for a period of five days during which time his complaint of abdominal pain did not abate. His symptoms continued to be ascribed to the withdrawal syndrome. On November 19 the patient suddenly went into shock and was transferred to a City hospital, but he died during transfer. Autopsy revealed a recent perforation of a chronic gastric ulcer.

Case 2. A female, age thirty-five, was admitted to the New York City House of Detention for Women, on November 4, 1965. On medical examination she was diagnosed as being in an acute opiate withdrawal syndrome. Her last dose of heroin had been administered approximately twenty-four hours prior to admission. She gave a history of using 4 to 5 bags of heroin daily, supplemented with varying amounts of barbiturates. The patient had been an opiate addict for a period of fifteen years. She had been treated for her addiction at the Federal Hospital Addiction Center at Lexington, Kentucky, in 1962. Also she had been treated for drug withdrawal syndromes at the House of Detention for Women after arrests in 1963 and again in 1965. The latter occasion occurred two months prior to her present admission to the detention institution. Past medical history revealed no additional significant data except for a hysterectomy in 1959.

Immediately after the initial medical examination, on November 4, 1965, the patient was transferred from the receiving room to the institution's hospital where she was again examined. Her chief complaint was vomiting. No abnormal findings were made except for a midline abdominal scar and multiple stigmata on both arms from intravenous drug injections. In spite of symptomatic treatment, the patient continued to vomit and had occasional diarrhea. During the night of November 6 the vomiting ceased, and on the morning of November 7 the temperature which had been below 100 F. since admission rose suddenly to 102 F., vomiting recurred, and dyspnea set in. The patient was forthwith transferred to the emergency ward of Bellevue Hospital where she died shortly after admission. The autopsy diagnosis was acute pancreatitis and opiate addiction.

Case 3. A male, age thirty-three, was admitted to a New York City House of Detention on November 23, 1965. On admission examination, the inmate was found to be suffering acute drug withdrawal symptoms, particularly abdominal cramping. His withdrawal syndrome was complicated by convulsive seizures caused by abrupt barbiturate withdrawal. Further findings, except for a healed midepigastric scar said to be caused by surgery for gastric ulcers, were noncontributory. Since the convulsive seizures were not satisfactorily controlled by barbiturate therapy, he was transferred on the day of detention admission to a New York City hospital. At the hospital, examination presented no findings of significance. His condition was considered to be caused by his drug withdrawal. He was medicated with chlorpromazine hydrochloride and phenobarbital and forthwith transferred to the Rikers Island Infirmary where treatment for drug withdrawal symptoms was continued with methadone hydrochloride added. Because of his ulcer history, he was given propantheline bromide (Pro-Banthine) and aluminum hydroxide and magnesium trisilicate (Gelusil) and put on an ulcer diet. His abdominal cramping continued throughout the night of November 23, but examination revealed no tenderness or rigidity and no masses. The abdominal pain was therefore attributed to the withdrawal syndrome although he had received methadone hydrochloride.

On the following day, thirty-three hours after his admission to the Rikers Island Infirmary, he suddenly showed signs of an acute surgical abdominal condition, severe pain, rigid abdomen, and a rise in temperature to 102 F. The Rikers Island Infirmary medical facility has no surgical service. Therefore the patient was immediately returned to the City hospital. He was operated on in the afternoon of November 24 for perforated ulcer. On the second postoperative day he expired. Autopsy findings ascribed the death to acute perforated ulcer with peritonitis.

Case 4. A male, age fifty-five, was admitted to a New York City detention institution on June 17, 1967. In his history he stated that he had used heroin for forty years and had taken his last dose on the day of admission to the detention institution. Initially he presented mild signs of opiate withdrawal but during the night of June 17, 1967, he developed nausea, vomiting, and cramping midepigastric pain. On June 19, because of increasing severity of his withdrawal syndrome, he was transferred to a City hospital. At the hospital he was medicated with methadone hydrochloride, and the severity of his symptoms abated. On June 20 he was returned to the detention institution where treatment for withdrawal syndrome was continued but without the use of methadone hydrochloride or any other opiate. The patient stated that he had experienced similar painful abdominal symptoms during previous drug withdrawal episodes. On June 22 he suddenly went into shock, and he was immediately transferred to the City hospital. On hospital admission he exhibited severe shock and had melena. Radiographic examination revealed complete pyloric obstruction.

A laparotomy was performed on the second hospital day. Multiple gastric and duodenal ulcers were identified, one of which was perforated. A Billroth 2 procedure was performed. The patient had a stormy postoperative course and died on the fifth hospital day.

Case 5. A male, age thirty-four, was admitted on September 1, 1967, to a New York City detention institution with the symptoms and signs of abrupt heroin withdrawal. His chief complaints were nausea, anorexia, and intermittent vomiting. He was medicated with chlorpromazine hydrochloride and chlordiazepoxide hydrochloride, and he visited the physician on duty twice daily. On September 4, because of the rather long duration of symptoms, he underwent complete re-examination. The abdomen was flat and soft. There was no tenderness or rigidity. No mass was palpable, and no dehydration or electrolyte imbalance was in evidence. Prochlorperazine (Compazine) 5 mg. was added to his medication. The patient seemed to improve. He stated that he felt better. He retained tea and milk, and the pain abated. During the evening of September 4 he was again visited and found walking about. He had retained additional fluids and seemed to be free of pain. The following day, September 5, he had a light breakfast and immediately thereafter complained of severe abdominal pain and went into profound shock. He lapsed into unconsciousness, was unresponsive to resuscitation, and expired. Autopsy revealed as cause of death a perforated ulcer anteriorly in the first portion of the duodenum, partially adherent to the undersurface of the liver at the base of the gallbladder and acute peritonitis.

Comment

Opiate addicts presenting the syndrome of abrupt drug withdrawal are frequently encountered in correction institutions on admission or within hours thereafter. During the past several years the addicts seen, in the main, exhibited only moderate withdrawal symptoms, primarily because the heroin available to them was usually highly diluted. Tranquilizers and general symptomatic treatment usually suffice to keep the patient comfortable until the withdrawal period is completed. When the withdrawal syndrome is severe, the patient is transferred either to the Department of Correction hospital at Rikers Island Infirmary, or to a City hospital where more modalities of treatment are available than the detention institutions afford. About 5 per cent of the male addicts and a much higher percentage of the female addicts require admission to hospital facilities for intensive treatment.

As illustrated by the cases briefly described, it is imperative that the physician treating opiate addicts whose supply of drugs has been abruptly withdrawn be aware of the danger of overlooking a concomitant serious medical or surgical condition presenting signs or symptoms closely simulating those found in the opiate withdrawal syndrome. Since very large numbers of addicts must undergo withdrawal treatment in correctional institutions, the need in these institutions for adequate medical facilities and staffs highly proficient in the treatment of drug addiction is obvious.

Summary

Five cases of acute abdominal disease which developed in opiate addicts during the acute phase of the drug withdrawal syndrome are reported. The similarity of gastrointestinal symptoms encountered in drug withdrawal and in acute abdominal conditions is stressed, and the need for continuous and adequate medical supervision of addicts undergoing drug withdrawal is emphasized.

Therapeutic Implications of Autopsy Findings in Acute Barbiturate Intoxication

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MODERN MEDICAL LITERATURE contains somewhat contradictory suggestions for the treatment of acute barbiturate intoxication. Recent autopsy observations made in this laboratory, relating to prolonged gastric retention of ingested barbiturates, have prompted a review of those recommendations. Two illustrative case histories of patients dying after several days of hospital treatment for acute barbiturate intoxication are reported. Barbiturate levels were determined by a modification of the method of Goldbaum.[1]

Case reports

CASE 1. A seventy-one-year-old Caucasian woman with a history of multiple sclerosis was found comatose in bed. She had appeared alert but emotionally depressed when seen by friends thirteen hours previously. In the hospital emergency room, the patient exhibited rapid shallow respirations with periods of apnea. She was areflexic with unreactive pupils. Bowel sounds were hypoactive. Barbiturate intoxication was suspected, and gastric lavage with multiple 200-ml. portions of tap water was performed. No grossly identifiable medications were recovered. No chemical analysis of the lavage fluid was conducted. An intravenous pressor infusion and assisted respiration were begun. The serum barbiturate level at this time was 5.8 mg. per 100 ml. Therapy was supportive without utilization of peritoneal lavage or hemodialysis. The patient's condition remained unchanged until death two and one half days after admission.

Postmortem examination revealed multiple sclerosis and acute bronchitis. Approximately 200 ml. of semisolid material including recognizable portions of vegetables were present in the stomach. Chemical analysis showed 6.3 mg. of secobarbital per 100 ml. of blood, 12.4 mg. of secobarbital per 100 Gm. (wet weight) of liver tissue, and 1 Gm. of secobarbital per 100 ml. of stomach contents (total, 2 Gm.).

CASE 2. A seventy-year-old Caucasian woman was found comatose and taken to the hospital about one hour after ingestion of an unknown number of barbiturate capsules and aspirin tablets. Examination showed her to be comatose and unresponsive to pain and corneal stimulation. Respirations were slow and labored; bowel sounds were decreased. Gastric lavage with approximately 1 L. of tap water was performed, but no capsules or tablets were recovered. No chemical analysis was carried out on the lavage fluid recovered. Two hours after admission, the blood carbon dioxide content was 17 mEq. per liter. The serum contained 9.5 mg. per 100 ml. of phenobarbital and 20 mg. per 100 ml. of salicylate. The patient went into shock, and a pressor infusion was started. Beginning five hours after admission, a twenty-four-hour hemodialysis was performed. At its conclusion, the pupils had become reactive to light, and the arterial pH was 7.37, the serum barbiturate level was 7.3 mg. per 100 ml., and the blood salicylate concentration was 8 mg. per 100 ml. The patient remained in deep coma with a temperature of 35.3 C. and died thirty-six hours after admission to the hospital.

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Postmortem examination disclosed an unsuspected villose adenoma of the colon. External cardiac massage administered terminally had resulted in several rib fractures plus pulmonary fat and bone marrow embolism. Approximately 250 ml. of greenish-purple viscid material without obvious tablets were found in the stomach. Chemical analysis showed 11.3 mg. of phenobarbital per 100 ml. of blood, 15.2 mg. of phenobarbital per 100 Gm. (wet weight) of liver tissue, and 5 Gm. of phenobarbital per 100 ml. of gastric content (total, approximately 12.5 Gm.).

Comment

It is clear from the 2 case histories presented that ingested barbiturates can be recovered from the stomach of comatose patients even after one and a half to two and a half days of hospitalization. In 1948 Boseley and Garrard[2] reported the case of a patient from whom they recovered by colonic lavage about half of the ingested quantity of phenobarbital in the form of recognizable tablets several hours after ingestion. Eight and ten years later respectively, Eckenhoff and Dam[3] and Koppanyi and Richards[4] advocated lavage of the stomach in cases of barbiturate overdosage because of the considerable amount of barbiturate potentially remaining unabsorbed in the stomach or upper intestine. Bottiger and Ostman in 1959[5] reported finding tablets in 16 per cent of 116 gastric aspirations carried out on such patients. More recently, Balzereit and Arnold[6] have reported a series of 204 cases of barbiturate overdosage in which 40 per cent had tablet remnants in the stomach up to forty-eight hours after hospitalization. These authors found no time-dose relationship after analyzing the recovery of barbiturates in the lavage fluid.

Several explanatory hypotheses have been offered for the physiopathologic processes occurring during acute barbiturate intoxication. Numerous authors have noted decreased or absent bowel sounds and postulate that gastrointestinal absorption fluctuates with the effectiveness of the circulation of blood and with increase in gastric acidity which enhances nonionized diffusion. Restoration toward normal of the cardiovascular status might also speed release of drugs from tissue-binding sites. It has also been pointed out that during dialysis, variations in the state of consciousness and an observed rise in serum barbiturate levels might result from absorption of remaining drug from the gastrointestinal tract as a consequence of reactivated peristalsis and a more effective circulation. Bernstein,[7] however, has rejected this reasoning.

The question of whether or not to use gastric lavage in patients with barbiturate intoxication has been discussed extensively. Potential hazards of gastric lavage include cardiac arrhythmias or arrest, esophageal perforation, and pulmonary aspiration. Harstad *et al.*, in 1942,[8] in opposing gastric lavage, reported only small and variable recoveries of barbiturates from lavage fluid and observed that administered fluids tend to speed passage of the drug into the small bowel, thereby potentially increasing its absorption. In Harstad *et al.'s* series, 40 of 71 patients undergoing a 10-L. lavage yielded no barbiturates in the washings, while only 3 per cent of the cases had more than a 500-mg. recovery.

On the other hand, Koppanyi and Richards[4] and Balzereit and Arnold[6] have reported that significant amounts of drugs can be recovered by gastric lavage, especially if performed within four hours of ingestion. Many other authors recommend gastric lavage but limit the expectations of its usefulness by the time elapsed between ingestion and treatment. Review of the literature indicates 24 authors who recommend that lavage, to be effective, be carried out in less than four hours after drug ingestion, while 5 additional writers would extend the useful period to eight to twelve hours. Seven authors believe that the possible dangers and poor recoveries outweigh the value of gastric lavage, while 4 investigators feel that gastric aspiration only, especially if performed within two hours of ingestion, is called for. Solomon[9] has pointed out, however, that aspiration without lavage may not be effective because the stomach may contain very little fluid to facilitate the removal of the drug. Ten authors, including Solomon,[9] mentioned the use of cathartics to remove remaining drugs from the gastrointestinal tract.

The 2 case histories detailed in the present report, plus the reported experience of other investigators, make it apparent that after ingestion of barbiturates the drug may remain in the gastrointestinal tract of comatose patients even after several days of hospitalization and despite gastric lavage. These observations are at variance with the statement of Bernstein and Bronsky[10] to the effect that: "After six to eight hours gastrointestinal absorption may be assumed to be complete, and little danger exists of progressive increase of coma from that source."

The therapeutic implications of the present observations of gastric barbiturate retention are obvious: Removal of remaining drug from the gastrointestinal tract is potentially feasible even days after ingestion. However, gastric lavage as usually performed may be ineffective in removing drug from the stomach. Failure to recognize the possibility of continuing barbiturate absorption in the comatose patient can make a significant contribution to therapeutic failures in such cases.

Summary

Large amounts of ingested barbiturates were recovered at autopsy from the gastric contents of 2 patients dying in coma thirty-six and sixty hours after admission to the hospital following suicidal drug ingestion. The therapeutic significance of this observation as it relates to continuing drug absorption in such patients is emphasized.

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Industrial accidents decreasing

Notable progress has been made in recent years in reducing the number of industrial accidents, according to a report by the Workmen's Compensation Board of the State of New York.

It was stated that the number of compensated cases closed during the ten-year period 1956 to 1965 declined almost 9 per cent when compared with the previous ten years, 1946 to 1955, despite the fact that employment had increased 10 per cent. Also, since 1960, through extended coverage, additional employes have been covered under the law.

Safety and rehabilitation are the two main features of the Workmen's Compensation Board, safety being of prime importance. If an accident does occur and an injury is reported, it is important that the injured worker be given every assistance to return to active employment as soon as possible.

The report also indicates that among the compensated cases that were closed in 1965, there was a decrease from 1955 in accidents in non-manufacturing fields where employment rose 20 per cent and in construction, a high-hazard industry, where there was a decrease of 18 per cent despite a rise in employment.

The most common type of accident was slipping or overexertion in handling materials. The average age of all injured workers was forty-two years, and the average compensation award per case in 1965 was $1,183.

Medical Arts and Letters

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Maimonides the Physician

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Occasionally a great teacher of such surpassing qualities appears that leaders of all major faiths recognize his great knowledge and build their own philosophies on this basis. However, that is but a small segment of Maimonides' claim to fame. He was not only a theologian but also an astronomer, mathematician, philosopher, physician, and much more. He was the last and the greatest of the Jewish scholars of Spain, and in that golden age scholarship meant proficiency in many fields. The sciences and arts were not strictly separated at that time, and the great physicians were conversant with all forms of knowledge.

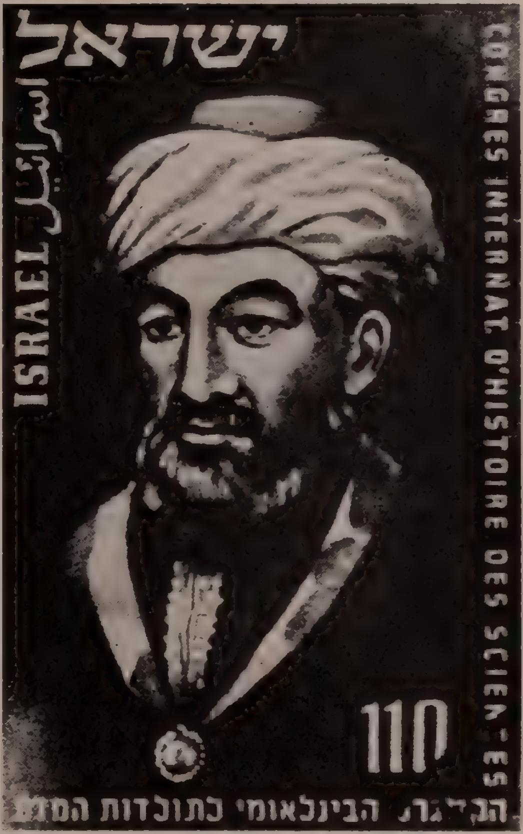
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FIGURE 1. Stamp issued by Israel in honor of Maimonides. Scott number Israel 74.

Early life

Maimonides, also known as Rabbi Moses ben Maimon, was born in Cordova, Spain, in 1135 into a family of rabbis, scholars, and physicians, during the time when the Moorish Empire was dying, and the great Arab renaissance in science and medicine had almost spent itself (Fig. 1). The great city of Cordova was under siege by the Catholics from the north and by a puritanical tribe of Mohammedans, the Almohades, from the south. This tribe, originally from Africa, conquered the southern part of Spain and pillaged her wonderful cities. In 1148 the Almohades subjugated the remarkable city of Cordova. The Jewish populace either had to embrace Mohammedanism or be killed, and many of the inhabitants fled for their lives. Maimonides' father, Joseph, who was a famous rabbi and physician in Cordova, took his little family and migrated from town to town in southern Spain. Maimonides had a brother, David, and a sister. Finally, in 1160, conditions had become so difficult that the small family had to emigrate to Fez in North Africa.

It is thought that in Fez Maimonides received his medical training and also studied the *Talmud*.[1] It is not known for certain whether he actually had a formal course of instruction in medicine. Meyerhof[2] believes that it is possible Maimonides never had any formal training in medicine but prepared himself through study of medical writers, supplementing theoretic knowledge by personal experience with patients. It is known that Maimonides had a profound knowledge of Greek and Mohammedan medical writings.

The family was forced to emigrate from Fez in 1165 and went for a short time to Palestine. During that same year they settled in Egypt where the climate appeared to be better for study and contemplation. Soon after emigration to Egypt other calamitous events occurred; his father died and his brother David was drowned in a shipwreck with the loss of the family fortune. Maimonides had to turn to medicine to support his mother and sister. The family lived in Fostat, a suburb of Cairo, where Maimonides was a rabbi. He had always stated that one should not make a living from the study of the Holy Books, so he turned to the practice of medicine. His skill as a physician soon came to the notice of the Vizier Al-Fadhil, and he became a physician to the famous Sultan, Salah-Al-Din (Saladin).

In Egypt, besides being a rabbi, judge, and physician he also found time to write many important religious works. He wrote a codification of the *Talmud*, the *Mishneh Torah* or the second *Torah*, in which he attacked superstition and interpreted miracles rationally. Another one of his famous works in those years was the *Guide for the Perplexed* which he ostensibly wrote for his protégé, Joseph ben Aknin.[3] In this interesting work he tried to put some of the biblical concepts on a scientific basis. Since very few rabbis of that era were interested in the scientific basis of the *Bible*, it is thought that Maimonides placed many hidden meanings in this work which certainly was not understood by the Jewish masses at that time. Maimonides was an intellectual snob and wrote for the learned but wrote with the clarity of a novelist. Besides Maimonides' other duties, he was the supervisor for the preparation of the great theriac of Cairo.[4] This was a composition containing from 40 to 70 drugs which was used in the treatment of snake bites, scorpion bites, and poisoning. Toward the end of the century and also toward the end of his life he wrote many medical treatises. He wrote the *Aphorisms of Medicine* which were taken from Galen and edited with critical remarks. The *Aphorisms* describe the signs of different diseases and the treatment of the diseases including diet and climatic therapy. He wrote the *Regimen Sanitatis* for the son of the Sultan Saladin. In this work he stressed the value of diet and personal hygiene and described the effect of mental states on physical illness. At the request of the Vizier Al-Fadhil he wrote the *Treatise on Poisons* in which he described antidotes and prophylaxis for snake bites and other poisons.[1] He translated the *Canon of Avicenna* into Hebrew and is credited with writing the oath and prayer of Maimonides which was a great factor in the development of medical ethics and ranks with the oath of Hippocrates.[5] It is also known that Richard the Lion-hearted, on a visit to Palestine, offered Maimonides a position as his personal physician, but Maimonides declined.

Arabic medicine

Can Maimonides be considered as strictly a Jewish physician or must we think of him as one of the Arabian elite? The problem arises whether Jewish medicine actually existed at that time or whether all Jewish medicine of the Middle Ages should be included in the medicine of the Islamic world. This was a time of great dispersion of the Jews, and Jewish medicine existed within the framework of the countries and dominant races of the times. Maimonides certainly wrote more of his works in Arabic than in Hebrew. Let us consider Maimonides in the context of a Hebrew physician whose genius was allowed to flower in a Moslem land.

Arabic medicine was associated with the history of conquest and expansion of Mohammedanism.[6] The year 622 A.D. was year 1 of the Mohammedan calendar. The first years of the Mohammedan invasion were spent in conquest, but the institutions that they found were not destroyed. When the Arabs occupied Syria, Greek medical texts were being translated by Syrian scholars. Many of these translators were Nestorian Christians, who were intellectual but not the orthodox Christians from Byzantium. These Christians were hounded from place to place and finally settled further east in Persia where they continued their work, erecting hospitals and teaching medicine. The golden age of Arab medicine was in the time of the Abbasside caliphs who lived about 750 A.D. Many great medical works were translated into Arabic. Another Abbasside caliph was a great patron of science. He established large grants of money for translations and sent scholars to Alexandria and Byzantium to search for old Greek medical manuscripts. The Persian physicians were also under Arabic domination.

The greatest Persian physician was Al Razi or Rhazes who lived from 865 to 925 A.D. He was the most original and most prolific Persian writer. He wrote 200 volumes on medicine, philosophy, religion, mathematics, and astronomy. He described smallpox, measles, appendicitis, and aortic insufficiency. He also wrote the most comprehensive book on medicine of the tenth century. His books were used in many areas even into the fifteenth century.

A second great Arab physician was Avicenna who lived from 980 to 1037 A.D. He wrote 68 books on theology, metaphysics, astronomy, and medicine. His most famous book was *The Canon of Medicine* which was in use as the textbook of medicine even as late as 1650 at the universities of Montpellier and Louvain. He wrote on the effects of the emotions on bodily changes and on the physiology of sleep. He was perhaps the first to think of testing the strength of drugs by animal experiments. He described tic douloreux, tetanus, diabetes mellitus, and wrote about the contagiousness of tuberculosis. Maimonides translated his book, *The Canon of Medicine*, into Hebrew.[6]

The Arabs also migrated westward to the northern coast of Africa, conquered the southern part of Spain, and there established a flourishing empire. This was called "The Western Caliphate." It achieved its highest development during the years 756 to 1031 A.D. The capital city was Cordova, where Maimonides was born, and had a population of 1 million. It had 300 mosques and schools, about 50 hospitals, 17 universities, and 70 public libraries.

Among the great physicians of Cordova was Albucasis who died in 1013. He was famous in the field of Arabic surgery and wrote the first book of surgery that combined theory with practice. He ligated arteries for hemorrhage and treated fractures much as we do today.[6] Another physician of Cordova was Avenzoar who lived from 1094 to 1162 A.D. He was considered the greatest physician of the west. He wrote a book on practical medicine which included therapeutics and diet. He described middle-ear inflammation, esophageal feeding, nutrient enemas, and tracheostomy. He had an inordinate belief in bezoar stones. Faith in bezoar stones was to be continued for more than five centuries. Averroës of Cordova, who lived from 1126 to 1198, was both a philosopher and a physician. He wrote the *Collegate* which was a complete system of medicine that had a great influence on western medicine. The last great physician of Cordova was Maimonides.[6]

The Arabs contributed few new drugs; they encouraged principally the use of older drugs. In general, the Arabs classified existing facts but produced little new or startling in medicine or in other sciences. They originated syrups, juleps, alcohol, and aromatic waters. As mentioned previously, they never destroyed the institutions they conquered but allowed them to develop. When most of Europe was sunk in the depths of barbarism, the Arabs were a beacon of light in the world. When London was without a paved street or a single street light, and when the population of London lived in windowless shelters, Cordova had miles of paved roads and lighted streets. In Granada, Toledo, and Seville the standards were almost as high. The Arabs were noted for their hospitals. A typical hospital had four courts, each having a fountain, lecture halls, wards for isolation, and dispensaries. In the hallways of the hospital musicians played day and night, and story tellers were available for insomniacs. There were also readers of the *Koran* throughout the hospital. When a patient was discharged, he received a few gold pieces so he would not have to go back to hard labor at once and would be allowed a chance to recover from his illness.[4]

It has been stated that the Arabian golden age of medicine was due to authorities who were of other than the Mohammedan faith. Although all these authorities bore Arabic names, many were not considered to be Mohammedans. La Wall[4] says that Rhazes and Avicenna were Nestorian Christians, that Albucasis and Avenzoar were Spanish, and that Averroës and Maimonides were Jews. Even if all these assertions were true, which is certainly not so, a characteristic of the Mohammedans was their tolerance toward teachers of other faiths. If Maimonides' genius were not allowed to blossom where he worked and lived, he would not have been able to accomplish anything no matter how brilliant he was. This, I believe, is the foremost lesson to be learned from the great golden age of Arabian science.

Maimonides' writings

Meyerhof[2] notes that Maimonides composed all of his medical writings in Arabic using Arabic characters, as he had nothing to hide from the Mohammedans. On the other hand his philosophic works were written either in Hebrew or in Arabic with Hebrew characters to make the works difficult for the non-Jewish readers. Maimonides wrote ten important medical treatises: *The Extracts from the Medical Works of Galen*, *Commentary on Hippocrates' Aphorisms*, *The Medical Aphorisms of Moses*, *On Hemorrhoids*, *On Sexual Intercourse*, *Discourse on Asthma*, *On Poisons and the Protection Against Deadly Remedies*, *On the Regulation of Health*, *Discourse on the Explanation of Fits*, and *Glossary of Drug Names*.

In the *Discourse on Asthma*, written for the nephew of the Sultan Saladin, there were instructions covering general and personal hygiene, diet, travel, and psychologic and personal behavior.[7] Maimonides spoke of the asthma attack after a common cold, which we know may occur in asthmatic subjects. Maimonides stressed the treatment of the whole patient rather than the disease and emphasized the value of the relatively clean air of the suburb in contrast to the contaminated air of a city like Alexandria. He noted several times in this treatise the value of regulation of the emotions, stating that mental suffering impaired the physical condition and thereby adversely affected the lungs. He stressed the fact that cold and high humidity and the extremes of excessive moisture and excessive dryness were harmful in asthmatic patients. He stated that sleep during an attack of asthma may be harmful. One wonders if he was alluding to the danger of oversedation in the asthmatic patient. Among the remedies he spoke of are those that dissolve sputum and keep the sputum from becoming hardened, sticky, and difficult to discharge. He also noted the value of emetics for this condition.[7] Indeed the use of emetics can often abort an attack of asthma, especially in children. A study of this work shows that Maimonides combined in one person the contemplative mind of the philosopher with the incisive analytic mind of the physician.

At the time Maimonides wrote his treatise, *On Poisons*,[8] the treatment of all poisoned individuals was to take the great theriac, a concoction of some 40 to 70 substances. Maimonides' treatise describes what to do before the great theriac could be taken. The first part of the book treats of the bites of snakes, spiders, and mad dogs, while the second part deals with the prophylaxis of actual and assumed poisoning. In the case of snake bite he advises tight constriction above the bitten place, incision with a knife over the bitten area, sucking the wound with the mouth by another person, and expectoration of all this material.

Ground emeralds in wine and ground bezoar stone were well considered in the treatment of snake bite and poisoning. Five centuries later these therapeutic materials were still in use. Maimonides mentioned the interesting sidelight that Avenzoar was so apprehensive of being poisoned that he always carried a gold vessel containing the great theriac and a piece of emerald.[8]

Perhaps it is not quite fair to detail some of the *Aphorisms* of Maimonides since they were written more than seven and a half centuries ago. These quotations taken from chapter 16 of the *Aphorisms* relate to obstetric and gynecologic affections.[9]

> If one puts suction cups besides the breasts and genitals, it will help to bring on menstruation when it is overdue.
>
> I have seen a woman who had been a widow for a long time and because of that suffered a spasm of the uterus (hysteria). Therefore the midwife. . .inserted a suppository into the vagina. Due to the warmth which was brought about by the internally inserted suppository and the friction of the genitals when the medication was admin-

> istered, an orgasm occurred together with a vaginal spasm. Afterward a thick matter was discharged. The woman was gratified and cured from all of the above mentioned symptoms.
>
> The ulcer, commonly known as cancer of the breast, develops in breasts of those women whose bodies did not get properly cleansed by the menstrual flux. If this comes forth adequately, then the woman will remain healthy without being overtaken by female diseases at all.

Most of Maimonides' writings are not very original nor do they reflect the achievement of such a great practitioner of medicine. As mentioned previously, very few of the Arabic scholars were original in any way. With the exception of Rhazes and perhaps of Avicenna, the physicians under Mohammedan rule from the tenth to the thirteenth centuries were arrangers of knowledge transmitted by the Greeks, and to this they added the experience and remedies of their times.[4]

According to Goyanes,[10] medicine like other human activities encompasses two forms of creative knowledge, the intuitive and the reflexive. An example of an intuitive individual would be Hippocrates who practiced medicine with intuition, diagnosed a disease from symptoms, and made his diagnosis and prognosis on the basis of inspiration. Galen, on the other hand, would be a reflexive individual, who methodically constructed a complex system of medicine like a dogmatic edifice. Most physicians combine both processes but to different degrees. According to this plan, Maimonides was a laborious constructor rather than a creative genius, thus making no great scientific discoveries. However, he also used medical intuition although he was not noted for it. The late Professor Sarton[11] stated:

> Maimonides was not a great physician, he was not an inventor as Averroës was, but he was a wise physician, and in those days objective medical knowledge and scientific methods of diagnosis or treatment were so few and shaky that wisdom and what one would call medical intuition counted for very much. Modern physicians still need those psychological qualities, but their judgment is solidly based on physical, chemical, and biological tests which did not exist and could hardly be conceived until the last century, almost seven centuries after his time of activity.

What the common people of Egypt still think of their wise physician is indicated by Meyerhof.[2] There is a curious superstition among the poor population of the Jewish quarter of Cairo that when a member of the family is seriously ill and medical advice has given no immediate results, they carry the patient to the old synagogue of Maimonides called "Rab Moshe." They leave him to sleep in the cellar under the prayer room for one or more nights. Meyerhof,[2] the great authority on Maimonides, says that it is noteworthy that Christian and Muslim patients alike share this belief in the healing power of the Maimonides synagogue. They also are sometimes allowed to pass the night under the protection of his spirit.

Saladin died in 1193 and his eldest son, Al Afdal, a pleasure-loving wastrel, took possession of the throne of Egypt which he held for two years, 1198 to 1200. He appointed Maimonides his chief court physician. A famous letter addressed to Rabbi Samuel ben Tibbon of France in 1198 tells about his arduous duties.[2]

> You will expose yourself in vain to the dangers of the journey as you will not find a moment during the day or night to discuss with me. The Sultan resides in Cairo and I dwell in Fostat and the distance between the two places is a double Sabbath Day's journey (about a mile and a half). My duties for the Sultan are heavy. I must visit him early in the morning. If he feels weak or any of his children or any of the inmates of his harem are ill, I cannot leave Cairo but have to spend the greater part of the day in the Palace. Also if any of the officials fall ill, I have to attend him and thus spend the whole day there. In brief, I set out for Cairo every day in the morning and even if nothing unusual happens I do not return to Fostat till after the noon hour. Then I am fatigued and hungry and I find the courts of my house full of people, prominent and common, gentlemen, theologians, and judges waiting for the time of my return. I dismount from my animal, wash my hands, go forth to them and entreat them to wait for me while I take a slight refreshment, my only meal in 24 hours. After that I attend to the patients and prescribe for them. Patients will wait around until nightfall and sometimes until two hours into the night. I talk to them lying on my back because of weakness. When the night falls, I feel so weak I cannot speak any more. Thus no Israelite can have a private discussion with me except on the Sabbath.

This enormous amount of medical work besides his rabbinical and judicial work must have been a tremendous strain for Maimonides. He fell ill in the year 1200 and was unable to appear at the Sultan's court. In that year Maimonides wrote a discourse on the explanation of fits. It was composed shortly before Sultan Al Afdal was deposed and four years before Maimonides' death. The Sultan sent to Maimonides, who was ill in Cairo, a detailed report of the consultation by his other physicians and asked Maimonides for his opinion and advice. The treatise is the result of this request. Between the years 1201 and 1203 Egypt was visited by a terrible drought, a famine, plague epidemic, and an earthquake. Nothing is known of how Maimonides reacted to these events, but we must assume that they had a great effect on him. He died in Cairo on December 13, 1204, at the age of sixty-nine.[2]

Maimonides left to posterity one of the great ethical documents of the world. Although the authorship is occasionally disputed, most modern authorities attribute the "Daily Prayer of a Physician Before Visiting a Sick Man" to Maimonides[5]:

> I begin once more my daily work. Be thou with me, Almighty Father of Mercy, in all my efforts to heal the sick. For without Thee, man is but a helpless creature. Grant that I may be filled with love for my art and for my fellow-men. May the thirst for gain and the desire for fame be far from my heart. For these are the enemies of Pity and the Ministers of Hate. Grant that I may be able to devote myself, body and soul to thy children who suffer from pain.
>
> Preserve my strength, that I may be able to restore the strength of the rich and the poor, the good and the bad, the friend and the foe. Let me see in the sufferer the man alone. When wiser men teach me, let me be humble to learn, for the mind of man is so puny and the art of healing is so vast. But when fools are ready to advise me or to find fault with me, let me not listen to their folly. Let me be intent upon one thing, O Father of Mercy, to be always merciful to thy suffering children.
>
> May there never rise in me the notion that I know enough, but give me strength and leisure and zeal to enlarge my knowledge. Our work is great and the mind of men presses forward forever. Thou has chosen me in thy grace, to watch over the life and death of Thy creatures. I am about to fulfill my duties. Guide me in this immense work so that I may be of avail.

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Necrology

Hattie Elizabeth Alexander, M.D., of New York City, died on June 24 at the age of sixty-seven. Dr. Alexander graduated in 1930 from Johns Hopkins University School of Medicine. She was a consulting pediatrician at Presbyterian Hospital. Dr. Alexander was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the American Pediatric Society (and a past president), the Society for Experimental Biology and Medicine, The Society for Pediatric Research, and the New York Academy of Medicine.

Romeo Winton Auerbach, M.D., of New York City, died on June 10 at the age of seventy-four. Dr. Auerbach graduated in 1917 from Long Island College Hospital. He was an associate attending surgeon at Jewish Hospital of Brooklyn, an associate attending pathologist at Caledonian Hospital, and for thirty years had served as an assistant medical examiner. Dr. Auerbach was a member of the American Board of Legal Medicine, the Industrial Medical Association, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Simon R. Blatteis, M.D., of Miami, Florida, formerly of Great Neck, died on June 11 at the age of ninety-two. Retired, Dr. Blatteis graduated in 1898 from Bellevue Hospital Medical College. He had been a consulting pathologist and physician at Jewish Hospital of Brooklyn. Dr. Blatteis was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Hobart Alexander Burch, M.D., of Elmira, died on December 8, 1967, at the age of sixty-three. Dr. Burch graduated in 1929 from Harvard University Medical School. He was director of roentgenology at St. Joseph's Hospital. Dr. Burch was a Diplomate of the American Board of Radiology, a Fellow of the American College of Radiology, and a member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., the Radiological Society of New York State, the Chemung County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Maxwell Chamberlain, M.D., of New York City, died on May 24 at the age of sixty-two. Dr. Chamberlain graduated in 1933 from the University of Colorado School of Medicine. He was an attending thoracic surgeon at Roosevelt Hospital and a consulting thoracic surgeon at Grasslands Hospital (Valhalla), the United States Naval Hospital (St. Albans), and the Queens Hospital Center. Dr. Chamberlain was a Diplomate of the American Board of Surgery, a Diplomate of the American Board of Thoracic Surgery (Affiliate of the American Board of Surgery), a Fellow of the American College of Surgeons, and a member of the American Association for Thoracic Surgery, the New York Surgical Society, the New York Society for Thoracic Surgery, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Muriel Fetterly Cuykendall, M.D., of Ithaca, died on March 18 at the age of sixty-nine. Dr. Cuykendall graduated in 1924 from the University of Toronto Faculty of Medicine. She was a member of the Tompkins County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herman Laurence Dowd, M.D., of New York City, died on June 4 at the age of eighty. Dr. Dowd graduated in 1913 from Columbia University College of Physicians and Surgeons. Retired, he was a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Irving Fruchs, M.D., of Brooklyn, died on May 24 at the age of sixty-five. Dr. Fruchs graduated in 1931 from Long Island College of Medicine. He was an associate attending staff orthopedist at Brooklyn Hebrew Home and Hospital for the Aged, an assistant attending orthopedist at Maimonides Hospital of Brooklyn, and an assistant attending orthopedic surgeon at Caledonian Hospital. Dr. Fruchs was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Louis Goldberg, M.D., of The Bronx, died on May 23 at the age of sixty-one. Dr. Goldberg graduated in 1932 from New York Homeopathic

Medical College and Flower Hospital. He was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur S. Huebschwerlen, M.D., of Kenmore, died on April 4 at the age of seventy-five. Dr. Huebschwerlen graduated in 1919 from the University of Buffalo School of Medicine. He was a member of the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Patrick Hylant, M.D., of Buffalo, died on May 10 at the age of fifty-seven. Dr. Hylant graduated in 1937 from the University of Buffalo School of Medicine. He was an associate attending surgeon in general practice at Sisters of Charity Hospital of Buffalo and an Erie County medical examiner. Dr. Hylant was a member of the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Malcolm Turner Munkittrick, M.D., of Southampton, died on June 4 at the age of eighty-one. Dr. Munkittrick graduated in 1913 from Fordham University School of Medicine. He was a consulting anesthesiologist at Southampton Hospital Association. Dr. Munkittrick was a Diplomate of the American Board of Anesthesiology, a Fellow of the American College of Anesthesiologists, and a member of the American Society of Anesthesiologists, Inc., the New York State Society of Anesthesiologists, the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph Peter Paolillo, M.D., of Massapequa, died on May 26 at the age of fifty-four. Dr. Paolillo graduated in 1942 from Middlesex University School of Medicine. He was a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

David Ramsay, M.D., of South Harwich, Massachusetts, formerly of Yonkers, died on June 2 at the age of seventy-seven. Dr. Ramsay graduated in 1914 from University and Bellevue Hospital Medical College. He was an emeritus surgeon at St. John's Riverside Hospital. Dr. Ramsay was a Fellow of the American College of Surgeons and a member of the Yonkers Academy of Medicine, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

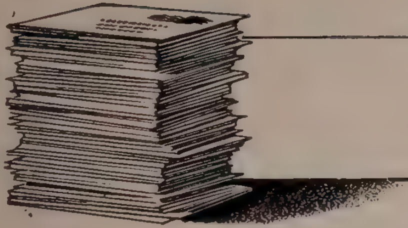
Harold Ellis Rhame, M.D., of Brooklyn, died on June 14 at the age of sixty-six. Dr. Rhame graduated in 1925 from George Washington University School of Medicine. He was a Fellow of the American College of Surgeons, a Fellow of the International College of Surgeons, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Sidney B. Rooff, M.D., of The Bronx, died on March 27 at the age of sixty-seven. Dr. Rooff graduated in 1925 from Long Island College Hospital. He was an associate attending dermatologist at Morrisania City Hospital and a senior clinical assistant attending dermatologist (off service) at The Mount Sinai Hospital. Dr. Rooff was a member of the American Academy of Dermatology, the Society for Investigative Dermatology, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Francis Shea, M.D., of Port Jefferson, died on June 17 at the age of forty-two. Dr. Shea graduated in 1950 from New York Medical College. He was an attending surgeon at the John T. Mather Memorial Hospital and an associate attending surgeon at St. Charles Hospital. Dr. Shea was a member of the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George Simon, M.D., of New York City, died on February 12 at the age of sixty-six. Dr. Simon graduated in 1926 from Long Island College Hospital. He was a Fellow of the American College of Chest Physicians and a member of the American Thoracic Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joseph L. Wielawski, M.D., of Bedford Hills, died on June 8 at the age of sixty-three. Dr. Wielawski received his medical degree from the University of Poznan in 1929. He was a member of the American Psychiatric Association, the Westchester Academy of Medicine, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.



Letters to the Editor

Urologic infections

To the Editor: I read with particular interest, in your March 15 issue, the report of a "Two-Year Study of Infections on Urologic Service."[*] May I take this opportunity to offer a few supplementary remarks on this subject, which I trust you will find space to print in the Journal.

First, I would like to point out that more stress should be given to the occurrence of an ascending infection via ureter from the ordinary bladder to the kidneys. Bed-confined hospital patients should be assured of the use of strictly aseptic urinals as one measure of curbing infections. Also, care should be taken about how frequently patients are given urinals as the "frequent" habit may encourage incontinence. Hence, we have two evils in particular to guard against in the hospital patient: infection and incontinence.

Another useful hint based on my observation is that patients who have hypertrophied prostates should be advised not to empty the bladder at the slightest desire just because they have easy access to the bathroom. By not voiding too frequently, they will prevent shrinkage of the bladder and thus be able to retain more urine in the bladder. As this is a diagnostic factor, it can serve to provide valuable information to the urologist when the patient undergoes a urologic examination.

O. L. Friedman, M.D.

Holbrook Manor, Inc.
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Holbrook, New York 11741

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[*] Zinsser, H. H., Doenecke, A. L., and Seneca, H.: Two-year study of infections on urologic service; origins, prevention, and control, New York State J. Med. 68: 743 (Mar. 15) 1968.

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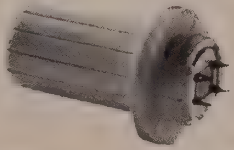

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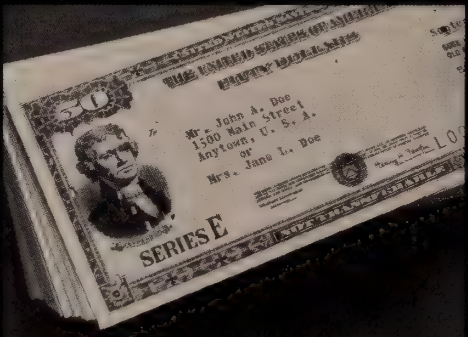
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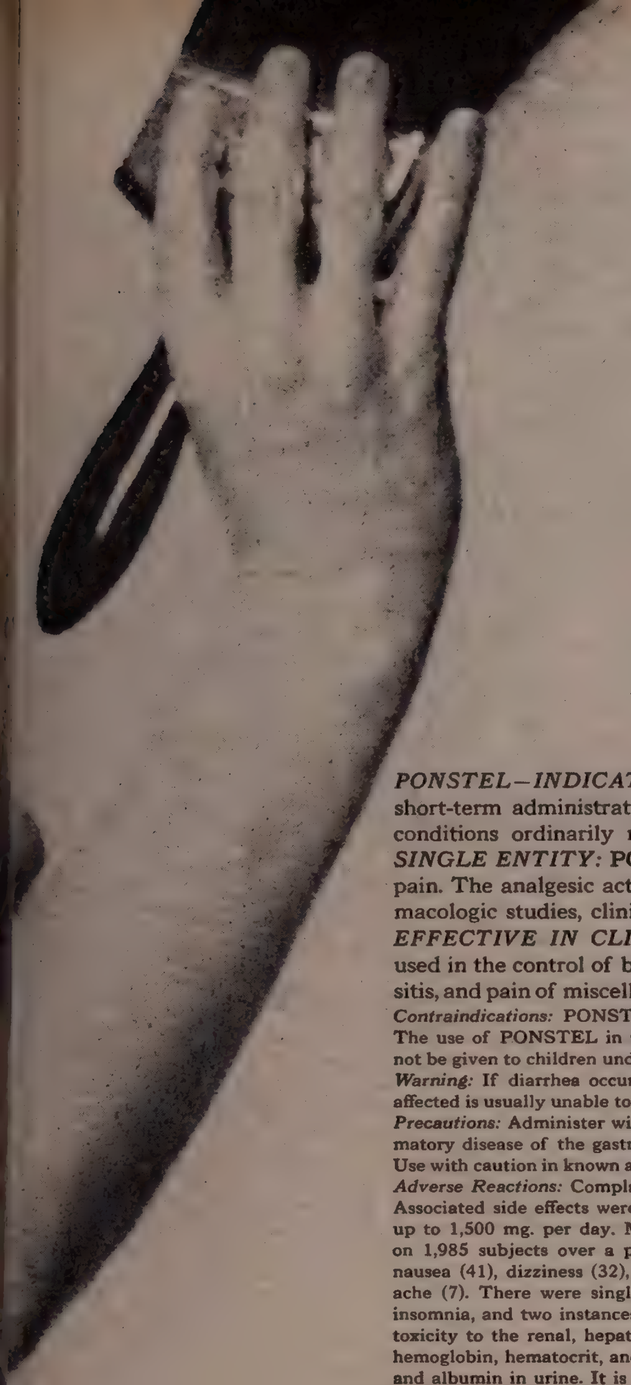

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The Editors of the Journal *assume no responsibility for opinions and claims expressed in the articles contributed by individual authors. Contributions accepted for original publication only.*

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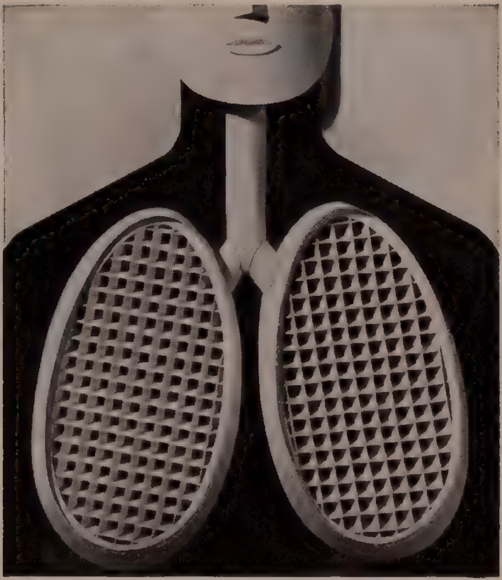
The ventilator pill



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Abstracts

Rossi, A. O.: Child with reading disability, New York State J. Med. **68:** 2145 (Aug. 15) 1968.

At least 1 child in 10 who has the intelligence to read does not have the ability to read at a level proportionate to his intelligence. Various factors involved in the maturation of cognitive processes are interrelated. Testing should be done at kindergarten or prekindergarten levels to screen all children with regard to their abilities and disabilities before they enter the first grade, to discover dyslexia and perceptual-motor deficiencies at an early stage. Corrective measures can then be effective.

Feibush, J. S., and Sherman, A. A.: Low incidence of hypothyroidism following radioiodine therapy, New York State J. Med. **68:** 2158 (Aug. 15) 1968.

Of 149 patients treated for hyperthyroidism by radioactive iodine, 17 developed hypothyroidism, 12 within two years after therapy. The incidence of permanent hypothyroidism was 8.6 per cent. Radioactive iodine should be given in smaller dosage than formerly, and it is suggested that additional radioiodine not be given before four months have elapsed following the initial dose.

Phelan, J. T.: Clinical experience with gastroscopy, New York State J. Med. **68:** 2161 (Aug. 15) 1968.

Gastroscopy is a useful phase in the over-all clinical approach to patients with clinically suspected gastric cancer. It is used to complement x-ray findings of changes that require further clarification; in some instances the gastroscopic examination has revealed lesions not detected by roentgenograms, and in other cases it has aided in determining the operability of a lesion and made it possible to plan the operative procedure in advance. In this study general anesthesia with endotracheal intubation was employed in most cases.

Mesches, D. N., Pugliese, W., Wiersum, J., Taylor, R. B., and Henriquez, C. L.: Dicloxacillin versus triacetyloleandomycin in upper respiratory infections caused by beta-hemolytic streptococci, New York State J. Med. **68:** 2164 (Aug. 15) 1968.

Since dicloxacillin is active against Staphylococcus aureus, Streptococcus pyogenes, and Diplococcus pneumoniae, it was compared with triacetyloleandomycin in a double-blind study of 80 patients with infections caused by group A beta-hemolytic streptococci. The two antibiotics were approximately equal in effectiveness, with no significant differences in action.

Abstracts in Interlingua

Rossi, A. O.: Le juvene con dyslexia (*anglese*), New York State J. Med. **68:** 2145 (15 de augusto) 1968.

Al minus 1 ex omne 10 juveniles con le intelligentia requirite pro leger non ha le capacitate de leger a un nivello commensurate con su intelligentia. Varie factores in le complexo del maturation del processos cognitive se combina in le production de iste situation. Tests deberea esser effectuate al etate de kindergarten o de pre-kindergarten pro identificar omne le juveniles con dyslexia e defectos perceptuomotori in un stadio precoce ante que illes comencia le prime classe e etiam pro determinar lor capacicates e incapacitates in general.

Feibush, J. S., e Sherman, A. A.: Basse incidentia de hypothyroidismo post therapia a radio-iodo (*anglese*), New York State J. Med. **68:** 2158 (15 de augusto) 1968.

In un gruppo de 149 patientes tractate con

continued on page 2121

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Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. *Dosage:* One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

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(See last page for prescribing information.)

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In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid Aventyl® HCl (nortriptyline hydrochloride, Lilly), 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules Aventyl HCl, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500. [101267A]

Additional information available to physicians upon request. 800321

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ontinued from page 2116

odo radioactive pro hyperthyroidismo, 17 disveloppava hypothyroidismo, incluse 12 in qui iste disveloppamento deveniva manifeste intra duo annos. Le incidentia de hypothyroidismo permanente esseva 8,6 pro cento. Iodo radioactive deberea esser administrate a plus basse nivellos de dosage que lo que esseva commun in le passato. Es proponite que un intervallo de quatro menses es programmate inter le dose initial e le administration de radioiodo additional.

Phelan, J. T.: Experientias clinic in le uso de gastroscopia (*anglese*), NEW YORK STATE J. MED. **68:** 2161 (15 de augusto) 1968.

Gastroscopia es un utile modalitate in le programma total de maneamento de patientes con bases clinic pro le suspicion de cancere gastric. Illo es usate in complementation de constatationes radiographic de alterationes que require un elucidation additional. In certe casos le examine gastroscopic ha revelate lesiones non detegite per roentgenogrammas, e in altere casos illo ha essite de adjuta in determinar le operabilitate de un lesion particular e ha rendite possibile planar le procedimento chirurgic ante su execution. In le serie de casos describite in le presente studio, le methodologia utilisate le plus frequentemente esseva anesthesia general con intubation endotracheal.

Mesches, D. N., Pugliese, W., Wiersum, J., Taylor, R. B., e Henriquez, C. L.: Dicloxacillina in confrontation con triacetyloleandomycina in le tractamento de infectiones supero-respiratori causate per streptococcos hemolytic beta (*anglese*), NEW YORK STATE J. MED. **68:** 2164 (15 de augusto) 1968.

Viste que dicloxacillina es active contra Staphylococcus aureus, Streptococcus pyogenes, e Diplococcus pneumoniae, illo esseva comparate in un studio a duple anonymato con triacetyloleandomycina, utilisante un gruppo de 80 patientes con infectiones causate per streptococcos β-hemolytic gruppo A. Le duo antibioticos esseva approximativemente equal in lor efficacia. Esseva notate nulle significative differentias inter lor activitates.

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Prescribing information—Composition: Each white, beveled, compressed tablet contains: Quinine sulfate, 260 mg., Aminophylline, 195 mg. **Indications:** For the prevention and treatment of nocturnal and recumbency leg muscle cramps, including those associated with arthritis, diabetes, varicose veins, thrombophlebitis, arteriosclerosis and static foot deformities. **Contraindications:** QUINAMM is contraindicated in pregnancy because of its quinine content. **Side Effects/Precautions:** Aminophylline may produce intestinal cramps in some instances, and quinine may produce symptoms of cinchonism, such as tinnitus, dizziness, and gastrointestinal disturbance. Discontinue use if ringing in the ears, deafness, skin rash, or visual disturbances occur. **Dosage:** One tablet upon retiring. Where necessary, dosage may be increased to one tablet following the evening meal and one tablet upon retiring. **Supplied:** Bottles of 100 and 500 tablets.

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Medical News

Hospital opens new child and youth project

Roosevelt Hospital opened its newly remodeled quarters for the Child and Youth Project at 430 West 59th Street, New York City. The project will provide medical and dental care for 15,000 disadvantaged children who live or go to school on the West Side between 42nd and 86th Streets.

Regulations relaxed for use of radioisotopes

Physicians in New York State who wish to use most radioisotopes for diagnosis and therapy must present evidence of training and experience. However, about six months ago the regulations were relaxed for the use of six simple but useful diagnostic tests which employ small quantities of radioactive materials. No training is required to use these materials because the instructions provided with the prepackaged individual doses by the pharmaceutical company are considered to be sufficient.

The following isotopes and procedures are involved: (1) Iodine-131 for measuring thyroid and for determining blood and blood plasma volumes; (2) iodine-125 for determining blood and blood plasma volumes; (3) cobalt-58 for measuring intestinal absorption of cyanocobalamin; (4) cobalt-60 for measuring intestinal absorption; and (5) chromium-51 for determining red blood cell volumes and for studies of red blood cell survival time.

For further information and application forms contact: Bureau of Radiological Health, New York State Department of Health, 845 Central Avenue, Albany, New York 12206.

Organizational plan offered for certification in child neurology

There is rapidly growing activity and interest in the field of child neurology. As a result, a pattern of training in the field has been developed for competent practice. There are about 80 neurologists specializing in child neurology at present and about 60 in training. So that this area may continue its orderly development, it is important that the special skills of its practitioners be appropriately recognized by the issue of a new type of certificate.

The members of the American Board of Psychiatry and Neurology believe that the proper preparation for the practice of child neurology requires that the practitioner be a competent neurologist who has had additional training in pediatrics and child neurology. To qualify for the new certificate, a different type of preparation and certifying examination has been formulated. The same diploma will be used, the only difference being that instead of certifying competence in neurology it will certify competence in "neurology with special competence in child neurology." It is expected that such a diplomate will be a general neurologist but with special knowledge of neurologic disorders of children.

The following would be the requirements for eligibility for admission to examination for certification in neurology with special competence in child neurology:

A. General qualifications

1. The degree of Doctor of Medicine from an acceptable medical school.

2. A valid and unlimited license to practice medicine in the United States or Canada.

3. Membership in a county medical society.

4. Satisfactory references concerning moral character and ethical practice.

5. One year of AMA-approved internship. Straight pediatric internship is not an absolute requirement but is strongly urged.

B. Special qualifications

1. One-year residency in general pediatrics.

2. Two-year residency in general neurology.

3. Either (*a*) two years of residency in neurology devoted to child neurology, or (*b*) one-year residency devoted to child neurology plus two years of experience in child neurology.

4. During his residency in neurology, the candidate must have satisfactory training in the sciences basic to neurology and in psychiatry and neurologic surgery as outlined in the "Essentials of Approved Residencies" as they apply to neurology.

C. Examination

1. Successful completion of the Part I (written) examination is required before admission to the oral examination.

2. The candidate is required to pass all other parts of the regular neurologic certifying examination and is required to examine 2 children and 1 adult patient.

Caution urged in use of calcium hypochlorite for swimming pools

Extreme caution should be exercised in handling calcium hypochlorite, a chemical

continued on page 2124

Material for inclusion in the medical news section must be received six weeks prior to publication date.

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00486

continued from page 2122

powder used to sterilize water in swimming pools and backyard wading pools. "Although calcium hypochlorite is ordinarily stable and not combustible, there is a potential fire and explosion hazard if it is carelessly stored, improperly handled, or mixed with certain other common chemicals or materials," warned Hollis S. Ingraham, M.D., New York State health commissioner.

The following safety tips were offered by the commissioner:

—Read the container label carefully and follow instructions.

—Store it in cool, clean dry areas out of the reach of children.

—Use only clean, dry, and noncombustible scoops to handle it. Scoops of porcelain, enamel, glass, or metal are suitable.

—Never mix it in anything but plain water. Pour the chemical into the water; do not pour water into the chemical.

—Dispose of spilled material by flushing immediately with large amounts of water. Rinse empty containers before discarding.

—Wash hands after handling the material. Avoid gloves because they can become impregnated with the chemical.

—Avoid inhaling fumes and avoid contact with the eyes.

Personalities

Appointed. Giulio J. D'Angio, M.D., New York City, as chairman of the Department of Radiation Therapy, and W. P. Laird Myers, M.D., New York City, as chairman of the Department of Medicine, of the Memorial Hospital for Cancer and Allied Diseases.

Elected. Edward E. Fischel, M.D., New York City, as president of the American Rheumatism Association . . . Melvin D. Yahr, M.D., New York City, as president-elect of the American Neurological Association.

Awarded. By the Dental Society of the State of New York to Edward A. Hughes, M.D., Syracuse, president of the State Medical Society, a plaque in recognition of the State Medical Society's "signal contributions to the oral health of the people of the State of New York."

Medical Meetings

Congress on occupational health to meet in N.Y.C.

The 28th Annual AMA Congress on Occupational Health is to be held at the Waldorf-Astoria Hotel, New York City, on September 30 and October 1, from 9:00 A.M. to 5:00 P.M.

The program will feature the following topics: Emotional Toxicity of the Work Environment, The Accident Process; Injury—A Major Environmental Problem; Diagnostic Examination in Alleged Low Back Injury; Electric Shock and Cardiopulmonary Resuscitation; Airline Medical Management; Contribution of Occupational Medicine to Environmental Health; Adverse Reactions Due to Occupational Exposures (Panel Discussion); Nurse-Personnel-Physician Symposium: Confidentiality of Medical Records; Automated Laboratory Procedures in Occupational Medicine; Women Workers in Industry; and New Concepts of Employment in Tuberculosis.

Among the featured guest speakers will be Edward C. Hughes, M.D., president of the Medical Society of the State of New York, and Albert M. Schwartz, M.D., president of the Medical Society of the County of New York, and an address will be given by Dwight L. Wilbur, M.D., president, American Medical Association.

There is no registration fee, and the program is acceptable for 11 elective hours of credit by the American Academy of General Practice.

Congress on medical ethics to be held in Chicago

The Judicial Council of the American Medical Association will hold its second national Congress on Medical Ethics on October 5 and 6 at the Drake Hotel, Chicago, Illinois. The program, developed to tie in with AMA Law Week, is divided into three parts. One will deal with the ethics of medical practice and the future of medical practice, including the relationship of physicians and all those who work with them in providing health care to the public.

The second part of the program will be devoted to medical ethics and science and will delve into the problems seemingly created by

continued on page 2130

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension

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Enduron: (methyclothiazide) A basic building block for mild hypertensives

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5 mg

Excellent day-long Na⁺ output, yet easy on the K⁺

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

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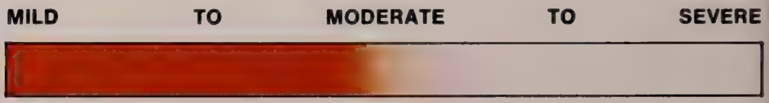

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Enduronyl: Its deserpidine component adds response in moderate hypertension

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METHYCLOTHIAZIDE
ENDURONYL

Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

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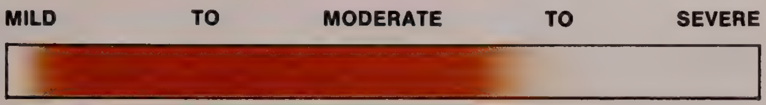

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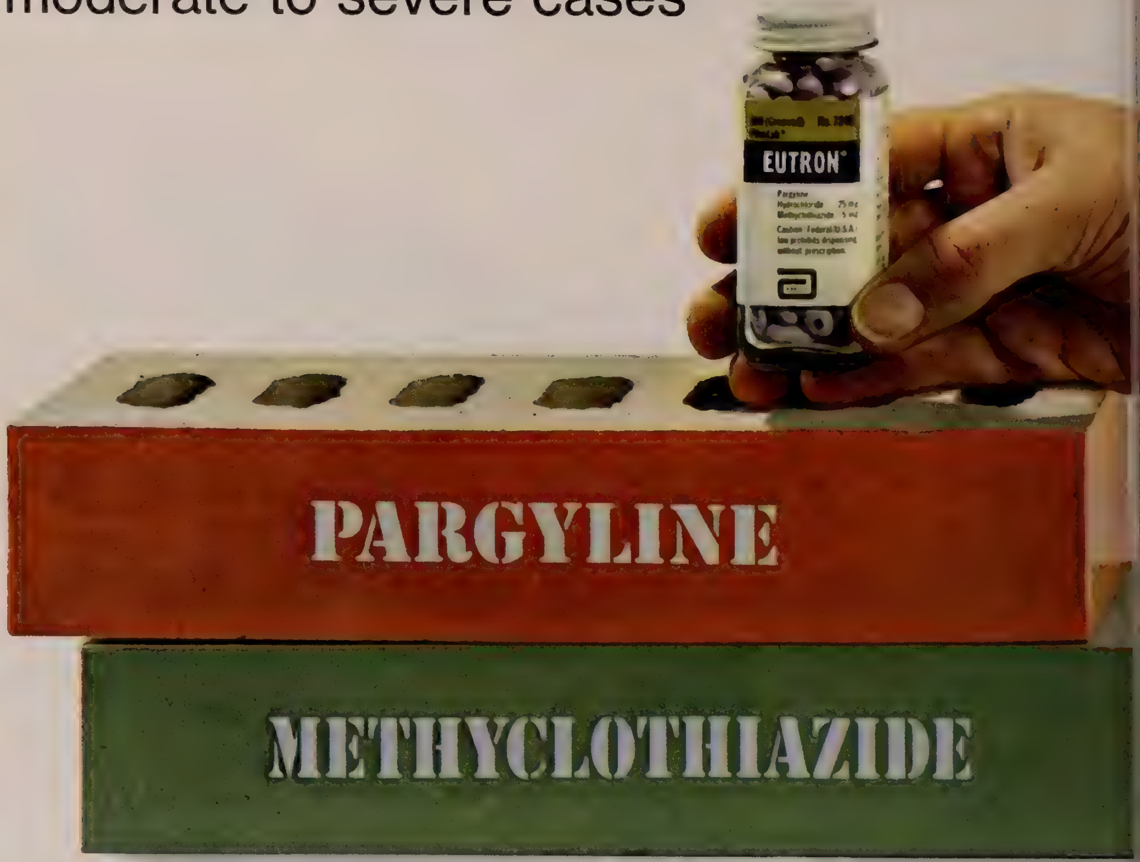
Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

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MILD
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TO
SEVERE

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801094

ENDURON®

METHYCLOTHIAZIDE

ENDURONYL®

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg.

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications—Moderate to severe hypertension.

Contraindications—Pheochromocytoma, paranoid schizophrenia, hyperthyroidism and advanced renal failure. Not recommended in malignant hypertension, children under 12, pregnant patients.

Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. 804438R

ABBOTT

TM-TRADEMARK

continued from page 2124

medical experimentation and by the transplantation of organs from one human being to another.

The third portion of the meeting will be devoted to medical ethics and discipline and will explore the several avenues available to the medical profession as it seeks to insure competency in the rendering of medical care.

Among the speakers at the conference will be F. J. L. Blasingame, M.D., executive vice-president of the AMA; Chauncey D. Leake, Ph.D., senior lecturer, Department of History and Philosophy, University of California; Irvine H. Page, M.D., research division, Cleveland Clinic, Paul A. Freund, LL.B., Harvard Law School; J. Frank Walker, M.D., radiologist, Atlanta, Georgia; Milton D. Krueger, director of public and professional affairs, California Medical Association; and Charles Forbes, LL.B., Los Angeles, California.

Medical hypnosis topic of postgraduate course

Columbia University College of Physicians and Surgeons announces its annual postgraduate course in Medical Hypnosis (Basic), under the direction of Herbert Spiegel, M.D., on Saturdays from 10:00 A.M. to 5:00 P.M., from October 5 through November 16. The course features lectures, case demonstrations, practice sessions, movies, slides, and seminars designed to present technics and theories of hypnosis and to demonstrate the practical adjunctive uses of hypnosis in clinical medicine from the perspectives of diagnosis, therapy, and research.

The course is open to general physicians as well as all specialists. For further information and application forms write to: Melvin D. Yahr, M.D., associate dean, Columbia University College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032.

Diabetes mellitus topic of symposium

A symposium on Diabetes Mellitus, sponsored by the Brooklyn-Cumberland Medical Center, will be held on October 15, from 1:00 to 5:00 P.M., at the Brooklyn Academy of Music, 30 Lafayette Avenue, Brooklyn, New York.

The following topics will be discussed at the symposium: "Diabetes: A Disease Entity or Part of the Aging Process," Charles Shuman, M.D., clinical professor of medicine, Temple University Medical School; "The Diagnosis of Diabetes: Value of Common Blood Tests and Mass Screening Program," Gerald T. Kent, M.D., associate clinical professor of medicine, Case Western Reserve Medical School; "The Use of Insulin on the Management of Diabetes Mellitus," Harold Zarowitz, M.D., clinical associate professor of medicine, State University of New York Downstate Medical Center; and "The Use of Oral Hypoglycemic Agents in the Management of Diabetes Mellitus," William K. Jenson, M.D., senior physician, Joslin Clinic, Boston, Massachusetts.

There is no registration fee, and the program is approved for four hours of elective credit by the American Academy of General Practice.

For further information and registration contact: Stanley S. Bergen, Jr., M.D., chief of community medicine, The Brooklyn-Cumberland Medical Center, 39 Auburn Place, Brooklyn, New York 11205.

Books Reviewed

Insurance for the Doctor. By Harvey Sarner, LL.B., and Herbert Lassiter, LL.B. Quarto of 193 pages. Philadelphia, W. B. Saunders Company, 1967. Cloth, $9.00.

This is an excellent primer on insurance replete with glossary, definitions, and an up-to-date (even to the 1968 Keogh Bill change) concise outline of every imaginable type of coverage. Actually, it is more widely applicable "for the self-employed" rather than just "for the doctor," which the title implies. It is the counterpart of a *Medical Encyclopedia* for the laity, and, similarly, possesses the same shortcoming—too superficial and inadequate to cope with unforeseen hazards.

If we presume that medical care should be entrusted only to a qualified professional, the same should apply to protection against financial risks and the vicissitudes of untimely catastrophe. This book is very informative, but a trained and trustworthy broker is a better investment.—MILTON B. SPIEGEL, M.D.

Ciba Foundation Symposium on Drug Responses in Man. Edited by Gordon Wolstenholme and Ruth Porter. Octavo of 257 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $13.

The international participants, under the leadership of Walter Modell, M.D., spend much time on the ways and means of improving the approach to good pharmacodynamics, discuss the predictable and nonpredictable adverse drug reactions in man, and how the use of animal studies can foretell these reactions. Sheila

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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Sherlock comments that the availability of early trials of a new drug in man depends entirely on what you are treating; the decision of the Food and Drug Administration to withhold many new drugs seems reasonable especially since no real advance in a drug for a major disease has been withheld. This meeting confirmed the belief of Laurence of the great importance of early intensive investigation of a drug on the patient with matched controls in a clinical pharmacologic laboratory with maximum information and minimum risk. Such thorough pilot studies may involve the use of extremely sensitive technics and low doses of drugs in relatively few human subjects at a very early stage in the development of a new compound. Brodie comments that if the need is acute enough, highly specialized technics will be developed to measure minute amounts of plasma levels of the drug which are as vital to the studies as double blind technics. A chemist may have to be added to the laboratory staff.

Unfortunately the onus is on the hard pressed manufacturers who develop new drugs. More trained personnel, more money, and more subjects for study are vital needs. The pharmacologic qualities of the drug and its potential for therapeutic usefulness as well as adverse reactions can be determined. "Information can at an early stage be transmitted to the manufacturer who can modify the structure of the compound to increase its usefulness and decrease its defects." (Modell) A preliminary period of close surveillance should occur after a drug is first introduced. During this period of surveillance the physician should be encouraged to observe carefully the patient on whom he uses the drug and to report unexpected effects, probably to a central panel of experts.

The heated discussion, implication of drug allergy, drug dosage, and genetic differences in this book create great interest for all those interested in pharmacology.—BERNARD SELIGMAN, M.D.

Resuscitation. By D. K. Brooks, M.D. Octavo of 323 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $13.

In common parlance, resuscitation refers to cardiocirculatory and respiratory problems, but the one unifying concept in this book is the chemical abnormalities in disease. The author discusses a spectrum of pathophysiology including cardiac arrest, hypothermia, shock, acid-base balance, hyperbaric oxygen, respiratory failure, and anaphylaxis. A chapter; Cardiac Disease, if it purported to acquaint the reader with problems of the intensive care unit would be appropriate; instead, it deals with diagnosis and treatment fit for a text on cardiology. In a book titled *Resuscitation*, the author deals at considerable length with such subjects as orthostatic hypotension, vaso-vagal syncope, and echinococcus disease (sic!).

The text is replete with undocumented statements and inaccuracies abound where the author shows lack of clinical experience. On page 225, in a discussion of the treatment of pulmonary edema, the statement appears, "If a rapid tachycardia is present and if there is a suggestion of myocardial insufficiency then atropine sulphate should be given."

In the treatment of respiratory acidosis the author advocates the use of sodium bicarbonate instead of the accepted modality of improved ventilation. After every pint of blood infused he advises the administration of calcium gluconate or chloride—a practice that frequently initiates cardiac arrhythmias.

The chapter wherein the author shows his expertise is the one on acid-base disturbances and this underlines his experience as a research fellow. This information, however, can be found in any textbook on physiology.

Repetition is frequent; grammatical and typographical errors abound. This book cannot be recommended.—SAMUEL BERKOWITZ, M.D.

Abnormal Sexual Development: A Genetic and Endocrine Approach to Differential Diagnosis. By Daniel D. Federman, M.D. Quarto of 206 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $8.75.

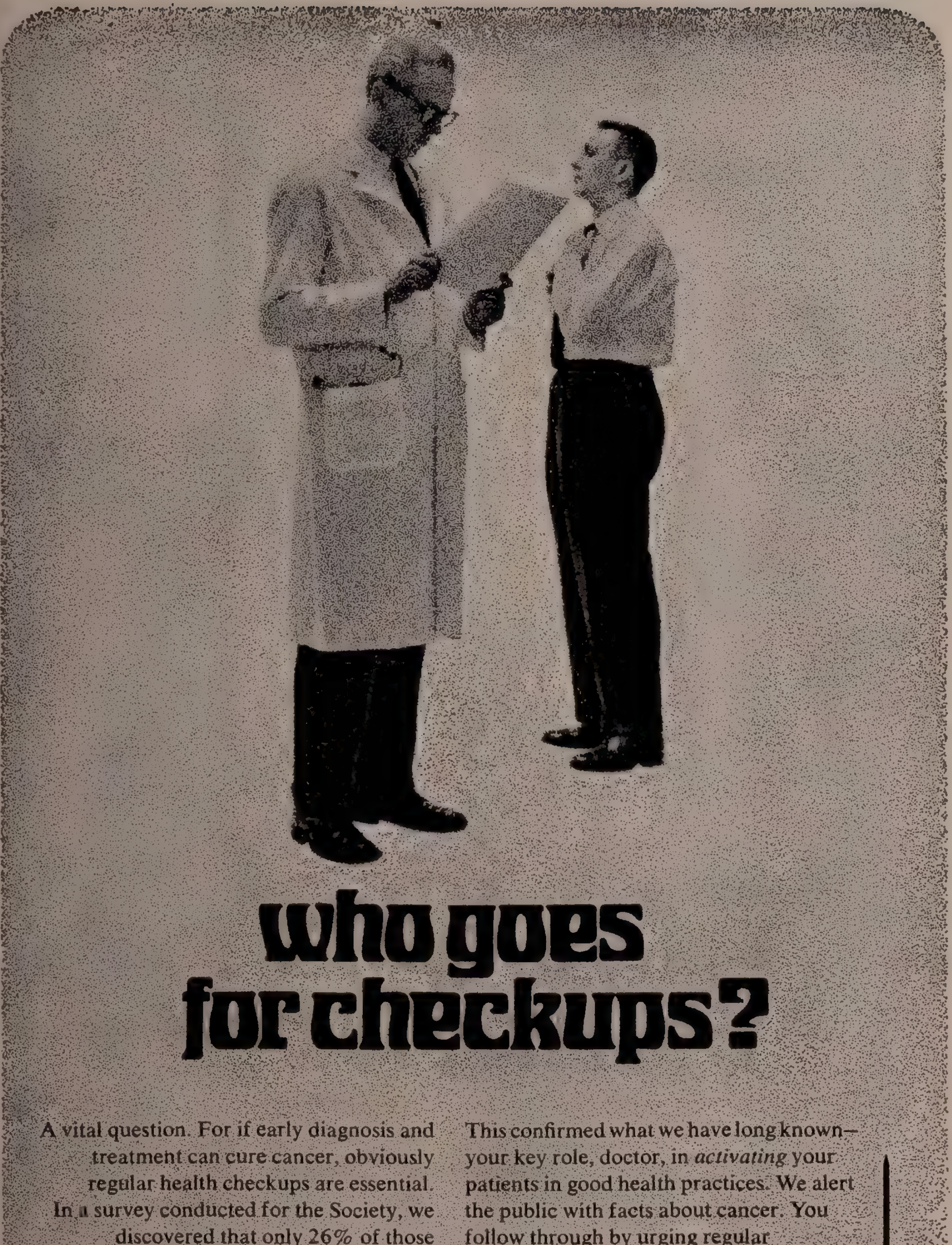
This monograph is written to bridge the gap between syndromes without general definition to our present knowledge with a better understanding of cytogenetics and steroid metabolism. Federman attempts to begin with first principles at levels from molecular biology to psychiatry through embryology and endocrinology. The major syndromes are depicted. The book was written for the general physician, urologist, gynecologist, pediatrician, and medical student. The specialist will find it worth while. It has all the accoutrements of skilled workmanship and ideology.—BERNARD SELIGMAN, M.D.

Essentials of Roentgen Diagnosis of the Skeletal System. By Lester W. Paul, M.D., and John H. Juhl, M.D. Quarto of 280 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Cloth, $12.50.

This volume consists of a section on the skeletal system and spinal cord of the authors' book *The Essentials of Roentgen Interpretation*.

It is an excellent introduction to radiology. Each condition is described very concisely and illustrated. In addition, in keeping with the authors' intent, there is an adequate bibliography present, mostly of the more easily available articles.

On a resident level this book accomplishes its purpose very satisfactorily.—EMANUEL MENDELSON, M.D.



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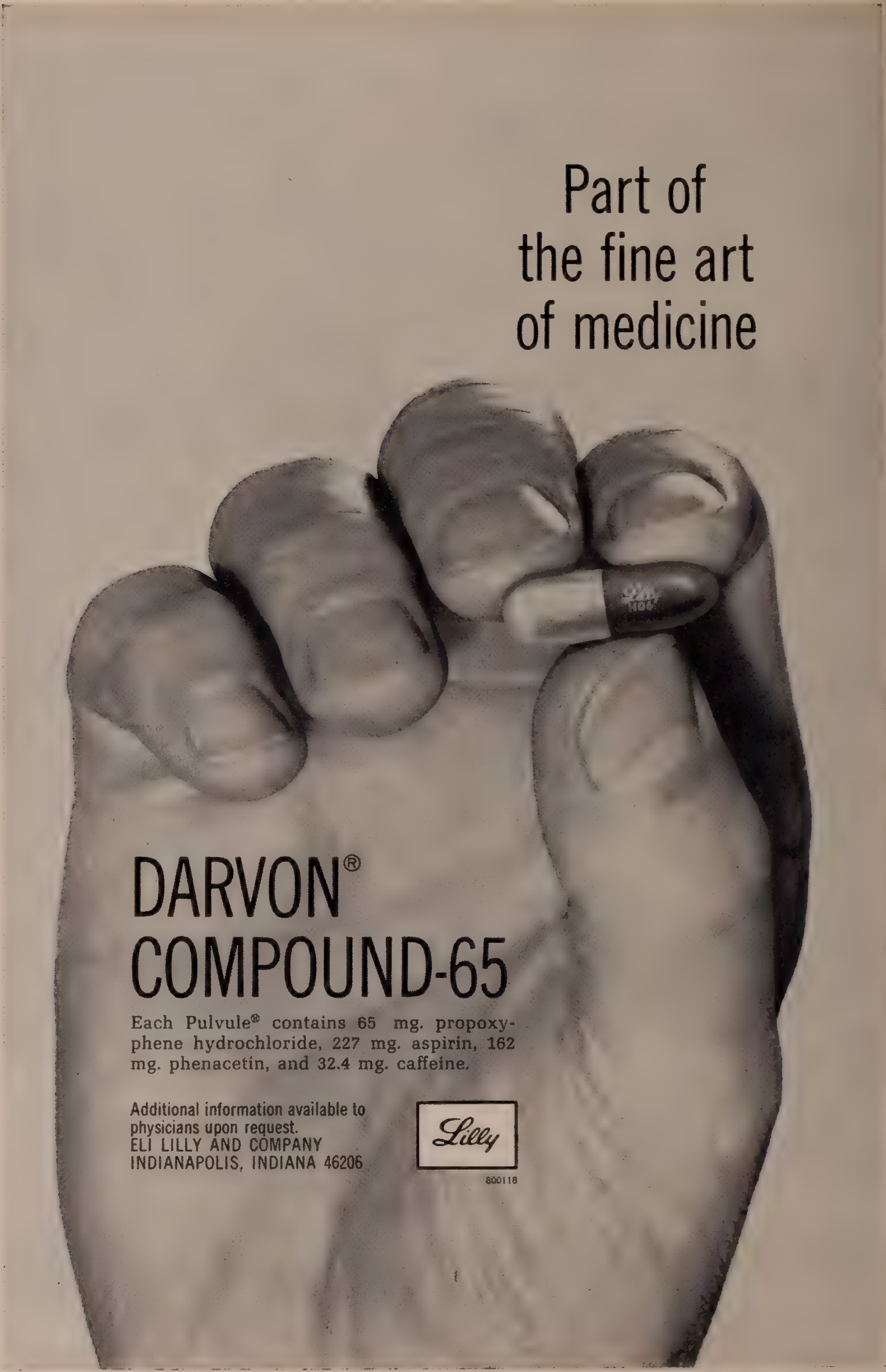

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68TH YEAR OF PUBLICATION

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Editorials

Report on the nursing home and extended care situation

Recently enacted legislation in the health care field makes great demand on the use of skilled nursing homes and extended care facilities. Those charged with the implementation of these laws knew that here was where one of the weaknesses lay. The quality of many such facilities in existence needed upgrading and many more facilities needed to be created. The demand for these services by people of limited income exceeds the supply, and will for some time.

We are fortunate that the administration in this State moved early on the problems of qualitative and quantitative deficiencies in health care beyond the hospital. The State Health Department promulgated a uniform nursing home code, inspected all facilities against this code, and made time-limited recommendations for compliance. Collaterally, Article 21A of the Public Health Law, known as the Nursing Home Companies Law, was put into action and made $100 million available in long-term, low interest mortgage loans for construction of modern, nonprofit nursing homes for persons of limited income. The money raised through bond sales rather than tax revenues is repaid in installments by the nursing homes and thus becomes a revolving fund.

More than 50 applications for such funds have been received to date. We note with satisfaction that many of these will be under sectarian auspices or will be extensions of existing hospitals.

The emergency is in process of solution. We are grateful to the legislation for putting the burr under the saddle—we all knew there was something wrong with aftercare. We were depressed by some of the so-called nursing homes we had to use and did little or nothing to try to correct them. Sam is doing it now. Let us not sink back into complacency again. The nursing home and the extended care facility need not be a dead-end street. Sufficient ingenuity and imagination about home care will open a side door in the aftercare facility—a more hopeful exit than the usual one.

Results of measles immunization

Recent figures released by the State Health Department show encouraging results from widespread use of measles vaccine.

There has been a significant decline in incidence of the disease since the availability of the vaccine and the educational program to promote its use.

In 1961, when there was no vaccine program, there were 32,444 cases of measles and 30 deaths in Upstate New York alone. In 1964, before the intensified vaccination program began, 28,559 cases were reported in the entire State. Comparable totals were 8,607 cases in 1965, 11,101 in 1966, 1,230 in 1967, and in the first quarter of this year 841, a period which includes the season of highest incidence.

When these figures are translated into sharp decrease of crippling complications and time gained in school, the worth of measles immunization is manifest.

Another medical service to the public has proved itself.

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Although *Trichomonas vaginalis* infection occurs in only 5 to10 per cent* of men, careful diagnosis will demonstrate the condition in about half of all husbands of infected women. Nine investigators* reported an average incidence of 50.8 per cent in exposed consorts.

Many clinicians have achieved a high degree of success in treating trichomonal vaginitis only after they have recognized the importance of sexual partners in perpetuating the infection. Crowley* has asserted, "it was not until we acted on this key premise that we were able to obtain positive and lasting results in our management of recurrent vaginal trichomoniasis."

Simple ten-day oral treatment with Flagyl virtually assures elimination of established trichomonal infection in men. In twenty-two of twenty-seven studies* data on the results of treating male patients revealed that all men treated with Flagyl were cured.

Indications: Flagyl is indicated in the treatment of trichomoniasis in both men and women.

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Side effects: Infrequent and minor side effects include nausea, metallic taste and furry tongue. Gastrointestinal disturbances, flushing and headache sometimes occur, especially with concomitant ingestion of alcohol. The taste of alcoholic beverages may be altered. Other effects, all reported in an incidence of less than 1 per cent, are diarrhea, dizziness, vaginal dryness and burning, dry mouth, rash, urticaria, gastritis, drowsiness, insomnia, pruritus, sore tongue, darkened urine, anorexia, vomiting, epigastric distress, dysuria, depression, vertigo, incoordination, ataxia, abdominal cramping, constipation, stomatitis, numbness or paresthesia of an extremity, joint pains, confusion, irritability, weakness, cystitis, pelvic pressure, dyspareunia, fever, polyuria, incontinence, decreased libido, nasal congestion, proctitis and pyuria. Elimination of trichomonads may aggravate candidiasis.

Dosage and Administration: *In women:* one 250-mg. oral tablet three times daily for ten days. A vaginal insert of 500 mg. is available for local therapy when desired. When used, one vaginal insert should be placed high in the vaginal vault each day for ten days; concurrently two oral tablets should be taken daily.

In men: When trichomonads are demonstrated, one 250-mg. oral tablet twice daily for ten days in conjunction with treatment of his female partner.

Dosage Forms: Oral tablets—250 mg.
Vaginal inserts—500 mg.

*Complete list of references on request.

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Malaria in U.S. Public Health Service Hospitals (1950–1965)

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From the U.S. Public Health Service Hospital

In recent years, travel, for business, pleasure, and assignment in the military or Peace Corps, has increased the exposure of Americans to malaria. The National Communicable Disease Center of the U.S. Public Health Service reported a total of 156 cases of malaria occurring in 1965, of which 105 were in civilians and 51 in military service personnel.[1] The total number of patients with onset of malaria in this country was 678 in 1966. Plasmodium vivax was the responsible parasite in 56 per cent of these patients and Plasmodium falciparum in 33 per cent.[2] During 1967 the total number of malarial cases in this country quadrupled.[3] Of the total for 1966, only 5 were acquired in the United States; 2 of these patients were siblings living in close proximity to military personnel recently returned from Asia. One reported case was in a newborn child who contracted the disease transplacentally. A fourth patient acquired malaria following a blood transfusion which is the twelfth such instance reported since 1957. The source of infection for the fifth patient could not be determined.[2] A death caused by P. falciparum malaria was reported early in 1965. The patient was a forty-three-year-old Norwegian seaman who became symptomatic while aboard ship en route from West Africa to Philadelphia, Pennsylvania. The initial impression was one of influenza. Subsequent diagnoses included toxic psychosis, infectious hepatitis, and pernicious anemia. The patient expired on the eleventh day of his illness with the diagnosis of malaria established at autopsy.[4] Four additional deaths from malaria in this country have been documented during 1966, 3 in servicemen from Vietnam and 1 in a visitor returning from Liberia.[2] An experience with malarial relapse induced by intravenous cholangiography in a patient being evaluated at our hospital for suspected cholecystitis and cholelithiasis further heightened our interest in this disease.[5]

A recent report of the Vietnam experience with malaria indicates that over 98 per cent of the present cases are P. falciparum, with a much higher rate of life-threatening complications such as central nervous system involvement and black-water fever. The latter produces acute tubular necrosis with hemoglobin casts, uremia, and death. The cerebral vessels may be blocked by parasites with resultant thrombosis. Coma may ensue with death in some instances. The recommendation was made that, "all physicians consider the diagnosis of malaria in every individual who has returned from Southeast Asia and has a fever, for it seems quite apparent that some patients being discharged from the Service in the United States will harbor the parasite and have relapses in this country."[6,7] Treatment may be delayed or even omitted because of failure to consider this diagnosis.

Presented to the joint U.S. Public Health Service Clinical Society and Commissioned Officers' Association meeting at Atlanta, Georgia, May, 1967, and the Regional Meeting of the American College of Physicians, Providence, Rhode Island, September 8, 1967.

* Presently at the Pima County Hospital, Tucson, Arizona.

Statistics

The collective experience among the U.S. Public Health Service Hospitals (Bureau of Health Services, Division of Direct Health Services, formerly the Bureau of Medical Services, Division of Hospitals) forms the basis for this report. Two hundred and twenty-six discharge summaries from patients seen at the U.S. Public Health Service Hospitals in Baltimore, Maryland; Boston, Massachusetts; Galveston, Texas; New Orleans, Louisiana; Norfolk, Virginia; San Francisco, California; Savannah, Georgia; Seattle, Washington; and Staten Island, New York were reviewed. All were admitted between January 1, 1950, and December 31, 1965, with the diagnosis of malaria established by smear with positive identification of the parasite. The peak of admissions was during the Korean conflict (Table I). The highest age incidence was between twenty and twenty-nine (Table II). There were 173 white patients, 19 Negro, 5 Oriental, and, in 29 instances the race was not stated. The admitting diagnosis was malaria in 148 (65 per cent), fever of unknown origin in 21 (9 per cent), upper respiratory infection in 3 (1.5 per cent), gastroenteritis in 1 (0.5 per cent), with miscellaneous diagnoses including alcoholism, acute rheumatic fever, genitourinary infection, pneumonia, hepatitis, tabes dorsalis, tonsillitis, renal colic, cholecystitis, and tuberculosis in 20 (9 per cent). In 33 instances, no admission diagnosis was stated on the discharge summary (15 per cent). Fever was a presenting complaint in 200 patients (90 per cent) with chills noted in 165 (73 per cent). Headache was noted in 97 (43 per cent); malaise in 57 (25 per cent); myalgia in 43 (19 per cent); nausea and vomiting in 61 (27 per cent); diarrhea in 30 (17 per cent); dark urine or hematuria in 24 (11 per cent); abdominal pain in 21 (9 per cent); cerebral symptoms, including coma, in 14 (6 per cent); cough in 10 (4 per cent); anorexia in 9 (4 per cent); and presenting complaints not stated in 5 instances (2 per cent) (Table III). The total here adds to greater than 100 per cent inasmuch as symptoms were multiple in most patients. The white count was less than 5,000 in 45 patients (20 per cent) and greater than 10,000 in 13 (6 per cent). The white count on admission is characterized further in Table IV. Twenty patients with proved P. falciparum infection and 14 with P. vivax were seen with leukopenia. Hypotension was noted on admission in 16 patients with P. falciparum and in 9 with P. vivax. This was defined as an initial blood pressure with a systolic below 100.

The identity of the parasite compared with the presumed origin of infection is shown in Table V. Of the patients studied, 100 had P. falciparum infection alone. Of these, 71 had contracted the disease in Africa. There were 106 seen with P. vivax; 38 came from Asiatic ports, 23 from Africa, and 45 from other areas of the world. In 12 instances, Plasmodium malariae was identified, and in 15 instances the actual identity of the malarial parasite was not stated by type. In 4 patients, more than one parasitic type was identified.

There was 1 death in this series. The patient was a fifty-two-year-old German seaman, placed in a hospital on November, 1963, at the New Orleans Hospital. His chief complaint was one of ten days of pain

TABLE I. Admissions per year

Year	Number of Admissions
1950	9
1951	40
1952	33
1953	10
1954	13
1955	16
1956	16
1957	11
1958	10
1959	8
1960	5
1961	11
1962	13
1963	11
1964	17
1965	3
TOTAL	226

TABLE II. Age incidence

Age (Years)	Number
10 to 19	20
20 to 29	89
30 to 39	38
40 to 49	37
50 to 59	26
60 to 69	4
Not stated	12
TOTAL	226

TABLE III. Symptoms (multiple in most patients)

Symptom	Number of Patients (Per Cent) (Total 226)
Fever	200 (90)
Chills	165 (73)
Headache	97 (43)
Nausea and vomiting	61 (27)
Malaise	57 (25)
Myalgia	43 (19)
Diarrhea	30 (17)
Dark urine or hematuria	24 (11)
Abdominal pain	21 (9)
Central nervous system disturbances	14 (6)
Cough	10 (4)
Anorexia	9 (4)
Not stated	5 (2)

TABLE IV. White count

White Count	Number of Patients
2,000 to 2,999	6
3,000 to 3,999	12
4,000 to 4,999	27
5,000 to 5,999	30
6,000 to 6,999	30
7,000 to 7,999	27
8,000 to 8,999	11
9,000 to 9,999	5
10,000 to 18,000	13
Not stated	65
TOTAL	226

TABLE V. Identity of parasite compared with presumed origin of infection

Strain	Asia	Africa	Other	Total
P. vivax	38	23	45	106
P. falciparum	5	71	24	100
P. malariae	. . .	2	10	12
Not stated	. . .	. . .	15	15
TOTAL				233*

* More than 226 total because of recognition of more than one parasite type in 4 patients.

in the left lower anterior side of the chest associated with afternoon temperature elevations and diaphoresis but no chills. The diagnosis of P. falciparum malaria was established. Therapy consisted of chloroquine phosphate initially, with a change to quinine sulfate three days later because of persistent temperature elevations. The patient suddenly became hypotensive on the thirteenth hospital day, remaining in shock despite vigorous therapy and dying eighteen hours later. Postmortem examination revealed persistence of the P. falciparum malaria infection identified in blood, bone marrow, and spleen with multiple small pulmonary thrombi and a moderate-sized embolus in the left pulmonary artery, occluding the branches to the left upper lobe. There was associated confluent bronchopneumonia with pulmonary abscesses.

Drug therapy

The introduction of large numbers of servicemen returning from Vietnam to this country while harboring malaria parasites in a preclinical state makes it essential for all physicians to be aware of this problem. Patients with P. falciparum infection usually become symptomatic within one to four weeks and those with P. vivax one to six months following their return from Vietnam.[7] Reports of chloroquine phosphate-resistant P. falciparum malaria have resulted in a reappraisal of current recommended therapy. The experience in Vietnam revealed that 5 to 20 per cent of the nonimmune troops with their first P. falciparum infection were totally resistant to chloroquine phosphate. In 60 to 70 per cent the drug caused only temporary clinical improvement without cure. Quinine sulfate also proved to be ineffective in completely eradicating the infection. In 75 to 90 per cent of patients who completed a seven- to fourteen-day course of quinine sulfate, the infection reappeared within three weeks. Combined therapy with a single dose of the long-acting sulfonamides, sulphormethoxine and pyrimethamine, was found to be effective alone and in combination with quinine sulfate for treatment of P. falciparum infections in nonimmune patients.[8] Recent reviews of the chemotherapy of malaria are by Bartelloni, Sheehy, and Tigertt,[8] Sheehy and Reba,[9] Powell,[10] and Neva.[11]

The National Communicable Disease Center has formulated a guide for the preparation of malarial smears. The ideal is both a thick and a thin film. The blood smears on proved cases or where a diagnosis of malaria is in question can be sent through state health department laboratories to the National Malaria Repository, Parasitology Section, Laboratory Branch, National

Communicable Disease Center, Atlanta, Georgia. The technic is as follows.[2]

Technic

Manufacturers' "Precleaned" slides are not considered clean enough for use in malaria diagnosis. Prior to use, such slides should be washed in mild detergent, rinsed thoroughly in warm running water and then in distilled water, and dipped in ethyl alcohol, 90 to 95 per cent. Slides may then be wiped dry with a lintless cloth or tissue for immediate use or stored in 95 per cent alcohol until needed.

The patient's finger should be cleaned with alcohol and wiped dry with a clean cloth or gauze. After puncturing the finger with a blood lancet, a large globule of blood should be allowed to form. The cleaned surface of slide should be placed against drop of blood, and with a quick circular motion, a film the size of a dime should be made in the middle third of one end of the slide. Ordinary newsprint should be barely legible through such a wet drop.

The finger should then be wiped dry and a small drop of blood gently squeezed from the puncture and placed at the edge of the middle third of the same slide. A clean "spreader" slide should be applied to the edge of the small drop at a 45-degree angle, and the blood should be allowed to extend about two thirds of the slide width; then keeping even contact, the spreader should be pushed forward along the slide. This will produce an even layer of red blood cells with a "feathering" at the lower edge.

The blood film should be kept horizontal and protected from dust and insects while the thick film dries for a minimum of six hours at room temperature. If a rapid diagnosis is desired, the thin and thick films may be made on separate slides. The thin film can be air dried, fixed with methyl alcohol, and stained immediately. If no parasites are found on the thin film, the thick film should be examined subsequently for rare organisms not detected on the thin preparation.

The slide should be labeled in the upper part of the thin film with the date and the name or initials of the patient.

Summary

From patients seen at the U.S. Public Health Service Hospitals from 1950 through 1965, 226 discharge summaries were reviewed, and recent experience from the Vietnam War summarized. The rising incidence of malaria in this country is emphasized with the need for increased physician awareness of this disease.

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Child with Reading Disability

AT LEAST 1 CHILD IN 10 *who has the intelligence to read does not have the ability to read at a level proportionate to his intelligence. Various factors involved in the maturation of cognitive processes are interrelated. Testing should be done at kindergarten or prekindergarten levels to screen all children with regard to their abilities and disabilities before they enter the first grade, to discover dyslexia and perceptual-motor deficiencies at an early stage. Corrective measures can then be effective.*

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THE TERM "READING DISABILITY," as used in the title of this report, pertains to the inability of an individual to acquire skill in reading and spelling that is commensurate with his general level of intelligence.

Reading ability and disability are topics of tremendous importance today. Education, the keynote and theme in plans for progress, demands an ability to read. Inability to read is directly related in a causal manner to school dropouts, unemployment, poverty, voting disqualification, juvenile delinquency, and crime. Yet, the problem of reading disability goes unrecognized for what it really is by many specialists in education and even by psychiatrists and psychologists. Unfortunately, quite a few children who have a reading disability are considered to be mentally retarded who cannot learn or recalcitrant who will not. Even today, in the midst of our considerable knowledge about language disorders, many "dyslexic" children are treated as they were over half a century ago, when Hinshelwood, a pioneer in this field, said that they were dealt with as imbeciles or "harshly flogged for not trying."

Authorities now agree that at least 1 child in 10 has, in some degree, a specific language disability in the field of reading, spelling, and writing. This estimate does not include children with speech disorders, blindness, or those with mental retardation. In other words, 1 child out of 10 who has the intelligence to read does not have the ability to read at a level proportionate to his intelligence.

In the United States, it is taken for granted that everyone can read. With education not only available but compulsory for all children, the assumption that everyone who has attended school can read is taken for fact. Yet, there are indications at all levels of our society that this fact, which we accept so readily, may be far from the truth. The truth is that about 11 per cent of the adult population of this country has not learned to read up to the fourth-grade level.

The process of reading involves the capacity to perceive, to recognize symbols, and to integrate them into meaningful sequence. It also involves some capacity for abstract reasoning. Any person who has some dysfunction or developmental lag in reading, emotional block in learning, or is "just a slow reader" is handicapped regardless of his endowment of general intelligence or his abilities in other fields. Reading is so fundamental that it cannot be bypassed without tremendous loss. In the Report of the Regents Conference on Improving Reading at the University of the State of New York in 1962, it was recorded that 35 per cent of all American youths are seriously retarded in reading.

In a recent issue of the *Bulletin of the Orton Society*, Orton[1] pointed out the following characteristics, several or all of

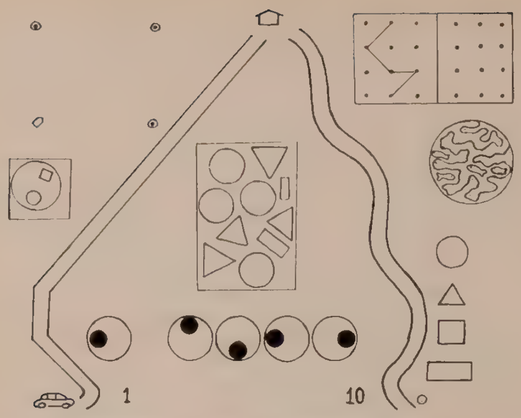


FIGURE 1. Visual perception test.[2]

which can be observed in children who have a reading disability of the strephosymbolic type.

Characteristics

1. The attainment of these individuals in reading is considerably below that expected for their mental age and their years of schooling and is often below their achievements in arithmetic.
2. These children show no evidence of any significant impairment of vision or hearing, brain damage, primary personality deviation, or any history thereof.
3. The children show great difficulty in remembering whole-word patterns and do not learn easily by the "sight method" of reading. They tend to confuse small words which are similar in general configuration.
4. The children are poor oral readers and fundamentally poor spellers although they can sometimes retain memorized lists of spelling words for varying lengths of time.
5. In their early attempts at reading and writing, the children show marked confusion in remembering the orientation of letters (b,d,p,q) and the order of letters in words or numbers in sequences (saw-was, on-no, felt-left, 12-21). They are sometimes called "mirror-minded" or "mirror readers."
6. The children usually show some evidence of delayed or incomplete establishment of one-sided motor preference (unilateral cerebral dominance). They tend to be left-handed or ambidextrous or mixed in their motor choices, for example right-handed and left-eyed, or they may have been slow in the establishment of their handedness.
7. The children often show delays or defects in more than one language area. In addition to poor reading, they may have delayed or imperfect speech, a poor ear for words, a poor oral vocabulary, or clumsiness in handwriting or in other motor acts.
8. The children usually come from families in which there is left-handedness, language disorders, or both.
9. The children are three or four times as apt to be boys as girls.

Tests

Bender,[2] who started her psychiatric career with Orton at the University of Iowa in 1926, is known as the originator of the visual-motor gestalt test. This test, commonly known as the Bender-Gestalt test, measures the degree of maturation of the visual-motor gestalt function. It calls for the reproduction of a series of varying configurations and is a valuable guide in revealing maturation of perceptual-motor Gestalten, especially in young children (Fig. 1).

According to Bender,[2] children with reading disabilities show many of the following disorders on this test: (1) Figures tend to be more primitive, more fluid, and full of movement of the primitive vortical whirling type; (2) squared figures become rounded, dots are replaced by loops, diamonds are squared, and oblique lines become vertical and sometimes even horizontal; (3) there is disorientation on the background, usually by rotation of mobile figures, or verticalization tendencies; (4) there is a tendency to close open figures; and (5) there is a tendency to convert figures, especially those that are verticalized and closed, into a "man" (body image projection) by drawing a face in the closed figure.

After working several years with hundreds of children at Bellevue Hospital, Bender[2] concluded that over 50 per cent of the boys who came to her psychiatric service with behavior disorders were nonreaders or severely retarded in reading. Basically, the studies carried out by Bender and her associates confirmed the Orton concepts, although she added new dimensions to his work, especially in the field of gestalt psychology. The characteristics she found in children with language lags paralleled almost identically those found by Orton: (1) poor establishment of cortical unilateral dominance; (2) right-left confusion, involving the child's own body and others; (3) slower development of motor skills, awkwardness in motor control and mobility, longer retention of tonic-neck-reflex-attitude responses, and more variable motor tone; (4) number of boys affected was several times that of girls; (5) family histories included other individuals with same or related problems; and (6) the need for predicting reading disability before the child enters school and the need for better diagnostic tests that included assessment of child's motivation were emphasized.

Etiology

Practically all the earlier writers on congenital word blindness postulated that the cause of the disability was some kind of brain abnormality. For them it had to be some anomaly, an agenesis or lesion in a certain region of the brain. Orton[3-5] was the first to deny explicitly that agenesis or a lesion was necessarily the fundamental cause. As a neuropathologist, he was fully aware that brain abnormality could produce reading disability even in children, but he thought that the major cause of word blindness was a developmental lag and not an abnormal condition in the brain.

Approaching the problem from a different direction, Bender,[6] Schilder,[7] Thompson,[8] and others became aware of the fact that brain-damaged children frequently showed evidence of dyslexia along with their neurologic and behavioral abnormalities. These children often had a suggestive or definite history of some type of central nervous system disorder.

Kawi and Pasamanick[9] found that in 16.6 per cent of 205 children with reading disability, there had been pregnancy complications such as preeclampsia symptoms, bleeding, hypertension, and so on, while in a control group of normal readers, the pregnancy complications occurred in only 1.5 per cent.

Gesell and Ilg[10] said, "The surprising prevalence of reading disabilities and their frequent association with minimal birth injuries tend to support our thesis that these injuries are more common than is ordinarily supposed."

Wagenheim[11] in a study of 674 elementary school children found a significant relationship between the occurrence of measles in the first three years and later reading achievement. This was true for boys but not for girls. In the same study, no significant relationship was found between early measles and level of intelligence.

Critchley[12] in his chapter dealing with maternal and natal factors in the etiology of developmental dyslexia was doubtful of perinatal causes. He stated:

> Most neurologists would be reluctant to visualize in developmental dyslexia any focal brain lesion, dysplastic, traumatic or otherwise, despite the analogy of the acquired cases of alexia after brain damage. To do so would be to ignore the important factor of immaturity as applied to chronological age, cortical development, and processes of learning. In all probability the cases of reading retardation which have been observed after brain damage at birth are of a nature different from the genuine instances of developmental, that is, specific, dyslexia.

It appears then, that there are many "shades of gray." Thompson's[8] opinion is that, in the majority of cases, reading disability is caused by a physiologic developmental or maturational lag which in itself may be accompanied by other signs of immaturity in "soft" neurologic, dominance, and psychological test findings. That the developmental lag has an hereditary anlage, predisposition, or diathesis cannot be denied. That minimal or "soft" insults to the brain from various sources during the perinatal period and early infancy might enhance or even produce the developmental lag cannot be disproved. Hence, the "shades of gray."

Recent methods

It appears that various factors involved in the maturation of cognitive processes are interrelated. Concept formation, language acquisition, and reading must be viewed as facets of the cognitive process, each contributing its share to the development of thought in the early years of childhood. I concur with Wepman[13] that each facet is seen as a stepping stone for the de-

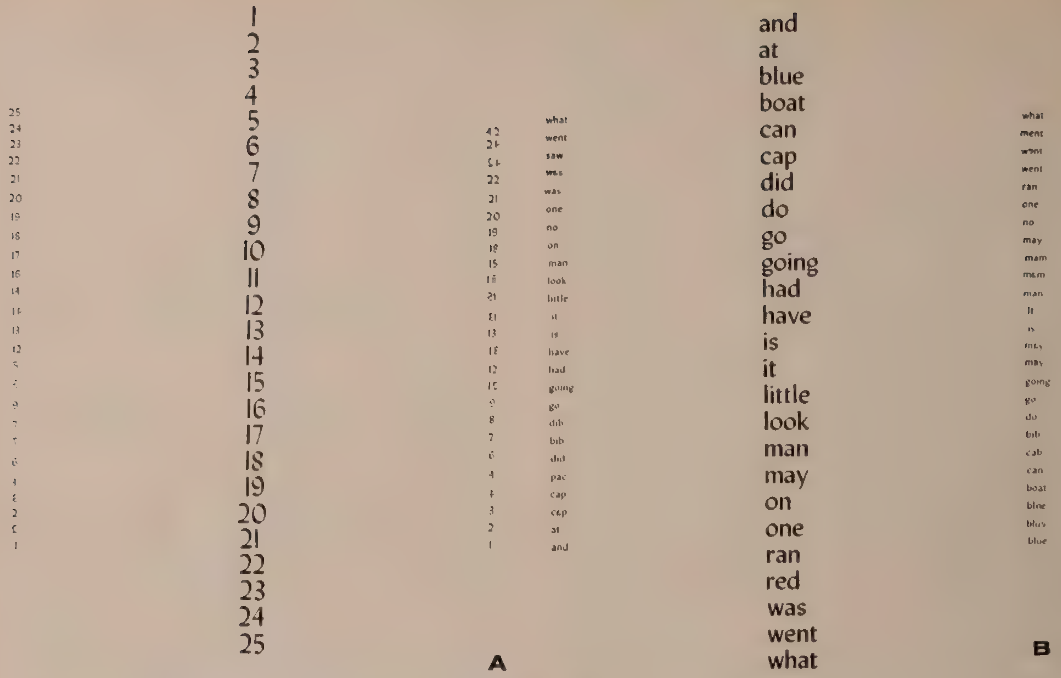


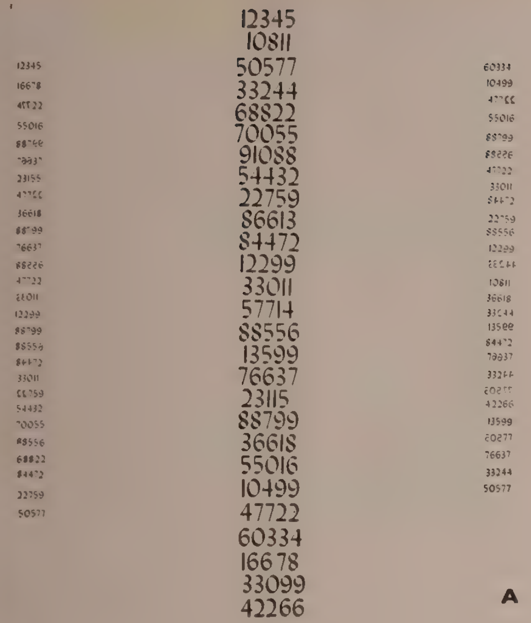
FIGURE 2. Tests for early detection of dyslexia, grades 1 and 2. (A) Numbers. (B) Words.

velopment of the next in a natural progression; however, when neurologic impairment exists, be its cause "brain damage," "maturational delay," or "myelinization," the stream of development cannot move forward in a predictable, chronologic order nor can there be significant feed-back data as each matures.[14] Neurologically, there is reason to point to the potential for decreased neural differentiation since if development here follows use, a lack of development would follow a lack of use.

Researchers are still searching for a common syndrome. A typical formula appears to call for administering a series of tests to a matched group of retarded and achieving readers (Figs. 2 and 3). Statistical analysis or analysis of variance is then applied to check the null hypothesis. Whenever the variable is statistically significant or the null hypothesis rejected, another part of a syndrome is developed. We all are aware of the importance and weakness of statistics in dealing with the human organism: The situation, size, and composition of the sample, and bias of the experimenters have in fact resulted in a great deal of confusion about these cases of reading retardation in the literature.[15] Robinson[16] used only 30 retarded readers for her classic text, *Why Pupils Fail in Reading.* Delacato[17] analyzed 45 boys who were poor readers. Smith and Carrigan[18] looked at 40 elementary students in their original testing programs. Many other researchers have conscientiously conducted similar research and overestimated their success in marking out the total or partial answer to the problem. Instead of cooperative interdisciplinary studies, we now have a profusion of small cults, all proclaiming their discovery of the cure-all, the magic panacea. Pity the schoolteacher who tries to absorb and conscientiously practice the numerous and popular and worthless "antidotes" of today.

Early testing

Irrespective of the cause of reading disability, we cannot expect child guidance or mental health clinics to meet the needs of dyslexic children because of the large numbers involved and because such clinics are not equipped to meet the total problem. Clinics can give valuable diagnostic help in difficult cases but must turn most of the "treatment" back to the schools. It becomes obvious, then, that the problem of reading disability must be met almost entirely by our public schools as they are attempting to meet the problems of mental



12345
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54432
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76637
23115
88799
36618
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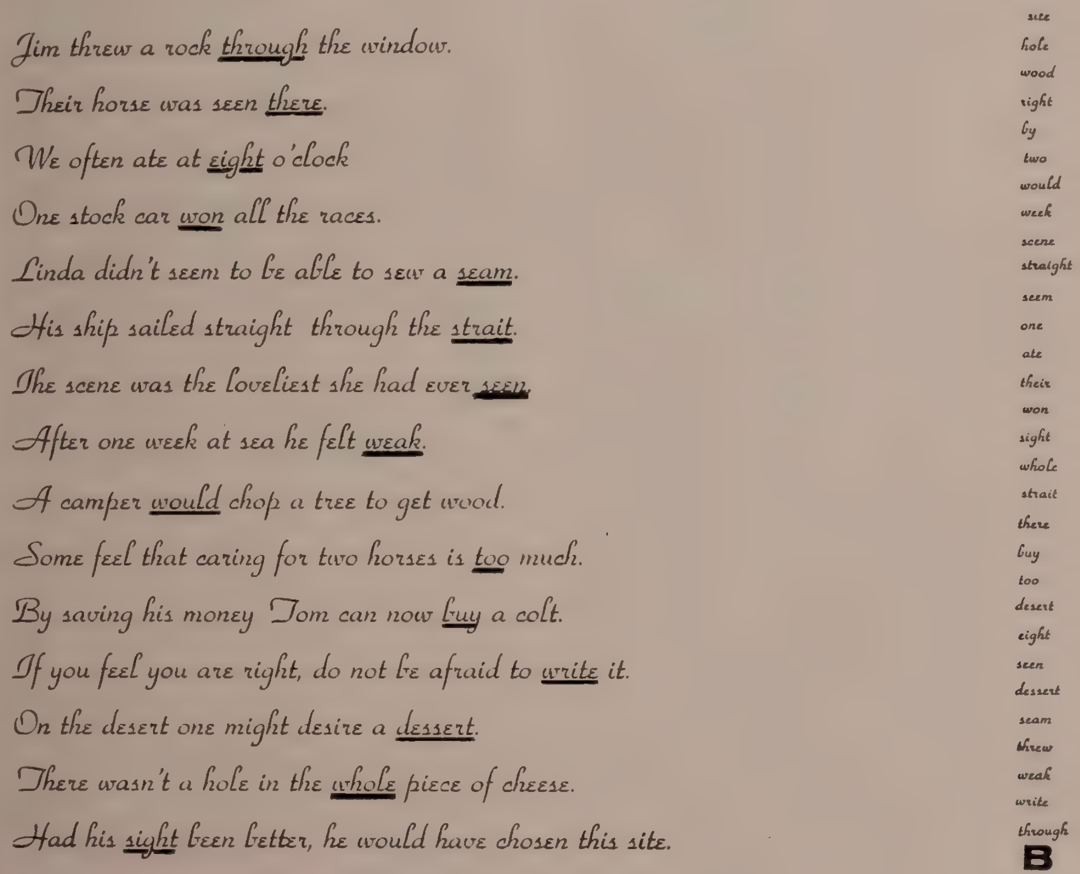
42266

FIGURE 3. Tests for early detection of dyslexia, grades 3 and 4. (A) Numbers. (B) Sentences.



Jim threw a rock through the window.
Their horse was seen there.
We often ate at eight o'clock
One stock car won all the races.
Linda didn't seem to be able to sew a seam.
His ship sailed straight through the strait.
The scene was the loveliest she had ever seen.
After one week at sea he felt weak.
A camper would chop a tree to get wood.
Some feel that caring for two horses is too much.
By saving his money Tom can now buy a colt.
If you feel you are right, do not be afraid to write it.
On the desert one might desire a dessert.
There wasn't a hole in the whole piece of cheese.
Had his sight been better, he would have chosen this site.

site
hole
wood
right
by
two
would
week
scene
straight
seem
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ate
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won
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whole
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through

retardation, speech disorders, hearing and vision handicaps, and even the needs of the gifted child. Many schools do have programs for the various deviations mentioned, but relatively few have such programs for dyslexic children even though they outnumber any of the groups.

In meeting the needs of dyslexic children, all public schools should have kindergartens. This statement may seem to be irrelevant since children are rarely taught reading, spelling, and writing until they are in the first grade. Also, in many areas, it is taken for granted that all children are enrolled in kindergartens, but according to the report of the Bureau of the Census for 1963, only about 54 per cent of the five-year-old children are enrolled in kindergarten.

The principal function of the kindergarten is not to teach the rudiments of the three R's, but rather to promote social-emotional development and give early experience in "learning to learn." However, evidence is accumulating which indicates that the average child can make a good start with the three R's before the age of six.

Perhaps most important is the opportunity that kindergartens provide for the screening of all children with regard to their abilities and disabilities before they enter the first grade. Along with the preschool physical and dental examinations, psychological studies should be carried out for all children to have a broad-gauge estimate of their general intellectual capacity and some leads or intimations about special abilities and disabilities. Group testing by teachers and, where indicated, individual studies by psychologists, properly fall within the public school domain. Incapacities in speech, hearing, and vision, including color vision, should be diagnosed through the preschool physical examination. The more subtle, yet serious, incapacities in visual and/or auditory perception, not caused by eye or ear disorder but producing language disabilities, should be recognized or predicted during the kindergarten year.

Conclusion

The objective of this report is to introduce a series of tests devised for early detection of dyslexia and perceptual-motor deficiencies. These tests are simple and can be administered by kindergarten and primary grade teachers. It is recommended that the screening program be limited to groups of 4 children to instill and assess motivation during the testing. Research has shown us that the most important purpose of testing is not prediction but evaluation. But evaluation is empty unless it is followed by diagnoses of the causes of poor achievement and by proved corrective measures including chemotherapy. In a further report, I propose to discuss in detail the treatment of dyslexia and perceptual-motor deficiencies by chemotherapy based on sound neurophysiology and on these objective testings.

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Toxoplasmosis

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THIS REPORT PRESENTS in summary the latest thinking concerning the biology, epidemiology, and the diagnostic and clinical aspects of toxoplasmosis.

Toxoplasmosis is a multisystem disease caused by infestation with a protozoan parasite, the Toxoplasma. Both congenital and acquired forms of the disease have been described.

It was only forty-three years ago that Janku[1] in Czechoslovakia described the first authenticated case of toxoplasmosis in man, and it was not until 1939 that Wolf, Cowen, and Paige[2] proved the infectiousness of the disease when they isolated the parasite from a thirty-one-day-old infant whose illness had first been noticed on the third day of life. Since that time, many cases in both children and adults have been reported. The advent of the serologic tests for diagnosis and their application in studies conducted among various population groups all over the world seem to lead to the inescapable conclusion that toxoplasmosis is a fairly common world-wide disease with greatest prevalence in the temperate and tropical zones. The highest incidence was found in the South Sea Islands.[3] A recent study in the eastern part of the United States revealed that 5 per cent of the population had positive test results from the age of five to nine, 50 per cent from the ages of thirty to forty had positive test results,[4] and 65 per cent of those over forty had positive serologic test results. The disease has also been discovered in many varieties of animals and birds.

Indeed, as early as 1953, Sabin[5] wrote ". . .it may very well be that all these future studies will show us that in toxoplasmosis we have found an example of that almost perfect host-parasite relationship in which the parasite only rarely causes serious damage to its hosts and the hosts are not too intent upon destroying the parasite—that is, a great deal of infection and very little disease."

The method of spread in individuals and species is not yet known, although there is some indirect evidence that the oral route may be important in man.[6,7] Siim[8] and Cathie[9] have demonstrated cysts in human tonsils and saliva, and it would appear that the respiratory and mouth-to-mouth routes would be likely modes of spread. Thus far, however, there have been almost no reports of concurrent infection in married couples.

In 1908 Nicolle and Manceaux[10] gave the name Toxoplasma to an organism that they had discovered a year before in a North African rodent, the Ctenodactylus gondi. This organism was similar to the Leishmania. It is now felt by some workers that 25 per cent of adult granulomatous uveitis disease is due to toxoplasmosis and that many cases of congenital disease exist.[4,7,11] Between the initial discovery and our present insight lies more than a half century of extensive observation and, within the last two decades, the development of serologic tests which have been invaluable in the study of the pattern of the disease.

Toxoplasma is derived from the Greek word "toxin" meaning bow or arc and denoting the lunate shape of the organism. The Toxoplasma is an obligate, intracellular protozoan parasite which reproduces by fission along the long axis. Except perhaps for the erythrocyte, it possesses the capacity to invade any tissue of mammals or birds. Infection of animals is achieved by the inoculation of infected material by any route. Parasitemia follows and persists for a variable period of time depending on the numbers of organisms injected, their virulence, and the resistance of the host. Prolonged survival of the parasite is not uncommon and is accomplished in a pseudocyst form, a capsule taking the silver stain surrounding a number of organisms. It is the rupture of these pseudocysts which is thought to be responsible for the relapsing form and many cases of the adult acquired form of the disease.[4]

Autopsies have demonstrated the presence of histologic changes in all tissues, especially in the eye and central nervous system in congenital disease and in muscles and lymph nodes in acquired disease. Areas of calcification are present in the brains of congenital cases and are probably the result of hemorrhages caused by destruction of vessel walls. Gross and microscopic areas of necrosis are seen in the viscera and skeletal muscles. Pseudocysts containing many organisms may be found in muscle and brain, frequently in the absence of surrounding infection. The basic lesion in the central nervous system is the microglial nodule.[12] Characteristic changes have been found by Siim[13] in lymph nodes biopsied from patients with acquired toxoplasmosis. These findings have been a hyperplastic lymphatic tissue containing large pale cells with deeply staining nuclei and many mitotic figures. Scattered throughout, but especially in follicles, are many macrophages which contain small deep-staining granules in their cytoplasm. It is not known whether these granules are Toxoplasma or nuclear debris, although Siim[13] has isolated Toxoplasma from these nodes. In the eye one finds an acute inflammation beginning in the retina with a copious exudate into the vitreous body, causing a marked haze clinically. This is followed by secondary involvement of the choroid.[14] Organisms can be found free in acute lesions or in cysts. Lesions appear atrophic and pale after healing. The pseudocysts can rupture and lead to reactivation of infection.[4] It has also been suggested that rupture of previously dormant cysts may cause an allergic chorioretinitis in adults.[15] The Toxoplasma can be grown easily in egg or tissue cultures and in animals but will not withstand freezing, drying, or ordinary chemical action.

Those characteristics of the organism which are crucial in its pathogenicity are: (1) its ability to grow in many cells, (2) its ability to form a relatively inert cyst, and (3) its obligate intracellular development.

It is not known whether or not any toxic factor operates in the production of disease.[16] The major host factors which affect the pathogenesis are: (1) the development of hypersensitivity with chronic infection, (2) the inability of some hosts to overcome infection or to develop an effective immunity, (3) the presence of an infection immunity, and (4) the results of cyst rupture.[17]

The greatest impetus given to the study of toxoplasmosis and the factor responsible for much of our present knowledge has been the application of the various tests for diagnosis. These are: (1) dye tests, (2) complement fixation test, (3) hemagglutination test, (4) skin test, and (5) fluorescein antibody test.

The dye test was developed in 1948 by Sabin and Feldman[18] and the complement-fixation test in 1948–1949 by Warren and Russ[19] and Sabin.[20] The principle on which the dye test is based is the fact that antibodies in the patient's serum are able to prevent live Toxoplasma from staining with methylene blue. A substance in fresh normal human serum, probably properdin, plus complement fraction, which is known as "accessory factor," is necessary to accomplish this reaction. The highest dilution of serum in which over 50 per cent of Toxoplasma are unstained is the end point.[4] The dye test antibody rises rapidly within two weeks of acute infection to high levels and remains elevated for many years. The complement-fixing antibodies develop more slowly, requiring one to two months to reach their peak level, and then diminish sharply. The difference in the rates of appearance and disappearance of the antibody is of help in the diagnosis. All dye titers are significant, and combinations of various dye test and complement-fixing antibody titers can be interpreted as follows: If the dye titer is high and the complement-fixing antibody test result is negative, there is postulated either an acute infection of recent onset or an infection only a few years past. In the latter case, the complement-fixing antibody test result will remain negative subsequently, whereas in the acute infection it will rise. Sabin[21] feels that high titers of dye test and complement-fixing antibody may occasionally result from a subclinical reactivation of a latent infection. It is obvious from this that it is necessary to examine serial serum samples before one can conclude that the Toxoplasma has caused a particular infection.[2,7] Jacobs and Lunde[22] have developed a hemagglutination test for toxoplasmosis. A skin test has also been developed which, despite its increased convenience, has not shown itself to be a significant diagnostic tool thus far because of the lack of standardization of the antigen, the large number of reactors in the general population, and the fact that serum antibodies have been demonstrated in nonreactive people.[22] A new serologic method was reported by Goldman[23] which measures antibody by its ability to inhibit a fluorescein-labeled antiserum from producing fluorescence in Toxoplasma. There are not enough data to allow an evaluation of this test. The development of our knowledge of toxoplasmosis was originally a result of the study of the congenital form. More recently a good deal has been learned about the acquired form of this disease. This knowledge has been making it apparent that there are no distinct differences of kind between the two, rather simply those of degree.[24] The chronic nature and long duration of granulomatous uveitis suspected to be caused by Toxoplasma suggests that ocular toxoplasmosis in adults becomes manifest when antibody titers have descended to relatively low levels, long after systemic manifestations have disappeared.[24]

Forms of toxoplasmosis

Congenital form. It is now felt as a result of the work with serologic tests that congenital toxoplasmosis occurs as an accidental complication of an inapparent primary Toxoplasma infection of a pregnant female because such infections may be accompanied by parasitemia.[25] No instance has yet been noted in which more than one congenitally infected offspring was produced by the same mother.[25] The manifestations in the infant depend on the virulence of the organism, the resistance to it, and the stage of pregnancy during which infection occurred. In congenital ocular toxoplasmosis, the lesions are usually bilateral.[26] If the infection occurs early in pregnancy, fetal death is the most common result; if it occurs in midpregnancy, the result is widespread disease resulting in death with miscarriage or such severe damage that the infants are born with marked sequelae such as hydrocephalus and microphthalmus. Infections occurring late in pregnancy give rise to acute manifestations such as encephalomyelitis with fever, generalized convulsions, and various paralyses and visceral involvement in the form of jaundice, anemia, purpura, petechiae, lymphadenopathy, hepatosplenomegaly, and chorioretinitis. The localization of Toxoplasma within the eye is a chance occurrence and its development a function of the rapidity with which the defense mechanisms of the host respond.[27] Its frequent occurrence is probably because of the fact that toxoplasmic immunity is acquired but slowly in the brain and eye.[28] Survival of the host may or may not take place. One quarter of the infants are premature, and they have a mortality rate of 27 per cent. Of those carried to term, 12 per cent die.[29] Of those that do survive, about 80 per cent can be found to be defective. Feldman[30] found psychomotor retardation in 56 per cent, hydrocephalus or microcephalia in about 33 per cent each, and convulsive disorders in the first three years of life in about one-half. Chorioretinitis was noted in 99 per cent (usually between 80 to 90 per cent according to most reports) of the patients with a bilateral incidence of 85 per cent. Cerebral calcification was found in 63 per cent of youngsters who had positive dye test results.[30] It is important to note that most frequently the only sign of congenital toxoplasmosis is the ocular involvement and that the acute fulminating form of the disease is much less common than the subacute asymptomatic forms.[31] The congenital disease may remain dormant or may progress.[32] The chorioretinitis may occur at birth or up to six months thereafter and be associated with the acute systemic disease, or it may be found in an infant with no signs of systemic disease. The diagnosis is dependent on the systemic findings if present, the eye lesions, and the results of the dye tests. Toxoplasma precipitins have been demonstrated in the aqueous humor by a modified Ouchterlony agar diffusion technic.[33] The disease must be differentiated from other infectious and degenerative diseases of the central nervous system. Among these are cytomegalic inclusion disease and the Sabin-Feldman syndrome, having all the manifestations of congenital toxoplasmosis except for a positive serology result.[4] Relapses of congenital ocular infections, often with new areas of chorioretinitis surrounding old ones, are very suggestive that the spread of the infection is caused by the rupture of pseudocysts and the dissemination of the organisms by the ocular fluids.[4,34] The ophthalmologist may discover ocular toxoplasmosis in an apparently healthy child whose relapse of congenital toxoplasmosis manifested itself by the development of strabismus or increasing blurring of vision or in whom the amblyopia in one or both eyes is detected in a routine examination.[4] Reactivation of lesions may follow the administration of anti-inflammatory corticosteriods because of the waning of immunity in the retina and systemically.[28] There is no doubt also that cases previously thought to be acquired toxoplasmosis were in fact relapses of congenital infection. Reactivation of acquired latent disease (toxoplasmosis may remain latent for many years) may be mistaken for primary systemic disease.[31,35] Hogan *et al.*[34] found relapse of congenital infection in 13 of 31 cases in a study made in 1957 and 12 of 36 cases in a study reported in 1958.[36] Several of these patients developed high antibody titers.

ACQUIRED FORMS. Although the initial studies of human toxoplasmosis were those of the congenital type, it was not long before the diagnosis was also being made in the adult, and more recently the ever-increasing use of corticosteriods and immunosuppressive treatment has resulted in larger numbers of unusual protozoan, bacterial, viral, and fungal infections. As early as 1953 organisms having the morphologic characteristics of toxoplasmosis had been isolated from chorioretinal lesions in the eyes of 53 adults.[37] In 1954 Jacobs, Fair, and Bickerton[24] isolated and identified the organism from an enucleated eye in a thirty-year-old white male who had pain and blindness of eight and one-half years duration. The acquired form can manifest itself in a variety of ways.

Lymphatic. The lymphatic or lymphonodosa form of Siim[13] is probably the most common presentation of acquired toxoplasmosis. The onset may be acute or subacute, and the course may be febrile, afebrile, or subclinical. The disease may last from weeks to months. Nonspecific symptoms such as headaches, nausea, abdominal pain, arthralgias, and myalgias may be present at any time during the course of the disease. All the nodes including hilar, mesenteric, and retroperitioneal may be involved. The nodes are usually discrete, firm, smooth, and freely movable. They may be tender. Symptoms and signs of atypical pneumonia may develop during the disease. The liver and spleen can be affected, and in severe infections myocarditis is fairly common. From the laboratory point of view, the positive findings are: (1) relative or absolute lymphocytosis with atypical Downey-type cells; (2) serologic test results strongly positive; and (3) the Paul-Bunnell test result negative, differentiating this from infectious mononucleosis. Lymph node biopsy can be performed, which reveals a characteristic histology referred to earlier. Siim has isolated the Toxoplasma organism from these nodes. There are very seldom, if ever, complications of this form of the disease. It has been estimated that about 7 per cent of cases clinically diagnosed as glandular fever but with a negative heterophil test result in fact have toxoplasmosis.[38] Of 40 patients with lymphadenopathy of unknown origin, 13 per cent had serologically verified toxoplasmosis in one study, and in another it was possible to isolate Toxoplasma from 4 college students among 154 who had been placed in a hospital for suspected infectious mononucleosis.[39,40]

Disseminated. When the Toxoplasma becomes disseminated throughout the body any organ may become involved, and pathologic evidence of local reaction and many foci of necrosis are seen. Following inoculation of material in experimental animals, Toxoplasma has been recovered from lymph node and muscle biopsies, blood, and cerebrospinal fluid, as well as bone marrow, myocardium, and lung. The clinical features of this form of the disease (the exanthematica form of Siim, the miliary form in the classification of Theologides) are very varied and of course depend on the organs involved.[41-47] The onset may occur over periods of from several days to months. Severe and constant headache is usually present at the onset. A brownish or pinkish maculopapular and occasionally purpuric rash is almost always present before the first week of the illness has passed.[5,18,46,48] Myalgias and arthralgias are frequently present, and in a case reported by Rowland and Greer,[45] polymyositis was the prime manifestation. Anorexia, nausea, and vomiting have been present in up to one third of the cases. Hepatosplenomegaly has been found, and derangement of liver function has been noted.[42] Lymphadenopathy, although occasionally absent, is usually present and can occur at any time during the course of the disease.[46] Respiratory symptoms or signs including cough, dyspnea, cyanosis, tachypnea, dullness on percussion, and rales on auscultation are found at some time during the course of the disease in almost all patients. Changes noted on chest x-ray film can simulate those of pulmonary edema, bronchopneumonia, or atypical pneumonia. The patient may manifest involvement of the cardiovascular system with tachycardia, precardial pain, arrhythmias, dyspnea, cardiomegaly, and congestive failure. The electrocardiogram can reveal myocardial injury, left ventricular enlargement, arrhythmias, and conduction defects. The whole gamut of neurologic symptoms and signs may also appear during the course of the disease. These include lethargy, headaches, hallucinations, impairment of hearing or vision, narcolepsy, nuchal rigidity, delerium, convulsions, abnormal reflexes, paralyses, and coma.[42,43,46,47] If the cerebrospinal fluid is examined, abnormalities of cells, protein, or pressure can be found or the fluid may be normal. The most frequent abnormality is pleocytosis. Urinalysis may reveal proteinuria or may be normal. The erythrocyte sedimentation rate and hemoglobin may be normal or mildly abnormal. There may be leukocytosis or leukopenia, thrombocytopenia, eosinophilia, neutrophilia with immature forms, and lymphocytosis with atypical lymphs. The duration and course of the disease vary greatly. Death can occur after weeks or months, or after a long convalescence complete recovery may result. If the Toxoplasma localizes to an organ, the clincial manifestations of course will reflect the organ involved. Strangely enough, even on autopsy sometimes the protozoan is found in only one organ. It is presumed that this results from a previous subclinical or clinical infection with unrecognized dissemination and later localization. Why this localization occurs is not known. Among the postulations are:

(1) Toxoplasma of low virulence which does not simulate significant antibody production; (2) clinical symptoms manifest some organ tropism; or (3) in the case of the most frequently localized forms, the ocular and the cerebral, the blood brain barrier may make the entrance of antibody into the eye and brain difficult, thereby facilitating the growth of the Toxoplasma in these sites.[49] There are reports in the literature of Toxoplasma localizing to the following organs:

Eyes are the most common localization, details of which have been discussed earlier. The diagnosis can be made in this case if (1) the ocular picture is compatible, (2) the dye test result is positive with a minimum titer of 1 to 62, and (3) all other systemic granulomatous infections have been excluded. It is extremely important that serial samples be examined before concluding that a particular infection has been caused by Toxoplasma. There appears to be a 20 per cent error where a single determination is the basis for diagnosis.[7,11] Hogan, Thygeson, and Kimura[50] found the methylene blue dye test to have positive findings in a titer of 1:16 or higher in 35 per cent of patients with uveitis and in only 25 per cent in a miscellaneous group of nonuveitis cases. Of patients with chorioretinitis, 48 per cent reacted positively to dye tests as compared with 25 per cent of the normal population. Patients with posterior uveitis have a higher incidence of positive dye test results than those with anterior uveitis.[50] It is felt by some workers that approximately 25 per cent of adult granulomatous uveal disease is caused by Toxoplasma.[7,11] The percentage is even higher if one only considers the incidence among those cases of adult granulomatous uveitis in which no cause has been determined in the search for the more common causes.

In the brain the disease may show signs

and symptoms of a space-occupying lesion.[51,52]

In the heart a large percentage of cases occurs in the myocardium; at least 8 cases have been published in which serologic evidence implicated toxoplasmosis as the cause of the myocarditis, and in 3 of these improvement seemed to follow therapy for toxoplasmosis. In 1 other, Toxoplasma was isolated by animal inoculation with a portion of heart muscle. Pauley *et al.*[49] have made the suggestion that Toxoplasma should be considered in the investigation of cases of obscure myocarditis, idiopathic cardiac hypertrophy, and familial cardiomegaly.[53–55]

The pericardium can also be involved, and in 1 case with a high titer on the dye test lowering of the titer and clinical improvement followed therapy.[3,56,57]

In the lungs 1 case is reported by Ludlam and Beattie;[58] Toxoplasma was demonstrated in an animal after a suspension of the patient's lung was inoculated into it. The authors stated that they felt in an evaluation of atypical pneumonia consideration should be given to toxoplasmosis.

In the liver toxoplasmic hepatitis has been suggested as a clinical entity in the German literature.

Conclusion

The diagnosis of toxoplasmosis must then be considered in patients manifesting any sign or symptom of systemic disease including involvement of all the organ systems mentioned. Because of the protean manifestations of the disease and the rarity of demonstration of the parasite in the biopsy material, diagnosis is difficult and a great deal of stress is laid on the results of the immunologic tests which are frequently positive when other test results may be normal or inconclusive.[3,59]

Although many kinds of therapeutic measures have been attempted, the results have all been disappointing, and, at the present time, although pyrimethamine (Daraprim) and sulfadiazine are in vogue, it appears that they only control the acute symptom of the disease without eradicating the encysted organisms.[60] If pyrimethamine is given, it should be realized that it has an antifolic action, and white blood cell counts should be performed at least once a week. Because the course of the disease is so often characterized by remissions and exacerbations, a hypersensitivity mechanism has been thought to have been involved and steroids have been exhibited. There seems to be no enthusiasm in the literature, however, for this mode of treatment. I think it safe to say that at the present time, there is no completely satisfactory therapy for toxoplasmosis.

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Positive value of seats belts verified

Seat belts, generally regarded as one of the great automotive safety advances of modern times, actually have been a part of the motor culture of America in crude form since before the turn of the century.

In fact, a U.S. patent was granted in 1895 to an Edward J. Claghorn for a safety belt for "tourists and others." Several early horseless carriages of that era came equipped with seat belts designed to keep passengers from falling out of vehicles on the rough roads of the day.

But it was not until 1964 that two seat belts became standard equipment, in the front seat, for most American cars. Six belts and front seat shoulder harnesses now are standard in most cars. Despite their proved value in reducing injury and death on the highways, only about one third of the motorists who have seat belts available use them regularly.

Low Incidence of Hypothyroidism Following Radioiodine Therapy

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OF 149 PATIENTS TREATED *for hyperthyroidism by radioactive iodine, 17 developed hypothyroidism, 12 within two years after therapy. The incidence of permanent hypothyroidism was 8.6 per cent. Radioactive iodine should be given in smaller dosage than formerly, and it is suggested that additional radioiodine not be given before four months have elapsed following the initial dose.*

RECENT REPORTS HAVE noted an increasing incidence of hypothyroidism in patients treated with radioiodine. Particular comment has been made on the rising number of patients with hypothyroidism as the years of post-treatment follow-up increase.[1-7]

The reasons given by various authors for this rising incidence of hypothyroidism are: (1) subtle radiation damage to the thyroid epithelial cells or their chromosomes which persists for many years; (2) damage to blood vessels within the thyroid resulting in slow obliteration and secondary progressive ischemia and fibrosis; and (3) auto-immune processes set up by thyroglobulin or other protein release.[5,8] With regard to the latter, Beling and Einhorn,[1] who were among the first to notice this progressive incidence of hypothyroidism, found increasing titers of circulating antibodies to thyroid tissue for about one year after radioiodine treatment. Following this period, they noted that the titer declined to levels below the amounts present before therapy.

This finding may point two ways: either that the late development of hypothyroidism, after one or two years, is not related to an auto-immune reaction triggered by the radiation damage or that the high amount of thyroid antibodies found in the first year post-treatment so badly damages the remaining thyroid cells during this year that in spite of the subsequent falling titer they slowly die off. To support the theory of chronic, low-grade damage, whether or not this is radiation damage or auto-immune damage, Chapman *et al.*[8] have demonstrated in histologic sections "bizarre nuclear forms in thyroid tissue removed eight years post-treatment with radioactive iodine."

Results

A review of our experience with radioiodine therapy for hyperthyroidism appears to be in complete disagreement with these reports, while agreeing closely with the report of Segal *et al.*[9] It should be noted that the reported findings, particularly with reference to the problem of post-treatment hypothyroidism, were only incidental to the main purpose of the study, which was to review the over-all results of therapy during a ten-year period.

From 1953 to 1963, 195 patients were treated for hyperthyroidism with radioiodine I^{131} in the radioisotope clinic. The diagnoses were made by clinical observations supported by confirmatory reports of uptake studies and conversion ratios.

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TABLE I. Cases of hypothyroidism developed after I^{131} therapy

Age	Sex	Number of Doses	Total Dose (Microcuries)	Duration	Onset After Therapy (Months)	Follow-up (Years)
38	Female	1	4.1	Transient	3	$3^2/_3$
43	Male	1	5.2	Transient	7	6
30	Female	3	14.5	Transient	8 to 9*	$2^1/_2$
64	Male	1	5.0	Transient	4	$5^1/_4$
66	Female	1	4.1	Transient	7	$8^1/_2$
56	Female	1	6.9	Permanent	4	$1^1/_2$
38	Female	1	5.9	Permanent	3	9
55	Female	1	3.1	Permanent	$1^1/_2$	$8^1/_3$
43	Female	1	4.9	Permanent	6	3
41	Female	1	5.3	Permanent	4	$10^1/_2$
46	Female	2	7.1	Permanent	4	$9^1/_2$
35	Male	3	11.8	Permanent	20*	6
50	Female	1	3.9	Permanent	5	$4^1/_2$
50	Female	1	3.3	Permanent	6	7
38	Male	1	5.2	Permanent	4	1
59	Female	2	8.0	Permanent	unknown	6
49	Female	2	6.1	Permanent	2 years	6

* After third dose.

Patients were seen at regular intervals and followed with repeated physical examinations and laboratory tests. Of the 195 patients, 46 were lost to follow-up. The remaining 149 patients form the subject of this report.

Only one dose of radioiodine was required to induce remission of hyperthyroidism in 84 patients, or 56.4 per cent, and two doses were required in 49 patients, or 32.9 per cent. Nine patients were given 3 doses; 5 patients needed 4 doses; 1 patient received 5 doses; and 1 patient received 6 doses.

Slightly more than 50 per cent of the 84 patients who received 1 dose of I^{131} were successfully treated with single doses of 2 to 4 millicuries, and only 4 of these 84 patients required single doses of 6.1 to 6.9 millicuries. On the other hand, where 2 doses of I^{131} were given to 49 patients, 14 patients received a total dose of less than 6 millicuries, 19 received 6.1 to 7.9 millicuries, 15 received 8 to 10.5 millicuries, and only 1 patient required 15.2 millicuries.

In this series of 149 patients, 54.4 per cent, or 81 patients were followed up to three years; 28.2 per cent, or 42 patients, were followed for from three to six years; and 17.4 per cent, or 26 patients, were followed for from six to ten years.

Table I lists the 17 patients who developed hypothyroidism after treatment with radioiodine, a total incidence of 11.4 per cent. Five of these patients had transient hypothyroidism only, 3.4 per cent of the entire series. In the transient group, the hypothyroidism lasted from three and one-half months to one year with complete recovery. Segal *et al.*[9] noted that 103 patients with transient hypothyroidism returned to the euthyroid state by eighteen months. Of the 12 patients with permanent hypothyroidism, one had inadvertently received twice the amount of radioiodine ordered. These 12 patients all developed hypothyroidism within two years after therapy. In fact, 9 of these 12 developed hypothyroidism within six months following therapy. It is noteworthy that 8 of our 17 patients who developed hypothyroidism either transiently or permanently, did so within four months of treatment (Table I). This average period of four months was noted also by Chapman *et al.*[8] The over-all incidence of permanent hypothyroidism was 8.6 per cent, or 12 out of 149 patients. Segal *et al.*[9] showed the following: an 8 per cent incidence of myxedema; the onset of clinical myxedema was usually noted in the first eight months and rarely as late as thirty-six to forty-two months post-treatment; and the patients with transient myxedemas were all euthyroid by eighteen months following onset.

We do believe that we have been conservative in the sizes of both the initial administered dose and the repeated dose or doses. We have also waited longer than some other groups before repeating the doses, hoping to achieve full benefit from an administered dose before giving more I^{131}.

We suggest that additional radio-iodine not be given before four months have elapsed following the initial dose.

In a subsequent report we shall relate the development of hypothyroidism to size of dose, number of doses, previous thyroidectomy, age, and size and type of gland. Some of the groups who reported on the rising incidence of hypothyroidism have stated that the size of the administered dose is probably the most important factor in producing this complication.[4-6] They suggest that the dose, or doses, be reduced in size, with the full knowledge that the number of doses may have to be increased and the duration of the hyperthyroid state will be prolonged. Patients with thyrotoxicosis, patients with glands that are normal in size or only slightly enlarged, and those patients who had previous subtotal thyroidectomies, should receive the smallest doses because the incidence of hypothyroidism is higher in these patients than in other groups of patients.

We feel as other authors do that radioactive iodine should be given in smaller dosage than formerly, even though additional doses may have to be administered. The use of I^{131} for the treatment of thyrotoxicosis should not be abandoned.

Summary

The authors report an over-all incidence of 8.6 per cent of permanent hypothyroidism following the treatment of hyperthyroidism with radioactive iodine. All the patients who developed hypothyroidism, 12 out of 149, reached that state within two years after therapy. The follow-up period ranged from three to ten years. No new cases of hypothyroidism occurred after two years.

The use of small doses of I^{131} with a waiting period of at least four months between doses favors the low incidence of this complication.

The use of I^{131} for the treatment of hyperthyroidism should not be abandoned.

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Cervical biopsy and cervical conization

After a retrospective survey, appearing in a recent issue of the *American Journal of Obstetrics and Gynecology*, S. G. Anderson, M.D., and E. B. Linton, M.D., conclude that following an abnormal cytologic smear, cervical conization is preferable to cervical biopsy because of greater accuracy of the former. A more advanced malignant process than indicated by the specimen was found in only 1 per cent of 195 hysterectomy specimens. On the other hand, 130 patients had cervical biopsy prior to conization. In these, the subsequent conizations revealed malignant processes more advanced than the biopsy results in 23.8 per cent.

Reviewed were all cervical conizations for diagnostic purposes over a ten-year period. Conizations for the therapy of benign conditions were excluded from the study. During the ten-year period, there were 415 diagnostic cervical conizations. Of these, 264 were done in the last five years of the period covered.

Cervical biopsies were carried out in 130 patients prior to conization. These were reported as follows: (1) chronic cervicitis, 22; (2) hyperplasia, metaplasia, or dysplasia, 27; and (3) carcinoma in situ, 81. Of the 49 patients who, according to the biopsy interpretation, had benign lesions, 19 were subsequently found to have invasive or preinvasive carcinoma when the conization specimen was studied. The majority of studies reported suggest a preference for conization as a diagnostic procedure because complete removal of potentially neoplastic tissue can be accomplished. In this series, 51.2 per cent of the patients with a Class III Papanicolaou smear showed malignant disease on conization.

Clinical Experience with Gastroscopy

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BECAUSE NEWER ENDOSCOPIC INSTRUMENTS have been developed, there has been a renewed interest in gastroscopy. However, much of it has been directed to gastric disease other than gastric cancers. For this reason, a review of the gastroscopic examinations performed by me at the Roswell Park Memorial Institute, Buffalo, New York, during the years 1965 to 1966 was undertaken, and the results of the study are the subject of this publication.

Historic data

In the late 1880's a number of physicians including Kussmaul and Mikulicz attempted to visualize the stomach by means of a straight tube.[1] Their success was limited because of technical difficulties with the optical system and also because of the high incidence of accidents to the esophagus. In the early 1930's Schindler[2] developed the flexible gastroscope by employing lenses of short focal distances. With this instrument, the chance of perforating the esophagus has become almost negligible. In recent years it has undergone a number of modifications; however, its basic design remains unchanged.[3,4]

Another notable advance in gastroscopy has been the introduction by Hirshowitz *et al.*[5] of the flexible fibro-optical gastroscope and the use of the gastric camera by Japanese investigators.[6] These latter instruments have gained enthusiastic support from a number of individuals. However, in this series, the flexible gastroscope as modified by Benedict[3] was employed because of the high image quality and the fact that it was possible to obtain gastric tissue for histologic study.

Method of gastroscopy

Despite the appeal of a local anesthetic, general anesthesia with endotracheal intubation was employed in all but 9 cases in this series. With general anesthesia there was no gagging or retching, and the gastroscopic examination was done in a much more thorough manner and without the obvious patient discomfort when compared with the same procedure done under a local anesthetic. To date, no anesthetic deaths or accidents have been recorded. In addition, esophagoscopy was combined with a gastroscopic examination in 10 cases.

Results

Thirty-eight gastroscopic examinations in 38 different patients made up this series. There were 8 cases where the gastroscopic examination gave negative results or was unsuccessful and the x-ray and surgical findings were positive for disease. In reviewing these cases, the location of the lesion was partially responsible for failure to visualize three tumors; in each of these cases the lesions were in the fundus of the stomach. In the other 5 cases, there was no satisfactory explanation except that the examination was done under a local anesthetic, and in 3 instances the procedure was hastened because of patient discomfort. These failures point out the limitations of gastroscopy and emphasize the fact that it is not what cannot be seen via the gastroscope but what can be observed that is important when this diagnostic modality is used.

Although the number of gastroscopies in this series is small, it should be emphasized that Roswell Park Memorial Institute is a State cancer hospital, and many patients are admitted with a clinical diagnosis already established. Furthermore, Nadler, from the same institute, in a recent survey of gastric ulcers and gastric carcinoma, found the radiologist to be correct in establishing an accurate diagnosis in over 75 per cent of cases.[7] Because of these factors, most of the gastroscopies in this series were done to amplify and expand the x-ray findings, and the majority of cases could be cataloged into three clinicoradiologic groups as follows:

GASTROSCOPY IN THE PRESENCE OF NEGATIVE ROENTGEN FINDINGS. There were 2 patients with gastric symptoms along with anemia and weight loss that suggested a gastric malignant condition; however, the x-ray findings were negative. In 1 case the patient had a known reticulum cell sarcoma of the stomach treated by gastric resection and radiation seven years previously. Recurrent disease was suspected clinically; however, x-ray films of the stomach gave negative findings. At the time of gastroscopy the mucosa appeared edematous, and the biopsy showed histologic evidence of a recurrent reticulum cell sarcoma. In the other case the gastroscopic examination suggested hypertrophic gastritis, and a biopsy verified the visual findings. Whether or not the gastritis was the cause of the patient's complaints was difficult to say; nevertheless, histologic proof that such a condition existed was important clinically. In both of these cases, clinical follow-up has proved the gastroscopic examination to be correct.

There was 1 other patient who despite the usual assurance of negative clinical x-ray findings had a fear of a stomach cancer, and negative gastroscopic findings afforded this individual additional reassurance.

In each of these cases, gastroscopy proved to be a very valuable and helpful diagnostic procedure. Admittedly, the patients in this group were highly selective; nevertheless, they do point out the value of gastroscopy as part of the complete gastrointestinal work-up in arriving at a clinical diagnosis, particularly where there is a clinical suspicion of a gastric malignant condition.

POSITIVE X-RAY FINDINGS. In the group of patients with positive x-ray findings, there were 6 cases where gastroscopic examination proved more accurate in determining the true nature of the gastric disease than did the radiologic examination. In 4 of these cases a polypoid defect was suggested by x-ray; however, in 3 instances, gastroscopy gave negative results. In the other 2 cases, the radiographic findings in 1 patient suggested an infiltrating process involving the antrum of the stomach; however, gastroscopy revealed hypertrophic gastritis. In the other case the radiologist interpreted the x-ray findings as compatible with a gastric polyp; however, at gastroscopy a gastric cancer was noted. In each of these cases, an exploratory laparotomy confirmed the gastroscopic observations.

> GASTROSCOPY IS A USEFUL *phase in the overall clinical approach to patients with clinically suspected gastric cancer. It is used to complement x-ray findings of changes that require further clarification; in some instances the gastroscopic examination has revealed lesions not detected by roentgenograms, and in other cases it has aided in determining the operability of a lesion and made it possible to plan the operative procedure in advance. In this study general anesthesia with endotracheal intubation was employed in most cases.*

These findings should not be taken to mean that the true nature of a gastric lesion is determined solely by gastroscopic findings. They do, however, emphasize the relative value of gastroscopy as an ancillary method of diagnosing gastric disease.

Also included in this group were 14 cases in which the gastroscopic examination was done to gain more information concerning the depth and spread of a given gastric cancer. Very often it was possible from the gastroscopic examination to plan in advance the operative procedure, particularly in selecting between a thoracicoabdominal and an abdominal approach.

INCONCLUSIVE X-RAY FINDINGS. Inconclusive x-ray findings were the main indication for gastroscopy in 15 cases in this series. In each case the x-ray findings were atypical and represented interpretational problems. For example, there were 6 cases where the radiologist was unable to differentiate between a benign or malignant gastric ulcer. In 4 of these cases the gastroscopic examination established the true diagnosis. In another case, an extragastric mass was readily distinguished by gastroscopy, and further clinical studies showed that it was caused by an abdominal aortic aneurysm.

As this series progressed, it became apparent that in those cases where the x-ray findings were inconsistent with the clinical picture or inconclusive when interpreted in the light of the clinical findings, further clinical information was gained with gastroscopy. Very often the gross differentiation of a malignant lesion from a benign one was made more readily by gastroscopy than was anticipated, and, as indicated, there were 4 instances where formal exploratory laparotomy was circumvented by the use of gastroscopy.

Conclusion

Gastroscopy, despite the fact that it is the oldest of all endoscopic procedures, has never become a popular diagnostic tool. There can be no question that the high degree of accuracy of the radiologist in diagnosing most gastric lesions is partially responsible for its position in this regard; nevertheless, gastroscopy, when used to complement the x-ray findings, adds much information to the clinical record. It is important, however, to recognize that gastroscopy like many diagnostic methods has limitations; nevertheless, many of these limitations can be reduced by the experience and skill of the gastroscopist.

In this series, gastroscopy was used mainly to augment the x-ray findings. In the majority of cases, the roentgenograms showed bizarre or atypical changes that required further clarification and which gastroscopy made possible. In a lesser number of instances, the gastroscopic examination revealed lesions which were not detected by conventional x-ray examinations. In several other cases, gastroscopy aided in determining the operability of a given lesion and not infrequently made it possible to plan the operative procedure in advance.

Throughout this series, gastroscopy was looked on as one phase in the over-all clinical approach to patients with a clinically suspected gastric malignant condition. In most cases the x-ray examination was the most important investigation; nevertheless, in lesions where the x-ray films were inconclusive or the clinical findings suggested the possibility of a gastric cancer without x-ray confirmation, gastroscopy proved to be a most useful diagnostic procedure.

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Dicloxacillin Versus Triacetyloleandomycin in Upper Respiratory Infections Caused by Beta-Hemolytic Streptococci

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DICLOXACILLIN (DYNAPEN), a new, semisynthetic penicillin, has been demonstrated in both in vitro and in vivo studies to be active against Staphylococcus aureus, Streptococcus pyogenes, and Diplococcus pneumoniae.[1-3] It is also effective against penicillinase-producing strains of Staph. aureus.

Because dicloxacillin is a new antibiotic, it was considered important to compare its efficacy and speed of response with those of other antibiotics already established for use in the treatment of patients who had upper respiratory tract infections caused by beta-hemolytic streptococci, group A. Triacetyloleandomycin (TAO) was selected for use in this double-blind comparative study because of its reported effectiveness against group A beta-hemolytic streptococci.[4,5]

Materials and methods

Eighty outpatients, 47 adults, twenty-one to sixty-three years of age, and 33 children, eight to twenty years of age, were selected for inclusion in the study.

Approximately 10 patients were screened for every patient selected to include only those who met the following pre-established criteria: (1) acute bacterial infection caused by beta-hemolytic streptococci, group A, as determined from throat cultures; (2) age of illness not to exceed seventy-two hours; (3) a diagnosis of either tonsillitis or pharyngitis without any associated disorder or disease; (4) no history of sensitivity to either antibiotic; and (5) no antibiotic received within the preceding five days.

On day 1, blood was taken and a hematocrit, white blood cell, and differential count were done. Liver function studies, total bilirubin, alkaline phosphatase, and SGPT (serum glutamic pyruvic transaminase), were done for all patients admitted to the study. In addition, antistreptolysin tests were also completed for each patient.

The clinical signs and symptoms, temperature, sore throat, headache, persistent cough, runny nose, and body ache, were recorded on day 1, and the severity of the disorder, based on physician's evaluation of results of physical examination, laboratory data, and evidence of clinical signs and symptoms, was classified as being severe, moderate, or mild.

All tests and cultures were repeated on day 10. In addition, throat cultures were done on day 4. Between days 21 and 28, throat cultures were again made to determine the presence or absence of recurrent infection. The time at which each patient became completely asymptomatic was recorded.

The response to treatment was determined on the following bases: (1) bacterial response assessed on basis of throat culture made on day 10; (2) days on which abatement and complete amelioration of signs and symptoms occurred (patient and physician evaluation); and (3) incidence of recurrence of infection as determined on basis of throat culture made between days 21 and 28.

Each patient was assigned a sequential identification number (1 through 80). The identity of the antibiotic was not known by either the investigator or the patient, and all medication was dispensed by the office nurse. The unit dose of each drug, 250-mg. capsules of triacetyloleandomycin and 125-mg. capsules of dicloxacillin, was prescribed on a four times a day basis, one to two hours before meals and at bedtime for a total period of ten days.

> SINCE DICLOXACILLIN *is active against Staphylococcus aureus, Streptococcus pyogenes, and Diplococcus pneumoniae, it was compared with triacetyloleandomycin in a double-blind study of 80 patients with infections caused by group A beta-hemolytic streptococci. The two antibiotics were approximately equal in effectiveness, with no significant differences in action.*

Results

When the code was broken at the completion of the study, 41 patients had received dicloxacillin, 21 of whom had tonsillitis and 20 had pharyngitis. Thirty-nine had received triacetyloleandomycin, 11 of whom had tonsillitis and 28 had pharyngitis. All but 1 patient completed the ten-day course of therapy.

Based on the criteria established for response to treatment, 37 (90.2 per cent) of the patients in the dicloxacillin group were cured and 4 (9.7 per cent) were improved. None became worse. Of the 39 patients in the triacetyloleandomycin group, 35 (89.7 per cent) were cured, 3 (7.6 per cent) were improved, and 1 (2.5 per cent) became worse.

Classification of illness and results of therapy according to severity of illness are presented in Table I for the two groups of patients.

Clinical signs and symptoms (Table II) totaled 139 for the dicloxacillin group and 130 for the triacetyloleandomycin group, and averaged 3.3 symptoms per patient for both groups. Of the 41 patients in the dicloxacillin group, 19 or 46.3 per cent responded to treatment within forty-eight hours after initiation of therapy; of the 39 in the triacetyloleandomycin group, 16 or 41 per cent responded within forty-eight hours. In the remainder of the patients in both groups who responded to therapy, amelioration of symptoms oc-

TABLE I. Results according to severity of illness

	Dicloxacillin				Triacetyloleandomycin			
Classification	Total Patients	Cured	Improved	Worse	Total Patients	Cured	Improved	Worse
Severe	21	21	0	0	19	18	1	0
Moderate	18	16	2	0	20	17	2	1
Mild	2	0	2	0	0	0	0	0
TOTAL	41	37	4	0	39	35	3	1

TABLE II. Clinical signs and symptoms

Antibiotic	Fever	Sore-Throat	Headache	Persistent Cough	Runny Nose	Body Ache	Total
Dicloxacillin	41 (range 99 to 104.5 F.)	32	22	9	13	21	139*
Triacetyloleandomycin	39 (range 99 to 102 F.)	29	18	8	14	21	130*

* Includes 1 patient with miscellaneous symptoms.

TABLE III. Results of laboratory tests—days 1 and 10

	Day 1				Day 10			
	Dicloxacillin		Triacetyl-oleandomycin		Dicloxacillin		Triacetyl-oleandomycin	
Tests	Normal	Above Normal	Normal	Above Normal	Normal	Above Normal	Normal	Above Normal
White blood cells	15	26	16	23	35	6	34	5
SGPT	40	1	38	1	41	0	33	6
Alkaline phosphatase	39	2	38	1	35	6	34	5
Antistreptolysin titer	33	8	23	16	34	7	24	15

curred at various time intervals ranging from forty-eight to more than ninety-six hours.

Cultures taken on day 4 showed persistence of the original pathogen in 2 patients in the dicloxacillin group and in 4 patients in the triacetyloleandomycin group. There was also a superinfection on day 4 in 1 patient in the triacetyloleandomycin group. Cultures taken on day 10, the day on which the over-all clinical and bacteriologic responses to treatment were assessed, showed persistence of the original pathogen in 1 patient in the dicloxacillin group and in 2 patients in the triacetyloleandomycin group. Follow-up cultures taken between days 21 and 28 showed persistence of the original pathogen in 1 patient in each group.

The results of the major laboratory tests, white blood cells, SGPT, alkaline phosphatase, and antistreptolysin titer, conducted on days 1 and 10 for the two groups of patients are presented in Table III.

Side-effects occurred in 3 patients in each group: moderate diarrhea, a rash controlled with antihistamines, and a generalized petechial rash which required discontinuation of medication on day 3 in the dicloxacillin group; sleepiness from the medication, elevated SGPT to 102 units on day 10 (normal on day 1), and drug-related hepatitis in the triacetyloleandomycin group.

Although the patient who had generalized petechial rash discontinued medication on day 3, cultures made on days 3 and 10 were negative. This case represented a bacteriologic cure, but was 1 case in the dicloxacillin group in which the over-all results had to be considered questionable.

The patient in whom hepatitis occurred (triacetyloleandomycin group) had an SGPT and serum alkaline phosphatase within normal limits before onset of therapy. During therapy the SGPT increased and reached a peak of 480 units, but decreased to 60 units by day 26, sixteen days after discontinuation of medication. The serum alkaline phosphatase increased to 13.2 units, and bile was present in the urine on day 19.

Comment

The striking similarity in results obtained with the two antibiotics is remarkable. Dicloxacillin and triacetyloleandomycin were equally effective against group A beta-hematolytic streptococci. In no one measurement of efficacy (day 10) was there a difference greater than 6 per cent in favor of either antibiotic, and this difference was not significant. The cure rates and the speed of response were approximately the same. It should be pointed out, however, that only half as much dicloxacillin as triacetyloleandomycin was required to produce these results. The side-effects, although different in severity and relation to the areas of involvement, were no more prevalent in one group than in the other.

Conclusion

Eighty patients who had infections caused by group A beta-hemolytic streptococci were treated either with dicloxacillin or triacetyloleandomycin under double-blind conditions. The results showed the two antibiotics to be approximately equal in effectiveness, and there were no instances in which there was significant difference in their action.

It is concluded that dicloxacillin and triacetyloleandomycin are equally effective against infections caused by group A beta-hemolytic streptococci.

Both produce a high rate of cure with a minimum of side-effects, and there is no significant difference in efficacy between the two.

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Announcement

1968 District Branch Meetings

Branch	*Date*	*Place*
FIRST	Sunday, February 11	The Americana, New York City
SECOND	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
THIRD AND FOURTH	Saturday, September 28	Holiday Inn, Lake George
FIFTH AND SIXTH	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
SEVENTH AND EIGHTH	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
NINTH	Monday, February 12	The Americana, New York City

Scientific Session held at the
Park "100" Restaurant
New York City
January 17, 1968
WALTER KESSLER, M.D.
President

PROCEEDINGS

NEW YORK ALLERGY SOCIETY

WILLIAM M. NICHOLAS, M.D., Editor

In Vitro Approach to Problems in Clinical Allergy*

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Baltimore, Maryland

American College of Physicians
Research and Teaching Scholar,
Johns Hopkins University School
of Medicine

IT IS A GREAT PLEASURE for me to have the opportunity to discuss with you some of our studies involving the leukocyte-histamine release system. This in vitro model of human allergy was developed to be able to study the multiple variables that combine to produce the in vivo allergic response. With this system we are able to manipulate independently the target cell,† the level of reaginic and blocking antibody, the concentration and variety of antigen, and various serum and pharmacologic factors which might play a role in the reaction.[1-4] Our work was built on that of several investigators who had previously studied leukocyte-histamine release; especially important were the studies of Noah, Middleton, and Van Arsdel.[5-9]

Obviously, data obtained in the test tube must be critically examined before they can be applied to the clinical situation. However, it is my objective to dwell on just these clinical aspects of our work, with the aim of demonstrating that the in vitro system is pertinent to the disease process of which it is a model. Before turning to these clinical correlates, however, I will briefly indicate how the system works and how it can be utilized to assess target cell sensitivity and the level of reaginic and blocking antibody.

Experimental technic

Figure 1 is a schematic drawing of the experimental technic. Briefly, blood is drawn into a mixture of ethylenediaminetetracetic acid, glucose, and clinical dextran. The latter reagent causes the erythrocytes to settle, and the white cell-rich plasma is drawn off. The leukocytes are then centrifuged free of the serum and platelets, washed several times, and resuspended in a carefully defined buffer to a concentration of about 15 million leukocytes per milliliter. Aliquots of this suspension are added to a series of tubes which contain the appropriate antigen and, depending on the experiment, other appropriate reagents. The tubes are incubated at 37 C. for one hour, centrifuged, and the histamine in the supernatant determined by a fluorometric method. Since human leukocytes from different individuals vary widely in their total histamine content, the results are expressed as per cent histamine release.[1]

In most of our work we have used ragweed-sensitive cell donors because they are the patients most readily available in our clinic. Moreover, ragweed hay fever

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* The work described is the result of a collaborative effort with A. G. Osler, Ph.D., P. S. Norman, M.D., M. B. Rhyne, M.D., N. Sadan, M.D., D. A. Levy, M.D., and E. Goldstein, M.D. Support for these studies was provided by The National Institute of Allergy and Infectious Disease under grants AI 04866, AI 07290, and AI 05780.

† The target cells of major importance are the tissue mast cells. The circulating basophil appears, however, to be their functional equivalent and is certainly involved in some of the reactions.

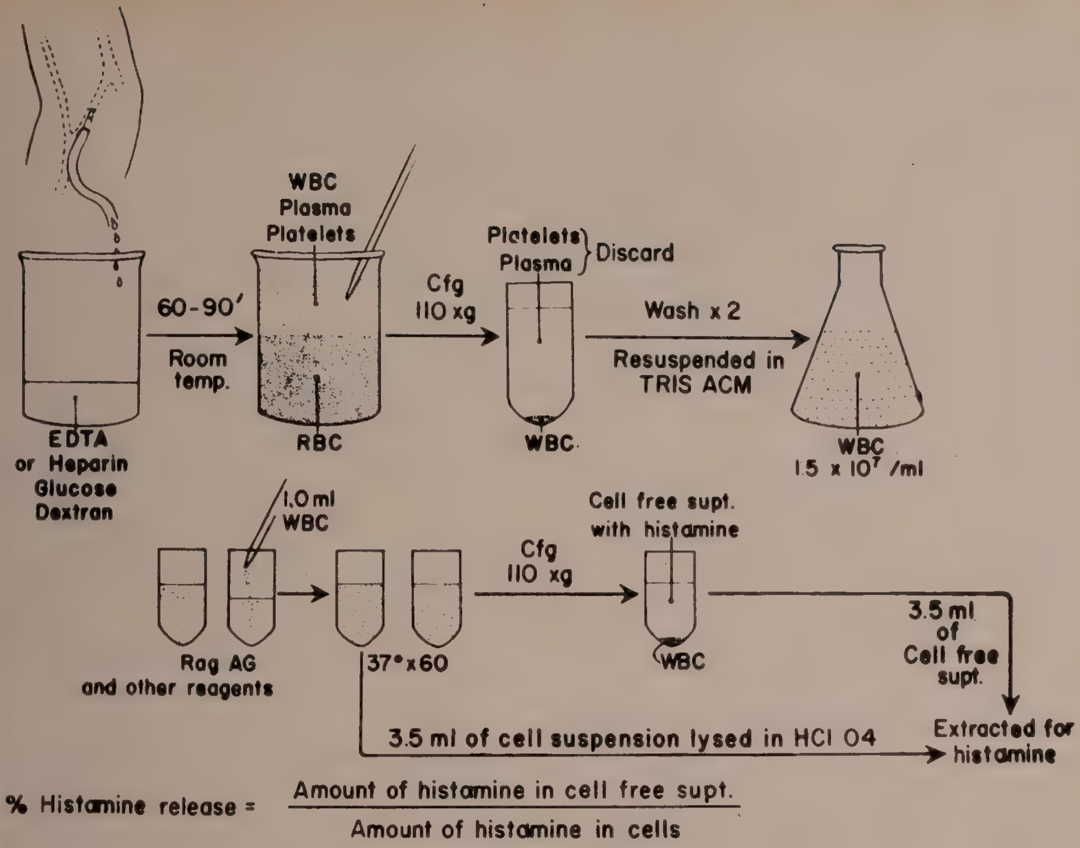
WBC
Plasma
Platelets
60-90′
Room temp.
EDTA
or Heparin
Glucose
Dextran
RBC
Cfg
110 xg
Platelets
Plasma
Discard
WBC
Wash x 2
Resuspended in
TRIS ACM
WBC
1.5 x 10⁷ /ml
1.0 ml
WBC
Rag AG
and other reagents
37°x60
Cfg
110 xg
Cell free supt.
with histamine
WBC
3.5 ml
of
Cell free
supt.
3.5 ml of cell suspension lysed in HCl 04
Extracted for
histamine
% Histamine release = Amount of histamine in cell free supt. / Amount of histamine in cells

FIGURE 1. Schematic drawing of histamine release technic.

serves as a useful prototype for other seasonal pollinoses. Rather than use crude pollen extracts, we were fortunate enough to be able to work with ragweed antigen E, provided by its developer, T. P. King, Ph.D., of The Rockefeller University. This highly purified protein (molecular weight = 38,000) is now generally accepted as the most potent of ragweed antigens.[10,11] I shall have occasion to consider antigen E again in the context of immunotherapy.

If antigen E in varying concentrations is added to identical aliquots of leukocytes prepared from a sensitive donor, a dose response curve is obtained. Reference to the curve shown in Figure 2A reveals that the system is exquisitely sensitive. In this case, appreciable histamine release resulted with the admixture of 6×10^7 molecules of antigen and 2×10^7 leukocytes. The antigen required for 50 per cent histamine release (in this donor 2.6×10^{-6} micrograms per milliliter) is defined as the patient's cell sensitivity. Each adult ragweed-allergic individual has a unique cell sensitivity which remains relatively constant and which tends to characterize the severity of his allergic diathesis. The variation among different allergic cell donors is illustrated in Figure 2B which shows the linear portions of the dose response curves of 6 typical individuals. We have had occasion to establish curves on several hundred allergic donors; their cell sensitivities distribute over a range of four orders of magnitude, from about 10^{-6} to 10^{-2} micrograms per milliliter.[12] The cells from donors not sensitive to ragweed release no histamine when challenged with antigen E, even at concentrations of 10 micrograms per milliliter and higher.

Index of allergic severity

I have stressed the cell sensitivity concept because of the relationship shown in Figure 3, in which this parameter is plotted, in terms of the antigen required for 50 per cent histamine release from the cells of 24

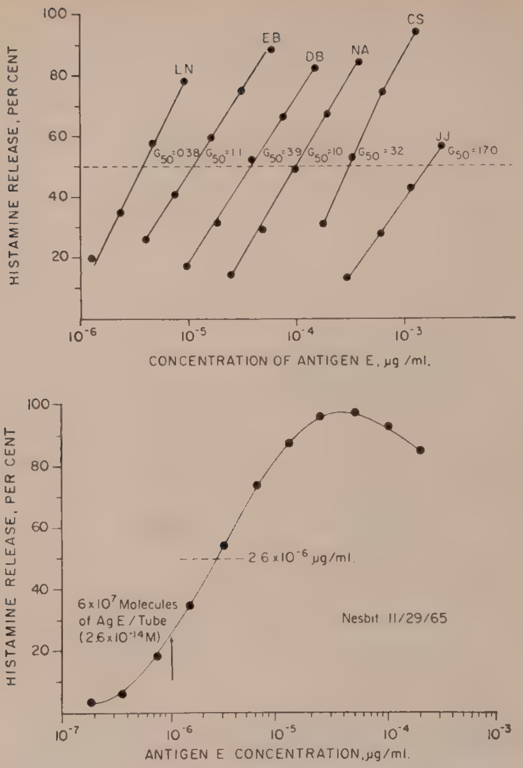

FIGURE 2. (Top) Antigen E dose response curve with the cells of an allergic donor. (Bottom) Dose response curves of 6 allergic donors illustrating the calculation of cell sensitivity.

ragweed-sensitive patients, against the degree of clinical illness experienced by these donors during the ragweed season. The symptom score is a semiquantitative index of the relative severity of a patient's symptoms, the derivation of which will be described in detail. The correlation between the in vitro measurement and the experienced disease is highly significant (correlation coefficient = 0.76; $p < 0.01$). Thus, we have in this system an accurate, objective tool with which to measure the clinical severity of an allergic condition. Moreover, this correlation supplies verification of the pertinence of the in vitro model to the disease process. Since cell sensitivity in adults does not usually change over the course of several years, we also have a way of prognosticating how severe a patient's disease will be. This can and has been a useful device for establishing matched control and treatment groups in clinical studies of immunotherapy.[13]

In collaboration with John Connell, M.D., we have shown cell sensitivity to be a considerably more accurate index of allergic severity than measurements of skin-sensitizing antibody.[14] The data we obtained are shown in Figure 4. It is reasonable to anticipate that the level of reaginic antibody would also be a very useful index of severity if it were measured by a more precise indicator than skin reactivity. This, as I will describe, is now possible and is being carried out.

The antibody which blocks histamine release can be measured in several ways. As in Figure 5, we commonly establish two

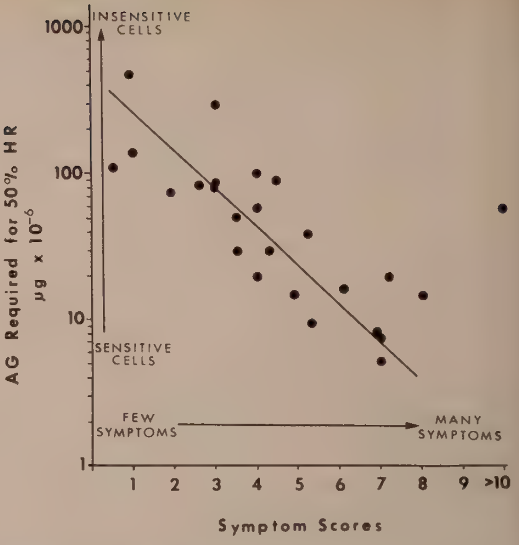

FIGURE 3. The correlation between cell sensitivity and patient's symptoms.

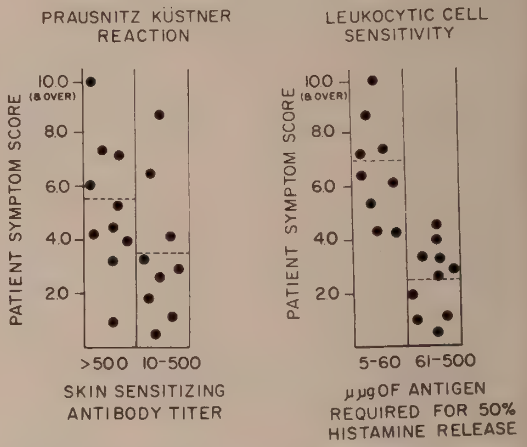

FIGURE 4. A comparison of the usefulness of Prausnitz-Küstner titer and cell sensitivity as an index of patient's symptoms.

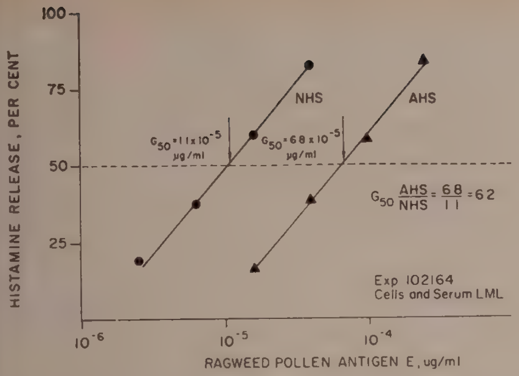

FIGURE 5. Dose response curves with the cells of one donor suspended in AHS (allergic) and NHS (normal) serum; technic of calculating "blocking" antibody activity of the AHS.

dose response curves with aliquots of the patient's cells.[3] One is in NHS (normal serum) and the other in the patient's AHS (allergic serum). In every case the curve in AHS is located to the right of the curve in NHS, that is, in the direction of requiring more antigen for a given degree of histamine release. We have shown that this shift is due to the binding of antigen by circulating antibody, which in this way "blocks" the antigen from reaching the cell and triggering histamine release. The magnitude of the shift is a function of antibody concentration and avidity. As the curves are parallel, it is reasonable to take the ratio between the antigen required for 50 per cent histamine release in allergic as compared to normal serum (G_{50} AHS/NHS) as the index of antibody activity. We have presented evidence elsewhere that this blocking activity is due to immunoglobulin G antibody, and that reaginic immunoglobulin E antibody plays little or no role from a quantitative point of view.[15]

The antibody activity is specific. The serum of a patient treated with ragweed antigen E will increase its blocking activity toward this antigen by several 100- or 1,000-fold without developing any increase in the ability to block histamine release induced by grass antigens. There is every reason to believe that the antibody we measure in vitro is the same as classic blocking antibody measured in the skin; we are in the process of formally establishing this point. In this comparison, it is important to realize that the in vitro method is 20 to 100 times as precise as skin titrations of blocking antibody.

Until now I have talked of technics using only activity-sensitized cells. Normal cells can, however, be passively sensitized in vitro with procedures evolved by Levy and Osler.[14,16,17] If the cells of a selected normal donor are incubated with allergic serum and then washed and resuspended in buffer, they will release histamine when challenged with an antigen to which the serum donor is allergic. By incubating normal cells with a series of dilutions of an allergic serum, a dose response curve can be established and a precise end point determined. Levy and Osler[17] have shown that antibody measurements carried out in this way correlate closely with those measured by the classic Prausnitz-Küstner technic. The precision of the in vitro technic is, however, far greater.

Clinical application in adults

With this introduction to the technic I would now like to consider the applications of this system to clinical problems. Perhaps the most important of these deals with so-called desensitization or hyposensitization therapy which, parenthetically, I think is more accurately described as immunotherapy. This technic is uniquely the allergists' and has been vigorously supported and deprecated by those in and outside the specialty. Part of the cause for this controversy may clearly be laid at the door of the allergist. The literature contains many testimonial and anecdotal accounts of 80 to 90 per cent "good" or "excellent" relief following immunotherapy. These reports, by and large, contain no control data and are poorly conceived, since it is clear to all of us that a tremendous placebo* effect attends this type of therapy and, moreover, that it is extremely difficult to obtain reliable symptom data.

Thus, a laboratory investigation into the mechanism of this form of therapy must be based on a carefully controlled, double-blind clinical trial. For this reason it is important to outline the form and technics utilized in our clinical evaluation. This

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* Symptom relief noted by the group not receiving specific immunotherapy is actually a complex function of the doctor-patient relationship, instruction as to antigen avoidance, and treatment with symptomatic drugs such as antihistamines.

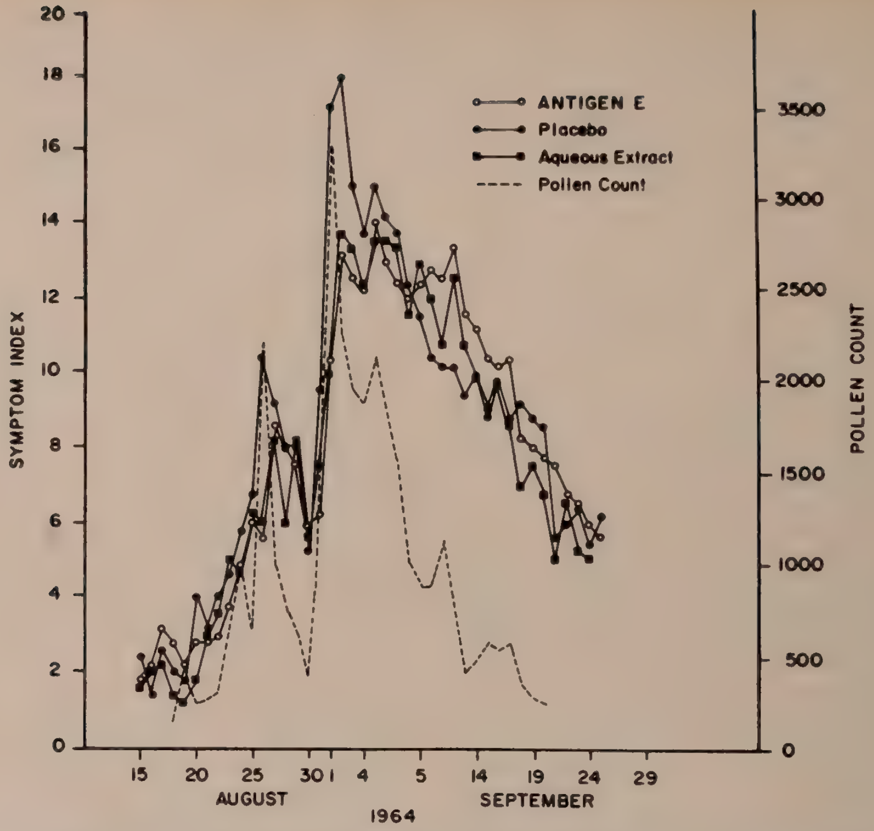


FIGURE 6. Plots of the pollen count and the symptom indices of three groups of patients, treated as indicated. There was no significant difference between the groups.

aspect of the work has been directed by P. S. Norman, M.D., and W. L. Winkenwerder, M.D. In the last few years we have generally followed three groups of adult allergic patients consisting of 20 to 30 patients each, a control group treated with buffer containing histamine to mimic the local reaction and two treatment groups, one receiving whole aqueous ragweed extract and the other ragweed antigen E. The patients were ignorant of their form of therapy, as were the physicians who evaluated them. Symptoms were assessed in two ways, by a detailed diary filled in by the patient each twelve hours during the ragweed season and collected each week, and by a physician's examination and history every two weeks during the season. A variety of symptoms and signs were ranked numerically as to severity, and these were collated by computer to arrive at a semiquantitative symptom index for each patient-season and, within each group, an average daily symptom score.

Results obtained with the latter score are shown in Figure 6 in their relationship to the daily pollen count. These data were obtained in the second year of our study. The antigen E-treated group received an average total preseasonal dose of 35 micrograms of antigen protein, and those treated with aqueous extract received 900 protein nitrogen units (54 micrograms of antigen protein). There was no significant difference between the placebo and specifically treated groups despite the fact that such a regimen and dosage schedule had been used for many years with results that were satisfying to physician and patient alike. Moreover, since there are reports without control data in the literature claiming 80 to 90 per cent relief with doses of this level, the results brought home to us, in the strongest possible fashion, the need for adequate controls.[18]

Figure 7 shows the results of therapy in the next year of our study when the dosage levels were increased about eightfold in

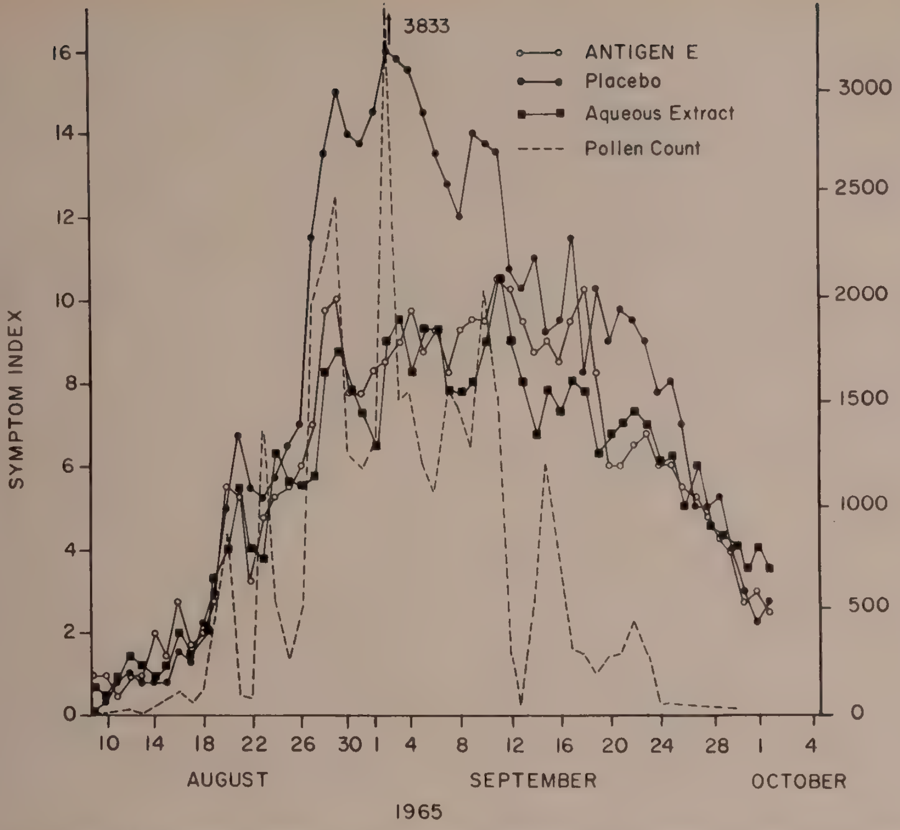
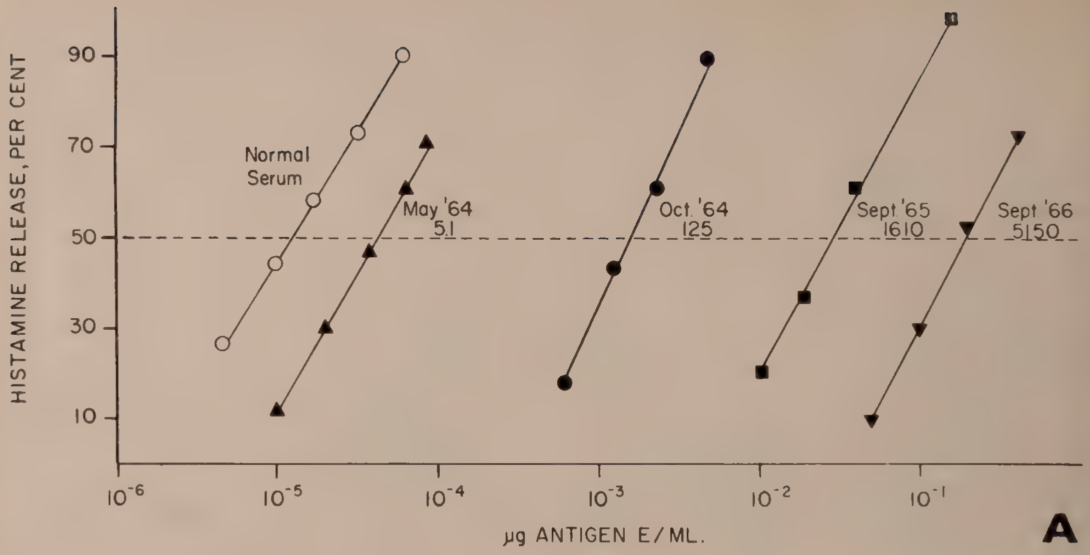


FIGURE 7. Plots of the pollen count and the symptom indices of three groups of patients, treated as indicated. There is a significant difference between the placebo and specifically treated groups.

both treatment groups. With these higher immunizing doses, there was a significant difference between the treated and placebo groups. Statistical analysis showed this difference to be significant at a probability level of less than 1 per cent.[13] An important aspect of this positive result is that there is no difference between the symptom scores of the groups treated with whole aqueous extract and those receiving a single purified protein, antigen E. Our experience in two subsequent years with gradually increasing doses has been about the same, namely, definite differences that are significant but not satisfying to the physician looking for a result which is "good" or "excellent" and who is aware of the results one can obtain with local or low-dose systemic steroid administration.

Nonetheless there is a definite effect, and we can now attempt to ascertain if this can be attributed to some of the immunologic parameters discussed earlier. Considering the problem generally, one might anticipate immunotherapy to act in one of two major ways: (1) It might cause an increase in serum and/or secretory blocking antibody levels or (2) a decrease in reaginic antibody level and/or target cell sensitivity. Each of these parameters can be investigated separately.

With reference to blocking antibody our experience is typified by the patient shown in Figure 8. Figure 8A shows dose response curves in normal serum, which remained essentially the same over the period shown, and in the patient's allergic serum before immunotherapy in May, 1964, and after therapy in this and two subsequent years. There is a distinct shift in the direction of more blocking activity after each year of therapy such that in 1966 it required more than 5,000 times as much antigen to induce 50 per cent histamine release in the presence of a 0.1 dilution of the patient's serum as in normal serum. Figure 8B shows the temporal course of the antibody response during the three years of pre-



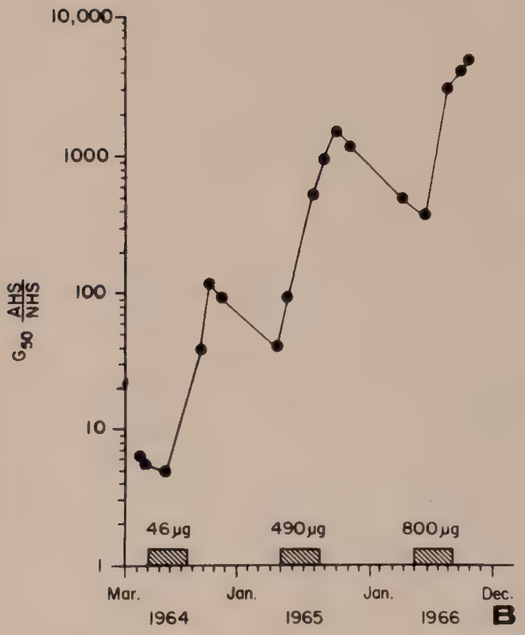


FIGURE 8. (A) Dose response curves of a patient's cells suspended in normal serum and in his own serum before immunotherapy and after therapy in each of three subsequent years. (B) Temporal course of the antibody response during three years of therapy. The periods of immunization are indicated along the abscissa; directly above is the total quantity of antigen E administered.

seasonal therapy in this same patient. In analyzing the antibody response of the whole group we found a significant, albeit rough, correlation between the antibody level and the immunizing dose. Thus, in going from an average dose of 35 micrograms in the second year of our study to 252 micrograms in the third year there was an increase in the average antibody level of about tenfold. Associated with this increase there was also the development of a significant degree of symptom amelioration. This relationship, however, does not prove causality. To demonstrate a cause and effect relationship, we should be able to show that the magnitude of the decrease of the patient's symptoms relative to that expected on the basis of his cell sensitivity is a function of the increase in blocking antibody titer. This was attempted in the compilation of data shown in Table I. Here we have gathered from among 21 treated patients the third with the highest and lowest antibody levels. The range of cell sensitivity in these groups is roughly the same, so that in the absence of immunotherapy one would have anticipated the same degree of symptoms. Yet we see that those with the highest antibody levels had a lesser average symptom score. The average symptom score for the entire treatment group was 9.8 compared to 7.2 for the control group. Thus, the magnitude of the difference between the two small subgroups shown in Table I is as large as can be expected. In spite of this suggestive relationship it is evident from the table that there are significant exceptions, and we still cannot draw a firm conclusion as to causality. Whether this failure is a result of the smallness of the subgroups, the uncertainties of symptom recording, or the lack of

TABLE I. Cell sensitivity and symptom scores in 14 patients grouped by antibody level

Pair	Patients with High Antibody Cell** Sensitivity	Levels* AHS†† G₅₀ NHS	Levels* Peak Symptoms	Patients with Low Antibody Cell** Sensitivity	Levels† AHS†† G₅₀ NHS	Levels† Peak Symptoms
1	2.5	1,610	8.57	1.3	342	11.04
2	3.3	1,280	4.04	2.7	69	11.14
3	5.6	3,470	7.66	4.6	11	6.35
4	8.2	1,370	4.45	5.8	100	13.83
5	8.5	2,600	2.05	9.3	104	2.19
6	17.0	1,590	6.14	11.0	233	5.30
7	32.0	970	3.14	27.0	73	6.56

* Average antibody level = 1,840; average peak symptom score = 5.1.

† Average antibody level = 130; average peak symptom score = 8.1.

** Micrograms antigen E per milliliter × 10^{-5} required for 50 per cent histamine release.

†† Maximum antibody level determined by dividing the concentration of antigen E required for 50 per cent histamine release in AHS by that required in NHS.

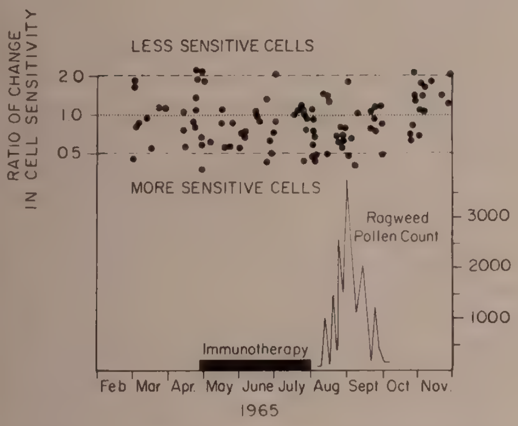


FIGURE 9. A plot of cell sensitivity versus time.

a causal relationship between symptom relief and blocking antibody remains to be seen.

With respect to the role of antibody present in the respiratory secretions our data are still fragmentary. Evidence from a number of laboratories suggests that it is nasal rather than serum antibody which plays a protective role in respiratory virus infections.[19] The analogy to the allergic condition is obvious. We have had little trouble identifying blocking antibody in nasal secretions, but the problems of collection and quantitation remain to be solved.

Our observations relative to the second possible mechanistic basis for the action of immunotherapy are shown in Figure 9. We had established in earlier years that there is no change in the cell sensitivity of untreated donors over the several months from January through pollen exposure in the fall.[18] This figure shows the cell sensitivity of each of 22 treated individuals as determined from three to five times over a ten-month period. There is no appreciable trend or change in cell sensitivity as a result of immunotherapy with, in this instance, an average total preseasonal dose of 252 micrograms of antigen E. In fact, as I have indicated, the cell sensitivities vary over a small range with few individuals showing more than a twofold change. As may be appreciated by reference to Figure 3, a twofold change in cell sensitivity would hardly be expected to influence the level of a patient's symptoms.

Levy and Osler[17] have measured the level of reaginic antibody in many of these same patients. Their observations show that the level of this antibody increases during and after environmental exposure to ragweed pollen.[14] The treated individuals, however, showed a somewhat lesser increase than the controls. These changes are of a very small magnitude, averaging two- to threefold. Thus, they well might not be reflected in changes in cell sensitivity. The exact relationship between target cell sensitivity and circulating reaginic antibody is extremely important and currently under study in our laboratories.

In summing up our experience in the studies with adults the only immunologic parameter which is even suggestively related to the moderate degree of symptom relief obtained is the increase in blocking antibody. From both a clinical and mechanistic point of view these data were not very satisfactory. For this reason we extended our studies to the immunotherapy of children in whom our pediatric allergy group believed it was possible to achieve more dramatic clinical results. The data from this study, carried out with N. Sadan, M.D., M. B. Rhyne, M.D., D. A. Levy, M.D., and E. Goldstein, M.D., are not yet fully analyzed. I would like, however, to describe briefly some of the results which have emerged.

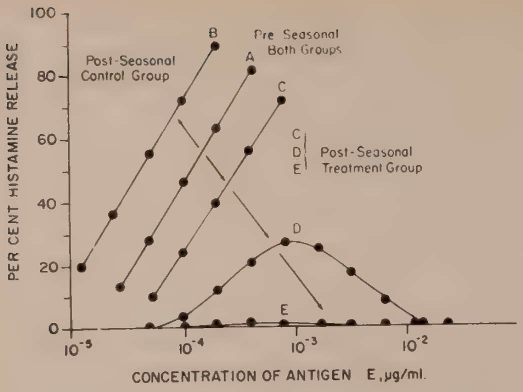


FIGURE 10. A schematic drawing of the changes in cell sensitivity and reactivity in placebo treated and immunized children.

Clinical application in children

The children's study included 35 patients who were divided into two groups matched with respect to age, sex, and cell sensitivity. The technics involved in this double-blind controlled study are similar to those described previously. During the course of preseasonal immunization the 18 treated patients received an average total dose of about 23,000 protein nitrogen units. As anticipated, the clinical results were more dramatic than those seen in adults. Thus, there was almost complete discrimination in individual symptom scores between the treated and control patients; 13 of the 18 treated individuals had fewer symptoms than any of the controls. It is important to stress that this result occurred after a single fifteen-week course of therapy. The doses, however, and I think this is the critical point, were considerably larger than we have ever given to adults.

As we had hoped, the immunologic changes which attended this striking degree of symptom relief were more marked. In addition to a rise in blocking antibody similar to that described for adults, there was a definite change in cell sensitivity. This change is schematized in Figure 10. We found cell sensitivity to vary more in children than in adults even in the absence of treatment or environmental exposure to ragweed, an observation which has been noted by Charles May, M.D. However, in comparing measurements made in the early spring with those in September and October, a striking difference was noted. The cells of 16 of the 17 control children either remained the same or became more sensitive to antigen. That is, as seen by comparing curve B to A, the cells now required less antigen for 50 per cent histamine release. In the treated group, on the contrary, the cells of all of the children remained the same or became less sensitive to antigen. This is illustrated by comparing curve C to A. In 6 of the 18 treated children, and in none of the controls, there was an even more striking change in that the cells became unable to respond with maximal histamine release at any antigen concentration.

This latter change, which we speak of as a decrease in cell reactivity as opposed to a decrease in cell sensitivity, which indicates only that more antigen is required for maximal histamine release, is illustrated in curves D and E. It should be emphasized that all of the curves shown in Figure 10 are run with washed cells in the absence of serum-blocking antibody. Thus, the changes noted are a function of the cells themselves which may include, of course, any of the immunoglobulins which are "fixed" or otherwise firmly bound to the cell surface.

The cells of 3 of the treated children with altered cell reactivity released essentially no histamine at any antigen level. Of these, 2 had no symptoms attributable to ragweed hay fever, and the third had an extremely mild or negligible degree of symptoms. A relationship between the loss of cellular reactivity and the disappearance of clinical symptoms had been observed before. We have, over the past six years, seen this occur in about 10 individuals.[14] Since several of these cases occurred spontaneously in the absence of treatment, we could not attribute the change to immunotherapy. Pruzansky and Patterson[20] have also noted changes of this type in 4 individuals immunized very vigorously over a protracted period of time. Although there was no detailed attempt to evaluate symptoms, these patients were said to be essentially symptom-free.

Thus, the changes we have found in children following immunization fit together with other fragmentary data to suggest that a loss of cell reactivity to antigen, whether it occurs spontaneously or is induced by immunotherapy, signals a marked decrease of clinical sensitivity to the antigen.

Recapitulation and speculation

I have attempted in this discussion to describe the technical basis of the leukocyte-histamine release system and to make a case for its role in exploring some of the problems in clinical allergy. The virtues of this system, as I see it, stem from three of its features: First, it appears to be clearly related to the disease process of which it is a model and, therefore, allows us to quantitate and predict the relative severity of the allergic state in various patients. Second, it allows us to dissect the complex interrelationships of the in vivo process by providing for independent manipulation and evaluation of reaginic antibody, target cell sensitivity, blocking antibody, and such serum or other factors which influence the reaction. Third, it increases the precision with which one can measure allergen activity and the levels of blocking and skin-sensitizing antibody by close to two orders of magnitude.

This technic has been used in combined laboratory and clinical studies of immunotherapy in adults and children. Our clinical results show unequivocally that this type of therapy can play a significant ameliorative role in ragweed hay fever. I think it likely that this conclusion can be extended to other of the seasonal pollinoses, but generalization to other uses of immunotherapy is not presently warranted.

Results in adults have, to date, been somewhat disappointing in that the degree of symptom relief, although definite, has been quite moderate at the dosage levels used. Of the several immunologic parameters studied, blocking antibody is the only one which shows a clear-cut change, and this can be related to clinical effects only in the most tentative way. It is of interest that the degree of symptom relief achieved in adults has been the same with crude aqueous ragweed extract and the highly purified antigen E. This suggests that it may soon be possible to analyze the complex mixtures usually injected and use only the pertinent antigens. Aside from other obvious benefits, this would allow a standardization of treatment materials which would be useful in comparing results obtained in different centers.

The investigation of immunotherapy in children has revealed a more dramatic degree of symptom relief. In this case there are alterations in both serum and cellular factors. Most intriguing is the decreased cell sensitivity and, in some cases, the alteration of cell reactivity to antigen. It would appear that in the absence of parenteral immunization the environmental exposure to ragweed antigens and their absorption by the transmucosal route leads to an increased sensitivity to antigen. Immunization may prevent this and may, in fact, decrease or obviate the cellular response to antigen. This very preliminary observation in children fits with other fragmentary data reported by us and by Pruzansky and Patterson,[20] which suggest that once an individual's cells become nonreactive to antigen, either spontaneously or following immunotherapy, the patient is no longer clinically sensitive.

As I now interpret the available data, the following would seem to be reasonable propositions: (1) Low-dose immunotherapy in adults is probably of no benefit; (2) with higher levels of antigen administration it is possible to effect a moderate decrease in clinical symptoms. This is probably due largely to increases in serum or secretory blocking antibody; (3) with still greater doses of antigen it is possible, at least in children, to get a rather marked clinical improvement. This is probably related to an altered reactivity of the target cell to antigen through a mechanism not yet understood; and (4) further investigative efforts should be directed toward very high dose immunotherapy (of the order of several hundred thousand protein nitrogen units, total dose). I would anticipate that this would lead, in at least a significant minority of patients, to a marked decrease in cell reactivity to antigen and virtually complete clinical relief. Continuation of therapy can then be monitored and ordered by following the reactivity of the patient's cells.

It is obvious that these propositions are highly speculative. Moreover, it is not yet possible to define what constitutes low, moderate, or high levels of antigen doses although the quantities indicated previously illustrate our experience. Finally, it appears likely that clinical relief will be found to come about through an interaction of both serum and cellular factors and, indeed, their relationship may be more intimate than we suspect. Even if these propositions were true, the details of original and maintenance immunization and the possible use of adjuvants or antigens altered to decrease their biologic activity will require long and intensive study. I believe, however, that we now have the tools for this type of investigation and that the future looks, at the very least, quite stimulating.

Question and answer period

Walter Kessler, M.D.: I would like to thank Dr. Lichtenstein for his very provocative report which is now open to discussion.

Physician: Were the same patients treated in successive years or were they different individuals?

Dr. Lichtenstein: They were largely the same patients. However, we cannot say whether they improved the second year because they received more antigen or because they were treated for an additional year.

Samuel Prigal, M.D.: As I recall Norman, Winkenwerder, and D'Lugoff's study,[21] they selected their patients on the basis of the skin test. All had to react to 0.1 protein nitrogen unit per milliliter on skin testing to be a part of the study. In New York City we routinely test approximately 100 units and rarely go below this. If Norman's patients were limited to those who responded to 0.1 units, he selected only extremely sensitive individuals, possibly 1 per cent of ragweed-sensitive patients. Are these the criteria you used for your studies?

Dr. Lichtenstein: We initially did not know what skin testing would do to the immunologic parameters and measured only their in vitro cell sensitivity and included those who released histamine. Over the years Dr. Norman has picked out about 150 patients, only 1 or 2 of whom have not released histamine. There is no question that our patients have severe symptoms. We have performed cell sensitivity studies on hundreds of individuals; and if we were to place the patients included in the present studies into a scatter graph of all sensitive donors, they would fall in the average to a more sensitive range. However, I am not sure that you can say that a person who reacts to 0.1 protein nitrogen unit is significantly more sensitive than someone who reacts to 1 unit.

Vincent Fontana, M.D.: You talked about the antibody response. Yet we know that ragweed has perhaps as many as 14 antigens, and one might anticipate a variety of blocking antibodies. Do you make any differentiation?

Dr. Lichtenstein: I don't know how many antigens ragweed pollen has, but the expert, Dr. King, is sitting in this room. So far he has uncovered two major antigens—antigen E and antigen K. Antigen K, which is the second most active antigen in ragweed, cross reacts to the extent of about 50 per cent with antigen E. As far as we can tell, most of the other antigens also cross react with antigen E. We have repeated all of the studies shown here by initiating histamine release with crude aqueous extracts containing all of the antigens. Under these conditions we obtain exactly the same results. I agree with you that there are multiple antibodies present.

Arthur Goldfarb, M.D.: I think we have in our hay fever patients people with different sensitivities. Each case of hay fever is different. We will find perhaps that 50 or 75 per cent of ragweed-sensitive individuals are allergic to one antigen and the others are sensitive to one or a number of other antigens in the pollen. I believe that this is why we are not as successful in treatment as we should be.

Dr. Lichtenstein: I think that each person is unique and will react differently to the sets of antigens in every pollen. Ideally, we would like to isolate each antigen in each clinically important pollen and run a profile on each patient so that he may be treated with the "clean" antigens to which he is allergic. That's a long way off.

Dr. Kessler: Dr. Connell, have you a question or comment?

John Connell, M.D.: I have a comment. As I understand it, Dr. Lichtenstein has interpreted his results concerning dose in the following manner: Patients were treated for a period of approximately three years, each year with higher antigen doses. It was observed that patients did not do well in the first year but improved in each succeeding year. The interpretation made is that the clinical improvement was related to the larger doses administered in succeeding years.

From my experience, I believe that another interpretation can be given. Clinical improvement may well be associated with the length of therapy. I suggest this interpretation only as a general rule, knowing that exceptions could be found to disprove it.

This interpretation derives from experiments W. B. Sherman, M.D., and I are performing to determine the effect of antigen injections on skin-sensitizing antibody titer. We found that in a significant number of patients treated with aqueous antigen extracts for periods of from two to four years, serial determinations showed decreased skin-sensitizing antibody titers. We interpreted this to indicate that therapeutic antigen injections cause a decrease in skin-sensitizing antibody. Interestingly, a number of these patients also had significant decreases in the clinical symptoms of allergic rhinitis. The point in these studies that relates to this present report is that frequently our patients who received low-antigen doses had decreases in skin-sensitizing antibody titer as great as those patients who had received higher antigen doses. One of the conclusions we drew from this study is that it is improper and confusing to talk of high or low doses since these terms are not defined. What may be a high dose for one patient may be exceedingly low for another.

Dr. Lichtenstein: The possibilities are two—either you have to get above a certain dose or you have to treat for two, three, or four years. To test these possibilities we are going to treat a group of patients with high doses to give the amount that finally achieves symptom relief in one year rather than three years. We are doing this in 1968 and will see what kind of results we get.

Charles May, M.D.: As an intruder I should be quiet, but I will seize this opportunity to express my appreciation of what Dr. Lichtenstein has presented this evening.

Sometime back, through armchair logic, we assumed that this sort of in vitro system would be a useful approach to gain some objective and quantitative information about allergic diseases. Since we were interested in children, we immediately turned to this field of inquiry. When Dr. Lichtenstein's work began to appear, we were able to capitalize on the things he had developed in terms of handling cells and so forth; therefore, our work is based to a considerable extent on his accomplishments.

As we proceeded with our experiences, we were at first made uncomfortable by the phenomenon which he described this evening, namely, that changes in cell sensitivity were quite common in children, whereas his work had up to that time stressed the constancy of the cell sensitivity. Therefore, for Dr. Lichtenstein to confirm our own experience has been of considerable consolation to us.

I would like to say that we should try to gather a viewpoint about this system in terms of our thinking about the phenomenon as a whole. I've come to look on it in this fashion. The fixation of skin-sensitizing antibody to the leukocyte in vivo is, in a sense, a sort of in vivo passive sensitization. In vitro study makes a handy way of measuring the amount of skin-sensitizing antibody which has been fixed in vivo. As the leukocytes have a very brief lifespan in the circulation, they will by and large reflect contemporary events, that is the rate of production of skin-sensitizing antibody at the time they are withdrawn.

Therefore, they have a different kind of opportunity for providing information than the skin test. The skin is exposed to that skin-sensitizing antibody which had been produced over a long period of time and represents a type of average experience of skin-sensitizing antibody production.

I think that the adults Dr. Lichtenstein showed are individuals who are manufacturing skin-sensitizing antibody at a rate sufficient to saturate the circulating leukocytes. They will have a fixed sensitivity from one period to another as long as their production of skin-sensitizing antibody does not fall below a level sufficient to keep them in this state. With children, one is perhaps dealing with individuals who, because of immaturity or other reasons, have not produced skin-sensitizing antibody at such a high rate, or else the cells did not fix antibody as avidly. There is less saturation of circulating leukocytes resulting in decreased ability to fix antibody, and we get a more sensitive revelation of the interplay of forces in terms of sensitization and histamine release. I would like to have Dr. Lichtenstein comment on this viewpoint.

Dr. Lichtenstein: I think your comments are as good a discussion as I could make, and I think that what you say is true. The children do appear to be more flexible and more amenable to changes. I am very interested in following the children in this respect.

Dr. Fontana: Since there has been a good deal of controversy concerning the effectiveness of injection therapy, I think that the work Dr. Lichtenstein has reported today is going to bring us closer to the answers to whether hyposensitization is an effective mode of therapy in treating the hay fever patient. The blocking antibody capacity of an individual and its relationship to the effectiveness of therapy have been worked out by Dr. Sherman and others. It remains to be seen whether this new type of objective testing will be a reliable method of evaluating the effectiveness of injection therapy. Studies of this subject, whether done in New York City, Boston, or anywhere else, based on subjective evaluation of symptoms alone, can be questioned. This objective technic offers an opportunity to bring us closer to the answer.

Dr. Kessler: I would like to thank Dr. Lichtenstein for coming and giving such a provocative report.

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Beekman-Downtown Hospital
New York City
August 29, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by SEYMOUR A. FINK, M.D.

Dyspnea, Pulmonary Lesions, and Back Pain

Case history

Ilhoon Kim, M.D.: A forty-four-year-old Panamanian-born Negro male was admitted to Beekman-Downtown Hospital with a complaint of severe shortness of breath and chest pain.

About one month before admission, the patient noted the onset of a tingling sensation over the entire body and pain across the lumbosacral region. During the subsequent four weeks, the pain increased in severity with radiation of pain into the lower rib cage, aggravated by inspiration. He experienced persistent low-grade fever and progressive shortness of breath. A chest x-ray film taken at a local health center was reported to show "pulmonary sarcoidosis," and the patient was referred to the hospital for admission.

The patient's father had had asthma for many years. The patient's past medical history included recurrent asthma for many years and allergy to dust.

On physical examination the blood pressure was 164/110, the pulse 100, the respirations 30 per minute, and temperature 102.4 F. The patient was orthopneic, breathing rapidly and complaining of pain in the lower back and across the lower thoracic region posteriorly. There were fine inspiratory rales over the lower lobe of the left lung. The heart rate was rapid, with normal sinus rhythm, normal heart sounds, and no murmurs. There was bilateral costovertebral angle tenderness even on light percussion and marked tenderness over the lumbosacral region of the back with muscle spasm. Rectal examination revealed the prostate to be slightly enlarged, elastic, and nontender.

The urinalysis showed a specific gravity of 1.021, a slight trace of albumin, and 4 plus acetone. The hemoglobin was 14 Gm. per 100 ml. and the hematocrit 42. The white blood cell count was 13,000 with 61 per cent segmented forms, 18 per cent nonsegmented forms, 17 per cent lymphocytes, and 4 per cent monocytes. The erythrocyte sedimentation rate was 0.38 mm. per hour. The fasting blood sugar was 100 mg., the blood urea nitrogen 16 mg., the serum calcium 9.4 mg., and the phosphorus 3.7 mg. per 100 ml. The total serum protein was 8.1 Gm. (albumin 4.5, globulin 3.6) per 100 ml. The carbon dioxide-combining power was 26.5 mEq., potassium 4.3 mEq., sodium 132 mEq., and chlorides 92 mEq. per liter. The serum alkaline phosphatase was 9.5 units (normal 0 to 4 units); the acid phosphatase 2.9 units (normal 0 to 4). The serum uric acid was 4.8 mg. per 100 ml.

The sputum examination showed no acid-fast bacilli on smear and was negative on culture for acid-fast bacilli after six weeks incubation. Routine sputum culture showed Neisseria catarrhalis, Diplococcus pneumoniae, and Aerobacter species. Three blood cultures gave negative results after eleven days incubation; the fourth blood culture showed gram-positive pleomorphic rods on anaerobic culture.

The electrocardiogram showed sinus tachycardia with S-T segment and T-wave abnormalities compatible with myocardial ischemia.

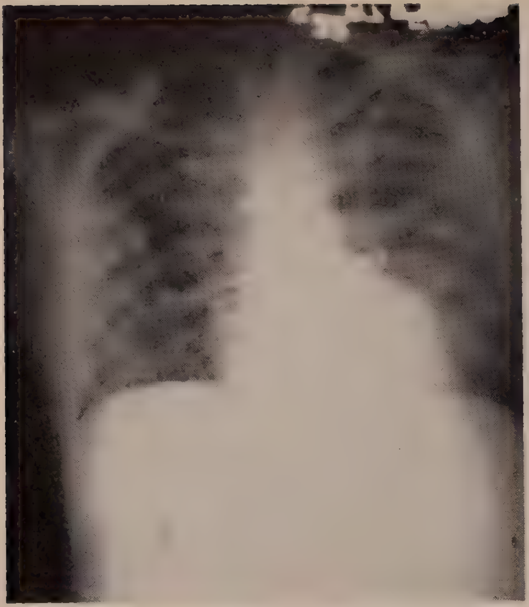

FIGURE 1. Chest x-ray film showing diffuse and reticular infiltration of both lungs and hilar adenopathy.

Serum protein electrophoresis revealed a slightly lowered albumin of 45.3 per cent (normal 49.7 to 70.1) and an elevated alpha-2 globulin of 15.7 per cent (normal 4.9 to 9.1). The gamma globulin fraction was normal.

The initial chest x-ray film showed diffuse fibrotic infiltration with a reticular appearance in both lung fields and enlargement of hilar areas bilaterally (Fig. 1).

The pulmonary function studies were interpreted as showing a lowering of the arterial oxygen tension and saturation, but the results of the remainder of the tests were within normal limits.

During the thirty days in the hospital, the patient's temperature fluctuated between 100.5 and 104 F., rising to 105 F. the day before death. The patient continued to complain of pain in the lower back and lower rib cage posteriorly together with distressing shortness of breath. Scattered rales were audible, especially at the base of the left lung. Repeated white blood cell counts fluctuated between 4,900 to 22,500 with a predominance of segmented polymorphonuclear leukocytes but no other abnormalities of the differential count. The blood platelets ranged from 291,000 to 390,000; during the last two weeks of life, the hemoglobin dropped slowly to 9.8 Gm. and the hematocrit to 28. X-ray examination of the lumbosacral spine and hip areas showed only degenerative changes of the body of the fourth lumbar vertebra probably caused by an old injury. A repeat chest x-ray film twelve days after admission showed no significant change from the initial film.

Under the assumption that the patient might have had pulmonary sarcoidosis, the patient was given prednisone 15 mg. four times a day; in addition he was given digitalis, aminophylline, diuretics, and ampicillin. A repeat carbon dioxide-combining power was 38.3 mEq. (normal 24 to 32 mEq.). A systolic apical gallop was observed during the first few days in the hospital.

On the third hospital day, an operation was performed.

Case discussion

Seymour Fink, M.D.*: First, I would like more information about this forty-four-year-old Panamanian-born Negro male. How long did he live in the United States, and what were his occupations here as well as in Panama?

Dr. Kim: He lived in the United States for twenty years and was an office clerk.

Dr. Fink: In this protocol, there is nothing to suggest a gastrointestinal disease, and yet a gastroenterologist was asked to discuss the case. I would like to know whether or not there was any lymphadenopathy or enlargement of the liver or spleen noted on abdominal examination.

Dr. Kim: The abdomen was noted to be soft, and no viscera were palpable. There were a few shotty nodes in both supraclavicular areas but no other adenopathy.

Dr. Fink: How about weight loss or any progressive asthenia?

Dr. Kim: There was no history of weight loss; the asthenia was present for less than one month.

Dr. Fink: What was the serum bilirubin level?

Dr. Kim: It was not recorded.

Dr. Fink: While in the hospital he continued to have dyspnea and pain in his back, but otherwise I am not clear about some features of his hospital course.

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* Associate Attending Physician, Beekman-Downtown Hospital.

John T. Flynn, M.D.: Following the operation, the patient was given medication and showed some improvement in the back pain and in the respiratory symptoms. Within ten days, however, he had a recurrence of these symptoms along with tachycardia and rales at the base of the left lung. Additional medication had no effect; dyspnea while patient was at rest became progressively worse, in fact almost intolerable.

Dr. Fink: There was a drop in the patient's hemoglobin to 9.5 Gm. per 100 ml. Was there any occult blood in his stool or any examination for ova and parasites?

Dr. Flynn: I see no reference to any testing of the stool for ova, parasites, or blood.

Dr. Fink: Dr. Batillas, would you tell us about the x-ray film findings?

John Batillas, M.D.: Examination of the chest, at the time of admission, demonstrates diffuse reticulonodular infiltration throughout both lung fields with scattered areas of coalescence (Fig. 1). There is prominence of the hilar regions bilaterally suggestive of adenopathy. The cardiac silhouette is not enlarged. There is also destruction of the posterior and medial segment of the third rib on the left side. A follow-up examination, twelve days later, demonstrated no significant change in these findings.

Examination of the lumbosacral spine, pelvis, and both hips fail to demonstrate significant abnormality in the bone. Hypertrophic spurring, which may be posttraumatic in origin, is noted along the anterior inferior margin of the fourth lumbar vertebra.

Dr. Fink: Concerning the chest x-ray film, we can entertain a rather broad spectrum of differential diagnoses, the first of which would be sarcoidosis. One would also have to include carcinoma, tuberculosis, pneumoconiosis, more specifically asbestosis, and any one of the collagen disorders such as lupus erythematosus or rheumatoid lung. Because of the severe shortness of breath, we would also have to consider interstitial fibrosis, pulmonary alveolar proteinosis, alveolar cell carcinoma, Goodpasture's syndrome, and a lymphangitic type of metastatic carcinoma, perhaps from the gastrointestinal tract or pancreas.

Sarcoidosis should be a primary consideration. The Hamman-Rich syndrome is to be considered but then sarcoidosis can mimic that syndrome on roentgenograms. Among other causes of diffuse pulmonary infiltration are scleroderma, beryllium exposure, x-ray radiation, eosinophilic granuloma of the lung, idiopathic pulmonary hemosiderosis, polyarthritis, farmer's lung, fungal infections, and pulmonary venous obstruction. From the standpoint of sarcoidosis, I would be bothered by the clinical course of this patient. As far as I am concerned, his clinical condition worsened too quickly to be accounted for by sarcoidosis, even though that disease would explain much of the clinical picture. Sarcoidosis often can be diagnosed by a Kveim test, but as far as I know, this was not done. I asked Dr. Dann to review the laboratory pulmonary function studies, and he suggested sarcoidosis as the best possibility.

Sidney Dann, M.D.: I could come to no definite diagnostic conclusions, not having seen the patient personally. We were not able to do any diffusion studies or vital capacity studies because this patient was very ill. The striking symptom was this man's air hunger and his tremendous discomfort in breathing, partly caused by the severe pain in the bone which was aggravated by the simple mechanical motions of respiration.

Dr. Fink: Sarcoidosis is a little more common in the Negro race but is often associated with an elevation in gamma globulin and in the beta fraction, both of which are normal. This piece of evidence makes sarcoid less likely. The elevation of alpha-2 globulin in this patient's serum is nonspecific and is found in a variety of conditions, including metastatic carcinoma.

Some aspects of the patient's illness bother me. He had such severe pain in the back and the lower part of the rib cage, and yet the x-ray films of the spine showed normal vertebrae except for narrowing of the interspace between the fourth and fifth lumbar vertebrae. However, the pain was higher than the fifth lumbar vertebra and being a gastroenterologist I would think in terms of pancreatic disease. A lesion in the body and tail of the pancreas involving the celiac axis and the lymph nodes in this area could cause back pain, but a neoplasm of the head of the pancreas with or without pain should cause jaundice. Naturally it would have been nice to have had a gastrointestinal series to determine any extrinsic pressure on or displacement of the stomach by a pancreatic neoplasm. I would like to know what an intravenous pyelogram showed because this patient had back pain, bilateral costovertebral angle tenderness, and albumin in the urine. The patient was probably too sick to subject him to an intravenous pyelogram and gastrointestinal series, but this type of information might have been helpful.

Another laboratory test which intrigues me is the elevation of the serum alkaline phosphatase which certainly can accompany sarcoidosis but which would encourage a gastroenterologist to think more in terms of liver disease, such as primary hepatoma or metastases. Primary hepatoma, at least in this part of the world, is usually preceded by cirrhosis, for which we have no evidence in this case. This, together with the absence of liver enlargement and tenderness, makes hepatoma less likely. With the elevated temperature and white blood cell count, I also considered a liver abscess which is frequently not diagnosed clinically. Here too the liver scan would have been helpful. But since there was no enlargement and no tenderness of the liver, I certainly have no basis for making that diagnosis.

On the third hospital day an operation was performed. Since this was done shortly after admission, I presume that this procedure was either a liver or a scalene node biopsy.

I think I have gone as far as I can go from the information at hand. Perhaps more information was made available to the clinician as a result of the operation. On the basis of the clinical and laboratory data afforded me, I think this patient probably had carcinoma with a lymphangitic spread to the lungs. I have no basis for localizing the primary site. If the lesion did not arise in the pancreas, I would not be at all surprised if it were located somewhere in the retroperitoneal tissues. I do not believe that sarcoidosis, if it did exist, constituted the sole disease in this patient. Again, I think the clinical picture is that of a malignant neoplasm with primary site undetermined, perhaps located in the pancreas.

I have no way of excluding a primary bronchogenic carcinoma mimicking this whole picture, except for my personal prejudices which make me think of a primary site below the diaphragm.

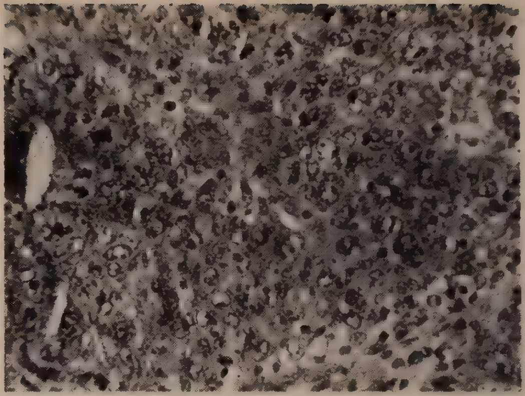

FIGURE 2. Section of scalene node biopsy showing poorly differentiated carcinoma (hematoxylin and eosin stain ×140).

Henry Sampson, M.D.: I think the most telling points against sarcoidosis were the fact that the patient showed no improvement during treatment with large doses of prednisone, and second, the rapid deterioration and death within two months. Sarcoidosis can cause bone reabsorption in the digits, but rarely, if ever, will it cause an isolated decalcification of a rib, as in this case. Although an unusual type of infection cannot be excluded, most of the findings point to carcinoma rather than to any other diagnosis. I would think of lymphoma and Hodgkin's disease, with enlargement of paravertebral lymph nodes, causing pressure and pain. Of course, a metastatic carcinoma from the lung could also cause adenopathy outside the thorax; but the findings on chest x-ray film does not impress me as being typical of a bronchogenic carcinoma. With the diffuse lung involvement, I had in mind an alveolar cell carcinoma which is uncommon but which does metastasize outside the thoracic cage, so that we would expect some metastases in the lymph nodes. I would think first of an alveolar cell carcinoma, then a lymphoma, and third, metastatic carcinoma to the lung.

Dr. Fink: I recall in my own experience two cases of carcinoma of the fundus of the stomach which had metastasized to the lungs but which had been unsuspected clinically and were associated with negative results from gastrointestinal series. Also I have seen biopsy reports in which the pathologist's first impression was carcinoma and the final postmortem diagnosis was lymphosarcoma. I recall cases in which lymphosarcoma was first diagnosed, only to have a poorly differentiated type of carcinoma as the final diagnosis. I am going to stick with a diagnosis of metastatic carcinoma as my first choice.

Harry Fong, M.D.: A primary bronchogenic carcinoma may present symptoms of a diffuse lymphangitic spread into the rest of the lungs. Very frequently when there is such a spread there tends to be some increased prominence in the hilar regions, no matter what the primary source of the carcinoma.

Clinical diagnosis

Carcinoma, primary site undetermined, with pulmonary involvement

Dr. Fink's diagnosis

Carcinoma with lymphangitic spread to lungs, primary site undetermined (*? pancreas*)

Pathologic discussion

Basil Moumgis, M.D.: The surgical procedure was a scalene node biopsy which revealed on microscopic examination large nests of neoplastic cells with prominent nuclear pleomorphism replacing the lymph node. The cells were poorly differentiated and were not arranged in any identifiable architectural pattern (Fig. 2). We surmised the most likely primary site would be the bronchus.

Dr. Flynn: Since we obtained a biopsy specimen fairly early in the clinical course, we knew that the patient had a neoplastic disease but could only speculate on the primary site. The question of prostatic carcinoma with metastasis to the lungs, vertebrae, and ribs was raised. This man was in agony, and we were searching for any possible means of effective palliation, such as hormone therapy. However, the patient's age was important in this consideration; prostatic carcinoma is extremely rare before the age of forty, and only 10 per cent of such lesions occur between ages forty and fifty.[1] Therefore, the facts against the diagnosis of prostatic carcinoma were the patient's age and the normal acid phosphatase. Furthermore, digital examination of the prostate showed a slightly boggy gland, elastic, and without any nodules.

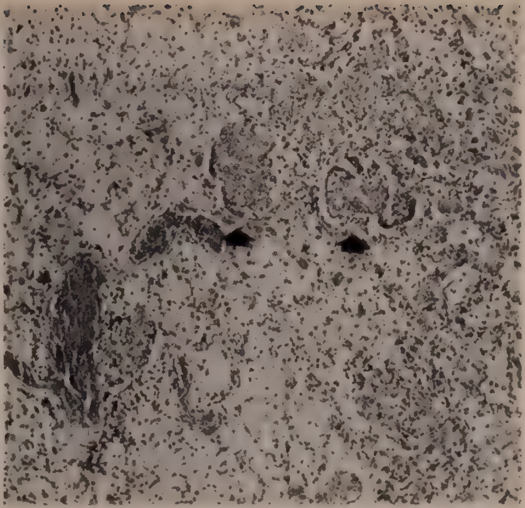

FIGURE 3. Low-power view of markedly edematous lung showing clusters of neoplastic cells (arrows) within alveolar space or "cancerous pneumonia" (hexatoxylin and eosin stain).

Dr. Fong: The pulmonary metastases from the prostatic carcinoma are most often nodular and appear on x-ray film as rounded densities.

Dr. Flynn: We were considering a lymphangitic spread from the prostate.

Dr. Batillas: On roentgenograms we see metastases to the lung from prostate carcinoma so infrequently that I would not even try to describe a specific pattern. I would say that this x-ray picture would be compatible with a primary prostatic lesion.

Dr. Flynn: The patient was given an antimetabolite (methotrexate), prednisone, digitalis, aminophylline, diuretics, and ampicillin. No significant relief from pain and dyspnea were seen. The neoplasm did not seem to be influenced, and in spite of every effort, he died in acute respiratory distress on the twenty-first hospital day.

Dr. Moumgis, tell us what you found at post mortem.

Dr. Moumgis: On opening the chest we found a moderate amount of pleural effusion bilaterally. The lungs, however, were voluminous, weighing 1,150 Gm. each. These markedly congested lungs contained numerous white nodules dispersed through-

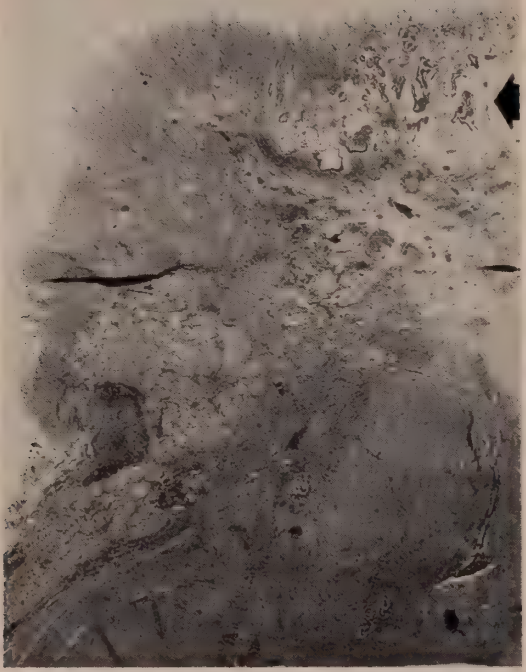

FIGURE 4. Section of small infiltrating adenocarcinoma (arrow) of pyloric region of stomach (hematoxylin and eosin stain).

out the parenchyma and involving the pleural surfaces. These nodules averaged 3 mm. in diameter. Scattered among these white discrete growths were areas of soft whitish-grey necrosis which on mild pressure exuded appreciable amounts of "creamy" material. We were unable to find any discernible lesion arising within the bronchi or bronchioles. Microscopic examination of the tumor nodules revealed clusters of poorly differentiated neoplastic cells lying within alveolar spaces giving the appearance of so-called "cancerous pneumonia."[2] We were also able to demonstrate large areas of tumor necrosis. The intervening alveolar spaces were filled with edematous material and numerous foamy macrophages (**Fig.** 3).

The question of the primary site of this neoplasm was subsequently resolved on microscopic study of the stomach. On gross examination of the pylorus we found a 2-cm. somewhat indurated area which gave the appearance of redundant mucosa. This lesion proved to be an infiltrating adenocarcinoma which extended through the muscularis and into the lymphatics (**Fig.** 4). Despite its apparently small size, it was a poorly differentiated carcinoma which was quite aggressive; we found metastases in the liver, in the lymph nodes within the porta hepatis and hilar region in the thorax, and in the lower thoracic vertebrae (**Fig.** 5A). The bone involvement certainly would account for the agonizing back pain which the patient experienced. We also demonstrated tumor emboli within both adrenals, the adventitia

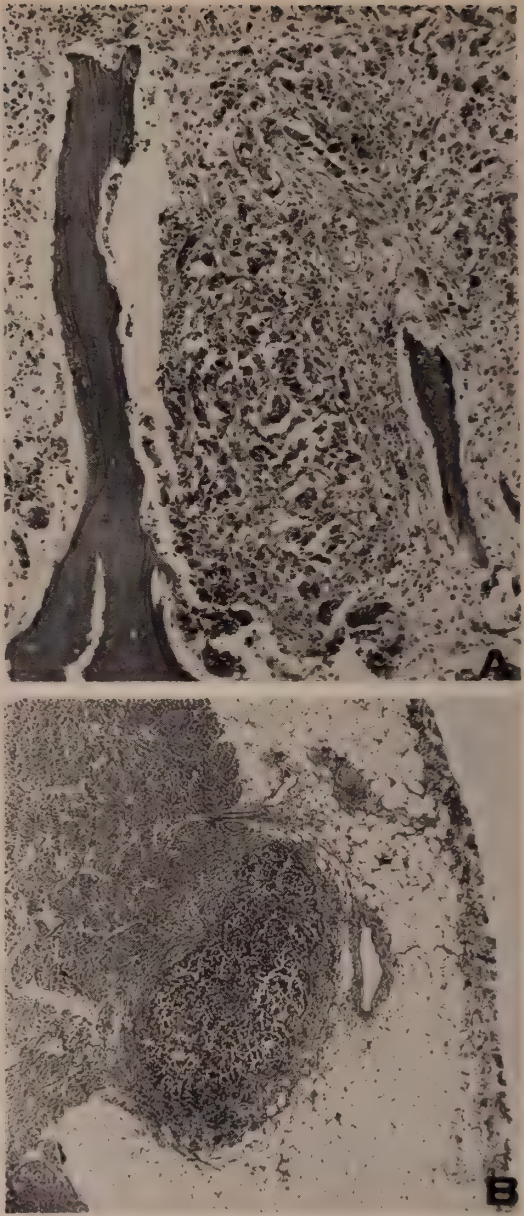

FIGURE 5. (A) Section showing metastatic carcinoma infiltrating thoracic vertebra (decalcified hematoxylin and eosin stain). (B) Section of heart showing metastatic tumor in epidcardium.

of the abdominal aorta, and the epicardium (Fig. 5B).

Dr. Fink: I should have made the comment that fever in patients with carcinoma is not an uncommon finding.[3] When a patient has unexplained rises in temperature, the physician should think of carcinoma, especially of the gastrointestinal tract. When I said that I had seen 2 cases of carcinoma of the stomach with widespread lung metastases, I must admit both of these lesions were located in the fundus. Even if this patient had been well enough to have a gastrointestinal series done, I believe that there would still have been trouble in making the diagnosis. If we had had tests which gave positive findings of blood in the stools on several occasions, I think this would have pinpointed the primary focus as being in the gastrointestinal tract.

Dr. Moumgis: One reason for fever in this case was necrosis which was present in some of the larger areas of tumor in the lungs and liver.

Final diagnosis

1. *Infiltrating adenocarcinoma of stomach (pylorus with metastases to lung, thoracic vertebrae, adrenals, adventitia of abdominal aorta, epicardium, and lymph nodes (scalene, porta hepatis, and hilar)*
2. *Bilateral pulmonary edema, marked*

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Subcutaneous Emphysema During General Anesthesia

SUBCUTANEOUS EMPHYSEMA is a type of interstitial emphysema. During general anesthesia, the complication may develop as a result of two mechanisms: (1) When a marginal alveolus ruptures into either the subpleural space or the peribronchial or perivascular tissues, air or other gases dissect a path along the pleura or vessel; after they reach the mediastinum, they may spread downward through the pleura causing a pneumothorax or upward causing emphysema in the neck. (2) Following trauma to the mucosal lining of any structure of the upper airway, the gases pass directly into the subcutaneous tissues of the neck, head, or thorax.

Two cases are reported in which subcutaneous emphysema occurred due to trauma to a structure of the upper airway.

Case reports

CASE 1. A two-year-old-child in good general health was scheduled for tonsillectomy and adenoidectomy. Premedication consisted of atropine 0.1 mg. Anesthesia was induced with open-drop divinyl ether (Vinethene) followed by diethyl ether. Induction of anesthesia was smooth, and surgical anesthesia was attained without struggling, coughing, vomiting, or excessive mucus formation. Following insertion of a tonsillar mouth gag, ether vapor was delivered through two metal ether hooks, placed at the lateral angles of the left and right lips, respectively, and connected to a source of oxygen, 3 L. per minute. After the left tonsil was removed, a swelling was noted involving the right upper and lower eyelids and the right cheek below the zygomatic bone. Since the first impression was that of angioneurotic edema, the administration of ether was stopped, but oxygen was continued. There was no respiratory distress, although the swelling was steadily increasing in size and spreading to the neck and anterior chest. The vocal cords were examined with a laryngoscope and found to be normal and moving freely. Rupture of an alveolus seemed unlikely since the oxygen had not been insufflated under pressure nor was there any sign of obstruction to the outflow of expired gas. It was decided that removal of the second tonsil and adenoids would provide the best airway; therefore, the administration of ether was resumed, and the operation was completed rapidly and uneventfully. Further examination revealed a site of indentation and some redness in the area where the right ether hook had been placed. The administration of oxygen was immediately discontinued, and within minutes the swelling of the cheek began to decrease. The child was taken to the recovery room awake. A chest radiogram showed negative findings. Most of the emphysema disappeared within four hours, and the child was discharged in good condition.

Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, March 27, 1968. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

Case 2. A forty-year-old woman was scheduled for extended abdominoperineal resection and radical aortoiliac pelvic lymphadenectomy for carcinoma of the anus. Results of physical examination, chest radiogram, electrocardiogram, and laboratory data were within normal limits. On the day of proposed surgery, the patient was anesthetized in the cystoscopy room with thiopental sodium, 300 mg., for insertion of ureteral catheters. She was then transferred to the operating room, ventilated with oxygen, and given nitrous oxide-oxygen-halothane. Following the intravenous injection of 40 mg. of succinylcholine, two unsuccessful attempts at orotracheal intubation were made. A second anesthesiologist was summoned who made two more unsuccessful attempts. At this time, subcutaneous emphysema of the neck was observed, and a chest surgeon was called. Laryngoscopy disclosed edema of the epiglottis and an abraded area, suggesting perforation, between the epiglottis and the base of the tongue. Mediastinal emphysema was detected on x-ray film, and the proposed surgical procedure was cancelled. Instead, tracheostomy was performed with the patient still under general anesthesia. In the recovery room, the lungs were clear to percussion and auscultation, and the patient was conscious and responsive. Tracheostomy suction produced small amounts of clear mucoid secretions.

One month later, the originally scheduled surgery was performed under nitrous oxide-oxygen-halothane anesthesia administered through the tracheostomy opening. Postoperatively, the tracheostomy was permitted to close spontaneously, and the patient was discharged seven weeks after the definitive procedure.

Comment

Symptoms of interstitial emphysema of the neck and thorax vary with the amount of gas escaping and the rate of its accumulation. There may be dyspnea, cyanosis, or retrosternal pain. The condition may simulate angina, myocardial infarction, pulmonary infarction, pericarditis, or pneumonia. Subcutaneous emphysema produces a peculiar crunch or crepitus beneath the skin. Mediastinal emphysema may require radiograms for definitive diagnosis, since mild cases cause little or no discernible abnormalities on physical examination.

Treatment depends on the location and severity of the lesion. If mediastinal emphysema and pneumothorax are prominent, thoracentesis or thoracotomy may be indicated. With perforation of the esophagus, surgical drainage combined with antibiotic therapy is recommended. If the patency of the airway is impaired, the placement of an endotracheal tube or tracheostomy is necessary. Subcutaneous emphysema, per se, will subside rapidly with administration of 100 per cent oxygen. Inhalation of 100 per cent oxygen through a semiclosed system establishes a gradient for nitrogen from tissues to blood to alveoli to outside air so that the nitrogen is gradually eliminated from the tissues and replaced by oxygen. Oxygen, in turn, is rapidly absorbed because it is soluble in blood and combines with constituents of blood.[1] When the absorption times of gases from the lungs of dogs with occluded bronchi and intact blood supply were studied following maximum inflation, nitrogen disappeared in sixteen hours, nitrous oxide in from seventeen to thirty-five minutes, and oxygen in only fifteen minutes.[2]

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Number one hundred eighty-one in a series of Clinical Anesthesia Conferences

Correlation Conferences in Radiology and Pathology

State University of New York
Upstate Medical Center
Syracuse, New York

Editors

E. ROBERT HEITZMAN, M.D.
Associate Professor, Department of Radiology
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Acute Tibial Pain

Case history

John Sanborn, M.D.*: A forty-eight-year-old white male enjoyed good health until one week prior to admission when he noticed the onset of pain of the left leg in the midtibial region. The pain was worse at night and waxed and waned in a crescendo fashion; it radiated from the ankle to the thigh. At first the pain was relieved by aspirin, but recently the pain became so severe that the patient was unable to work.

Physical examination showed his blood pressure to be 180/110. There was marked tenderness over the middle region of the left tibia where there was slight soft-tissue swelling. The area was not red, although it was slightly warm.

Routine laboratory determinations were normal, as were the serum calcium, phosphorus, and alkaline phosphatase. His latex fixation test result was normal. X-ray films of the lower extremities were made over a nine-day period.

Alfred Berne, M.D.†: The x-ray films reveal no definite bony or soft-tissue abnormality. There is an area of questionable radiolucency in the cortex of the midshaft of the left tibia (Fig. 1).

E. Robert Heitzman, M.D.**: How would you proceed in the further evaluation of this problem?

Dr. Berne: I would do a bone survey and laminagrams of the midtibia.

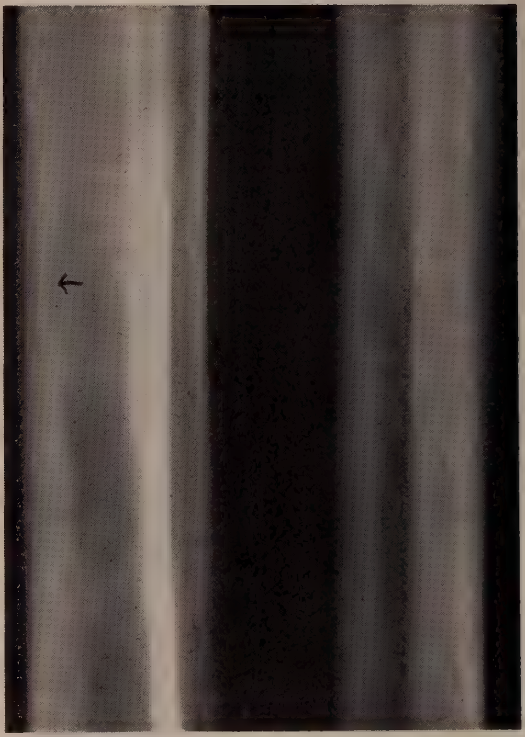

FIGURE 1. Anteroposterior and lateral views of midshaft of left tibia shows slight thinning of endosteal surface of medical cortex (arrow).

Dr. Sanborn: These were done. The bone survey was normal.

Dr. Berne: The radiolucent area that is demonstrated on the plain films is visualized more clearly on the laminagrams. The cortex is thinner here than it is elsewhere, and it is fairly sharply defined on the endosteal side. The cortex in the area

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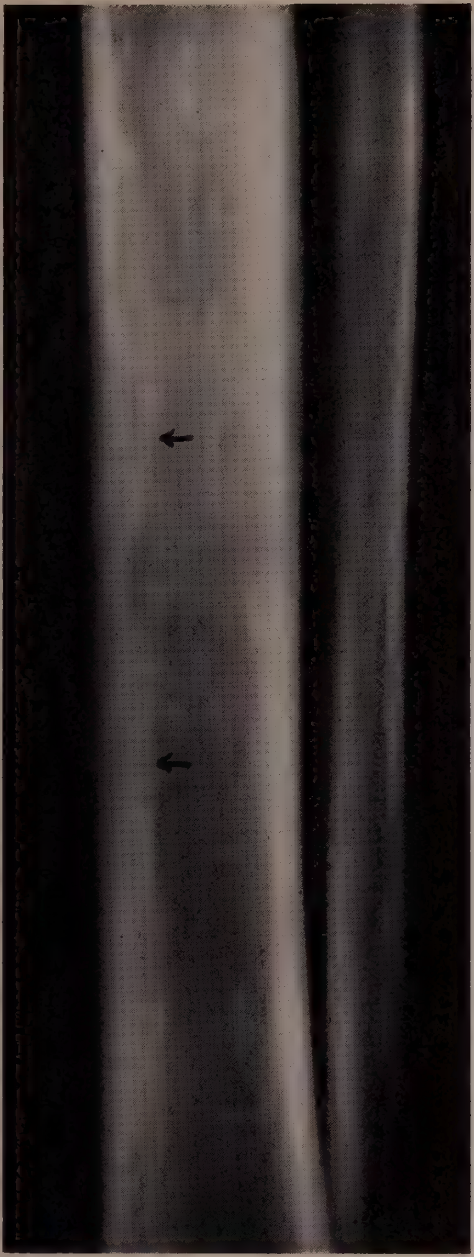

FIGURE 2. Anteroposterior laminagram of midshaft of left tibia confirms presence of area of endosteal thinning and shows suggestive "splitting" of cortex (arrow).

under question appears split (Fig. 2). I am not positive, however, that any of the findings represent a definite abnormality.

What is the differential diagnosis to be considered? Before I looked at the x-ray films, I thought this was going to be a case of Paget's disease of the tibia because of the age of the patient, the history of the pain, and the site involved. However, he doesn't show the typical radiographic appearance of Paget's disease.[1] The cases of early Paget's disease I've seen have had a radiolucent V-shaped defect in the cortex. The process may on occasion split the cortex, an appearance we have suggested by the films in this case. Early osteomyelitis producing only borderline film abnormalities would have to be considered as well.

FIGURE 3. Anteroposterior scan of right and left tibias shows area of abnormal uptake of fluorine-18 in midshaft of left tibia (arrow). Scan is distinctly positive, although radiographs show only borderline abnormalities.

Dr. Sanborn: A bone scan was done using fluorine-18 (Fig. 3).

Dr. Berne: This examination indicates that there is an increased uptake of the radionuclide in the midshaft of the left tibia. There are other areas of increased uptake in the femurs and in the pelvis. The presence of multiple lesions would make me think of metastases, but Paget's disease with multiple foci remains a distinct possibility.

Dr. Berne's diagnosis

1. *Probable Paget's disease of left tibia and other sites*

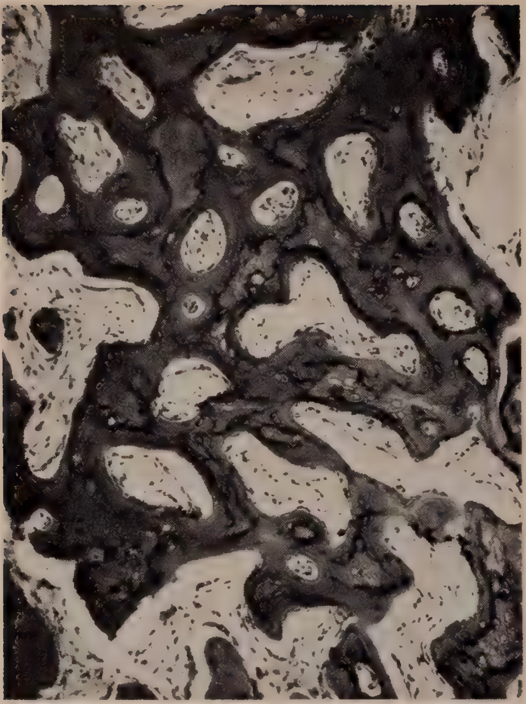

FIGURE 4. Photomicrograph of biopsy specimen shows prominent cement lines and mosaic pattern of bone deposition, with intertrabecular fibrosis and increased vascularity.

2. *Rule out metastatic disease*

Dr. Sanborn: A biopsy of the left tibia was performed.

J. Albert Schaefer, M.D.*: We received approximately 50 bone fragments for examination.

In Figure 4 I think you can see the rather classic, typical mosaic pattern of osteoclastic bone resorption and a new bone deposition with accentuation of the cement lines, characteristic of Paget's disease of bone.[2] The fibrosis and increased vascularity of the intertrabecular spaces are also quite characteristic.

Although we examined histologically all of the bone fragments submitted, not every piece showed the picture as well as what I am showing you. I have had very little experience correlating the pathology of Paget's disease with its radiographic appearance.

Thomas Berrigan, M.D.†: Does the increased uptake of fluorine in this case manifest osteoblastic activity?

Robert O'Mara, M.D.**: At present there's considerable controversy in the field over whether this represents increased vascularity or increased cellular activity.[3] Our work would suggest that both factors play a role.

Dr. Berrigan: Why is the alkaline phosphatase normal?

Dr. Heitzman: By clinical and radiographic criteria this case would be classified as early Paget's disease. In early stages of the disease, the alkaline phosphatase is often normal.[2]

I thought that this was an interesting case from several points of view. A few years ago we would have been really stymied by such a patient. We would have had a very severely incapacitated individual with only questionable radiographic abnormalities and with no laboratory findings to help us. We would have been at a loss to know what this man's disease really was. With scanning, we have been able to demonstrate the process beautifully and to render a rather secure diagnosis. It's remarkable to see how much disease is demonstrated by the scan and how little disease you can see on conventional films and laminagrams.[4]

This kind of presentation of Paget's disease I think is rather interesting too. We see Paget's disease often, but frequently we fail to consider it in the differential diagnosis of bone pain of sudden onset or in instances of severely incapacitating bone pain.

Final diagnosis

Paget's disease of mid left tibial shaft and other sites

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Fatal Perforating Ulcer of Esophagus Lined by Columnar Epithelium

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In 1950 Barrett[1] described a condition in which the lower portion of the esophagus was lined with gastric-like epithelium. He, as well as Allison and Johnstone in 1953,[2] pointed out that this abnormal epithelial lining can undergo deep ulceration, penetration, and perforation. Since that time the syndrome has been more clearly delineated.[3,4] In addition to the columnar-lined lower part of the esophagus, usually accompanied by a hiatus hernia, there is a high esophageal stricture or ulceration at the squamocolumnar junction. More recent reports on the subject have emphasized etiology,[5] the stricture,[6] and accompanying dysphagia[7] as well as the histologic makeup,[8] functioning capacity,[9] and etiology, and radiology[10] of the abnormal esophagus. The present case is reported to re-emphasize the complication of perforation and the fact that the syndrome may be present without dysphagia and be indistinguishable clinically from an ordinary hiatus hernia with reflux esophagitis.

Case report

This fifty-one-year-old man, who had previously been in good health without significant gastrointestinal complaints, was admitted to Huntington Hospital for a fractured right patella. Following general anesthesia and excision of the fractured patella, the patient began to have persistent "coffee grounds" vomitus. There was a drop in hemoglobin of 4 Gm. to 10.3 Gm. per 100 ml. accompanied by diaphoresis and tachycardia.

An upper gastrointestinal series and esophagram revealed a hiatus hernia with free reflux of barium from the stomach into the esophagus. There was evidence of a broad, oblique linear defect in the middle third of the esophagus at the level of the tracheal bifurcation (Fig. 1A). There was no evidence of obstruction at this point, but there was a suggestion of infiltration in the midlung field adjacent to the irregularity in the esophagus. It was thought that the defect represented local invasion of the esophagus from a neoplastic process in the lung.

The patient was examined under local anesthesia with the Eder-Huffard esophagoscope. The esophageal mucosa was noted to be edematous, granular, and hemorrhagic. At 23 cm. from the incisor teeth, an adherent, old blood clot was found lying transversely across the anterior wall of the esophagus corresponding to the filling defect noted on x-ray film. No other intrinsic abnormalities could be delineated. A hiatus hernia was identified at 35 cm. There was continual reflux of gastric contents into the esophagus during the examination. The patient was treated with a bland diet, continuous elevation of the head of the bed, and large doses of antacids. On this regimen there was no further vomiting or evidence of upper gastrointestinal

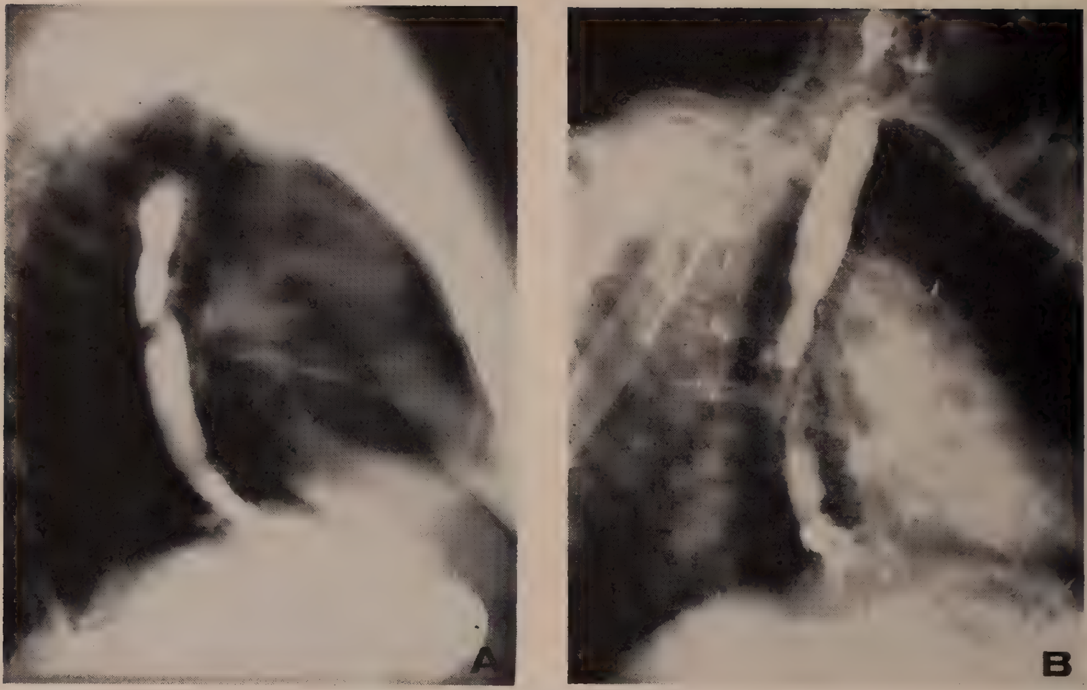

FIGURE 1. (A) Esophagram from first upper gastrointestinal x-ray series showing hiatus hernia. In upper third of esophagus there is broad, oblique filling defect. (B) Repeat esophagram showing narrowing and mucosal irregularity in middle third of esophagus.

bleeding, and he was discharged from the hospital.

Five days after discharge the patient was readmitted because of recurrent vomiting. The previously outlined regimen was reinstituted and again the patient responded. A repeat esophagram reconfirmed the previously abnormal findings. At the time of re-examination the mucosa of the esophagus at the junction of the middle and upper thirds appeared to be more irregular, and there was a suggestion of a small ulcer on the right lateral wall (Fig. 1B).

Esophagoscopy was again performed. The acute inflammation noted on the previous examination had subsided slightly, but at 30 cm. from the alveolar ridge an irregular, friable mass was noted from which a biopsy specimen was taken. Below the mass, gastric rugae were encountered. Histologic examination of the biopsy specimen revealed no evidence of cancer, but the epithelium was of a columnar type. There were no parietal cells noted; however, acute and chronic inflammatory changes were seen. Four days after the last esophagoscopy the patient suddenly became acutely dyspneic, cyanotic, and diaphoretic and was found to have a large hydropneumothorax on the right side. Chest drainage yielded a large amount of fluid which resembled gastric contents. The patient died shortly thereafter.

Postmortem examination revealed a large perforated ulcer of the esophagus just below the bifurcation of the trachea (Fig. 2). The esophagus in this area was densely adherent to the tracheal bifurcation and the right main-stem bronchus. The perforation measured 3.5 cm. in its greatest diameter and communicated with the right pleural space. A large foldlike mass of esophageal mucosa was noted adjacent to the ulceration. There were many other areas of superficial ulceration and esophagitis as well as a large hiatus hernia. Microscopic examination of the mucosa in the region of the ulceration revealed it to be of a columnar type. The junction of this abnormal columnar epithelium and squamous epithelium was above the area of the ulceration (Fig. 3A). Microscopic examination of the mass in the esophagus revealed it, too, to be columnar epithelium with much inflammation, edema, and

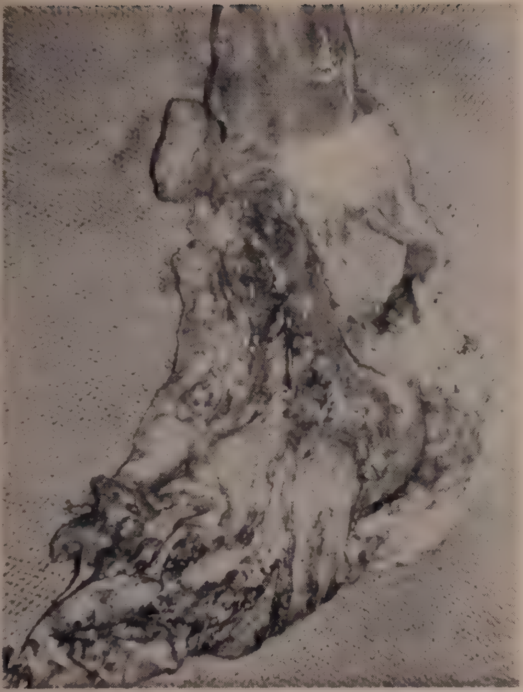

FIGURE 2. Postmortem examination of esophagus and stomach showing large perforated ulcer of esophagus. Mucosa above and around perforation is inflamed, edematous, hemorrhagic, and in large folds.

fibrosis. The ulcer was a typical, chronic, peptic ulcer with a base of granulation and necrotic tissue, muscular fragmentation, and extensive fibrous scarrings (Fig. 3B).

Comment

This case demonstrates the occurrence of a perforating, chronic, peptic ulcer in a columnar-lined esophagus. The degree of fibrosis and chronic inflammatory reaction in the mediastinum indicates that the ulcer had been present and penetrating into the periesophageal structures for a prolonged period. The enforced bed rest incumbent on knee surgery probably facilitated the gastroesophageal reflux, resulting in exacerbation of the chronic peptic ulcer, and leading first to slow bleeding and then to free perforation. It has been pointed out that this type of ulcer in the esophagus has the same potential as a peptic ulcer of the stomach.[1-3] The ulcer is liable to produce hemorrhage by eroding into a large blood vessel.[11] Mediastinal or pleural suppuration has been reported previously.[1,11] Perforation into a pulmonary vein[1] or into a bronchus[3] has

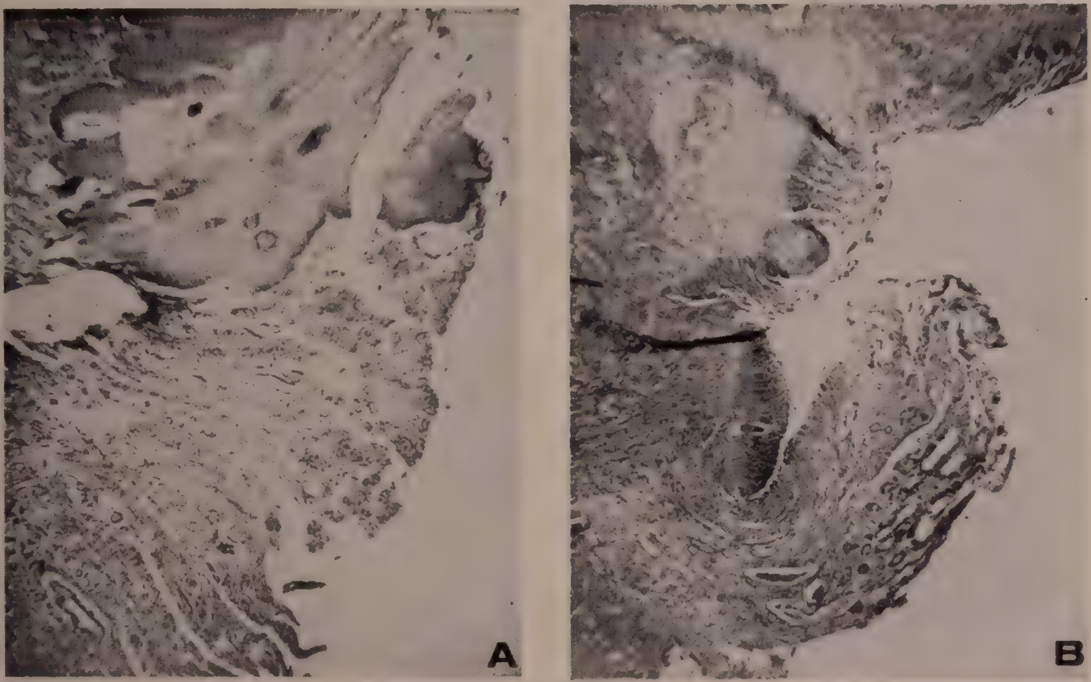

FIGURE 3. (A) Esophageal mucosal section showing junction of squamous (above) and columnar epithelium. (B) Esophageal mucosal section showing columnar epithelium thrown up into large fold adjacent to ulcerated mucosa.

proved to be equally fatal. This type of ulceration is also associated with various degrees of eccentric stricture formation.[12] The more significant obstructing strictures associated in this syndrome, however, are found with the superficial nonpenetrating ulcerations at the squamous and columnar-epithelial junctions.[6,7] The majority of patients with abnormally lined esophagi had high esophageal dysphagia secondary to such junctional forms of ulceration stricture.

The cause of the condition is generally thought to be congenital, secondary to incomplete replacement of the embryonic columnar epithelium by squamous epithelium.[11] However, there have been well-documented cases showing the ascent of a stricture up the esophagus[5] at the squamocolumnar junction as squamous epithelium is replaced by a columnar type.[13] The acquired theory interprets the columnar epithelium to be an adaptive change in response to the continued acid-pepsin environment present in the esophagus[3] secondary to gastroesophageal reflux. A hiatus hernia facilitating reflux is usually demonstrable. The presence of functioning parietal and chief cells in the abnormally lined esophagus has also been noted.[8]

The importance of mucosal biopsy at the time of esophagoscopy is emphasized because it is only by this means that the diagnosis can be confirmed.[9] Grossly, one may be unable to differentiate the abnormal mucosa from normal squamous mucosa or the mucosa lining a hiatus hernia. Had biopsy been performed in this case at the time of the initial esophagoscopy, the diagnosis would have been established earlier and more definitive therapy instituted. A hiatus hernia repair with a vagotomy plus gastric drainage might have prevented the fatal outcome.

Summary

A free perforation of a chronic peptic ulcer in a columnar-lined lower portion of the esophagus is presented. The abnormally lined esophagus may exhibit an ulcer of the esophagus rather than a stricture with dysphagia. The syndrome is best recognized by esophageal mucosal biopsy.

ACKNOWLEDGMENT. The authors wish to thank L. F. Clary, M.D., and the Department of Radiology of Huntington Hospital for help in preparing this report.

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Corynebacterium Endocarditis

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Bacterial endocarditis in which the Corynebacterium species of microorganism is incriminated is rare indeed. Since 1949, 45 cases have been reported, the majority of which were poorly documented.[1] This bacterium, when isolated, has in many instances been looked on as a contaminant rather than the etiologic agent of the disease. As sequelae to cardiac surgery and in repeated episodes of endocarditis in the same patient, Corynebacterium species is becoming recognized as a pathogenic bacterium.

Case report

A forty-year-old white female was admitted to the hospital with a one-week history of fever (101 to 102 F.); pain in the knees, ankles, and fingers; and malaise. Dental caries had been treated about three weeks before the onset of symptoms. She had had no extractions and had not received prophylactic antibiotics.

The patient had a history of rheumatic heart disease with residual mitral valvular stenosis and aortic valvular stenosis with chronic atrial fibrillation. She had had a mitral and aortic valve commissurotomy six years prior to admission and was maintained on digitalis with intermittent diuretics during this period. She was also mildly diabetic and was controlled on oral hypoglycemic drugs.

Physical examination revealed a temperature of 103 F. rectally. Pulse was 100 to 110 and irregular. Neck veins were flat. Funduscopic examination gave negative findings. There were no conjunctival or mucosal petechiae. The heart was enlarged, and the point of maximal impulse was felt in the sixth interspace, 3 cm. to the left of the midclavicular line. A harsh ejection-type systolic murmur and early blowing crescendo diastolic murmur were heard in the aortic area; a Grade IV harsh pansystolic and middiastolic rumble were audible at the apex. The chest was clear to percussion and auscultation. The spleen and liver were not palpable, although there was some tenderness in the right upper quadrant. Two splinter hemorrhages were noted in the nail beds of the right hand. Examination of the joints was unremarkable.

Laboratory data revealed a white blood count of 17,500 with a shift to the left. The hemoglobin was 11.8 Gm. per 100 ml. The hematocrit was 37. Fasting blood sugar was 84 mg. per 100 ml. Urinalysis showed 4 to 6 red blood cells per high-power field. However, subsequent urinalyses gave normal results. One arterial and six venous blood cultures were obtained, and all seven cultures subsequently grew out a Corynebacterium species of microorganism. The laboratory data concerning microorganism isolated are shown in Table I.

The electrocardiogram was interpreted as showing atrial fibrillation, and left ventricular hypertrophy and a chest film revealed generalized cardiac enlargement.

Following the blood cultures, the patient was given 20 million units aqueous penicillin intravenously and 2 Gm. of streptomycin sulfate intramuscularly daily. This therapy was continued for six days during which time the temperature remained elevated and the initial symptoms persisted. When the blood cultures were reported on the seventh day, treatment was changed to 100 million units of penicillin intravenously daily, and the streptomycin sulfate was discontinued. The microorganism was sensitive to penicillin in vitro. The patient's temperature gradually returned to normal during the next week. After two weeks, the intravenous penicillin

TABLE I. Laboratory data concerning microorganism isolated*

Category	Findings
Morphology	Gram-positive bacilli, slender, single, in chains; nonmotile
Biochemical reactions	Activity in glucose, maltose, mannitol, rhamnose, dulcitol, milk, 10 per cent glucose, and 15 per cent lactose; and alpha to beta hemolysis in deep agar
Sensitivities	
Chloromycetin	Sensitive
Erythromycin	Sensitive
Kanamycin sulfate	Resistant
Penicillin	Sensitive
Streptomycin sulfate	Resistant
Tetracycline	Moderately sensitive

* Identity = Corynebacterium species.

was discontinued and oral penicillin, 14.5 million units daily with 1 Gm. of probenecid (Benemid), was started. This was continued for one more week.

After a total treatment time of four weeks, the temperature remained rather constant at 100 F. rectally. The antibiotic was discontinued, and the patient remained afebrile and asymptomatic. Repeat blood cultures during treatment and one, two, six, and eight weeks after treatment were sterile. The total hospital stay for this admission was fifty-five days. The patient was subsequently admitted to the hospital for investigation of a low-grade fever and fatigue. Her temperature was normal within twenty-four hours, and she was asymptomatic after five days. Blood cultures at that time were sterile. No antibiotic treatment was given.

Comment

The case presented is one in which the patient had persistent fever with underlying heart disease and evidence of embolic phenomena. The diagnosis of subacute bacterial endocarditis was of prime consideration. All blood cultures grew out Corynebacterium species, sensitive in vitro to the antibiotic used in treatment. The organism isolated in this particular disease process would infer a causal relationship. The significance of this species of microorganism, aside from Corynebacterium diphtheriae, has of late been recognized in septicemia and, in particular, endocarditis. Nineteen recent surveys of bacterial endocarditis revealed 2,651 cases, 6 of which showed the isolation of diphtheroids from the blood.[1] This was, in a few instances, believed to be a contaminant. However, this microorganism has also been grown in blood cultures following cardiac surgery with cardiopulmonary bypass and in mixed infections of endocarditis, especially associated with Streptococcus endocarditis.

Barritt and Gillespie[2] presented a review of 67 cases of primary bacterial endocarditis in which 58 grew Streptococcus viridans from blood culture. There was in this series 1 case of endocarditis in which a diphtheroid identified as Corynebacterium hofmannii was isolated. Recurrence of endocarditis in a patient of this study was associated with a diphtheroid. His first infection was proved to be caused by a Streptococcus species.

Friedberg, Goldman, and Field[3] described 95 cases of endocarditis, the majority of which had underlying rheumatic heart disease in which a diphtheroid was isolated in a single case.

Treatment has varied from the use of penicillin, streptomycin sulfate, and erythromycin, to bacitracin and vancomycin. In the case presented and in those reviewed in the literature, the Corynebacterium species isolated has been susceptible to penicillin.

Summary

A case of subacute bacterial endocarditis in which a Corynebacterium species was isolated has been described. A course of treatment was outlined, and a brief review of the literature as regards this microorganism in endocarditis was presented.

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Early Musculoskeletal Disorder of Hands in Hansen's Disease

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THIS REPORT is a presentation of a patient with intractable painful hands with finger deformities. My purpose in reporting this case is to stress the necessity for considering the possibility of Hansen's disease in the differential diagnosis of painful extremities. I would like to call attention to a type of finger deformity important to recognize as a relatively early sign of leprosy. In addition, this case report points out still another hazard in the use of adrenal corticosteroids.

Although leprosy is a rare disease in the United States, it is not so rare that it may not be encountered. The protean early clinical manifestations may resemble a variety of cutaneous, neurologic, musculoskeletal, and systemic disorders among which are erythema nodosum and multiform, syringomyelia, compressive neuropathies, Dupuytren's contracture, syphilis, tuberculosis, sarcoidosis, and systemic lupus erythematosus.[1]

This is an interesting report of a patient with joint symptoms who was treated for a rheumatologic disorder before the proper diagnosis was suspected.

Case report

The patient, a thirty-eight-year-old female of Chinese descent, was first seen on March 5, 1966. She spoke no English, therefore the history was obtained from her husband who acted as interpreter. Her chief complaint was severe pain in the hands and wrists since 1956. She also complained of a skin rash which appeared about the same time. Her occupation was that of a sewing machine operator, but she had stopped working in January, 1966, because of her illness. The patient was married, had two daughters, ages fifteen and thirteen, and one son, age three, all living and well. There were no significant family illnesses. She was born in China and came to this country about 1954 and had lived in New York City ever since. Her past medical history was significant in that she was treated for Hansen's disease in China in 1950 for two years and then discontinued her medication because she considered herself cured.

The present illness started about 1956 with intermittent pains in both hands and wrists which gradually became worse. There was also some numbness, but this was not a prominent symptom. A rash of the upper extremities and face appeared at about the same time as well as generalized weakness and easy fatigability. The fourth and fifth finger of both hands gradually became contracted as progressive weakness of the hands developed. She was told by several doctors that she had arthritis and was treated on and off with salicylates and corticosteroids. In 1958 she attended the outpatient department of a hospital in New York City for about six months. She was seen in the medical, allergy, skin, and arthritis clinics where a variety of diagnoses were considered including lupus erythematosus, scleroderma, fibrositis, drug eruption, and contact dermatitis. Numerous laboratory studies were noncontributory. These included hemograms, sedimentation rates, latex fixation tests for rheumatoid factor, stools for ova parasites, studies for lupus cells, roentgenograms, and skin biopsy. No studies for active Hansen's disease were made, and a diagnosis was not established. In the last few years the patient changed doctors frequently because of lack of improvement.

Corticosteroids were prescribed from time to time, and for the past year she was taking 0.75 mg. of dexamethasone four times a day. Her condition continued to deteriorate.

Physical examination revealed a Chinese woman appearing older than her stated age of thirty-eight. She had a markedly swollen Cushingoid face. Her height was 63.5 inches, weight 138 pounds, blood pressure 140/80 mm. Hg, temperature 99 F., heart rate 90 regular, and respiration 18 regular. She was in no acute distress. Examination of the heart, lungs, and abdomen revealed them to be normal. Examination of the skin showed ill-defined macular papular lesions on the cheeks and near the nasal ridges with atrophic changes of the malar regions of the face. Accentuation of the lines of the face and forehead suggested a leonine facies. There was loss of hair of the eyebrows and diffuse macular papular lesions on both forearms, hands, and back with atrophic changes of the skin of the hands. There was one macular lesion on the left knee. Examination of the hands revealed flexion deformities of the fourth and fifth fingers of both hands occurring mainly at the interphalangeal joints and less at the metacarpophalangeal joints. Weakness of the grip of both hands was present with diffuse tenderness but no localized joint swelling or tenderness. There was moderate atrophy of the hypothenar eminences. Neurologic examination revealed definite areas of anesthesia to pinprick and touch along the course of the ulnar nerves bilaterally. The remainder of the neurologic examination was noncontributory.

Laboratory studies revealed the following: normal hemogram, glucose tolerance (two-hour postprandial) 114 mg. per 100 ml., blood urea nitrogen 13.7 mg. per 100 ml., sedimentation rate 20 mm. per hour (Westergren); serologic tests for syphillis and rheumatoid factors as well as the test for lupus erythematosus gave negative findings; urinalysis showed a 1 plus albumin; x-ray films of the chest revealed no abnormality, and those of the hands and wrists demonstrated no bony or joint abnormalities except for the flexion deformities of the fourth and fifth finger.

The diagnosis of active Hansen's disease was suspected because of the history of previous infection with inadequate treatment, persistent rash, and bilateral ulnar neuropathy. The patient was referred on March 15, 1966, to the Tropical Disease Diagnostic Service, Department of Health of the City of New York. Chung C. Wang, M.D., physician-in-charge, reported that smears taken on April 4, 1966, from ear lobe scrapings and nasal secretions were positive for Mycobacterium leprae. He made the diagnosis of active lepromatous Hansen's disease. (There are three main types of leprosy: lepromatous, tuberculoid, and indeterminate.[1]) Treatment was started immediately with sodium sulphoxone (Diasone). The patient has remained under strict supervision at the Tropical Disease Diagnostic Service. The corticosteroids were gradually withdrawn, and household contacts were immunized with BCG (bacillus Calmette-Guérin). A follow-up report from Dr. Wang on December 16, 1966, stated that the skin scrapings had become negative for Myco. leprae and that there was substantial overall improvement. The rash had receded, and the contractures of the fingers had improved.

The patient was last seen by me on April 10, 1967. She was markedly improved and had virtually no complaints of pain or fatigue. There was no tenderness of the hands, and the grip was considerably stronger; the contractures of the fingers were substantially less. Examination of the ulnar nerve distribution of the skin revealed increased reactions to pinprick and touch. The Cushingoid appearance of the face had receded entirely, and the skin of the face was more normal looking. The rash was virtually gone except for a few light lesions on the forearms.

Comment

The diagnosis of Hansen's disease was not made in this patient until about ten years after the onset of symptoms. Once the diagnosis was suspected, it was readily confirmed. Many other diagnoses were entertained of disease entities involving the skin and musculoskeletal systems, but none proved to be correct. The diagnosis of leprosy was missed presumably because of the misconception that although the patient was known to have had Hansen's disease in the past, she had received treatment and therefore was assumed to be cured. The probability of relapse because of inadequate treatment was not appreciated, nor was the fact that active Hansen's disease, as a clinical entity, exists in New York City and most parts of the United States.

Fasel,[2] of the Leprosy Clinic, San Francisco, California, found that a significant number of people are affected by Hansen's disease in continental United States, that it occurs in members of any race, and is found, too, in persons who have never been outside of this country. In the United States it is said to be endemic in California, Florida, Louisiana, Texas, and Hawaii. The World Health Organization estimates a worldwide incidence of between 12 and 15 million people with leprosy, Asia and Africa accounting for the largest number of cases. Canizares[1] estimates that about 2,000 cases of Hansen's disease exist in the United States and at least 250 in New York City. Statistics are very difficult to evaluate because of the different health regulations in different localities. Fisher, McCann, and Michele[3] in 1964 reported 2 cases in New York City of active Hansen's disease with foot ulcers simulating peripheral vascular disease. They called attention to the incidence of Hansen's disease among immigrants from Puerto Rico, Central Africa, the Virgin Islands, and the Caribbean Sea area.

Fasel[2] observed that with most patients several years had elapsed between the appearance of symptoms and the correct diagnosis. Early diagnosis is most important for public health consideration as well as for early treatment to prevent irreversible tissue damage. With early diagnosis and treatment the prognosis for the arrest or cure of the disease is very favorable. Present-day treatment with a sulfone compound is highly effective and may be used as a therapeutic test. It is, however, leprostatic and generally requires three to six years to attain negative bacteriologic results and clinical cure.[1] Treatment should be continued for life on a maintenance dosage to prevent relapse.

This case report illustrates the important, relatively early pathognomonic sign of contractures of the fifth and often fourth fingers bilaterally of leprous ulnar neuritis. This has long been recognized by leprologists but probably not by physicians in general.[4] This case report also points out the need for a high index of suspicion of Hansen's disease in patients born or who have resided in endemic areas in this country or abroad. This patient's leprosy exacerbated presumably because she had only two years of treatment and failed to continue with maintenance therapy. It is also possible that the adrenal corticosteroid treatment affected her disease adversely. Adrenal corticosteroids are contraindicated in patients with a history of Hansen's disease as in tuberculosis, according to Wang in a personal communication.

Summary

A case is reported of Hansen's disease demonstrating severe intractable pain in the hands simulating a rheumatologic disease in a patient residing in New York City. The typical finger deformities are described as well as the danger of using corticosteroids in a patient with a suspicion of Hansen's disease. The difficulty in making an early diagnosis because of the protean manifestations of Hansen's disease is illustrated, and the importance of making this early diagnosis is emphasized. Mention is made of an effective drug for treatment, and the need to start treatment early and to continue maintenance treatment in inactive leprosy indefinitely to prevent relapse is emphasized.

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Hepatoma Following Carbon Tetrachloride Poisoning*

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PRIMARY CARCINOMA of the liver is, in many respects, a very unusual tumor. The incidence of the tumor varies considerably in different parts of the world and is very frequently associated with cirrhosis of the liver. A variety of chemical agents, including carbon tetrachloride, can readily produce the tumor in the experimental animal. Hepatomas are notorious for their varied clinical manifestations and have infrequently been diagnosed prior to autopsy, although recent advances in diagnostic technics have increased the frequency of diagnosis during life.

The following case is presented because of certain unusual clinical manifestations and because it is thought to be the first report of hepatoma occurring in man after toxic exposure to carbon tetrachloride.

Case report

A fifty-nine-year-old white man was admitted to the James Ewing Hospital on September 1, 1956, in acute renal failure. Approximately two weeks prior to admission, the patient had returned to his apartment after having attended a cocktail party and noted the odor of carbon tetrachloride which had been used earlier that same evening to clean his rug. He had slept in the apartment and remained asymptomatic until five days later when he developed nausea, vomiting, and diarrhea. These symptoms continued, and five days later he was noted to be jaundiced. He was then admitted to another hospital and found to be anuric. He was transferred to James Ewing Hospital for possible hemodialysis. The patient had been in good health all of his life but admitted to the almost daily consumption of several alcoholic drinks. There was no past history of jaundice or symptoms of hepatic decompensation or portal hypertension.

Physical examination on admission to the hospital revealed him to be alert, oriented, jaundiced, but in no acute distress. His vital signs were all within normal limits. Pertinent physical findings included an enlarged tender liver that was palpated 3 fingerbreadths below the right costal margin. Only one of many observers thought that he could detect shifting dullness and a fluid wave. There were no spider angiomas or stigmata of chronic liver disease.

Laboratory studies on admission revealed a hemoglobin of 13.6 Gm. per 100 ml., normal white blood count, blood urea nitrogen 174 mg. per 100 ml., serum creatinine 22.6 mg. per 100 ml., serum glutamic oxaloacetic transaminase 69 units per 100 ml., total serum bilirubin 18 mg. per 100 ml., serum alkaline phosphatase 5 Bodansky units per 100 ml., arterial blood pH 7.29, and carbon dioxide 11 mEq. per liter.

The patient was almost completely anuric for four days. After a long, complicated hospital course, the patient completely recovered and left the hospital nine weeks after admission. At the time of discharge, the blood urea nitrogen, creatinine, and liver function test results were all within normal limits except for a serum albumin of 3.7 mg. per 100 ml. and globulin of 2.9 mg. per 100 ml.

The patient was then lost to follow-up. When he was seen again four years later, he stated that he had been in good health and denied any alcoholic ingestion since his previous admission. Physical examination at this time revealed a smooth, enlarged, nontender liver palpated 3 fingerbreadths below the right costal margin. There was no palpable spleen and no stigma of chronic liver disease. At this time blood urea nitrogen, bilirubin, and sulfobromophthalein sodium excretion were normal. The serum glutamic oxalaocetic transaminase was 64 units per 100 ml.

The patient was readmitted to the hospital in September, 1963, with a history of anorexia, weight loss, nausea, vomiting, and diarrhea. He again denied any inges-

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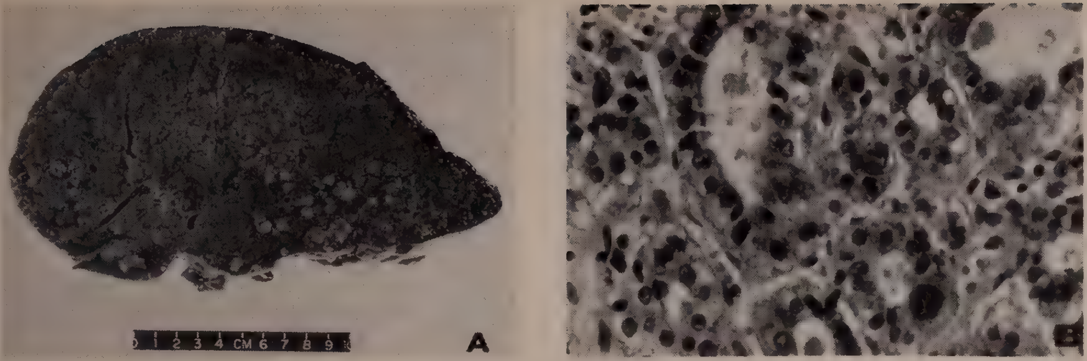

FIGURE 1. Sections of liver. (A) Cut section showing multiple nodules from primary hepatoma. (B) Section obtained at autopsy showing several glandular structures containing malignant cells (× 215).

tion of alcohol since his exposure to carbon tetrachloride. Pertinent physical findings at this time included an enlarged, tender liver that was felt 4 fingerbreadths below the right costal margin. A 6- by 6-cm. tender mass was felt in the right epigastrium and clinically was thought to be attached to, or part of, the liver. A harsh systolic murmur was heard over the epigastric mass. There was no evidence of ascites, splenomegaly, spider angiomas, or other stigmata of chronic liver disease. Chest x-ray revealed an elevated right hemidiaphragm. Iodine-131 rose bengal liver scan revealed an over-all decrease in counts and a 6- by 6-cm. "cold area" to the right of the xiphoid that corresponded to the palpable mass.

During the first five hospital days, the epigastric mass progressively decreased in size until it could no longer be felt. At the same time the murmur disappeared, and the serum glutamic oxaloacetic transaminase which was 1,320 units per 100 ml. on admission progressively decreased to 190 units per 100 ml. Percutaneous liver biopsy revealed hepatocellular carcinoma. His fever gradually subsided. The white blood count reached a peak of 26,000 but gradually returned to normal coinciding with the disappearance of the epigastric mass. The patient felt relatively well and was discharged. He was readmitted five months later when he developed increasing abdominal pain. He received a course of 3,000 r to the liver as palliation, with transient improvement in liver chemistries. Two paracenteses were required to relieve symptoms from ascites. He had intermittent bouts of lethargy. He requested further care to be administered at home. He gradually became comatose and died two weeks following discharge from the hospital.

Postmorten examination revealed the liver to be extensively involved with tumor with little normal liver tissue remaining (Fig. 1A). Although there was a moderate amount of fibrosis, the parenchymal architecture was so disrupted by the tumor that no classification as to type of cirrhosis could be made. The tumor was also noted to be invading intrahepatic blood vessels and to be necrotic in many areas (Fig. 1B).

Comment

There are a number of interesting clinical features in this case. Alcohol has previously been noted to increase the susceptibility of the individual to the hepatotoxic effects of carbon tetrachloride.[1] In this patient, the liver and kidney failure that developed might have been less severe if he had not ingested alcohol prior to his exposure to carbon tetrachloride. Murmurs over the liver have been reported in association with hepatoma, although they have been noted in nonmalignant disease of the liver as well.[2] In this patient, the disappearance of the murmur, in association with the elevation of transaminase, white blood count, and temperature together with the marked diminution in size of the mass, most likely represented massive necrosis of tumor tissue within the liver. Vascular insufficiency was probably responsible for the necrosis caused either by tumor compression or invasion of an intrahepatic blood vessel. Hepatomas are known for their propensity to invade blood vessels.[3]

The differential diagnosis during the

last hospitalization included hepatic abscess, hepatitis, and metastatic or primary tumor of the liver. The palpable mass, leukocytosis, fever, and the area of nonvisualization on rose bengal scan were all compatible with hepatic abscess. The possibility of hepatitis was suggested by the marked elevation of transaminase, although it has recently been noted that marked elevation of transaminase occurs in a variety of clinical conditions.[4]

Various environmental factors have been suggested as having an important etiologic role in producing hepatoma because of the frequent association of hepatoma and cirrhosis and because of the geographic variation in the incidence of these tumors.[3,5] Parasitic, dietary, and toxic agents have all been suggested as possible hepatocarcinogens in man.[6] In the experimental animal, a variety of chemical agents, notably butter yellow, will also produce hepatoma.[7] These agents may be hepatocarcinogens by virtue of the fact that their toxicity causes necrosis and regeneration of the liver, and this regeneration alone is the precancerous lesion rather than any specific carcinogenic effect of the chemical itself. However, the production of hepatoma in rats using butter yellow is not preceded by an increase in proliferation of cells, as measured by tritiated thymidine.[7] Also, butter yellow has been shown to affect the enzyme content of the liver cell, and its carcinogenic effect may be related to its effect on specific cellular constituents.[8] Carbon tetrachloride has also been shown to disrupt normal enzymatic processes in the liver cell[9] and to produce necrosis of the liver, cirrhosis, and hepatoma in mice.[10]

Although carbon tetrachloride has long been known to be a hepatotoxin, little is known concerning its long-term effects on the liver in man. There have been a few case reports of cirrhosis in man after exposure to carbon tetrachloride,[11,12] as well as studies of human beings exposed to carbon tetrachloride over many years with no evidence of subsequent liver disease.[13]

Many clinical studies have demonstrated the frequent association of hepatoma with cirrhosis of various types in man. In this particular patient, it is impossible to exclude an underlying alcoholic cirrhosis. The long history of moderate alcohol ingestion might suggest this, but the absence of stigmata of chronic liver disease and the normal sulfobromophthalein sodium excretion rate some years after the patient supposedly discontinued drinking is somewhat against the diagnosis of alcoholic cirrhosis. Unfortunately, the tumor was so extensive at autopsy that no morphologic diagnosis of cirrhosis could be made, although there was increased fibrosis in the liver.

Although there is no way to prove a cause and effect relationship, carbon tetrachloride, a potent hepatocarcinogen in animals, may have been an important etiologic factor in this particular case of hepatoma in man. This is believed to be the first reported case of hepatoma in man after poisoning by carbon tetrachloride.

Summary

A patient died of hepatocellular carcinoma seven years after acute intoxication with carbon tetrachloride. The unusual clinical and laboratory findings suggested necrosis of a large tumor mass. Carbon tetrachloride, a potent hepatocarcinogen in the experimental animal, may have been carcinogenic in this patient.

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Benjamin Rush, M.D. (1745–1813)

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William Penn and his followers settled in Pennsylvania in 1682. Philadelphia was founded one year later. When Benjamin Rush was born, the Quaker City was sixty-two years old and surpassed Boston and New York in population, wealth, fashion, and culture. It possessed a hinterland of agriculture, industries, and manufacturing. On the outskirts there were beautiful estates of those who had amassed wealth. Learned minds were attracted to Philadelphia. It was the seat of the American Philosophical Society. John Bartram created a delightful and instructive botanical garden on the Schuylkill River. A medical school was functioning in 1765. The Pennsylvania Hospital opened its doors in 1752. Thomas Paine became the impassioned pamphleteer of independence. John Fitch applied steam to navigation on the Delaware River. Benjamin Franklin was its leading citizen and patriot.

Early years

Benjamin Rush, fourth child in a family of seven, was born in Philadelphia County on a homestead acquired by his grandfather, a follower of Penn and a gunsmith. His father died when he was six, and his mother opened a grocery store to support the family. He entered Rev. Samuel Finley's Institute when he was eight years old. At thirteen he matriculated at the College of New Jersey and received his baccalaureate degree in 1760. Rush was now fifteen years old. He excelled as a public speaker, and a law career seemed promising until Mr. Finley persuaded him to study "physic."

Rush began an apprenticeship on February, 1761, under John Redman, M.D. (Leyden, 1748). Colonial practitioners acquired the art and science of medicine by serving a master for six years. He worked hard, read his preceptor's books, observed the methods of Redman's colleagues at the hospital, and attended Shippen's (Edinburgh, 1761) anatomy lectures and Morgan's (Edinburgh, 1763) lectures on materia medica at the medical school. In July, 1766, Rush left for Edinburgh. It was customary for affluent American students to attend European medical schools, and the University of Edinburgh attracted eighteenth century colonial students. Rush attended lectures by Cullen, Monro, and others. In the summer, he studied mathematics, French, Spanish, Italian, and Latin. He received his degree on June, 1768, and left for Paris and London for further clinical practice. He was a pupil of the Hunters in London, lived as a house guest of Franklin, and met many of the great minds of the Continent.

In the summer of 1769, Rush, twenty-four years old, returned to his native city. He was a learned, able, and well-trained physician, a humanitarian, and a patriot. He set out on a path that few men of his century paralleled. He served medicine, humanity, and his country. He made history.

Personality and career in medicine

Rush was an attractive man, well-built, above medium height, and wore a powdered wig which he discarded after middle age. He was dignified, elegant in dress, and had a quiet, pleasant speech. His face was thin, with a high, round forehead, piercing eyes, firm jaw, and aquiline nose.

Rush was courteous, sympathetic, honest, and charitable to his patients. He considered environment in relation to disease. He believed that few drugs were helpful, and favored vaccination. In mental illness, Rush encouraged occupational therapy and analytic conversation. In his early medical practice, he was influenced by John Cullen (1712–1792), his teacher in Edinburgh and a pupil of Boerhaave (1668–1738). Later he adopted the procedures of John Brown (1735–1788), a pupil of Cullen. After 1790 Rush practiced and taught his own system based on the concept of vascular tension and its therapy, bleeding and purging.

Rush joined the medical school faculty soon after his return from Europe and became the first professor of chemistry in the country. His *Syllabus of a Course of Lectures in Chemistry* was the earliest American text. Rush succeeded to the chair of physic in 1789 and in 1791 to the chair of medicine and clinical practice. When Kuhn (Edinburgh, 1767) resigned, Rush became Professor of the Practice of Physic which title he held until his death.

Rush was the leading clinician in America and responsible for the medical education of over 3,000 physicians. He also conducted clinical instruction at the hospital (1783–1813) and in 1786 helped found the first American dispensary. His ideas and theories of medical practice were followed by physicians both here and abroad, and he demonstrated to Europe that America could produce a high level of medical education. He was a keen observer and kept precise and careful notes. J. C. Lettsom, M.D., called him the "American Sydenham." W. H. Welch, M.D., acclaimed him the "greatest historical figure in American medicine." Silas Weir Mitchell, M.D., described him as the "greatest physician this century produced."

Other activities

Rush was a prolific writer. He possessed not only a profound and extensive knowledge of medicine, but was also a keen student of his country and its history, philosophy, business, agriculture, education, and social conditions. Consequently, his contributions were not confined to medicine but also included anthropology, education, social reforms, and evils of slavery, penology, alcoholism, and politics.

Rush was exquisitely sensitive to suffering and misery and was deeply concerned for the poor, Negroes, the sick, the hungry, and the aged. He loved man and respected the dignity of man. He sought the improvement of man and gave his active support to many liberal and philanthropic causes.

Rush was a patriot. He was faithful to the revolutionary cause and its principles, took an active part in the Revolutionary War, and sought only the welfare of his country and its people. He considered participation in public affairs a duty. Before he left for Edinburgh, he bitterly denounced the Stamp Act of 1765. When England attempted to dump tea on the colonies in 1773, he hailed the Boston Tea Party, and in the first Continental Congress, in 1774, as a delegate from the Pennsylvania Assembly, he acclaimed the unity of the colonies. He was a member of the second Continental Congress (1776–1777) which adopted the Declaration of Independence on July 4, 1776, and was one of its renowned signers.

Conclusion

Rush lived a useful life in an historic and exciting period. His medical theories and revolutionary activities; his opposition to slavery, capital punishment, and liquor; and the advances he sponsored in education and social conditions did not endear him to the tories, conservatives, appeasers, special groups, and factions in medicine, religion, and politics. But when he died, tributes came from his two closest friends, both former Presidents of the United States. Jefferson described him as the "benevolent, learned, honest genius." John Adams mourned "the passing of a man of science, letters, taste, sense, philosophy, patriotism, religion, morality, merit, usefulness—who had done more good in the world than Franklin or Washington."

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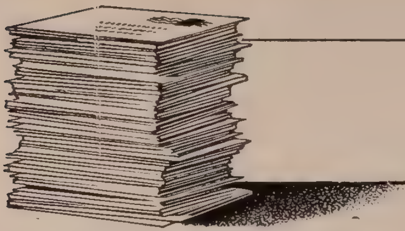

Letters to the Editor

Further reflections on maltreatment of children

To the Editor: The neglect and abuse of children appears to be increasing and has become a problem to those individually concerned with the diagnosis and subsequent disposition of these cases. In the last decade, this most pressing problem of child maltreatment has been recognized by society. Today, all 50 states have child-abuse laws making it mandatory to report cases of child abuse as proposed by the Children's Bureau.[1] However, reluctance on the part of some physicians to report, the traditional yielding to parental authority by the courts, the overlapping of investigations, and the interposition of various social service agencies call attention to the possible lack of protection for the abused child as provided by these state laws.

Kempe[2] brought the plight of the "battered child" to the attention of physicians in 1962. This comprehensive report emphasized the last phase of a spectrum or the ultimate result of willful child abuse. A more suitable term, "the maltreatment syndrome," encompasses all phases of child abuse and neglect. The medical criteria for establishing the diagnosis of the "maltreatment syndrome" in children have been fairly well defined in some recent reports.[3–5] These diagnostic medical criteria have minimal relationship to any ethnic or class identification of the family.

In a recent text on human violence, Werthman[6] stated:

> The Battered Child Syndrome or Maltreatment Syndrome is a recent phenomenon. It is increasing and it seems to occur as a mass phenomenon in the United States. The parents belong to a generation which has grown up with crime and horror comic books, and the violence of other mass media. They live in a time when war and foreign policy are almost interchangeable terms and nonviolence is regarded as a radical invention. In a considerable portion of the cases, alcohol plays a very important causal or contributing role in both mothers and fathers. Without the lubrication with alcohol, some of the cases would not have happened.
>
> This syndrome in all its aspects is the most important symptom of our time. It is a link in the documentation of my thesis that the spirit of violence is rampant in our society. It is a matter not only of the occurrence of these heartless cruelties against defenseless children, but of the inadequacy of the steps taken so far to prevent them. Physicians, legislatures and childcare agencies have taken up the question belatedly. Even now no proper solution has been found. This is one of the forms of violence which society calls "incredible" and is unequipped to deal with.

Elmer[7] has reported: "The array of emotional attitudes toward abuse, the sparseness of descriptive literature and the comparative absence of study all lead to the hypothesis of a social taboo in this area. . . . We resent the evidence that vindictive impulses exist in others and may therefore exist in ourselves. Hence, the 'cloak of silence' and the determined actions to eliminate or disregard the evidence."

In evaluating our cases of child abuse at St. Vincent's Hospital and Medical Center, it appeared that the battered children were usually the victims of emotionally crippled parents, beginning with unfortunate circumstances surrounding the parent's own childhood.[4] The "battering" parent reacts toward his own child as a result of past personal experience of loneliness, lack of protection, and love. Some of the mothers have been cared for by a variety of foster parents during their own childhood. These mothers who have had unfortunate childhoods are unable to react normally to the needs of the infant. These parents are unable to distinguish between their own childhood suffering and their vicious reaction toward their children.

One of the solutions to this problem of maltreatment, therefore, must begin with the proper care and treatment of the adolescent who has been exposed to an environment which is lacking in parental love and protection. This is a most important first-phase attack on the over-all problem of child abuse. With proper management of the abused child by psychologic, social, and medical measures, the maltreatment of future children may be prevented.

We noted that over 50 per cent of these children who were abused or neglected were prematurely born and of low birth weight. These premature children are usually slower in development than the normal newborn. The parents of these infants are often unable to cope with the slow development of the expremature child. When the child is not able to perform, the parent may be "triggered" into a reaction leading to inflicted abuse. From the large percentage of premature births in the 25 maltreated children in our study, one can speculate that there might be a conscious or unconscious rejection of the infant by this type of parent. In the prenatal period it is expressed by the high incidence of prematurity and after birth of the child by the episodes of inflicted neglect and abuse often leading to death. Divorce, alcoholism, unemployment, and financial distress played leading roles in the family structure of the abusing parents who were investigated. The abusing parents were often young, emotionally unstable, and immature. The characteristics of the families and children have been studied and reported by other investigators.[8-10]

It would seem at this time that a hopeless situation exists in assisting or rehabilitating the parents who are responsible for the child abuse since not enough studies have been accumulated to give the psychiatrists direction and tools for therapy. It is also hopeless in that many of these parents not only do not seek out help but in many cases resist any type of psychologic or social assistance when it is offered.

Legislative action is only the first phase of protecting the child, and alone it will not help alleviate the plight of the abused and neglected child. Reporting of abuse and neglect cases is not enough. It is the action taken after the reporting that is important, and an interdisciplinary approach to this action must be implemented to achieve the effective results and the true intention of the law. Reporting, subsequent investigation, and a realistic follow-up must become a cooperative venture if further progress is to be made in the prevention of this disease.

Many difficulties still remain in attacking this most important problem of maltreatment. The education and cooperation by all members of society, more effective reporting of child abuse cases on all levels, and more persistent investigation and follow-up on the child and family by child protective agencies are all important and necessary in effecting the true intention of any child protective legislation. The development of a more intensive multidisciplinary, medical, legal, and social approach will allow complete coverage and prevent overlapping of investigations now resulting in the lack of protection for the abused child.

Informative dialogue and communication with the judges and lawyers of the Family Court is essential to assure a more realistic interpretation of the "mother belongs to child and child belongs to mother" concept. The traditional yielding to parental authority by the courts often allows the parents to escape prosecution for their actions and gives them an opportunity to continue their vicious actions.

The problems that still face us involve the physician who still does not appreciate the extent or existence of the battered child or maltreatment syndrome and is reluctant to report cases of suspected child abuse. The lack of foster homes and child-caring institutions in the community often makes the removal of a child from a hazardous environment difficult or impossible. There is great difficulty in obtaining psychiatric care on a community level for the rehabilitation and care of the disturbed parents. These problems demand the attention of physicians, lawyers, social workers, and community leaders—only then can there be adequate community, city, and state family services to insure facilities and trained personnel to protect both child and parents from further emotional and physical trauma.

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Problems in Global Medicine

To the Editor: Somewhere on the bumpy road to final printing the following errors were made in my part of the Symposium "Problems in Global Medicine," entitled "Kanto Plain Asthma," NEW YORK STATE J. MED. **67**: 2461 (Sept. 15) 1967:

Paragraph 3, lines 3 and 4, Donora for Danora

Paragraph 6, line 8, Nagoya for Nazoya

Paragraph 7, line 6, Zama for Zarna; Tachikawa for Tachiekawa.

If at all possible, please print corrections in a forthcoming issue.

COMDR. JOHN H. BAKER (MC) U.S. NAVY
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Necrology

Alonzo Jefferson Beavers, M.D., of Elmhurst and Freeport, died on January 9 at the age of fifty-five. Dr. Beavers graduated in 1939 from the University of Texas School of Medicine.

Paolo Emilio Bucci, M.D., of Richmond Hill, died on June 7 at the age of fifty-one. Dr. Bucci received his medical degree from the University of Naples in 1942. He was an assistant attending pediatrician at Mary Immaculate Hospital. Dr. Bucci was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Garrett Marcellus Clowe, M.D., of Schenectady, died on May 23 at the age of seventy-nine. Dr. Clowe graduated in 1913 from Albany Medical College. He was a consulting physician at St. Clare's Hospital and an honorary member of the medical staff at Ellis Hospital where he formerly had served as chief of the medical staff. Dr. Clowe was a member of the Schenectady County Medical Society (and a past president), the Medical Society of the State of New York, and the American Medical Association.

Harry Epstein, M.D., of The Bronx, died on May 8 at the age of seventy-eight. Dr. Epstein graduated in 1914 from Long Island College Hospital. He was an adjunct physician in internal medicine (off service) at Bronx-Lebanon Hospital Center. Dr. Epstein was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Norman Frankel, M.D., of New York City, aged thirty-nine, was found dead at his home on June 30. Dr. Frankel received his medical degree from the University of Bologna in 1955. He was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry and Child Psychiatry), and a member of the American Psychiatric Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Everett Colgate Jessup, M.D., of Princeton, New Jersey, formerly of Roslyn, retired, died on July 1 at the age of eighty. Dr. Jessup graduated in 1916 from Columbia University College of Physicians and Surgeons. He was a consulting physician at Nassau Hospital (Mineola), Community Hospital at Glen Cove, and South Nassau Communities Hospital (Oceanside), an honorary member of the medical staff at North Shore Hospital (Manhasset), and an emeritus member of the medical staff at Meadowbrook Hospital (Hempstead). Dr. Jessup was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the New York Academy of Medicine, the Nassau County Medical Society (and a past president), the Medical Society of the State of New York, and the American Medical Association.

Frank Alford Johnston, M.D., of Kingston, died on March 11 at the age of eighty-five. Dr. Johnston graduated in 1903 from Long Island College Hospital. He was an honorary surgeon at Kingston Hospital. Dr. Johnston was a Fellow of the American College of Surgeons and a member of the Ulster County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Vincas Kanauka, M.D., of Brooklyn, died on March 22 at the age of seventy-five. Dr. Kanauka received his medical degree from the University of Kiev in 1917. He was a staff physician at Linden General Hospital. Dr. Kanauka was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Edwin Brannon Kelly, M.D., of Amsterdam, died on June 24 at the age of sixty-four. Dr. Kelly graduated in 1936 from Albany Medical College. He was an associate attending physician and an assistant attending surgeon at St. Mary's Hospital and an attending physician at Amsterdam Memorial Hospital. Dr. Kelly was a member of the Montgomery County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Herman Kleinman, M.D., of Brooklyn, died on May 25 at the age of fifty-one. Dr. Kleinman graduated in 1941 from New York University College of Medicine. He was an associate attending obstetrician and gynecologist at Caledonian and Coney Island Hospitals and an assistant attending obstetrician and gynecologist at Maimonides Hospital of Brooklyn. Dr. Kleinman was a Diplomate of the American

Board of Obstetrics and Gynecology, a Fellow of the American College of Surgeons, a Fellow of the American College of Obstetricians and Gynecologists, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Margaret Doolittle Nordfeldt, M.D., of New York City, retired, died on June 10 at the age of ninety-five. Dr. Nordfeldt graduated in 1898 from Boston University School of Medicine.

Thomas H. Shanahan, M.D., of Jamestown, died on May 21 at the age of seventy-six. Dr. Shanahan graduated in 1920 from the University of Buffalo School of Medicine. Retired, he was an honorary surgeon at Woman's Christian Association Hospital. Dr. Shanahan was a Fellow of the American College of Surgeons and a member of the Buffalo Academy of Medicine, the Chautauqua County Medical Society (president in 1934), the Medical Society of the State of New York, and the American Medical Association.

Edward Delavan Truesdell, M.D., of Huntington, died on July 7 at the age of eighty-eight. Dr. Truesdell graduated in 1906 from Columbia University College of Physicians and Surgeons. He was a consulting surgeon at Lincoln and St. Luke's Hospital. Dr. Truesdell was a member of the New York Academy of Medicine, the New York Surgical Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Weiskopf, M.D., of The Bronx, died on June 27 at the age of seventy-three. Dr. Weiskopf graduated in 1917 from Long Island College Hospital. He was an honorary consulting physician at Bronx-Lebanon Hospital Center. Dr. Weiskopf was a member of the Bronx County Medical Society (president in 1947), the Medical Society of the State of New York, and the American Medical Association.

Jack Wolf, M.D., of New York City and Harrison, died on July 7 at the age of sixty-four. Dr. Wolf graduated in 1927 from Columbia University College of Physicians and Surgeons. He was a consulting dermatologist at Long Beach Memorial Hospital. Dr. Wolf was a Diplomate of the American Board of Dermatology, Inc., and a member of the American Academy of Dermatology, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Correction: Collipp, P. J., and Dragutsky, D.: Serum proteins in infant stools; another test for protein-losing enteropathy, NEW YORK STATE J. MED. **68:** 1965 (July 15) 1968. This report came from the Department of Pediatric Services, Maimonides Medical Center, and the Department of Pediatrics, State University of New York Downstate Medical Center, Brooklyn, New York.

Month in Washington

President Johnson designated Wilbur J. Cohen, Secretary of U.S. Department of Health, Education, and Welfare, as the chief Federal official for health policies and programs.

A reorganization plan of H.E.W., recommended by Secretary Cohen and approved by Mr. Johnson, makes the secretary: (1) Chief adviser to the President on Federal health policy and programs; (2) responsible for coordinating all Federal health programs, and (3) head of a new Federal Interdepartmental Health Policy Council.

The reorganization also included creation of a Consumer Protection and Environmental Health Service as a unit of the Public Health Service and transfer of the Division of Regional Medical Programs from the National Institutes of Health to the Health Services and Mental Health Administration.

Mr. Johnson also agreed to renew a request to Congress to raise the status of H.E.W.'s principal health official, Philip R. Lee, M.D., from assistant secretary to undersecretary for health and science.

The new consumer and environmental health unit consists of:

—The Food and Drug Administration;

—The National Center for Air Pollution Control;

—The National Center for Radiological Health;

—The National Center for Urban and Industrial Health; and

—certain staff units of the Office of the Director, Bureau of Disease Prevention and Environmental Control.

Charles C. Johnson, Jr., a Negro and assistant commissioner for environmental health in New York City, was named to head the new unit. An engineer, he had been on leave from the U.S. Public Health Service, and his new post makes him the highest ranking Negro member in the history of the Public Health Service.

Herbert L. Ley, Jr., M.D., who had been director of the F.D.A.'s Bureau of Medicine since the fall of 1966, was appointed to succeed James L. Goddard, M.D., who recently resigned as commissioner of Food and Drug Administration. Dr. Ley, age forty-four, had been recommended by Dr. Goddard and also had the support of a number of Senate and House members on committees concerned with F.D.A. A 1946 graduate of the Harvard Medical School, Dr. Ley had been on the faculty at his alma mater and the George Washington University School of Medicine earlier in his career. He also had served as chief of medical branches of the Army research office and the office of the Army Surgeon General.

The interdepartmental health policy council will oversee all Federal activities in the health field, such as the drafting of physicians for service with the armed forces, Veterans Administration hospitals, and Office of Economic Opportunity health projects.

Secretary Cohen said that there had been no way in the past for the H.E.W. secretary to give guidance in such matters. He said there must be a re-examination of the drafting of physicians to provide care in the United States for civilian dependents of military personnel.

"This allocation of a portion of the critically scarce physician pool materially affects programs intended to make health care as widely available as possible, a national health goal that goes far beyond the mission of the Department of Defense," Cohen said.

As Medicare went into its third year, Cohen announced the appointment of a 12-member advisory council to study the possible extension of the program to disabled persons under age sixty-five. Congress last year turned down the Administration's request for such an extension but authorized creation of the council to study the matter.

In discussing Medicare, Cohen said rising health care costs had made financing of the program a serious problem. He said new financing, presumably a tax increase, may be required if costs continue to rise. "Physicians must act with restraint on fees or people will ask government to put on controls," he said. "I would not like to see that."

Henry H. Kessler, M.D., director of the Kessler Institute for Rehabilitation in Newark, New Jersey, was named chairman of the advisory council. Other members are:

Morris Brand, M.D., medical director of the Sidney Hillman Health Center; James Brindle, president of the Health Insurance Plan of Greater New York; James M. Gillen, director of personnel research of General Motors; Juanita Kreps, associate professor of economics at Duke University; Leonard W. Larson, M.D., past president of the American Medical Association; Daniel W. Pattengill, vice-president of Aetna Life and Casualty Company; Bert Seidman, director of the AFL-CIO social security department; E. A. Vaughn, vice-president of the Aluminum Company of America; Anthony G. Weinlein, executive assistant to the president of the AFL-CIO Building Service Employes; E. B. Whitten, executive Director of the National Rehabilitation Association, and Alonzo S. Yerby, M.D., professor, Harvard School of Public Health.

Prepared by the Washington, D.C., Office of the American Medical Association.

* * *

The American Medical Association told Congress it supported most provisions of the Administration's health manpower bill as essential to increasing enrollment in the nation's medical schools.

The AMA position was outlined by William A. Sodeman, M.D., of the AMA's Council on Medical Education in testimony before the House Public Health and Welfare Subcommittee. He brought attention to a recent joint statement of the AMA and the Association of American Medical Colleges that more funds from both government and private sources would be needed by medical schools if they were to expand enrollment. "The bill (H.R. 15757) before the subcommittee provides a means of furnishing the Federal component of the necessary financial resources," Dr. Sodeman said.

In other testimony, the AMA supported the over-all objectives of the Administration's occupational health bill. But the AMA opposed a provision that would authorize establishment and enforcement of mandatory national standards for health and safety.

R. Lomax Wells, M.D., chairman of the AMA's Council on Occupational Health, told a Senate Labor Subcommittee, that the objectives of the bill (S. 2864) could "best be accomplished through the research, education, and training provisions and through grants to states to enable them to undertake and conduct more effective programs in both occupational health and safety."

Urging rejection of the mandatory standards provision, Dr. Wells said that this authority has been "properly vested in the states where the standards and the enforcement can be adapted to their particular geographic and industrial conditions."

* * *

The U.S. Supreme Court refused, by a 5 to 4 division, to lay down a constitutional rule against punishing persons who are chronic alcoholics for being drunk in public.

In an opinion by Justice Thurgood Marshall, four members of the Court said that neither the facts of the test case nor "the comparatively primitive state" of scientific knowledge on the subject justifies such a decision at the present time.

The vote of the four, plus Justice Byron R. White, who concurred separately, upheld the conviction of Leroy Powell, age sixty-seven, who was fined $50 in a Travis County, Texas, court for being drunk in public.

The argument for Powell was that alcoholism is a disease, and the person suffering from it should be treated rather than punished.

Two AMA authorities on alcoholism expressed surprise and disappointment at the court's decision. Marvin Block, M.D., Buffalo, a member and former chairman of the AMA's Committee on Alcoholism and Drug Abuse, and Dana L. Farnsworth, M.D., of Harvard University, chairman of the AMA Council on Mental Health, took issue with the court opinion that "we are unable to conclude . . . that chronic alcoholics in general . . . suffer from such an irresistible compulsion to drink and get drunk in public that they are utterly unable to control their performance . . .   ."

Cerebral blood flow studies

Speaking of cerebral blood flow studies, E. B. Schlesinger, M.D., has recently stated that these studies, using multichannel gamma emission detectors for the investigation of neurologic disorders, involving the injection of isotopes into arteries, lose value in clinical use because of hazards and inconvenience of arterial puncture to the patient. Venous injection, however, is considered more minor, and many hospitals now use this route.

Flow patterns after intrathecal injection of isotopes have been studied, and have given more comprehension in various disorders. Low-pressure hydrocephalus, for example, is characterized by a unique pattern of isotope movement which is not only of diagnostic interest but also throws light on the dynamics of this unusual entity.

This characteristic pattern was found in 1 patient, for example, seventy-four, who gradually became confused, demented, and had progressive difficulty with gait and sphincter control. Ordinarily, particularly with no signs of pressure in the brain, the patient would be considered to have senile dementia. The classic pattern of isotopes entering the ventricular system rather than spreading around the brain was the clue to the presence of low-pressure hydrocephalus. An operative procedure consisting of shunting cerebrospinal fluid from the ventricle into the venous blood stream rapidly reversed the patient's clinical picture to nearly normal.

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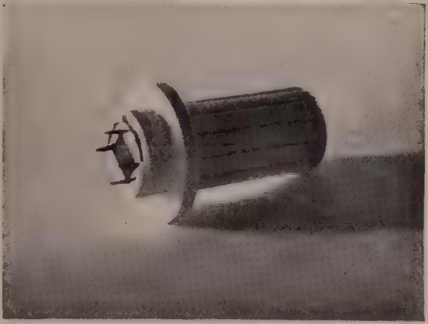

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The Acne "Epidemic"

Acne is constantly present in epidemic proportions. At any given time 60% to 90% of teenagers are afflicted.[1]

Because many different therapeutic approaches are available, no single "regimen of choice" is applicable to all patients. There is, however, one generally agreed upon basic procedure: the use of therapeutic cleansing. In most instances, antibacterial pHisoHex is "right" for cleansing acne skin. Its regular use complements other therapies and enhances results.[2-4] When deep-seated acne lesions occur, the thorough, antibacterial skin cleansing action of pHisoHex is beneficial whether or not oral antibiotics or sulfonamides are used. pHisoHex, containing 3 per cent hexachlorophene, makes the skin surgically clean. Repeated exclusive use builds a cumulative antibacterial film on skin to help protect against skin bacteria (especially Staph) that may infect lesions.

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Available in plastic squeeze bottles of 5 oz. and 16 oz.

References: 1. Sulzberger, M. B., and Witten, V. H.: *M. Clin. North America* 43:887, May, 1959. 2. Hodges, F. T.: *GP* 14:86, Nov., 1956. 3. Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. 4. McLean, I. E. D.; Graham, K. T., and East, M. O.: *Practitioner* 189:82, July, 1962.

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Indication — Oral contraception.

Contraindications — Thrombophlebitis, thromboembolic disorders, cerebral apoplexy or a past history of these conditions, markedly impaired liver function, known or suspected carcinoma of the breast, known or suspected estrogen-dependent neoplasia, undiagnosed abnormal genital bleeding.

Warnings — Watch for the earliest manifestations of thrombotic disorders (thrombophlebitis, cerebrovascular disorders, pulmonary embolism, retinal thrombosis); if present or suspected discontinue the drug immediately.

British studies reported in April 1968[1,2] estimate there is a seven- to tenfold increase in mortality and morbidity due to thromboembolic diseases in women taking oral contraceptives. In these controlled retrospective studies, involving 36 reported deaths and 58 hospitalizations due to "idiopathic" thromboembolism, statistical evaluation indicated that the differences observed between users and non-users were highly significant. The conclusions reached in the studies are summarized in the table below:

Comparison of Mortality and Hospitalization Rates Due to Thromboembolic Disease in Users and Non-Users of Oral Contraceptives in Britain.

Category	Mortality Rates		Hospitalization Rates (Morbidity)
	Age 20-34	Age 35-44	Age 20-44
Users of Oral Contraceptives	1.5/100,000	3.9/100,000	47/100,000
Non-Users	0.2/100,000	0.5/100,000	5/100,000

No comparable studies are yet available in the United States. The British data, especially as they indicate the magnitude of the increased risk to the individual patient, cannot be applied directly to women in other countries in which the incidences of spontaneously occurring thromboembolic disease may differ.

Discontinue medication pending examination if there is sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine. Withdraw medication if papilledema or retinal vascular lesions are found.

Since the safety of Ovulen in pregnancy has not been demonstrated, it is recommended that pregnancy be ruled out for any patient who has missed two consecutive periods before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule the possibility of pregnancy should be considered at the first missed period.

A small fraction of the hormone agents in oral contraceptives has been identified in the milk of mothers receiving these drugs. The long-range effect to the nursing infant cannot be determined at this time.

Precautions — Pretreatment physical examination should include special reference to the breasts and pelvic organs, and a Papanicolaou smear.

Endocrine and possibly liver function tests may be affected by Ovulen. Therefore, it is recommended that such tests if abnormal be repeated after the drug has been withdrawn for two months.

Pre-existing uterine fibromyomas may increase in size under the influence of progestogen-estrogen preparations.

Because these agents may cause some degree of fluid retention, conditions which might be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation.

In breakthrough bleeding, and all irregular vaginal bleeding, consider nonfunctional causes. Adequate diagnostic measures are indicated in undiagnosed vaginal bleeding.

Carefully observe patients with a history of psychic depression and discontinue the drug if severe depression recurs.

Any possible influence of prolonged Ovulen therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study.

A decrease in glucose tolerance has occurred in a significant percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be observed carefully while receiving Ovulen.

Because of the effects of estrogens on epiphyseal closure Ovulen should be used judiciously in young patients in whom bone growth is not complete.

The age of the patient constitutes no absolute limiting factor, although Ovulen therapy may mask the onset of the climacteric.

The pathologist should be informed of Ovulen therapy when relevant specimens are submitted.

Adverse Reactions — A statistically significant association has been shown between use of oral contraceptives and the following serious adverse reactions: thrombophlebitis, pulmonary embolism.

Although available evidence is suggestive of an association, such a relationship has been neither confirmed nor refuted for the following serious adverse reactions: cerebrovascular accidents, neuro-ocular lesions, e.g., retinal thrombosis and optic neuritis.

The following adverse reactions are known to occur in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea during and after treatment, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), change in weight, changes in cervical erosion and cervical secretions, suppression of lactation when given immediately post partum, cholestatic jaundice, migraine, allergic rash, rise in blood pressure in susceptible individuals, mental depression.

Although the following adverse reactions have been reported in users of oral contraceptives, an association has been neither confirmed nor refuted: anovulation post treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme and nodosum, hemorrhagic eruption, itching.

The following laboratory results may be altered by oral contraceptives: hepatic function: increased sulfobromophthalein and other tests; coagulation tests: increase in prothrombin, Factors VII, VIII, IX and X; thyroid function: increase in PBI and butanol extractable protein bound iodine, and decrease in T^3 values; metyrapone test; pregnanediol determination.

References: 1. Inman, W. H. W., and Vessey, M. P.: Brit. Med. J. 2:193-199 (April 27) 1968. 2. Vessey, M. P., and Doll, R.: Brit. Med. J. 2:199-205 (April 27) 1968.

Before prescribing see Detailed Product Information.

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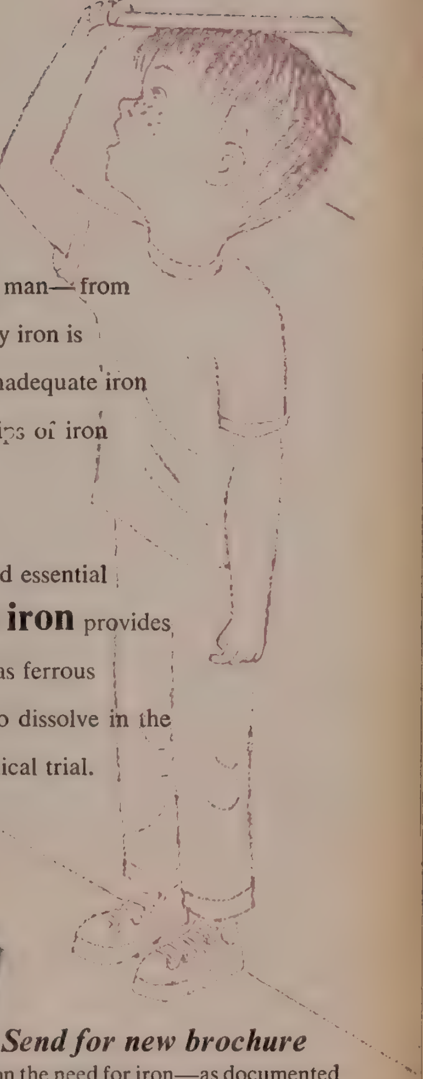
due to the metabolic demands of rapid growth and total body development. Growth spurts increase the need for iron so that the recommended daily iron intake[5] in both boys and girls between ages three and six is equal to that for the adult man—from ages six to nine it is twenty per cent greater. Since only about 10% of dietary iron is absorbed,[2,6] this need is often greater than that provided by dietary intake. Inadequate iron intake may lead to subtle tissue changes[7] due to the metabolic interrelationships of iron absorption and utilization with other essential nutrients.



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Niacinamide	20 mg.	4.0	2.7	2.0
Vitamin B_1 (Thiamine) . . .	2 mg.	4.0	2.7	2.0
Vitamin B_2 (Riboflavin) . . .	2.5 mg.	2.7	2.7	2.0
Pyridoxine HCl (B_6)	1 mg.	*	*	*
Cyanocobalamin (B_{12})	1 mcg.	*	*	*
Iron (as Ferrous Fumarate 31 mg.)	10 mg.	1.3	1.0	1.0

*MDR for these vitamins has not been determined.

References: 1. Beutler, E.; Fairbanks, V.F.; and Fahey, J.L.: Clinical Disorders of Iron Metabolism. New York, Grune & Stratton, 1963. 2. Moore, C.V.: Iron and the Essential Trace Elements, Chapter 10. In Wohl, M.G., and Goodhart, R.S. (eds.): Modern Nutrition in Health and Disease. 3rd edition. Philadelphia, Lea & Febiger, 1964. 3. Moore, C.V.: Iron Malnutrition, Chapter 9, page 329. In Jolliffe, N. (ed.): Clinical Nutrition. 2nd edition. New York, Hoeber-Harper, 1962. 4. Merivale, Wm. H.H.: Mineral Metabolism, p. 281-288. In Duncan, G.G. (ed.): Diseases of Metabolism. 5th edition. Phila. and London, W.B. Saunders, 1964. 5. Recommended Dietary Allowances, Sixth Revised Edition, 1964. A report of the Food and Nutrition Board, National Academy of Sciences, National Research Council, Publication 1146, Washington, D.C., 1964. 6. Herbert, V.: Iron and Iron Salts, Chap. 9, p. 1394-1409. In Goodman, L.S., and Gilman, H. (eds.): The Pharmacological Basis of Therapeutics. 3rd edition. New York, Macmillan, 1965. 7. Beutler, E.: Tissue Effects of Iron Deficiency, p. 256-272. In Iron Metabolism, Symposium. Gross, F. (ed.). Springer-Verlag, Berlin, 1964. 8. A.M.A. Council on Foods and Nutrition: Iron Deficiency in the United States. Jour. Amer. Med. Assn. 203:119-124 February 5, 1968.

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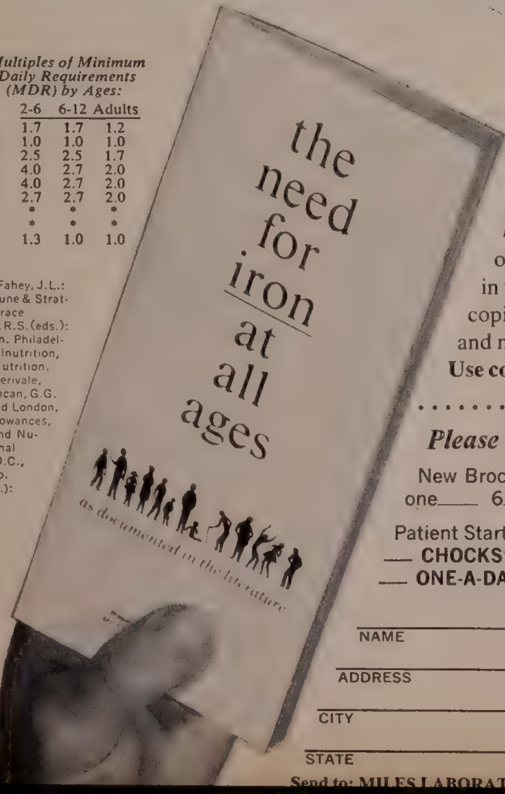
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Books Received

*The following books were received during the month of June, 1968.**

Orthopedic Diseases. By Ernest Aegerter, M.D., and John A. Kirkpatrick, Jr., M.D. Third edition. Quarto of 906 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $23.

The Radiobiology of Human Cancer Radiotherapy. By J. Robert Andrews, M.D. Quarto of 271 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $20.55.

Fundamentals of Psychiatry. By Ian Gregory, M.D. Second edition. Quarto of 647 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $14.05.

Clinical Endocrinology. II. Edited by Edwin B. Astwood, M.D., and Carl E. Cassidy, M.D. Octavo of 844 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $29.75.

Use of Interpretation in Treatment. Edited by Emanuel F. Hammer, Ph.D. Quarto of 379 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $16.75.

Psychiatry: East and West. Edited by Jules H. Masserman, M.D. Octavo of 166 pages. New York, Grune & Stratton, 1968. Cloth, $7.75.

Gradwohl's Legal Medicine. Edited by Francis E. Camps, M.D. Second edition. Quarto of 740 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1968. Cloth, $27.

Pediatric Therapy. By Harry C. Shirkey, M.D. Third edition. Quarto of 1,294 pages, illustrated. St. Louis, The C. V. Mosby Company, 1968. Cloth, $25.

Ambulatory Pediatrics. Edited by Morris Green, M.D., and Robert J. Haggerty, M.D. Quarto of 970 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $22.50.

Clinical Radiation Pathology. Volume I and II. By Philip Rubin, M.D., and George W. Casarett, Ph.D. Quarto of 1,057 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $45. the set.

Noyes' Modern Clinical Psychiatry. By Lawrence C. Kolb, M.D. Seventh edition. Quarto of 638 pages. Philadelphia, W. B. Saunders Company, 1968. Cloth, $9.00.

Testimony of Two Men. By Taylor Caldwell. Quarto of 605 pages. Garden City, N.Y., Doubleday & Company, 1968. Cloth, $6.95.

Synanon. By Guy Endore. Octavo of 360 pages. Garden City, N.Y., Doubleday & Company, 1968. Cloth $5.95.

Monoclonal and Polyclonal Hypergammaglobulinemia: Clinical and Biological Significance. By Jan Gösta Waldenström. Octavo of 223 pages, illustrated. Nashville, Vanderbilt University Press, 1968. Cloth, $6.95.

Merchants of Heroin. By Alvin Moscow. Octavo of 276 pages. New York, The Dial Press, 1968. Cloth, $5.95.

Ciba Foundation Symposium on Interferon. Edited by G. E. W. Wolstenholme and Maeve O'Connor. Octavo of 271 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $12.

A Ciba Foundation and Science of Science Foundation Symposium on Decision Making in National Science Policy. Edited by Anthony De Reuck, Maurice Goldsmith, and Julie Knight. Octavo of 310 pages, illustrated. Boston, Little, Brown and Company, 1968. Cloth, $12.

Ciba Foundation Study Group No. 31. Nutrition and Infection. Edited by G. E. W. Wolstenholme and Maeve O'Connor. With 20 illustrations. Duodecimo of 144 pages. Boston, Little, Brown and Company, 1967. Boards, $3.50.

Schizophrenia in Children. Collected Papers by J. Louise Despert, M.D. Octavo of 215 pages. New York, Robert Brunner Inc., 1968. Cloth, $6.95.

Cooperative Study on Cardiac Catheterization. Edited by Eugene Braunwald, M.D., and Harold J. C. Swan, Ph.D. Quarto of 113 pages, illustrated. New York, The American Heart Association, 1968. Boards, $5.00. (American Heart Association Monograph Number Twenty)

Clinical Obstetrics and Gynecology. Volume 11 Number 1, March 1968. Physiology of Labor. Edited by Edward J. Quilligan, M.D. **Thromboembolic Disorders in Gynecology and Obstetrics.** Edited by Gail V. Anderson, M.D. Octavo of 318 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Published quarterly (four numbers a year). Cloth, $18 per year.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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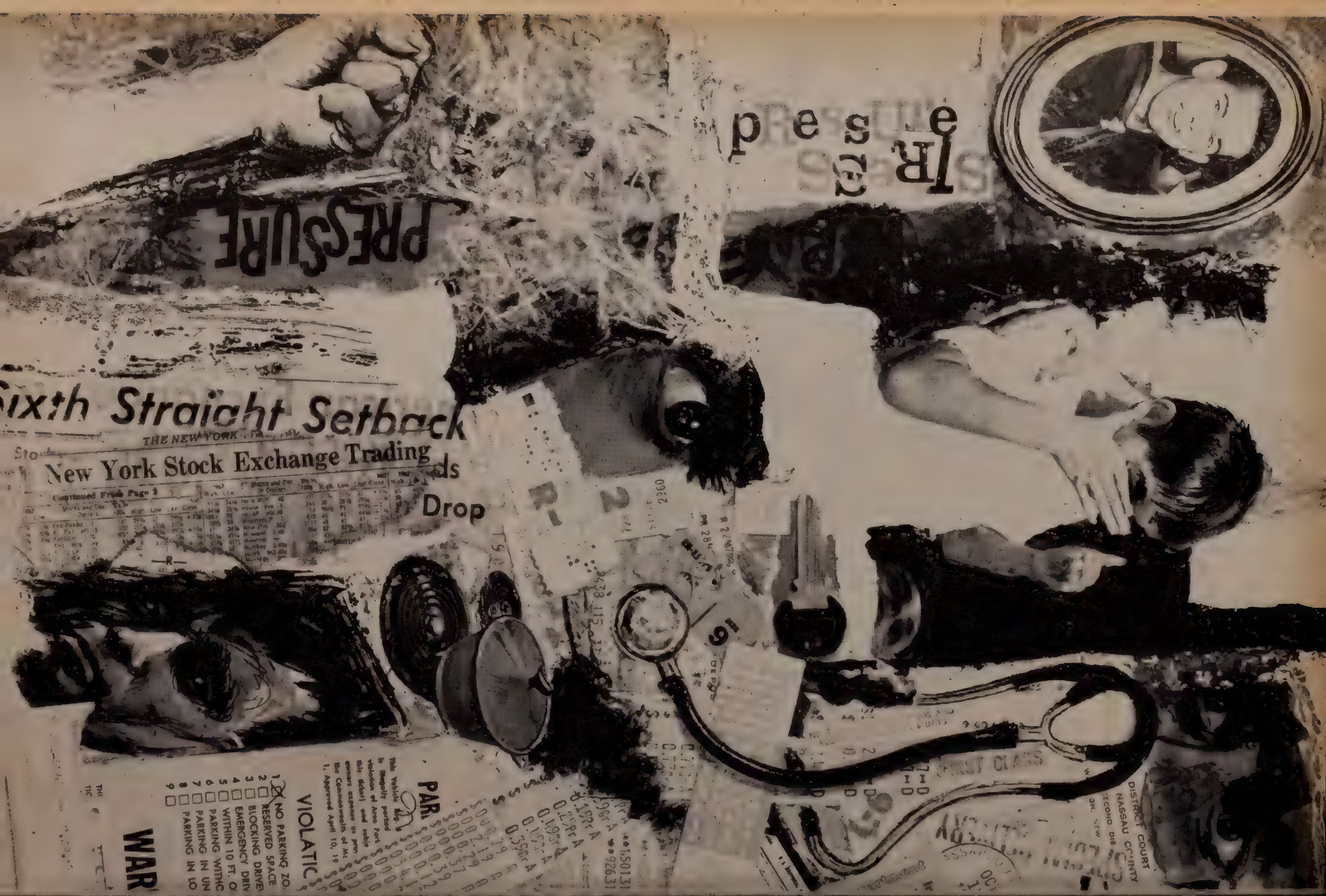
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WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls.

Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. The possibility of sensitivity reactions should be considered in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of child-bearing age, potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.

PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, paresthesias, purpura, rash, urticaria, photosensitivity or other hypersensitivity reactions may occur. Cutaneous vasculitis precipitated by thiazide diuretics has been reported in elderly patients on repeated and continuing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice. Whenever adverse reactions are moderate or severe, the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, and pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS (including ocular) sensitization have been noted. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure. Since reserpine may increase gastric secretion and motility it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other gastrointestinal disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Anxiety, depression, or psychosis may develop. Pre-existing depression may be aggravated.

Before prescribing or administering, read product circular with package or available on request.

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25 mg. hydrochlorothiazide
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Medical News

Albany Medical College receives Federal grant

Albany Medical College received a one and a half-million dollar Federal grant to extend planning and operational activities of the Albany Regional Medical Program.

The Albany Regional Medical Program is designed to assure rapid application of new medical knowledge about heart disease, cancer, and stroke in patient care for these diseases, which account for more than 7 out of every 10 deaths in the United States.

This was the first program to become operational under the Federal Heart, Cancer, and Stroke legislation passed in 1965. A nationwide network of programs is planned, and twelve other programs across the nation have become operational since this program started.

As part of its activities, the Albany program is (1) establishing communication with the medical community to determine the medical care needs within the region, (2) expanding the activities of WAMC, the FM radio station of the Medical College, to provide more two-way medical education for physicians, nurses, and other medical professionals, (3) designing community hospital learning centers for the use of professional and allied medical personnel, (4) supporting acute coronary care activities and training nurses to work in coronary care units which provide intensive care for patients suffering from heart attacks, and (5) coordinating area resources so that available knowledge about cancer prevention, early detection, and treatment will be more effectively employed in the region.

New concept in treatment of pregnant patients with cancer

A New York Medical College investigation of pregnant patients with cancer of the cervix has had twofold results—earlier detection and new concepts of treatment. Sanford Sall, M.D., assistant professor, states that cancer was detected five to fifteen years earlier in patients at Metropolitan Hospital, an affiliated hospital, than in the general population. He adds, despite disease some of these patients can have a family with "excellent results." The earlier detection is the result of a routine cytologic test (Pap smear) done on 40,906 patients during the eight-year period.

As a result of this investigation, in situ carcinoma was detected five years earlier than in the general population; invasive carcinoma was discovered fifteen years earlier.

In those patients with invasive carcinoma, surgery, x-ray therapy, or both, was immediately performed. However it became apparent to Dr. Sall while treating these patients with in situ carcinoma that certain women could be allowed to have one or more children because of the early stage of the disease. Previously, these women underwent hysterectomy.

Before making this decision, however, extensive tests were performed. If it was definitely in situ carcinoma, a conization was done to see if the cancer had spread. If conization showed that the disease was localized, the mother was allowed to complete the pregnancy with a normal delivery. If the mother's condition remained unchanged, surgical therapy was delayed so that she could have more children.

In 1968, the method of allowing certain patients with in situ carcinoma to have one or more children is accepted practice. The New York City Department of Health has made it mandatory that every pregnant patient receive a routine Pap smear. Dr. Sall emphasizes that this should be done on a national basis as it is "a unique opportunity for screening," and enables the physician to treat the patient when she can really be helped.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

New transplant-dialysis-biochemistry unit opens at New York Hospital

With the inauguration of a unique transplant-dialysis-biochemistry unit, The New York Hospital greatly increased its potential to perform organ transplants, especially kidney transplants.

The new unit, located in the general surgical wing of the Hospital, consists of an area for dialysis for 4 patients at one time, an adjoining nursing station, and two sterile rooms for post-transplant patients being treated by immunosuppressive therapy. Important to the unit is a nearby biochemical laboratory which permits the performance of various tests, including electrolytes, pH, and blood volume tests. The laboratory is equipped to do tissue typing on a round-the-clock emergency basis.

The organ transplant program is under the Department of Surgery, headed by C. Walton Lillehei, M.D., surgeon-in-chief.

Five New York firms acquire latest life-saving technics

Five major New York firms, including Con Edison, American Telephone and Telegraph, New York Life Insurance Company, Inter-

continued on page 2244

New

Tegretol®
carbamazepine

Therapeutic breakthrough in non-narcotic control of the pain of trigeminal neuralgia

Warning
Fatal cases of aplastic anemia have been reported following treatment with Tegretol. Agranulocytosis, thrombocytopenia and transitory leukopenia have also been observed. Complete blood and platelet counts should be done prior to and at regular intervals during treatment with the drug (see recommendations under "Important Note and Precautions") to help in the early detection of serious bone marrow injury. Abnormalities in initial blood tests should rule out use of the drug. Also, patients should be made aware of such early toxic signs of a potential hematologic problem as fever, sore throat, mouth ulcers, easy bruising and petechial or purpuric hemorrhage. Should such signs appear, the patient should be advised to discontinue the drug and to report to the physician immediately.

Indication Tegretol is indicated in the treatment of the pain associated with true trigeminal neuralgia. It is not a simple analgesic and should never be administered for relief of trivial facial aches or pains.

Contraindication Do not use in those with a known sensitivity to any tricyclic compound or in those being treated with M.A.O.I. agents. As long a period as possible should elapse before using Tegretol in patients who have been treated with M.A.O.I.'s, with a minimum of 7 days. In such cases, initial dosage should be low and the patient's reaction to gradual increments closely observed.

Important Note and Precautions Familiarity with the clinical symptoms which lead to an accurate diagnosis of true trigeminal neuralgia and with the complete prescribing information, careful patient selection, a thorough examination before treatment and close patient supervision throughout the treatment period are essential to the safe and effective use of this drug.

Where feasible, Tegretol should not be used in conjunction with any potent drug which may increase the possibility of toxic reactions.

In pregnancy, the drug should not be prescribed during the first trimester and thereafter only to patients in whom the clinical situation warrants the potential risk. It should not be administered to nursing mothers.

Patients with increased intraocular pressure should be closely observed during treatment with this drug because of its anticholinergic effect. Because of the drug's relationship to other tricyclic compounds, the possibility of activation of latent psychosis and, in the elderly, of confusion or agitation, should be considered.

Dizziness and drowsiness may occur and patients should be cautioned about the hazards of operating machinery or automobiles and of engaging in other hazardous tasks.

Use cautiously in patients with a history of coronary artery disease, organic heart disease, congestive failure or liver disease.

Before initiating therapy, the following laboratory procedures should be performed:

1. Complete blood and platelet counts which, if abnormal, should rule out the use of the drug.
2. Baseline evaluations of liver function.

During treatment with Tegretol, the following laboratory procedures should be performed:

1. Complete blood and platelet counts should be done at intervals of one week during the first month of drug treatment, every two weeks during the second and third months, and at monthly intervals thereafter for as long as the patient is taking the drug. A trend toward a decreasing white blood cell count should suggest a dosage reduction and more frequent laboratory and clinical evaluations. Should this trend continue, the drug should be discontinued.
2. Liver function tests must be performed at regular intervals during treatment with this drug since liver damage may occur during therapy. The drug should be discontinued immediately in cases of aggravated liver dysfunction or active liver disease.
3. Periodic eye examinations, including slit-lamp, funduscopy and tonometry, are recommended for patients being treated with this drug since many phenothiazines and related drugs have been shown to cause eye changes.
4. Complete urinalysis and BUN should be done on patients treated with Tegretol because of observed renal dysfunction.

Adverse Reactions Dizziness, drowsiness, unsteadiness on the feet, nausea, vomiting, aplastic anemia, transitory leukopenia, agranulocytosis, eosinophilia, leukocytosis, thrombocytopenia, purpura, abnormalities in liver function tests, cholestatic and hepatocellular jaundice, urinary frequency, acute urinary retention, oliguria with elevated blood pressure, albuminuria, glycosuria, elevated BUN, microscopic deposits in the urine, impotence, disturbances of coordination, confusion, headache, fatigue, blurred vision, transient diplopia and oculomotor disturbances, speech disturbances, abnormal involuntary movements, peripheral neuritis and paresthesias, depression with agitation, talkativeness, nystagmus, tinnitus, paralysis and other symptoms of cerebral arterial insufficiency, pruritic and erythematous rashes, urticaria, Stevens-Johnson syndrome, photosensitivity reactions, alterations in skin pigmentation, exfoliative dermatitis, alopecia, diaphoresis, recurrence of thrombophlebitis, erythema multiforme and nodosum, aggravation of disseminated lupus erythematosus, gastric distress, abdominal pain, diarrhea, constipation, anorexia, dryness of the mouth and pharynx, glossitis, stomatitis, fever, chills, adenopathy, lymphadenopathy, aching joints and muscles, leg cramps, conjunctivitis, left ventricular failure, aggravation of hypertension, hypotension, syncope and collapse, edema, aggravation of coronary artery disease and congestive heart failure. (Whether these cardiovascular effects are drug-related is not known. However, some of these complications have resulted in fatalities.) The necessity for discontinuing the drug should be dictated by the gravity and severity of the adverse reactions.

Dosage and Administration The drug should always be taken with meals, if possible.

Initial: One-half tablet (100 mg.) b.i.d. on the first day. Thereafter, the dose should be increased in one-half tablet (100 mg.) increments every 12 hours until freedom from pain is achieved. To relieve pain, between 200 mg. and 1200 mg. per 24 hours may be necessary.

Maintenance: Initial control of pain can be maintained in most patients with a dose of 400 mg. to 800 mg. daily. Maintenance doses may range between 200 mg. and 1200 mg. daily.

At least once every 3 months during treatment period attempts should be made to discontinue the drug or to reduce the dose to the minimum effective level.

Availability Round, white, single-scored tablets of 200 mg. in bottles of 100 and 1000. (B)46-820-A

For complete details, please see Prescribing Information.

Geigy Pharmaceuticals
Division of Geigy Chemical Corporation
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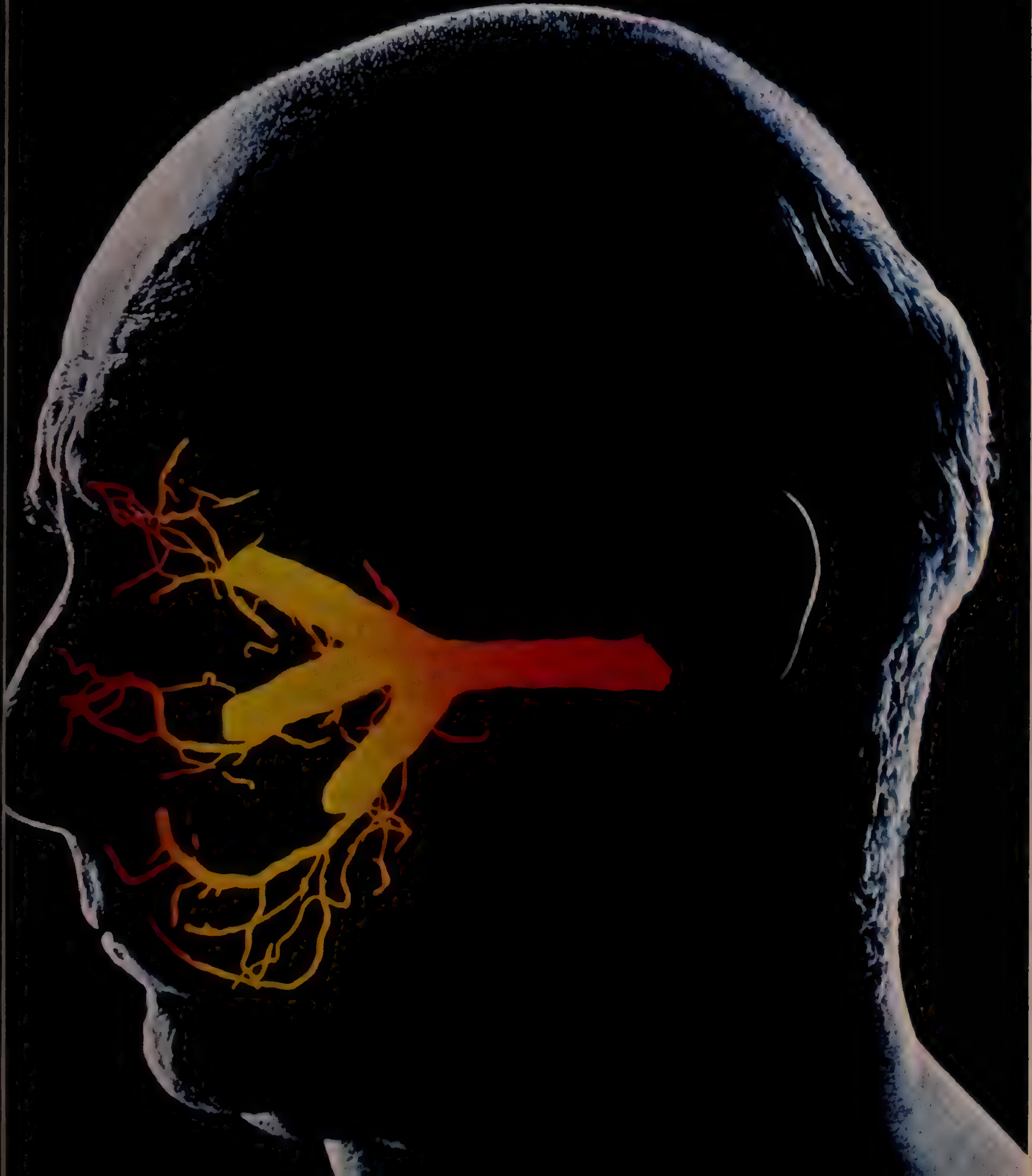
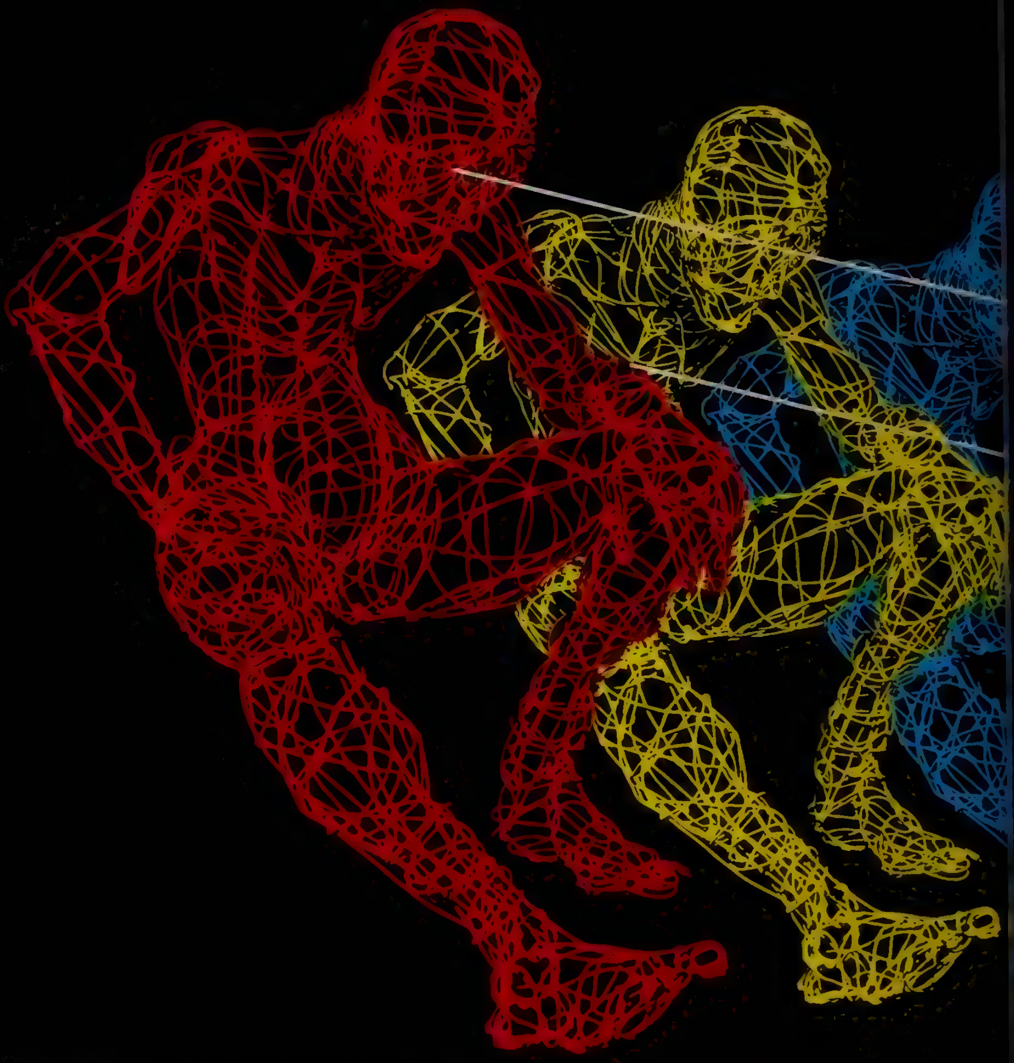
uncommon relief of uncommon pain



a comprehensive hematinic



Description: Each Pulvule® contains—

Special Liver-Stomach Concentrate, Lilly (containing Intrinsic Factor)	150 mg.
Cobalamin Concentrate, N.F., equivalent to Cobalamin	7.5 mcg.
(The total vitamin B_{12} activity in the Special Liver-Stomach Concentrate, Lilly, and the Cobalamin Concentrate, N.F., is 15 micrograms.)	
Iron, Elemental (as Ferrous Fumarate)	110 mg.
Ascorbic Acid (Vitamin C)	75 mg.
Folic Acid	1 mg.

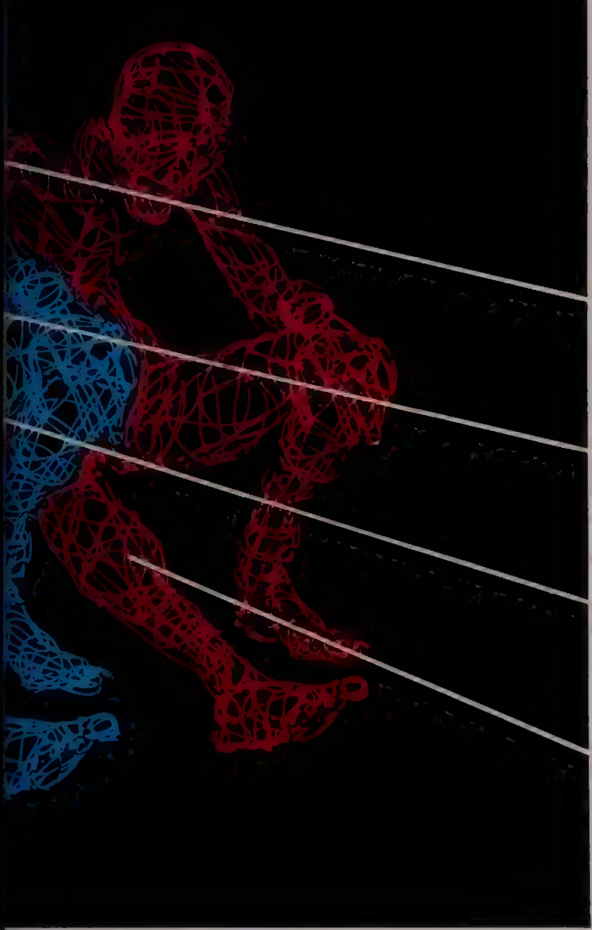
Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinics, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

Precautions: Anemia is a manifestation that requires appropriate investigation to determine its cause or causes.

In pernicious anemia, the use of folic acid without adequate vitamin B_{12} therapy may result in hematologic remission but neurological progression. Adequate doses of vitamin B_{12} (parenteral, or oral with potent intrinsic factor as in Trinsicon® [hematinic concentrate with intrinsic factor, Lilly]) usually prevent, halt, or improve the neurological changes.

As with all preparations containing intrinsic factor, resistance may develop in some cases of pernicious anemia to the potentiation of absorption of physiological doses of vitamin B_{12}. If resistance occurs, parenteral therapy, or oral therapy with so-called massive doses of vitamin B_{12}, may be necessary. No single regimen fits all cases, and the status of the patient observed in follow-up is the final criterion for adequacy of therapy. Periodic clinical and laboratory



studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

In extremely rare instances, skin rash suggesting allergy has followed oral administration of liver-stomach material. Instances of apparent allergic sensitization have also been reported after oral administration of folic acid.

Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

How Supplied: Pulvules Trinsicon® (hematinic concentrate with intrinsic factor, Lilly), in bottles of 60 and 500. [032508]

You can treat combined deficiencies with

Trinsicon®

—the multifactor hematinic

Vitamin B_{12} plus intrinsic factor (15 mcg. B_{12} activity)—helps provide adequate levels of this important vitamin.

Folic acid (1 mg.)—treats nutritional macrocytic anemias and/or malabsorption syndromes.

Ascorbic acid (75 mg.)—augments the conversion of folic acid to its active form and helps iron absorption.

Iron (110 mg.)—treats hypochromic anemia.

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upon request.
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Lilly

continued from page 2239

national Telephone and Telegraph, and J. C. Penny, have acquired the most advanced technics in cardiopulmonary resuscitation, confirming their belief that with properly trained personnel in key areas, many victims of so-called "sudden death" could be brought back to life. In a course sponsored by the New York Heart Association medical personnel from these relatively high-risk companies were taught the combined technic of closed-chest compression and mouth-to-mouth ventilation.

A recent but important revival technic, cardiopulmonary resuscitation is expected to save the lives of many people who die by default. It is a step beyond the widely practiced mouth-to-mouth ventilation, because it involves restoring heartbeat as well as breath. Each year thousands of victims die because of heart attack, drowning, electric shock, drug sensitivity, and plastic bag or refrigerator suffocation. Many of these deaths, however, might be prevented if bystanders had been trained to become the heart and lungs of a patient while medical help was on the way.

Cardiopulmonary resuscitation has been on the ascendant as an important life-saving technic for the past twelve years. In New York City, the New York Heart Association has been the most active agency in promoting this education and training and has funded several major cardiopulmonary resuscitation programs. The approach of the Association has been to create everwidening circles in the pool by teaching organizations how to set up programs to teach their own personnel. Education programs to train trainers have proved to be the most effective way to save the greatest number of lives.

Personalities

Appointed. Donald P. Conwell, M.D., on leave from the U.S. Public Health Service, as assistant commissioner for preventable and chronic disease services, City of New York Department of Health . . . George M. Wheatley, M.D., Glen Head, as a member of the Injury Control Advisory Committee of the U.S. Public Health Service . . . Emanuel M. Rechter, M.D., Willard, as director of the new Wilton State School . . . Albert W. Cook, M.D., Brooklyn, as a member of the Medical Advisory Board of the New York State Athletic Commission . . . Harold A. Lyons, M.D., Brooklyn, as a member of the Committee on Pulmonary Diseases of the Nassau-Suffolk County Regional Medical Program . . . Benjamin A. Rosenberg, M.D., Brooklyn, as a member of the Public Relations Committee of the New York Society of Internal Medicine.

Elected. Albert L. Deutsch, M.D., Brooklyn, as president of the Association of Medical Group Psychoanalysts . . . Ladislav P. Hinterbuchner, M.D., as president of the Brooklyn Neurological Society . . . Cyril J. Jones, M.D., Brooklyn, as secretary-treasurer of the Brooklyn Surgical Society . . . Julius E. Stolfi, M.D., Brooklyn, as president, and Monte Malach, M.D., Brooklyn, as secretary of the Brooklyn Society of Internal Medicine . . . Harry Z. Mellins, M.D., as president-elect of the Association of University Radiologists . . . William Pomerance, M.D., Brooklyn, as vice-president of the Medical Society of the County of Kings . . . Nathaniel E. Reich, M.D., Brooklyn, as chairman of the executive board of the New York Cardiological Society . . . Herman D. Ruskin, M.D., Brooklyn, as a member of the Board of Directors of the New York State Heart Assembly . . . Morrel M. Avram, M.D., Brooklyn, as a member of the Council of the American Society of Nephrology.

Awarded. Harold N. Schwinger, M.D., Brooklyn, a certificate of merit for outstanding presidential services to the Radiological Society of the State of New York . . . Nathan Beckenstein, M.D., Brooklyn, a testimonial scroll by the Brooklyn Association For Mental Health.

Retired. Elaine P. Ralli, M.D., New York City, as director of Outpatient Services, Bellevue Hospital, after more than forty years of service.

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Medical Meetings

Downstate Medical Center offers continuing medical education courses

The following postgraduate courses are being offered by the Department of Anatomy of the State University of New York Downstate Medical Center:

—"Blood Brain Barriers," on September 11, from 9:00 A.M. to 5:30 P.M., in the first floor lecture room, 450 Clarkson Avenue, Brooklyn. This course is limited to 100 applicants, and registration closes September 4.

—"Embryological Basis for Developmental Anomalies," on Wednesdays, September 18 through December 18, from 2:00 to 3:00 P.M., in the second floor lecture room.

There is no tuition fee. For further information and registration contact: Charles M. Plotz, M.D., director of continuing education, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, New York 11203.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

Postgraduate course in psychiatry offered

A five-month intensive course covering the basic elements of group psychotherapy is being sponsored by The Page and William Black Postgraduate School of Medicine at the Mount Sinai School of Medicine, Fifth Avenue and 100th Street, New York City, on Mondays and Thursdays, September 16 through January 30, from 9:00 A.M. to 12 NOON.

The course covers dynamics, theory, technics, indications and applications in an organized series of didactic lectures, supplemented by weekly seminars or workshops in which there is a small group discussion of material from psychotherapy groups. Experiences as a recorder-observer in the groups from which the material is taken will be available. The student, under supervision, will organize and treat a special group with modified group psychotherapy for five months.

Tuition fee is $50. For further information and registration contact: The Registrar, The

continued on page 2252

their boss has a hair-trigger temper

...and spastic colitis

When the volatile patient with spastic colitis loses his temper, he often receives swift punishment in the form of acute flare-up of his somatic symptoms. This patient should benefit from the *dual* therapeutic action of Librax. Librax provides both Librium® (chlordiazepoxide HCl)—a highly effective antianxiety agent—and Quarzan® (clidinium Br)—a modern, dependable anticholinergic.

Side effects, when seen, are typical of anticholinergic agents—dryness of the mouth, blurring of vision, etc.—and/or of chlordiazepoxide HCl—drowsiness, ataxia and confusion, particularly in the elderly or debilitated.

two good reasons for prescribing Librax®

Each capsule contains
5 mg chlordiazepoxide HCl
and 2.5 mg clidinium Br.

Also indicated in gastritis and irritable bowel syndrome.

Before prescribing, please consult complete product information, a summary of which follows.

Indications: Indicated as adjunctive therapy to control emotional and somatic factors in gastrointestinal disorders.

Contraindications: Patients with glaucoma; prostatic hypertrophy and benign bladder neck obstruction; known hypersensitivity to chlordiazepoxide hydrochloride and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering Librium (chlordiazepoxide hydrochloride) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards. As with all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with either compound alone have been reported with Librax. When chlordiazepoxide hydrochloride is used alone, drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally with chlordiazepoxide hydrochloride, making periodic blood counts and liver-function tests advisable during protracted therapy. Adverse effects reported with Librax are typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

Dosage: Individualize for maximum beneficial effects. Usual maintenance dose is 1 or 2 capsules, 3 or 4 times a day, before meals and at bedtime. Geriatric patients—see Precautions.

How Supplied: Librax® Capsules, each containing 5 mg chlordiazepoxide hydrochloride (Librium®) and 2.5 mg clidinium bromide (Quarzan®)—bottles of 50 and 500.

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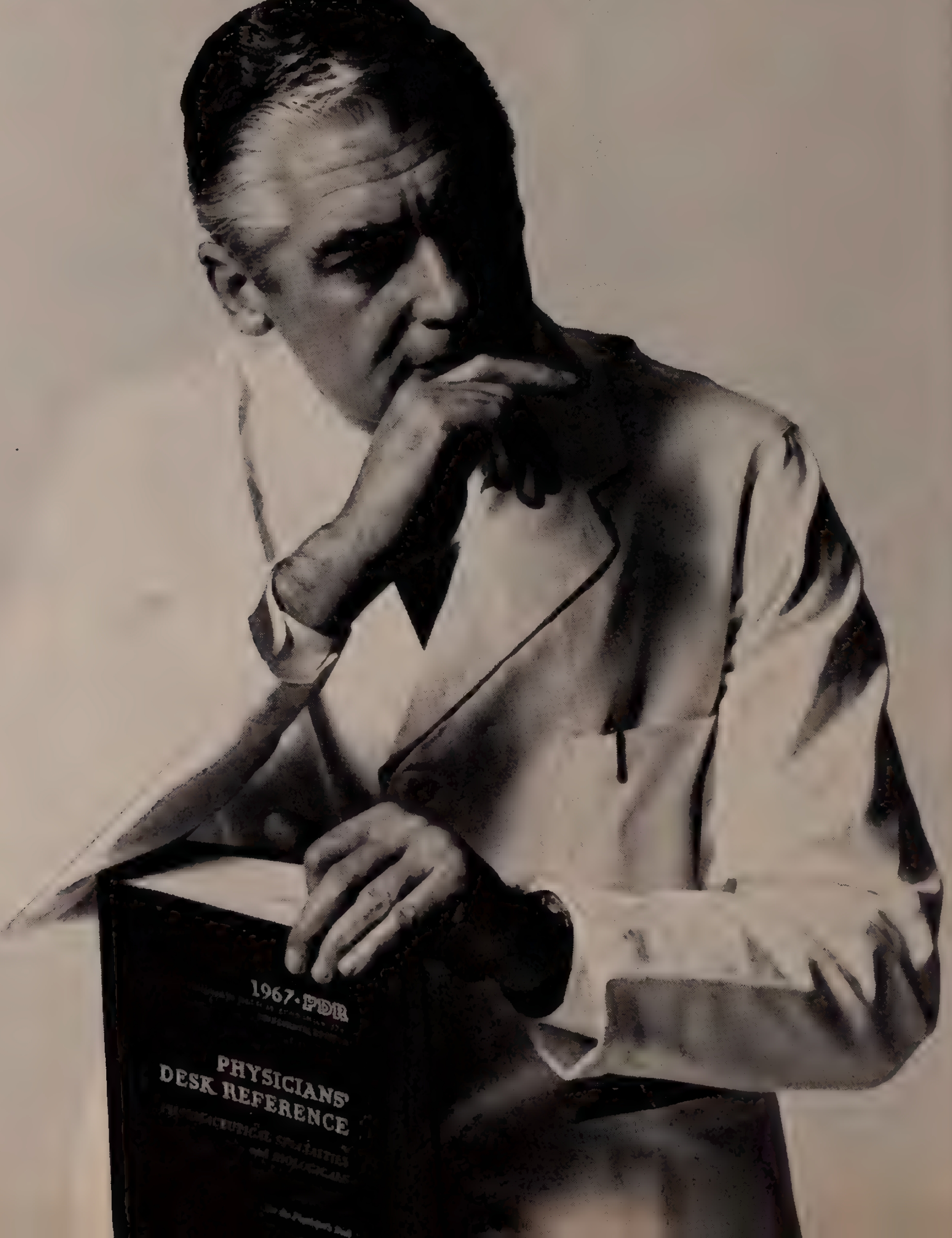
with so many othe
thyroid hormones
to choose from...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animal gland products are still widely used today. Synthroid (sodium levothyroxine), however, offers important advantages in the treatment of thyroid deficiency and related conditions.

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SYNTHROID (sodium levothyroxine) is 100% pure thyroid hormone . . . a drug of definite and uniform composition, more soluble in body fluids and more readily absorbed than desiccated thyroid. Each batch is assayed by chemical and physical measurement. There is no need for biologic standardization because SYNTHROID (sodium levothyroxine) is pure, fully potent, and does *not* deteriorate in storage or in humid conditions. Your patients consistently receive the dosage you prescribe.

predictably smooth response

With SYNTHROID (sodium levothyroxine), there is little possibility of a metabolic surge that can compromise cardiac function. After absorption and protein binding, SYNTHROID (sodium levothyroxine) is released at a *physiologic* rate *assuring a smooth response with a higher degree of safety*. Expect PBI readings in the range of 6-10 mcg.%. Count on these and other parameters to be predictable in relation to dosage. Levothyroxine has a high binding capacity for serum proteins. Other thyroid medicaments may contain varying amounts of L-triiodothyronine which has a low binding capacity.

competitively priced

Patient costs are competitive with the cost of animal gland products. And in comparison to the other synthetic thyroid hormone, SYNTHROID (sodium levothyroxine) costs approximately half as much.

indications

SYNTHROID (sodium levothyroxine) tablets are specific replacement therapy in diminished or absent thyroid function when indicated by diagnostic test criteria in primary, hypopituitary, pediatric, and geriatric hypothyroidism, and for reproductive disorders associated with hypothyroidism. SYNTHROID (sodium levothyroxine) is especially useful in confirming your diagnosis when a diminished level of thyroid is implicated, because it precludes variability in response often encountered with desiccated thyroid.

unexcelled dosage flexibility

Available in six strengths. Tablets are scored and color-coded for dosage convenience. SYNTHROID (sodium levothyroxine) INJECTION is also available.

EASY TO PRESCRIBE—EASY TO USE

0.1 mg. SYNTHROID (sodium levothyroxine)
APPROXIMATELY EQUIVALENT TO 1 gr. THYROID U.S.P.

Synthroid®

sodium levothyroxine, FLINT

Precautions: As with other thyroid preparations, an overdose may cause diarrhea or cramps, nervousness, tremors, tachycardia, vomiting and continued weight loss. Medication, in such cases, should be stopped for 2—6 days, then resumed at a lower dose level. In patients with diabetes mellitus, careful observations should be made for changes in insulin or other antidiabetic drug dosage requirements. In cases of adrenal insufficiency, the dysfunction must be corrected prior to, and during SYNTHROID (sodium levothyroxine) administration. It should be administered with caution to patients with heart disease.

Contraindications: Thyrotoxicosis, acute myocardial infarction.

Side Effects: Side effects, when they do occur, are secondary to increased rates of body metabolism: sweating, palpitations, leg cramps, and weight loss. Diarrhea, vomiting, and nervousness have also been observed. Myxedematous patients with heart disease have died from abrupt increases in dosage of thyroid drugs. Reduction in dosage followed by a more gradual upward adjustment will usually result in a more accurate indication of the patient's dosage requirements without the dosage side effects.

Dosage and Administration: Administer tablets as a single daily dose, preferably after breakfast. In hypothyroidism without myxedema, the usual initial adult dose is 0.1 mg. daily, and may be increased by 0.1 mg. every 30 days until proper metabolic balance is attained. Final maintenance dosage will usually range from 0.2—0.4 mg. daily. In adult myxedema, starting dose should be 0.025 mg. daily. The dose may be increased to 0.05 mg. after two weeks and to 0.1 mg. at the end of a second two weeks. The daily dose may be further increased at two month intervals by 0.1 mg. until the optimum maintenance dose is reached (0.1—1.0 mg. daily). The initial dose for children with cretinism or severe hypothyroidism is the same as for adult myxedema, but all intervals of change should be made every two weeks.

SYNTHROID (sodium levothyroxine) Injection may be administered intravenously utilizing 200—400 mcg. of a solution containing 100 mcg. per ml. If significant improvement is not shown the following day, a repeat injection of 100—200 mcg. may be given.

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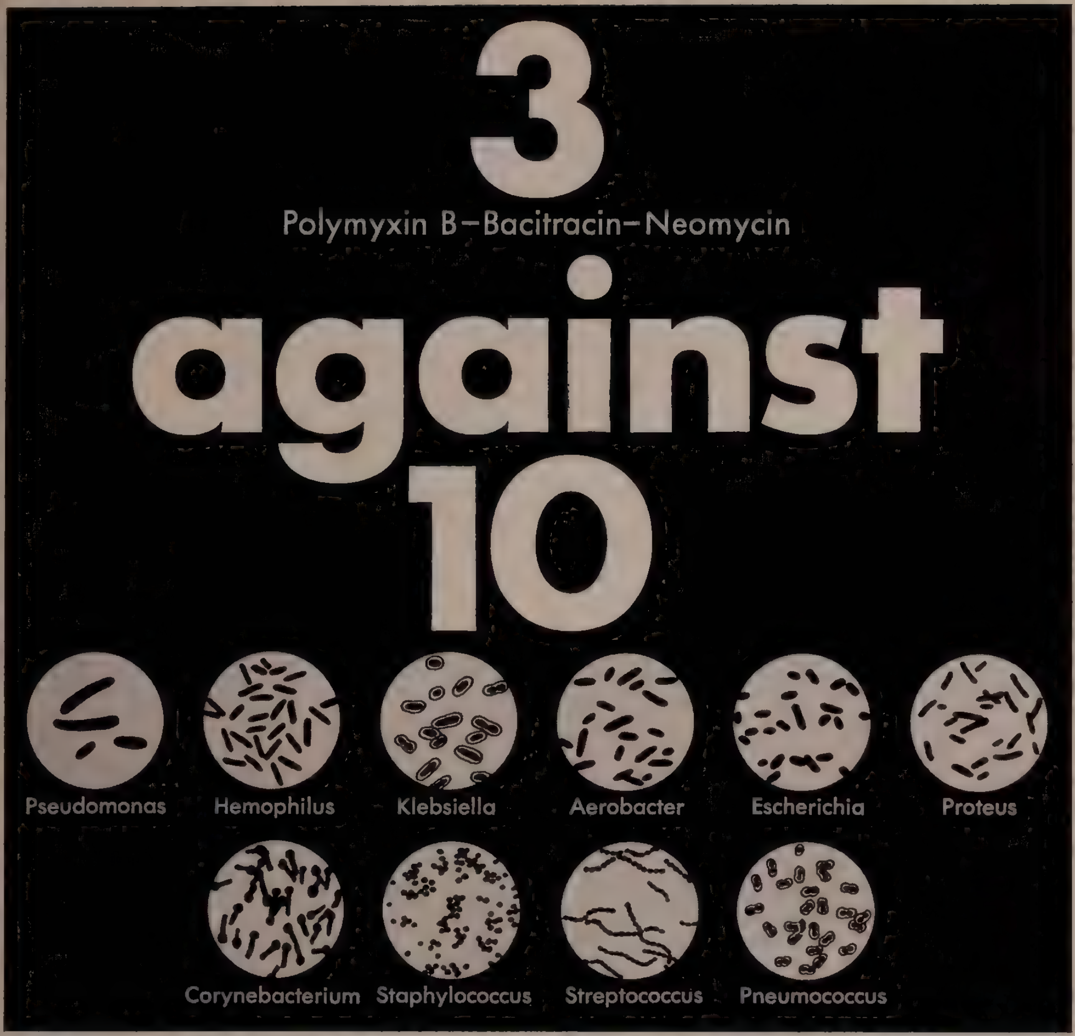
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Page and William Black Postgraduate School of Medicine, Fifth Avenue, and 100th Street, New York, New York 10029.

Computers in clinical medicine topic of symposium

A symposium on "Use of Computers in Clinical Medicine" sponsored by the Department of Social Medicine, School of Medicine State University of New York at Buffalo, is to be held September 19 through 21 at the Parkway Inn, Niagara Falls.

The program will feature the following topics: Introduction to Information Sciences and Computer Technology; The Clinical Chart; Automation of Medical Data in the Hospital; Decision Systems in the Hospital; and Planning a Health Information System.

This program is accepted for 21 accredited hours by the American Academy of General Practice.

A registration fee of $90 includes tuition and the cost of luncheons and dinner.

For further information and registration contact: Main Street Division, Continuing Medical Education Program, School of Medicine State University of New York at Buffalo, 2211 Main Street, Buffalo, New York 14214.

Congress on neurologic sciences to be held in New York City

The Ninth International Congress of Neurology and the Fourth International Congress of Neurological Surgery will be held as a combined scientific meeting at the New York Hilton September 20 through 27, 1969. This combined meeting will be called the World Congresses of Neurological Sciences.

The program will feature joint sessions of the two congresses on the topics of epilepsy and cerebral vascular disease. Subjects for the session of the neurologic congress are cerebral dominance, nutritional and metabolic diseases, and geographic and viral diseases of the nervous system. The neurosurgical congress will discuss the treatment of brain tumors, intracranial pressure, and pain.

For further information and registration forms write to: World Congresses of Neurological Sciences, 420 Lexington Avenue, Suite 417, New York, New York 10017.

Alienation and revolt topic of mental health congress

The New York Congress for Mental Health is sponsoring its fourth annual congress to be held at the Hotel Commodore, New York City, on October 5. The theme of the congress, "Alienation and Revolt: Rebels Without a Cause??," touches on key issues of unrest in society today. Discussion will include racial issues, student revolt, inner-city problems, drug usage, sexual patterns, and hippies, in relation to the government, the church, and the parent.

Guest speakers at the luncheon session are: Bertrand S. Brown, M.D., deputy director, National Institutes of Mental Health; and the Rev. William Sloane Coffin, Jr., chaplain, Yale University. The morning session will feature the following: Dr. Gustav Bychowski, Professor Seymour Halleck, Kwami Taha, Dr Robert Porter, Professor Robin Williams, Mrs Harriet Mandelbaum, and others.

For further information contact: Claude Price, secretary-coordinator, New York State Association for Mental Health, 90 State Street, Albany, New York 12207.

Course offered to prepare physicians for ECFMG examination

The Clinical Medicine Curriculum, a course offered by the New York Polyclinic Medical School and Hospital to prepare physicians for examinations given by the Educational Council for Foreign Medical Graduates and State Boards, will be given from October 7 through January 31, 1969, provided a sufficient number of students register for the course. This is a full-time course, from 9:00 A.M. to 4:00 P.M., Monday through Friday, and consists of 400 hours of formal instruction in medicine, surgery, various specialties, and applied medical sciences.

Admission requirements for candidates are the following:

1. Candidates must hold an M.D. degree. A photostat of the original medical school diploma or record should be submitted, together with (*a*) applicant's photograph, in duplicate, passport size; and (*b*) two letters attesting to applicant's moral and scholastic fitness.
2. Candidates will be interviewed.
3. Foreign students will be expected to possess a working knowledge of the English language before admission.
4. All applications must be submitted in duplicate, on forms furnished by the school, accompanied by a registration fee of $25, which is not returnable.

For further information, concerning registration and tuition fees, contact: Office of the Dean, New York Polyclinic Medical School and Hospital, 341 West 50th Street, New York, New York 10019.

Neuromuscular diseases subject of course

The New York University Post-Graduate Medical School is offering a full-time basic course on "Clinical Electrodiagnosis of Neuromuscular Diseases" to be held October 9 through 11 at the Institute of Rehabilitation, New York University Medical Center.

This course covers the following topics: Some Aspects of Neuromuscular Physiology and Pathology; Basic Requirements of Instrumentation Systems in Detecting and Recording

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Tuition fee is $125, payable when submitting application. For application contact: office of recorder, New York University Post-Graduate Medical School, 550 First Avenue, New York, New York 10016.

Diabetes association sponsors symposium on diabetes mellitus

The New York Diabetes Association Clinical Society is sponsoring its sixteenth annual symposium to be held at the Barbizon-Plaza Hotel, October 12, from 9:00 A.M. to 4:30 P.M. The general theme of the symposium will be "Genetic and Environmental Factors in Diabetes Mellitus."

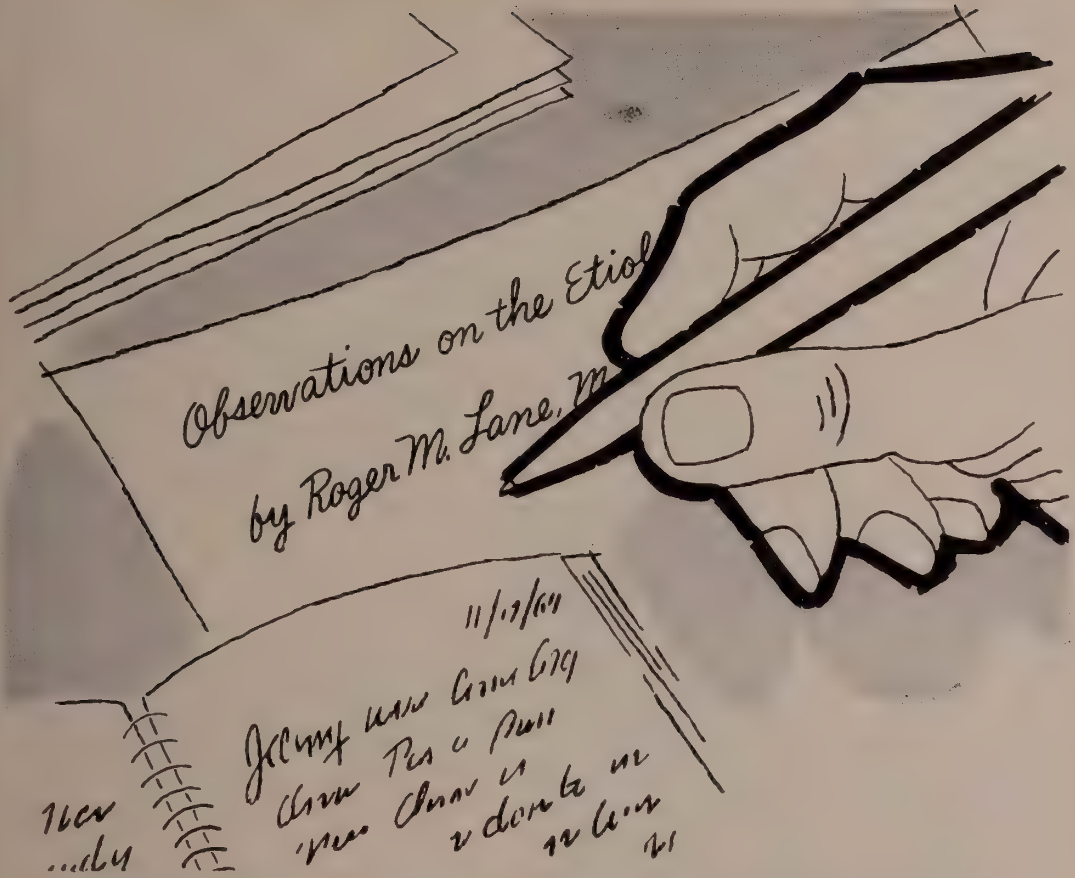
The program will feature the following topics and speakers: "General Genetic Aspects of Diabetes," Nancy E. Simpson, Ph.D., Queen's University, Kingston, Ontario; "Is Diabetes a Heterogeneous Group of Disorders?," David L. Rimoin, M.D., Washington University School of Medicine; "Environmental Modifications of Carbohydrate Metabolism," Robert E. Greenberg, M.D., Stamford University Medical School; "The Physiology of Starvation Diabetes," M. G. Herrera, M.D., Harvard School of Public Health; "Experimental Aspects of Diabetes Mellitus," Bruno W. Volk, M.D., Downstate Medical Center, and Sydney S. Lazarus, M.D., Isaac Albert Research Institute; and "What is Diabetes Mellitus," I. Arthur Mirsky, M.D., University of Pittsburgh.

American Academy of Compensation Medicine to meet

Medical and surgical problems in Workmen's Compensation will be discussed at a two-day meeting to be held November 7 and 8 at the New York University Medical Center.

The meeting, sponsored by the American Academy of Compensation Medicine, will consist of four half-day sessions covering cardiovascular problems, cerebrovascular problems, causes of failure in disk surgery, and problems of the eye. A. Wilbur Duryee, M.D., attending physician, University Hospital, and clinical professor of medicine, New York University School of Medicine, is chairman of the program committee.

There is no registration fee. For further information and registration contact: Eugene Clark, M.D., president, American Academy of Compensation Medicine, Box 180, Radio City Station, New York, New York 10019.



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A short abstract of the proposed presentation should accompany the letter.

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Editorials

The influence of environment

It is always a great privilege and pleasure to present the views of one of the foremost scientific thinkers of our time.

Dr. Rene Dubos, microbiologist and experimental pathologist of the Rockefeller University, has been engaged in exploring the effects of early environment on health and growth. In a recent address to a conclave of nutritionists, Dr. Dubos reported on some animal experiments which support his view that physiologic characteristics such as size, growth, musculature, and even brain characteristics are determined by nutritional and behavioral patterns in the early months of life.

Dr. Dubos observed, "Until a few years ago, it was generally believed that Japanese were small people. However, postwar Japanese teenagers are often as tall as their American counterparts, not because there has been a change in the genetic makeup of the Japanese population, but because the ways of life in postwar Japan are different from those of the past."

Dr. Dubos also noted a similar phenomenon in the Israel kibbutz. Children born and raised in the kibbutz are so tall they tower over their parents who came one generation ago from the ghettos of Central Europe. All over the world, children grow faster, sexual maturity is achieved earlier, and adults are taller in all the social groups that have adopted the ways of Western civilization. Menstruation begins three years earlier than it did a hundred years ago. Teenage boys cannot fit in the armors of medieval knights.

Pointing out that children are underdeveloped in the villages of Central America and that adults there remain small and lethargic, Dr. Dubos said it was not a result of genetic constitution, but because environmental deprivation prevents their physical and mental potentialities from becoming fully expressed. "Indians and Ladinos, born and raised under more favorable conditions, achieve greater physical development and exhibit much enterprising spirit."

Summarizing the results of some of his own experiments with colonies of mice produced and raised under optimum conditions, Dr. Dubos demonstrated that the lasting effects of environmental deprivation on the developing organism can be readily duplicated in laboratory models with many animal species.

Behavioral influences. Mice born the same day, from mothers in a highly inbred colony, were pooled and reallocated randomly to foster mothers of the same age. The weights of the young at weaning exhibited profound differences, but were uniform for each foster mother. The weight differentials persisted throughout the life span of the young, even though they were all placed under the same conditions after weaning. As far as can be judged at present, the differences in growth were not due to differences in the amount or quality of milk produced by the foster mothers, but to their behavioral characteristics in caring for the young—in other words, to the mothering quality. In another kind of experiment, mice received an odoriferous substance (citral) that passed into their milk while they were nursing their young. The young thus became accustomed to that flavor during lactation. After weaning, they selected food that had been thus flavored.

Early subclinical infections. Newborn mice (two days old) were contaminated with a dilute suspension of a virus isolated from the intestinal content of wild mice. This virus produced a mild infection that did not cause any detectable disease but depressed the growth of the animals. Moreover, growth depression persisted throughout their life span even though the animals appeared normal—just smaller in size.

Early nutritional deprivation. Female micewere given a slightly deficient diet, either during the period of gestation or of lactation. The deficiency was achieved by quantitative restriction of food intake, or by feeding a plant protein low in lysine and threonine, or a diet low in magnesium. All young animals born or nursed by mothers on restricted or deficient diets were unusually small at the time of weaning. Even more interestingly, they remained small throughout their life span even when placed on an optimum diet after weaning.

It is of importance to mention that smaller size did not imply disease or shorter life span. In fact, animals born or nursed by mothers fed a diet slightly deficient in lysine and threonine lived longer than those of mothers fed a very rich diet.

Dr. Dubos stated that although it is not yet clear how early influences produce such lasting effects, the following working hypotheses can be formulated: (*a*) Behavioral disturbances, minor infectious processes, and nutritional deprivation may affect hormonal production at a critical stage in development. In this regard, it is of interest that lasting depression of growth can be achieved by administering cortisone to newborn rats.

One may postulate that cortisone depresses pituitary and the production of growth hormone at a critical period of development.

(*b*) In mice which have been stunted during early life, the efficiency in the utilization of food and, in particular, the ability to incorporate amino acids, remains depressed throughout life.

(*c*) There is evidence that the numbers of certain types of cells (for example, lipogenic, muscle, and brain cells) are determined at an early age and thus probably are affected by early influences. Mice and rats born or nursed by a mother fed a restricted or deficient diet have fewer fat cells than do control animals; as a result, they do not become obese, which may account for their longer life span. Depression in the number of brain cells may be important for behavior.

Whatever the precise mechanisms involved, the important fact is that metabolic effects of early influences are long lasting, may be irreversible, and affect both behavioral and biologic characteristics.

In man as in animals there are critical periods for mental as well as physical development, but the timing and duration of these critical periods have not been defined. It is certain in any case that the manifestations of mental development are conditioned by the metabolic factors that govern anatomic and physiologic growth, and by the nature of the stimuli to which the child is exposed. The social environment during early life, therefore, affects profoundly, and in most cases irreversibly, the fate of the person.

As usual the poets have words for it. Pope said "Just as the twig is bent the tree's inclined."

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SYMPOSIUM

PROCEEDINGS

Special Committee on Infant Mortality
Medical Society of the County of New York

Comprehensive Health Care

Impact on Community Wellness and on Perinatal Survival*

HAROLD ABRAMSON, M.D., Editor

Greetings

C. JOSEPH DELANEY, M.D.
New York City

President, Medical Society of the County of New York;
Professor of Clinical Surgery, New York Medical College

We have come far in the last hundred years from the days of Lister, Pasteur, and others, in overcoming the scourge of disease due to infectious agents. The history of the success of the attack on pneumonia, poliomyelitis, diphtheria, pertussis, measles, and many other communicable diseases is long and, in many instances, fresh in our minds. Ultimate victory against these diseases is now visible.

The focus is turning to the next great goal, that of conquering environmental disease and afflictions of the body and mind caused by malnutrition, overcrowding, air and water pollution, and so forth. Hence the term "comprehensive medical care," as exemplified in today's press, is used to designate the continuing battle to improve community health and to lower infant mortality rates in the more usual and understood areas and to presage extension into newer fields.

The plan of attack is as yet not too clear. The cost may be astronomical. But the place of the physician is clear. He must be in the center of the drive. In fact, he

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Presented by the Special Committee on Infant Mortality of the Medical Society of the County of New York, Harold Abramson, M.D., Chairman, and Charles H. Bauer, M.D., Benedict B. Benigno, M.D., Elizabeth Coryllos, M.D., Alvin M. Donnenfeld, M.D., James T. Drew, M.D., Jere B. Faison, M.D., Angelo Ferrara, M.D., Edwin M. Gold, M.D., L. Stanley James, M.D., David Lehr, M.D., Walter Levy, M.D., Jean Pakter, M.D., Sophie Peirog, M.D., Alexander Sedlis, M.D., Martin L. Stone, M.D., Lotte Strauss, M.D., Edward Wasserman, M.D., Mr. Herbert Rich, and Mrs. Frieda Nelson, New York Academy of Medicine, New York City, December 6, 1967.

* The opinions expressed in the reports presented are those of the speakers and do not necessarily represent the policies or opinions of the Medical Society of the County of New York.

Presented by the Special Committee on Infant Mortality of the Medical Society of the County of New York, New York Academy of Medicine, New York City, December 6, 1967.

must be the driver, who would regulate and relate facts of environmental phenomena, as unearthed by the engineer or the social scientist, to the biologic subject we call man. The didactic course and the program of study of the physician of the future may be changed. He may one day be called a medical engineer, but he will still be a physician, extending health to all who seek comfort and guidance.

NEW YORK COUNTY MEDICAL SOCIETY
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NEW YORK, NEW YORK 10019

Introduction

HAROLD ABRAMSON, M.D.
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Chairman, Special Committee on Infant Mortality,
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Professor of Pediatrics, New York Medical College

ON OPENING THE SYMPOSIUM, it would first be worth while to attempt to define certain terms to be discussed. Wellness is considered to encompass the continuing state of physical, mental, and behavioral soundness of health and of the social integrity of the individual, the family circle, and the community. Wellness is the goal to be achieved by the development and application of programs of comprehensive or total health care.

And what about the terms comprehensive and total? Search of several dictionaries offers only vague meanings, such as, "thorough," "covering completely," "including much," "extensive," "entire," "perfect," and "concentrating all available personnel and resources on a single objective." If the lexicographers have such difficulty arriving at satisfactory definitions, think of the difficulties that beset the legislators when they included the words comprehensive and total in public health laws governing national, state, and municipal health services. Under the circumstances, mutual understanding and communications have become confused indeed. The recently enacted Hill-Staggers Law with its allocation of huge funds, makes no attempt to define either the meaning of "comprehensive care" or of the phrase "service to be rendered."[1]

Ragan[2] states that "the phrase comprehensive medicine has become as popular as fighting sin." The interesting statement is added that "the true basis for comprehensive care is that someone assumes responsibility for the continuing care of the patient so long as the patient is willing to allow him to assume that responsibility." Ragan[2] also comments, "When, however, a patient does accept care, it is incumbent on the physician to see that he provides continuity of that care to the best of his ability."

Basic principles of health care

Certain fundamental principles are involved in the delivery of effective health care to the individual, the family group, and to the community in which they live. The principles are as follows: (1) the maintenance of achieved community wellness; (2) the restoration of wellness to the sick and disabled; (3) the prevention of sickness and disability; (4) the training of medical, paramedical, and other essential personnel to carry out programs of health care; and (5) the development and application of newer, more effective measures of health care in keeping with progressive advance in knowledge and technology.

Programs of health care

Certain important questions immediately come to mind. How can these fundamental principles be applied to and built into comprehensive health services? What is the intent, nature, and scope of comprehensive health care? What is meant by family-centered programs? Obstetrical programs? Pediatric programs? Do these programs taken together constitute over-all comprehensive health care? If so, what about behavioral and social comprehensiveness, community involvement and responsi-

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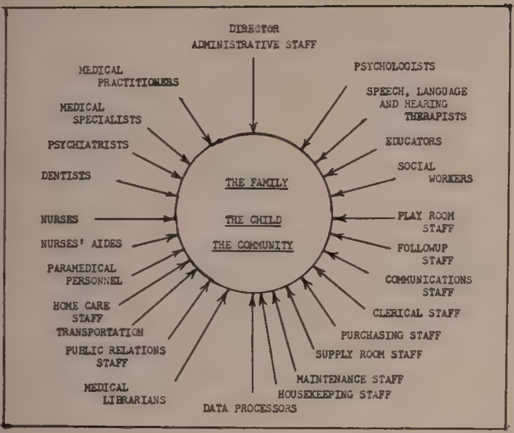
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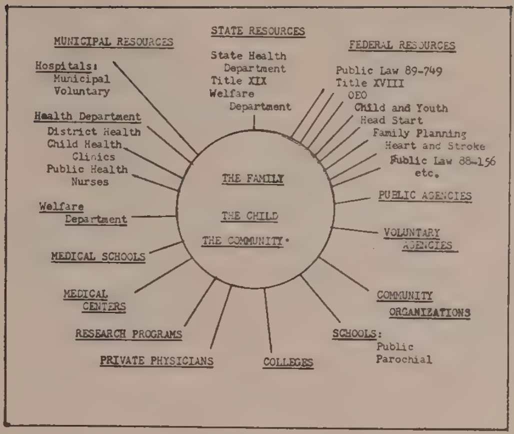
HOUSEKEEPING STAFF
DATA PROCESSORS

FIGURE 1. Illustration of certain manpower needs in comprehensive health care programs.


STATE RESOURCES
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Title XIX
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Head Start
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Heart and Stroke
Public Law 88-156 etc.
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Child Health Clinics
Public Health Nurses
THE FAMILY
THE CHILD
THE COMMUNITY
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MEDICAL SCHOOLS
MEDICAL CENTERS
COMMUNITY ORGANIZATIONS
RESEARCH PROGRAMS
SCHOOLS: Public Parochial
PRIVATE PHYSICIANS
COLLEGES

FIGURE 2. Illustration of impact of certain health agencies and forces on family, child, and their community in relation to comprehensive health care programs. In which direction should arrows go? Are forces presently unifying or fragmenting general and highly specialized health services?

bility, data processing, record retrievals, and follow-up? These and other questions are the concern of today's symposium.

Extent of health care

Additional important considerations next arise. How comprehensive or total is it reasonably possible to get in the delivery of effective health services, considering the universally acknowledged limitations of manpower, resources, finances, and space? How can quality care be given in the quantity demanded by comprehensive health services with the best being obtained from the cost dollar?

In attempts to bring about best possible health care to people, preliminary general screening procedures have been devised with the intent to detect physical, mental, and behavioral deficiencies early. Immediately correctable defects are given early attention. Referrals to specialized care are made in instances of more complicated defects, with follow-up and recall to determine success of therapy. Other programs have been tried to include more extensive and more highly specialized multiple procedures in attempts to offer everything to everyone.

Manpower

Mere thought of the many categories of manpower required to carry out even the less complex types of comprehensive health services with current popular movement out from inpatient and outpatient hospital facilities into the community and into the home is quite bewildering, let alone consideration of the cost of such services (Fig. 1).

Funding of health care

Meanwhile many varieties of comprehensive health services are now in operation and supported by Federal, state, municipal, and private funds, without unification or standardization of procedures or organization, often in competition, and often in conflict. Think of their effect on the very centers of concern—the adults, children, and the community that we presume to benefit (Fig. 2). Will the impact of the many uncoordinated programs serve to cohere and integrate the centers of concern, or will their forces pull in the opposite direction to the detriment and further fragmentation of the centers of concern? How are general and highly specialized services to be rendered? Are changes in health care going on precipitously and under pressure merely for the sake of change, without cautious deliberation, planning, and controlled trial?[3] In the current zeal to provide for the underprivileged, is the middle class rapidly becoming a forgotten and underprovided for economic group?

Evaluation of health care programs

Much hope has attended implementation of programs of comprehensive health services, and much has been looked forward to. These are the promises. What are the fulfillments? How will it be possible to evaluate long-term utilization of health services and the effectiveness of programs? Will the programs improve wellness in individuals, their families, and in the communities to the degree that in the future healthier babies will be born and needed reductions will eventuate in perinatal and early infant morbidity and mortality rates?

Let us find out!

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Intent, Nature, and Scope

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THE RUBRIC "Comprehensive Health Care: Intent, Nature, and Scope" provides a framework within which to explore many of the pressing questions surrounding present-day methods and systems for providing medical care. These questions may be approached from many directions. Essentially, though, as in any discussion, an individual reflects his perception of the problems and of the potential solutions. It is therefore appropriate that the background for the perceptions which underlie the comments which follow be exposed at the beginning, so that you may evaluate the observations in the light of their sources. I am not a practitioner in the medical field, which of course affects my perceptions of health care. This also affects my vocabulary, so that I may use words which have one meaning or connotation for me and an entirely different one for you. I will try to avoid this as much as possible, but it is a point about which we should be wary. There can be so much smoke around questions regarding the provision of health care that apparent differences caused only by the communication process should be avoided as much as possible.

Social and rehabilitation service

My perceptions of health care and its relationship to other aspects of our lives are most immediately affected by the new position which I hold and the new organization of which it is a part. On August 15, 1967, the Secretary of Health, Education, and Welfare announced the combination of a group of functions and agencies into the new Social and Rehabilitation Service. This combined into one organizational unit the Federally-aided public assistance programs, including Title 19 or Medicaid, the child welfare and the maternal and child health programs which were administered by the Children's Bureau, the vocational rehabilitation program, the activities in the area of aging which were administered by the Administration on Aging, and the mental retardation program activities of the Division of Mental Retardation in the Public Health Service. There were many reasons for this reorganization. Among them is one of particular significance in the general area of our concern today.

A major element in the reorganization was the concern with providing a meaningful organization structure within which separate Federal programs that relate to one another might be looked at in terms of their interrelationships. Advances in the ability to apply some of the ideas in a total systems approach are made possible by the organizational change. Also, the reorganization

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gives us the possibility of looking a little more clearly at how the Department does its business and at how the various things we do relate to one another and to the states and localities with whom we work.

I personally come to this new organization with a background of concern for family and community strength and structure. My major conviction is that we must find the ways of moving within our society to organize in such a way as to create the climate in which individuals can live, prosper, and effectively aspire.

Urban community

This is the background from which these comments come. They do not reflect any particular expertise in medical matters or in the varying merits of various patterns for organizing medical care. They do emphasize the need to be concerned with what is happening in the total community, the effects of this on community health care organization, and on attitudes about how health care should be organized.

During the course of the symposium, many data will be presented about comprehensive health care, and they will be viewed in the context of the currents and factors affecting American life today. There are several aspects of this background which bear emphasis. Although these are elements of today's living of which we all are aware, their over-all impact on our society must be considered in deliberations about comprehensive health care and patterns of health care practice.

One of the most immediately apparent aspects of today's condition is that we are an urban people. Almost 70 per cent of the United States population lives in urban areas. This means that a much higher proportion of our population is living concentrated in a relatively small land area. We are increasingly living in a crowd. This fact is driven home sharply to those who move to New York City and for the first time face some of the pressures which are created by the large number of people living and working here. One needs only to be pushed onto the subway during rush hour to become aware of the urbanization of our population and some of the life-affecting elements of this increasing population concentration.

Changing patterns of urban and suburban living

Coupled with this increase in the proportion of people living in urban areas has been the changing character in the pattern for urban living, with the development of suburbs on a massive scale. This has had a particular affect on the city, both in terms of its economic base and the economic mix, if you will, of the city's residents. The growth pattern has been such that the inner city has become the area in which those who are least affluent and have the least experience in coping with this extremely complicated system in which we live are congregated. Those who are more affluent, who have greater experience in coping with the system and in negotiating for change within the system, have moved from the city and are living outside it.

"Crisis of cities"

At the same time that this is happening, the evidence is mounting with rapidity to show how strongly all people want to have a voice in the decisions which affect them and their families. Particularly within the city, the residents are demanding a part in the process by which decisions are made. They are saying that as individuals they feel powerless in the face of the size, the complexity, and the massiveness of the organization of our society, and that that just isn't right! They believe that society's organization should be such that they can feel that they are active participants and can have their voices heard.

When these elements are combined with others, many of which are corollaries or logical consequences of these, you have what many, including Dr. John Gardner, formerly the Secretary of Health, Education, and Welfare, have called the "crisis of the cities."

Changing patterns of health care

The changes which have been taking place in the health care need only be summarized. They will be outlined in other aspects of this symposium. They have come with great rapidity in many instances and have come in many areas.

Changing patterns of physician practice, including the increase in specialization by physicians, the increase in hospital-based medicine, and the growth of group practice arrangements are but some of the elements of medical change. The areas of differential use of manpower, the development of team approaches with the physician a member of the team, and the creative use of available manpower to provide the most effective health care possible have shown evidences of rapid growth.

Health care attitudes

Our attitudes about health care have been changing also. There is today a general acceptance in our society that health care is a basic need and a service for which no one should lack because of his inability to afford it. This has led to an increasing public involvement in the provision of medical and health care and in the financing of that care. With this have come new sources for funding and new funding patterns which in turn have their effect on the structure and organization for providing health services.

Looking at the changes in our society, changes in patterns for providing health care and in concepts as to what health care entails, and hearing what people are saying about the community in which they live provide insights into the constellation of concerns which are our business. It has become apparent that it is impossible to draw boundaries between the problems of employment and income maintenance, education, social services, housing and environment, and health. The more exploration there is into any one of these areas, the more their interrelatedness becomes apparent. The need for mutual support and working together among these various aspects of a total life has become increasingly obvious. The response from the health field has been an emerging restatement of the health problem and the beginning evolution in patterns of health care.

Meaning of "comprehensive health care"

The term, comprehensive health care, is extremely difficult to define with a generally accepted definition. This may come about because the term stands not for some specific thing but rather as a verbal symbol for a growing concept of how the problems of health maintenance are to be viewed. In a way, the idea is that you start with the whole person and all the things that affect his health, looking at these in their breadth rather than in segments. To illustrate, we are moving from the concept of disease entity or special group-oriented clinics to a more general clinic organization framework. The separate cancer clinic, tuberculosis clinic, well-baby clinic, and so on, are giving way to comprehensive clinics that consider the total person and his health needs.

Whole person

Looking at the whole health of the person, therefore placing less emphasis on an existing health condition or a presenting problem as the only problem, is what comprehensive health care is all about. This has major ramifications and program implications beyond those things which have classically been defined as health care. The story of the blind men describing an elephant, the descriptions varying according to the part of the elephant each had touched, comes immediately to mind. For health care is one place where we touch this elephant, and comprehensive health care expands beyond the particular toward the more general. This could be seen as a problem of education, social welfare, housing, or of many other elements, depending on which first brings one into contact with the total problem. Health care cannot be considered as isolated from the questions of adequate food, adequate clothing, adequate housing, sanitation, air pollution, water pollution and other environmental factors, recreation, the availability of things to do, and family counseling and guidance. Comprehensive care as a concept grows outward from a medical base as a segment of this total community system with interrelations to all parts of it.

Federal legislation

This change in emphasis which underlies comprehensive health care is illustrated by the "purpose" statements in recent Federal legislation which established projects for maternity and infant care and authorized children and youth health projects, both of which are administered by the Children's Bureau. The legislation which created the Federally-supported maternity and infant care projects was an outcome of the report of the President's Committee on Mental Retardation. The projects were seen as an element in an over-all approach to the prevention of mental retardation. That Committee might have limited its recommendations so that a Federal program for mental retardation would be focused primarily on training more people to work with the mentally retarded, creating more and better institutions and day care arrangements for the retarded, and developing more ways to work with the retarded in the context of the community. However, the Committee went beyond this to look at causes of mental retardation and means for preventing it. The members noted that the elements which contributed to a higher incidence of mental retardation among infants included premature births, births to young mothers, too close spacing of childbirths, and births where there was inadequate prenatal care. Thus, the project grants to provide comprehensive pre- and postnatal care for mothers and infants have as their purpose the reduction of the incidence of mental retardation caused by complications associated with childbearing and are thus a direct response to the Committee's findings. To be responsive, the project grants must encompass comprehensive health care.

The project grant authority for children and youth health projects approaches the concept of comprehensiveness more directly, for their purpose is the promotion of health for school and preschool children. Here, too, the emphasis is on total health needs of a population group rather than following the historic categorical approach. This legislation defines comprehensive health care as "... including, but not limited to, screening, diagnosis, preventive services, treatment, correction of defects, aftercare, both medical and dental, in such amounts as may be prescribed by the Secretary of Health, Education, and Welfare."

Attributes of health care system

Comprehensive health care is defined in the context of this legislation by listing a series of elements of which it is comprised and asserting that the list is not exclusive so that other elements of health care may be added to the definition. Another way of approaching the concept is to review the attributes which may be necessary in a reasonable health care system and which are subsumed in the symbolic concept of comprehensive health care. In this case, the elements which are included do not relate to the health care problems of any particular group. They include the essentials for any reasonable medical care system which is established to meet the needs of the people it serves, the consumers of health care services. They do not relate particularly to persons with low incomes, to the middle class, or to any particular group. The methods by which the principles are put into practice may vary, however, depending on a variety of circumstances, including the particular needs of the group served.

Access to health care

A primary principle which would be a part of comprehensive health care is that of access. This includes physical access, with health services at locations where persons are not blocked by distance, lack of transportation, or other physical elements from being able to avail themselves of needed services. More importantly, psychologic access must be a major concern in the system. Health services which tend to fend off those needing the services by the way that the person is treated or by his perception of how he will be treated must be avoided.

This latter may be illustrated by two recent observations. On two successive days, I visited the emergency room in a large city hospital and a children and youth project in the same city. In both cases, I tried to put myself in the position of a patient coming through the door. During the evening, the emergency room had an almost forbidding air. The physical layout was such as to confuse anyone who had not been there before as to where he should go and what he should do. The persons who came for medical care seemed to divide into two groups: those with real emergencies and those who had been bothered by some illness or condition for several days and were finally coming for treatment. With the latter group, one had the feeling that the patients finally had decided that they were not going to spend one more night bothered by what was disturbing them. It appeared that these people had been screwing up their courage to approach an alien and foreign atmosphere and that there was an invisible wall between them and access to health care which it took great courage to broach.

The children and youth project, on the other hand, was very concerned with making its services genuinely available to the people in the area which it served. Their major problem was getting parents to bring their children for the first time. The atmosphere was such that, once they had gotten over any fear of the unknown, the patients came back for appointments. The process within the project for patients included appointment schedules for patients and "family physician" assignments for the physician staff. These assisted in making the patient and family feel that their care was important to the project.

Continuity of health care

A second principle for a health care system is that of continuity of care. There needs to be some way for maintaining, through a family physician or other health personnel, a medical records system, or some alternate means, a continuing record of and concern for the total health needs of a family. Health and its maintenance are continuous processes. In many cases, it is approached on an episodic basis, with relatively little attention paid to its total scope over time and the place of the episode within this broader spectrum.

Entry point to health care

A third element should be an acceptable and available entry point into the total health care system. This is, in part, a corollary to the access principle. However, it goes beyond that to the question of referrals within the system. For many of us, our family medical care is a series of discrete contacts with various specialists. Our health care program is carried within us. Comprehensive health care should go beyond this, providing a point of entry into the health system which will also assist in negotiating through other aspects of the total system as various needs for differing medical or other health services become apparent.

Organization of health care

The principles and the earlier general discussion do not answer questions about how, precisely, health care should be organized. Indeed, it would seem that there is no firm and fixed answer to that problem. The variables which must be applied in each situation or location are such as to make a single prescription impossible. What is being done is to start with the problem and experiment with various methods for providing comprehensive health care, seeing what works and what does not work and under what circumstances.

Complexity of task

In developing any health care system, it will be necessary to cope with a variety of problems. Among these are several which should be underlined. The problem of effective use of manpower coupled with job analysis to determine the skill levels required to perform particular tasks, training, and manpower availability affect any system. The desire of persons who receive service to be a part of the decision process determining the form of service offered must be included in the considerations, for we can, in our drives to do good, walk all over people's rights to participate in the choices vital to their lives. In a drive for efficiency, we can dehumanize the system.

Finally, we must face the problems of separation or integration. Should we have separate programs for children and youth, for example, or should there be comprehensive family health care programs? Or should we look at the separate special emphasis programs as subsystems and build linkages to other aspects of the total system?

The purpose of this report has been to raise questions with an aim toward the definition of issues. I hope that it has laid a general groundwork for considering the reports which follow, in its general consideration of the elements in today's world affecting the provision of health care and the principles which should be considered in evaluating any health care system.

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Discussion

George Himler, M.D., *New York City*. I would like to congratulate Commissioner Callison on a very lucid presentation and for his modest approach to the subject. He disclaims any expertise in medical matters. He is the first commissioner I have heard who did not believe that the mere fact of being a commissioner conferred such expertise. This certainly deserves a commendation.

Goal of comprehensive health care. Now, to get down to more serious discussion, I, too, share the general wonderment about what "comprehensive health care" is. I visualize it as a goal to be approached and something to be evolved over a rather long period of time; at least a sufficient period of time to avoid the mistakes we may make if we jump into its planning with preconceived and fixed ideas. This evolutionary type of approach to comprehensive health care, whatever that may be, will require the effective cooperation of all the individuals involved in it.

Community demand. Commissioner Callison has pointed out to you—and even as a physician presenting what is primarily a physician's point of view, I accept this as a fact of life—that the community now wants a degree of self-determination in the provision of health services. The public is no longer willing to leave the mechanisms and the manner in which health services are delivered to be determined solely by physicians. I think there is some justification for this. It is something that physicians have had to learn to accept.

Physician representation. There is another fact of life that should also be remembered, however, and that is that physicians happen to be experts in medical care and that many physicians are experts in the most appropriate and efficient manner of delivering that care. Government, in devising and supporting health service programs, is therefore almost obligated to be sure that physicians are given adequate representation and hearing for their points of view to be given proper weight. I assure you that they do have some weight.

Government programs. Now, it seems to me that government, in developing medical assistance programs, has to this point concentrated on areas of deficiency or of immediate and urgent need, and there are many such: the needs for assistance of the categorically indigent, the medically indigent, and the elderly, to name a few. In so doing, government has addressed itself to the solution of the most immediate and pressing social problems relating to medical care.

Medicare. Government intervention has taken two general forms. In Title 18, or Medicare, government limits itself to being primarily a paying agency, with some responsibility for the availability and the quality of care. It has not taken on the direct administration of the program but has entrusted that function to health insurance carriers, acting as intermediaries.

Medicaid. Most Title 19 or Medicaid programs are also being administered by intermediaries except in this great State of New York, where it is being managed, as far as I known, by 64 different agencies, representing 64 welfare or social service districts. I must say that the product indicates the type of organization behind it. This is a purely prejudiced point of view, of course.

Voluntary health insurance plans. It seems to me that the most important thing government must do in establishing plans for medical assistance is to utilize everything that is available in the community. Now, what do we have available in the community? We have voluntary health insurance carriers that have developed a great deal of expertise in administering their programs. They have the machinery, the trained manpower, and the know-how to do so. When government, at any level, undertakes the administration of its own programs, it must reproduce that know-how, it must reproduce the facilities, and it must duplicate the skilled personnel. All this takes time, and it is essentially wasteful and unnecessary. It is the waste of an existing community resource.

Government function in health care plans. What I am getting at is this: I do not believe that government has a proper function beyond recognizing social needs, paying for the services involved, and serving as a catalyst to assist communities in developing the programs they require. The restriction of government to these areas of function would do much to encourage the pattern of community involvement in planning that we are now taking such pains to create.

HEALTH CARE COVERAGE. There is another aspect of tax-supported programs that disturbs me a bit. Legislators, in establishing these programs, have dealt with the problems of those who require assistance in paying for medical services by dividing them into categories and then devising a plan for each category. They have lost sight of the fact that the majority of the public depends on voluntary or commercial health insurance and that that insurance is currently far from being adequate. The need for comprehensive health services is common to all, regardless of their age or their ability to pay.

HEALTH INSURANCE SUBSIDY. It is my contention that if the voluntary and commercial health insurance carriers were encouraged or even subsidized in some ways to experiment with ways of providing better and more comprehensive health care coverage, we would be nearer to what we should be aiming for. The goal is not medical assistance to the needy or the elderly but mechanisms for the protection of all of the public against the costs of health care. This can best be achieved by permitting or even requiring health insurance carriers to administer tax-supported programs, preferably in a carrier rather than an intermediary role. Protecting them against losses which they might incur as a result of bad underwriting experience would remove the actuarial barriers that have hitherto limited the scope of trial programs to expand coverage.

RESPONSIBLE ADMINISTRATION AGENCY QUALIFICATIONS. Of course, there is much more to the question of making comprehensive medical care available to everyone than mere insurance or payment mechanisms. As a result of Federal Public Law 89-749, we have had much discussion in New York City about the agency best qualified to be entrusted with comprehensive health planning for the area. As you are aware, there were two major contenders. One was the Health Services Administration of the City of New York which claimed that it must assume the planning responsibility since it was New York City money that was being spent. The structure of the agency proposed by the Health Services Administration was such that it did not have the consumer representation required by law or the physician representation necessary for effective planning. For this and other reasons, the five county medical societies of Greater New York opposed this alternative.

The other contender, if I may use that term, was the Health and Hospital Planning Council of the Southern District of New York. I had the pleasure of testifying at a forum of the State Health Services Commission early in September, at which time I spoke against vesting the area-wide planning function in the Council. I felt that, although it was vastly better qualified than the Health Services Administration, to do so would be to repose an enormous amount of power and responsibility in one agency without the necessary checks and balances.

COMMUNITY AGENCIES. At the forum, I presented a third alternative which was not developed in detail and, indeed, was not a new concept. In recognition of the desire of communities to take active part in planning to meet their own health needs, as was pointed out to you by Commissioner Callison, I recommended that boards or agencies be developed for each area which would have a broad community base and consist of individuals who have the knowledge and experience to decide what is required. I realize that one cannot merely go out into a community and say, "Okay, we will now appoint representatives from among you who will plan the health services for your area." Agencies of this type will require time and patience to develop, but the very pervasiveness and extent of their influence demand prudence and care both in their structuring and in their authority. Such agencies, once developed, would of course use all existing community resources both for research and for policy formulation.

PHYSICIAN PARTICIPATION IN PLANNING AND IMPLEMENTATION. I can tell you that we physicians have lost the attitude that we alone can determine what must be done in the field of health care. On the other hand, we are the ones who must implement the programs that are devised, and we are not entirely willing to do so unless we have a hand in their planning. Medicaid is a case in point. Therefore we, the medical societies, have tried to offer our services to government, the State government in particular, in a sort of partnership. We no longer want to control programs. We want to be heard. We want to be able to say what is right and what is wrong, and we want those opinions to be given the weight they deserve.

We have not achieved this type of cooperation in Medicaid. I am not sure that we will achieve it, although we are trying very hard. Those responsible for the Medicaid program in New York State have tended to resist giving physicians an active and effective role in bringing about sorely needed improvements.

Medical manpower is one of the obvious essentials in the rendering of good medical care, and it is in short supply. It must be utilized in the most efficient way possible. Such utilization can come about only as a result of planning and implementation by a real partnership among lay and professional people who have only one aim in view: not the preservation of their own rights and privileges, but the best way of meeting the needs that the community has identified for itself. Thank you very much.

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Family-Centered Care

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In July, 1966, the Montefiore Hospital Neighborhood Medical Care Demonstration was funded for 1.9 million dollars by the Federal Office of Economic Opportunity.[1] The program was developed in the Division of Social Medicine of Montefiore Hospital and was designed to demonstrate a new approach to comprehensive health care.

Locality

The neighborhood chosen for the project is a 55-square block area. It comprises two health districts and is located in a low-income neighborhood in the southeast Bronx. Approximately 11,000 families (45,000 people) live there; this population is equally divided among Afro-Americans and Latin Americans. About 5 per cent are white. The area is blighted with run-down factory buildings, empty tenements, and garbage-strewn streets. The gross "social statistics" confirm what the eye sees: a high unemployment rate, many families on welfare, crowded housing, and high crime high drug use rates.

The vast majority of people in the neighborhood have received their medical care in the clinics and emergency rooms of nearby hospitals and from the five general medical practitioners in the area. The nine pharmacists are a vital part of the medical care network. "Botanicas," spiritualists, and faith healers provide a great number of people with folk medicine services.[2] Continuity of health care, follow-up, and preventive medical services are difficult to come by. The infant mortality rate is twice that of a more affluent area only 40 city blocks away.[3]

Organization

The Montefiore Hospital Neighborhood Medical Care Demonstration is organized around a main health center and two satellite centers that offer comprehensive ambulatory and home care medical and dental services. The program has three

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major components: (1) a health careers program to provide the project with vitally needed, scarce technical and subprofessional health personnel; (2) a program of community development and health education that is aimed at mobilizing and coordinating health and health-related services in the area; and (3) a program that provides family-centered medical care. The latter is the subject of this presentation.

Historic antecedents

The Peckham experiment in Great Britain provided the antecedents for health maintenance programs.[4] Later in South Africa, The Kark Institute of Family and Community Health developed principles of health record keeping and health maintenance.[5] Perhaps the most significant study of family medical care was conducted by Silver[6] in the Family Health Maintenance Demonstration. During 1950 to 1958 he provided family medical care for several hundred middle-income families of the Montefiore Medical Group. Since that time, family-centered medical care has been undergoing demonstration programs in a number of centers across the country.

Health teams

The Montefiore Hospital Neighborhood Medical Care Demonstration brings physicians together in group practice and physicians, nurses, family health workers, and ancillary personnel in team practice. In the context of team practice, traditional roles have been examined and redefined.

Family physician. The family physician is usually an internist-pediatrician team or a general practitioner. He is the team "manager" who is responsible for the medical care delivered by the team.

Public health nurse. The role of the public health nurse has been expanded in several ways. She is responsible for the preventive medicine care of the family. To enable her to fill this role, she receives additional training in well-child, prenatal, and postnatal maternity care; postnatal infant care; and in preventive medicine care for the adult. In addition, she coordinates the medical and social care of the family, bringing people that require the resources of the full team to conference. She has primary responsibility for the supervision of the family health workers on her team.

Family health worker. The family health worker has incorporated into her role some of the traditional subprofessional functions of the public health nurse, the social worker, and the health educator.[7] She is trained as a generalist to serve as the family advocate and major resource. She provides not only home nursing and health education services, but also assists families in their dealings with the bureaucracies of the welfare system, the courts, and medical agencies, including our own. Thus a family health worker may in one day check on medication being taken by a member of one family, assist a second family in obtaining a proper allotment from the welfare department, and also accompany a member of a third family to the hospital for a treatment which he or she views with fear and might otherwise not obtain.

Team conferences. Team conferences are conducted by each team on a weekly basis for one and a half hours during luncheon. The health status of selected families is reviewed periodically by staff physicians, public health nurses, and family health workers assigned to the team, as well as by various indicated resource personnel, such as lawyers and public health educators. The social and medical backgrounds of the household are reviewed in depth. A suggested plan or series of guidelines for future activity for each of the team members is then developed.

The following family-centered history record is detailed to illustrate the working organization of the Montefiore Hospital Neighborhood Medical Care Demonstration.

Case report*

This case is presented to describe a family with numerous medical and social problems, a situation that is by no means unusual in our neighborhood demonstration area. Members of the family have received medical care for the past five months (Table I).

History notes. The family consists of the father, aged twenty-six, unemployed; the mother, aged twenty-seven; a daughter, aged four and a half; and a son, aged one and a half years. They live in a three-room, fourth-floor, walk-up apartment in southeast Bronx, about five minutes' walk from the health center.

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* The history notes were taken by Mrs. K. Estrada; the follow-up notes by Mrs. A. McDade; and the medical notes by S. Essandoh, M.D.

TABLE I. Health problems and health plans for family*

Findings	Health Plan	Responsible Team Worker
Father, age 26		
Pneumonitis, September 8, 1967	Physical examination	Physician
	Management of pneumonitis	Physician
	Tuberculosis workup	Physician
Cigaret smoking, dental caries	Smoking class	Public health nurse
		Public health nurse Referral to dentist
Unemployment	Training program	Family health worker
Mother, age 27		
Acute rheumatic fever, June 26, 1967 and carditis	Hospitalization	Physician
	Signed out against medical advice	
	Requires homemaker	Family health worker
	Weekly vital signs	Family health worker
	Monthly penicillin injection	Public health nurse
	Family planning	Referral to gynecologist
	Dental care	Referral to dental worker
Daughter, age $4^{1}/_{2}$		
Routine examination (heart murmur, anemia)	Immunizations	Public health nurse
	Cardiac workup	Pediatrician
	Treat iron deficiency	Public health nurse
Dental caries		Referral to dentist
	Head Start	Family health worker
Son, age $1^{1}/_{2}$		
Routine examination	Immunization	Public health nurse
Incomplete immunizations		
Bilateral otitis media	Treatment of otitis media	Physician

*Family plan: referral to housing authority for elevator building: family health worker; diet instruction: public health nurse; and tuberculosis screening of children: public health nurse.

The first contact was with the father who came to the health center requesting medical help for his ailing wife. At home the wife, a slender woman, was lying in bed. She looked extremely ill, had swollen tender elbow and knee joints, and was unable to move. Her pulse was rapid, but her temperature was normal. Her transportation to the health center was arranged, and her condition was diagnosed as acute rheumatic fever. She was then admitted to the hospital.

The husband had just entered a training program to gain industrial skills. The immediate problem was to find a homemaker for the family. Soon after the mother's hospitalization, she began expressing fear of being in a hospital where no one was available to speak her language, Spanish. On several occasions she wanted to sign out of the hospital against medical advice. She was kept in the hospital for the greater part of the month. The physicians were worried about her leaving because her heart murmur was changing. Finally, on one weekend, she signed herself out against medical advice. It was necessary to follow her at home.

Follow-up notes. The care of this family has shifted from the hospital to the home. The family health worker, physician, and public health nurse have alternated home visits. The mother's vital signs were checked, and monthly injections of long-acting penicillin were given. The two children have been seen for routine examinations, and it was found that the daughter had anemia and a heart murmur. The son had incomplete immunization schedules. These were completed on both children, and they were seen by the pediatrician.

Medical notes. The daughter had been born at Morrisania City Hospital with a low birth weight of 1,588 Gm. (3 pounds, 8 ounces) after an eight-month period of gestation. Pregnancy, complicated by early pre-eclampsia, had been treated with diet and pills. Soon after birth, the baby had been transferred to The Mount Sinai Hospital premature baby unit. The clinical course in the premature nursery had been uncomplicated, and the baby had been discharged after four weeks with a weight of over 2,268 Gm. (5 pounds). She was subsequently followed in Morrisania Hospital pediatric well-baby clinic, but appointments were rarely kept.

The baby's formula consisted of an evaporated milk mixture. Vitamins, cereals, vegetables, and meat were introduced at appropriate times. Table food was introduced at eighteen to twenty-six months.

Developmentally, the baby sat at nine months, crawled at twelve months, walked at eighteen months, and was toilet trained at two and a half years. Speech was delayed until three years.

Physical examination showed a pale, active, but cooperative girl with length and weight in the third percentile. Significant findings included clear lungs, a Grade I to II/VI systolic mitral murmur, and the mitral second sound was split but physiologic. A chest x-ray film showed no cardiomegaly. The electrocardiogram showed nonspecific changes with S-T elevation in leads II, III, aVf, and V_4 to V_5. Neurologic examination showed normal findings.

Blood tests revealed a hematocrit of 28, white blood count 7,000, reticulocytes 0.7 per cent, and a smear showed hypochromic and microcytic red cells with occasional target cells. A sickle cell preparation gave negative findings. The urine was acid, specific gravity was 1.015, and tests for glucose, protein, and acetone gave negative findings.

The baby was started on iron therapy with brisk reticulocyte response; the hematocrit rose to 35. The appetite improved.

The son is a one and a half-year-old boy born at Jewish Memorial Hospital. The birth weight had been 3,030 Gm. (6 pounds, 11 ounces). Pregnancy had been complicated by hypertension which was controlled by diet and pills. Delivery had been uncomplicated. The neonatal course had been benign.

The baby was started on a prepared formula and then changed to regular whole milk at two months. Table food was introduced at nine to ten months. Growth and development were normal. Physical examination showed an active boy with length and weight in the fiftieth percentile. The examination gave normal results. The urine was acid, specific gravity 1.010, and tests for glucose, acetone, and protein gave negative findings.

The boy was first seen by the family health worker. He had a temperature of 105 F. The physician found a bilateral otitis media which responded to antibiotics and oral decongestants. Follow-up revealed incomplete immunizations which were subsequently brought up to date.

MEDICAL NOTES. In addition to routine examination of the father, he was also seen at the health center on September 8, 1967, for acute pneumonitis from which he recovered. The father was then registered in the "stop smoking" class, beginning in the new year.

The mother was seen at home. Her cardiac condition was stabilized, but she still had shortness of breath on exertion. Her past two visits have been to the health center. Except for the occasional home visit by the family health worker, home care has been discontinued.

ADDITIONAL NOTES BY FAMILY HEALTH WORKER. Since the first contact with the family, they have found an apartment in a low-income city housing project and will be moving within the next two months. The father has completed his training program, and referrals to a variety of agencies to see if employment can be obtained for him are being made. There has been contact with the welfare investigator to see what additional funds can be obtained for the family.

Comment

The advantages of family-centered health care have been well documented. Difficulties of organization are another matter. To operate a health agency for the convenience of the patient and at the same time to provide economically feasible staffing patterns involve significant administrative problems. It is easy to say that a family should, on one visit, have the mother seen for the prenatal examination, the children for well-child examinations, and the father for a persistent chronic ailment. The coordination of team activities to provide these coordinated services effectively and economically is a major accomplishment. Creating a family chart and getting team members to utilize it is but one example of the communications problem to be solved. Developing a functioning health team while each member is learning a new role is fraught with potential group conflict and anxiety.

It is mandatory, however, that the complex specialization of modern medical care be managed not by the patient but by those in health service roles. Family medical care provides one answer to the problem.

The Montefiore Hospital Neighborhood Medical Care Demonstration has implemented a subtle, but we think, significant shift of emphasis from the more traditional concepts of "family management." A large percentage of our community does not reside in the traditional nuclear family pattern of the white middle-class population but lives instead in an extended household pattern. By treating the household, we are attempting to effect change in the medical and social environment by tapping the resources inherent in this extended kinship pattern.

The family management concept is implemented in an environment distinctly different from that of the traditional outpatient multispeciality clinics. The Montefiore Hospital Neighborhood Medical Care Demonstration approach to the family is designed to offer continuity of care not only to the individual patient but also to the entire household by exposing the household over a period of time to the same health team members. It is felt that this long-term exposure will improve preventive medical management.

Will the utilization of extensive health care by all members of the family as a unit achieve general improvement in family and community wellness, and eventually bring about needed reduction in perinatal and early infant morbidity and mortality rates? Only the passage of time and future experience with family-centered health care will resolve this important question.

Summary

The Montefiore Hospital Neighborhood Medical Care Demonstration is organized to provide comprehensive family health care services. A health team comprising a family physician, a public health nurse, and a family health worker are responsible for providing and coordinating family medical care. The composite family history of a representative family is detailed, and some of the problems of providing family-centered medical care are described.

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Obstetric Care

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THE PREAMBLE OF the Constitution of the WHO (World Health Organization) states that "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It states further that "The enjoyment of the highest attainable state of health is one of the fundamental rights of every human being without distinction to race, political, or economic condition."

American medicine currently stands on the threshold of a transition in the delivery of health services to achieve the WHO concept of health. We are becoming increasingly convinced that health care is not a medical responsibility alone, but rather a composite of the energies of all community health and social agencies working in concert. We are increasingly committing ourselves, therefore, to the concept of totality of health care, not alone for the individual but also for the entire family complex. Thus we are tending toward the development of programs of comprehensive health care which are family centered. Stated another way, we are beginning to appreciate the necessary interrelationships of all community disciplines directed to the family group in an attempt to provide better health services and achieve a totally healthier citizenry. In addition, the concept of health care for wellness rather than for sickness is emerging.

Carruth J. Wagner, M.D., of the Public Health Service, recently stated "While the United States leads the world in volume of health and medical expenditures and activities, it also leads many other countries in the incidence of disease, premature death, delinquency, alcoholism, and social problems, while spending more per capita on health than do these countries."

"Preventive care," he added, "is not widely sought nor widely practiced. Rural people and the urban poor are being left behind in the forward progress of health. Infant mortality is higher than in many other countries, and in parts of this country twice as many Negro as white infants die each year."

Excessive infant mortality rates

On this score, there has been increasing concern over the markedly decelerated rate of improvement in infant mortality rates nationally. Between 1950 and 1960 infant mortality rates in this country improved but only 15.4 per cent, compared with improvement rates in other countries ranging between 20.4 per cent and 56 per cent. From 1962 to 1964 the national reduction was but 2.8 per cent, or from 25.4 to 24.8 per 1,000 live births, and the United States

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ranked sixteenth in regard to infant mortality rates among a group of selected countries.[1]

Of even greater concern than the slowing down in progress in reducing infant mortality rates is the unevenness of progress between comparable statistics for the white and nonwhite population groups and the differentials in pregnancy outcome between private and ward patients. While prematurity incidence has steadily risen to the current level of 10.1 per cent of live births, ethnic differences are striking, with a figure of 7.5 per cent for the white versus almost 16 per cent for nonwhite births. Infant mortality rates likewise show a 1 to 2 differential with a rate of 22.3 for white and 41.3 for nonwhite births of 1,000 live births.

A recent report from the Children's Bureau revealed that for the period 1956 to 1960, a majority of the infant deaths occurred in 56 counties in the United States, which contained nearly all the densely populated areas in the nation.[2] These 56 counties include such major cities as New York, Los Angeles, Chicago, and Washington, D.C.

To face up squarely to the problem of lowering infant mortality rates requires solving the enigma of prevention of premature labor, identifying and striving to prevent the obstetric antecedents producing neurologic deficits, and reducing the high incidence of low birth-weight infants.

Causes of excessive infant mortality rates

What leads do we have? First is the acknowledged association between low birth weight and infant mortality rates. Second are the epidemiologic leads relating low birth weight to low socioeconomic status, ethnicity (nonwhite versus white), out of wedlock births, patients receiving late or no prenatal care, and to those patients with repetitive obstetric casualties of abortion, premature birth, stillbirth, or neonatal death. Third is the recognition of the greater vulnerability of certain population groups, particularly the medically indigent, nutritionally deprived, and predominantly nonwhite.

Maternal and infant care projects

National concern resulting from an appreciation of the foregoing data occasioned commissioning the President's Panel on Mental Retardation in October, 1961. A direct response to the recommendations incorporated in the report of the President's Panel, submitted in October, 1962, was enactment by Congress of Public Law 88-156, on October 24, 1963.[3] This law, an amendment to the Social Security Act, was officially captioned the "Maternal and Child Health and Mental Retardation Planning Amendments of 1963."

Part 4 of this law enabled provision of Federal funds for special MIC (maternity and infant care) projects, "for the provision of necessary health care to prospective mothers (including, after childbirth, health care to mothers and their infants) who have or are likely to have conditions associated with childbearing which increase the hazards to the health of the mothers or their infants (including those which may cause physical or mental defects in the infants)."[3]

Lesser[4] has pointed out that the expansion of maternity services made available by this legislation should make possible reduction in incidence of premature birth, further reduction in infant mortality rates, and reduction in the incidence of mental retardation and allied neurologic handicapping sequelae associated with childbirth. In addition, Lesser[4] also suggested the possibility of exploring new methods for providing comprehensive health care and improved quality of health services.

Against this background of fact and motivation, the New York Medical College, in 1965, applied for and was granted funds by the Children's Bureau to develop a total maternity and infant care program in cooperation with the City of New York Department of Health.

MIC project at Metropolitan Hospital

The project was developed at Metropolitan Hospital, a 1,000-bed municipal teaching institution of New York Medical College, located in the section of New York City known as Spanish Harlem. The area served by the Hospital is one of economic deprivation, poor housing, low educational level, and general blight. In the year 1964, this health area also achieved the dubious distinction of having the highest perinatal mortality rate (48.6 per 1,000), the highest prematurity incidence (17.1 per cent), and the highest number of out of wedlock births (43.7 per cent) in New York City. It also had the second highest incidence of late or no prenatal care (41.1 per cent) and of infant mortality rate (41.1 per 1,000 live births). These figures average two to four times the comparable rates for New York City as a whole and for the entire country. Among much of this population, birth control education and availability had been absent or minimal.

The obstetric service of Metropolitan Hospital is the second largest in the city and provides care for a medically indigent population with a large proportion of high-risk patients, predominantly nonwhite and Puerto Rican. Deliveries total 4,000 a year. The perinatal mortality rate is 50.8. The incidence of prematurity is 16.2 per cent, the incidence of toxemia is 15 per cent, and teen-age pregnancies number approximately 130 a year. Walk-ins account for almost 10 per cent of all deliveries. These data seem related to the fact that these patients either do not seek care, are dissatisfied with it, make infrequent visits, or report late for prenatal care and actually, in many instances, get no prenatal care at all prior to delivery.

This report will describe and appraise patient care experiences of the total MIC project which functions in its own physical area on the second floor of the clinic building at Metropolitan Hospital, since its inception nineteen months ago, through to June 30, 1967.

The MIC project was specifically developed to: (1) provide optimum and comprehensive total maternity care for high-risk pregnant women; (2) to determine if such care affects the outcome of pregnancy and to what extent; and (3) to identify those factors in prenatal care which affect pregnancy outcome. In the following review of the first nineteen months of operation, it will become apparent that we have fulfilled the first objective, but it is too early to state whether or not objectives 2 and 3 have been achieved.

Patient selection

Pregnant women applying for prenatal care at Metropolitan Hospital come from a low socioeconomic, demographically and ethnically high-risk patient cohort of childbearing age, predominantly Puerto Rican and nonwhite. On application for care, each patient is screened by a public health nurse for selection into the MIC project by preset criteria for high-risk factors such as age, parity, over- and underweight, history of prior pregnancy wastage, prior medical and obstetric complications, and so on. From these criteria for selection, it is evident that the MIC project cares for a "super high-risk" group of pregnant women. Approximately 1,000 patients per annum are so selected for total MIC care. Patients not fulfilling these criteria for MIC care are registered in the regular prenatal program at Metropolitan Hospital.

Patient care

The selected patients receive total maternity and infant care encompassing antepartum, intrapartum, postpartum, family planning, and interconceptional care for the mother throughout the first postpartum year and infant care during the first year of life to the infants born to the project mothers.

Patient care is geared to the tempo of private office practice with a sufficiency of multidisciplined personnel, including trained faculty member-qualified obstetricians and pediatricians, public health nurses, social workers, a nutritionist, and the required ancillary statistical, laboratory, secretarial, and clerical personnel, all under the direction of specialists in the field of maternal and child health. Liaison with the City of New York Department of Health and with departments of obstetrics and gynecology and of pediatrics of New York Medical College is continually maintained. Thus, the patient care given is not only hospital based but is also highly integrated and multidisciplined. It includes eliminating all deterrents to seeking early and continuous care such as red tape financial eligibility investigation and provision for transportation when needed. In addition, an appointment system; follow-up of broken appointments; home visits by the staff nurses, social workers, and nutritionists; patient education; and humane and dignified patient-physician and patient-nurse ratios are provided. Hospitalization for incipient complication is promptly utilized and readily available.

CONTINUITY OF CARE. Continuity of patient care is stressed. Each patient in the project has her own obstetrician and public health nurse who sees the mother during each prenatal visit and at each postpartum, family planning, or interconceptional visit. Each mother during her postpartum stay is visited on the ward daily by her own public health nurse. The same continuity in patient-physician relationship applies to the infant and its own pediatrician, so that at the well-baby clinic visits at six weeks, three months, four and a half months, six months, nine months, and twelve months, each mother-infant complex is seen at each visit by their own pediatrician and the mother herself by her own obstetrician.

COMMUNICATIONS. In addition, the MIC program maintains its own private line telephone service around the clock. Patients are encouraged to call directly in to the MIC project for all advice, questions, and information. Likewise, they use this telephone service to cancel a stated appointment and make a new one. The project staff mans this telephone line five days a week from 9:00 A.M. until 5:00 P.M. After 5:00 P.M. and weekends, this private line is covered by a professional telephone answering service so that we do not lose continuity with the patient.

LABOR, DELIVERY, AND POSTPARTUM CARE. Antepartum hospitalization and labor and delivery services are provided at the Metropolitan Hospital with a qualified attending and resident staff. Postpartum care for the MIC patients is provided in a specially maintained 19-bed ward where a minimum five-day postpartum stay for the patient with no complications is provided.

Statistical highlights

PATIENT LOAD. What has been accomplished? Probably the most succinct overview of the project can best be obtained by a review of the operational highlights of the first nineteen months of patient care activities through June 30, 1967.

Admitted were 1,130 patients, of whom 1,098 were direct admissions and 32 admitted by transfer. Total physician visits were 6,410 of which 1,130 were first examinations. With the qualification that patients are not admitted to the MIC project after the thirty-second week of pregnancy, 29 per cent of the patients were admitted for care in the first trimester of pregnancy, 58 per cent in the second trimester, and 13 per cent from the twenty-eighth to thirty-second week. Actually, 87 per cent of the patients were admitted prior to the start of the seventh month of pregnancy.

TABLE I. Major high-risk categories admitted in hospital

Complication	Number	Per Cent
Pregnancy wastage (patients with history of prematurity, mental retardation, infant death, and fetal loss)	402	36
Sixteen years or younger	238	21
100 pounds or less	209	18
200 pounds or more	150	13
Grandmultipara	142	13
Hypertensive disease	106	9

The ethnic distribution of patients reveals that approximately 10 per cent are white, the remainder being equally divided between Negro and Puerto Rican.

High-risk factors averaged 1.6 per patient at admission. The major high-risk categories admitted are listed in Table I.

Of the 106 antepartum hospitalizations, five conditions (diabetes 19, narcotic addiction 13, bleeding 10, elevated blood pressure 13, and cardiac disease 9) accounted for more than one half (64) of the hospitalizations.

Of the patients disqualified in the obstetric phase of the program (914), 80 were disqualified for "did not meet criteria" or "not pregnant." Only 2.9 per cent (24 of the remaining 834) were disqualified for "moved," and 4.6 per cent (38 of 834) were delivered elsewhere than at Metropolitan Hospital. Thus, the MIC case retention to delivery is 93 per cent, illustrating patient acceptance and desire for a total maternity care program affording patient dignity and compassionate care.

Broken appointments

Of interest is a review of the problem of broken appointments. At the outset, our

TABLE II. Home visit activities, June, 1966, to June, 1967

Category	Number
Follow-up on antepartum and postpartum patients who did not keep appointments	124
Follow-up of newborn infants (formula, premature babies, and so on)	105
Family planning health supervision	22
Prenatal health supervision	6
Home evaluation	5
Positive serology follow-up	6
Nutrition supervision	2
Other	14
TOTAL	284

ground rules for broken appointments are that any patient scheduled at a given date who does not appear on that date is carried as a broken appointment, despite the fact that she may come in on the following day. It may also be stated that in the course of our follow-up, no patients have been lost and all have been retained under care. Notwithstanding, with these ground rules, the following experiences represent the first nineteen months of operation. In the course of antepartum care, the broken appointment rate is 19 per cent; in the postpartum and interconceptional area, 35 per cent; in family planning, 32 per cent; and in our child health activities, 36 per cent. These findings serve to point up the traditional attunement of the patient to seeking health care for a definitive acute situation (sickness or pregnancy), rather than for prophylaxis or "wellness," or for extending the concept of family-centered health care.

Home visits

A major aspect of follow-up of broken appointments is the home visits made by the 6 MIC public health nurses. Table II represents a picture of the home visit activities for the period of June, 1966, through June, 1967.

Postpartum and family planning

Of women delivered in the MIC program, 74 per cent have had at least one postpartum visit. This is a minimum figure for these deliveries, since for some a first postpartum visit is not yet due. As to registration for family planning, the figure, which as previously indicated is a minimum, is 43 per cent. Pills and intrauterine devices are the methods of choice (pills, 61 per cent; intrauterine devices, 34 per cent) with relatively few shifters.

It is indeed frustrating to find that only 43 per cent of MIC project patients accept the family planning services that are made so completely available to them. One of our future goals is to develop a sociocultural and motivational research study to ascertain the multitude of reasons contributing to the poor acceptance of available family planning services by these patients. In fact, a pilot study along these very lines has already been initiated in cooperation with the Population Council.

Infant care

Every infant, sick or well, full-term or premature, even under conditions of optimum maternal health, goes through the crisis of birth. To survive, he must make the successful transition from intrauterine dependence to life as an independent organism. The kind of medical care the infant receives in the first postnatal hours and days may well be crucial to health and even survival. In the MIC project, the knowledge and skill of the obstetrician and pediatrician merge to minimize the hazards of adjustment for the neonate to life on his own.

Pediatricians on the project have given care to 652 infants born alive and living beyond one month during the nineteen-month period through June 30, 1967. Of these, 494 (76 per cent) have had continuing care in the child health phase of the project.

During the five-day hospitalization in the neonatal period, each infant was assigned to a pediatrician who followed this same infant thereafter and also maintained a close relationship with the mother. Initial contact with the mother was made during the first twenty-four hours following birth. She was given advice and assurance about her baby's well-being. Normal infants were followed daily with an extensive initial examination within the first twenty-four hours of birth, an interim examination at seventy-two hours, and a discharge examination on the fifth day. A short visit was paid to the mother on the day of discharge to advise her about the first stressful days at home and the infant's feeding and care.

Low birth-weight infants (under 2,501 Gm.) constituted 19.9 per cent of live births. These infants were placed in a hospital according to their condition, and extensive care was given in the premature nursery unit. They were discharged from the hospital when their weight reached 3,370 Gm. (5 pounds) and a steady gain in weight occurred and when physical conditions were within normal limits.

Major congenital malformations were found to be approximately 5 per cent of live births, and extensive multispecialty care was given to these infants for diagnosis and correction of their abnormalities. Infant deaths under seven days were found to be 45 per 1,000 live births; prematurity contributed heavily to this group. The mortality rate was 37.5 per cent of 40 live births under 2,001 Gm. delivered during this period. Neonatal deaths under twenty-seven days were 48.5 per 1,000 live births; multiple congenital abnormalities and infection contributed to this figure.

Infants were seen in the well-baby clinic at the ages of three to four weeks. Mothers were again given advice in infant care and feeding. It was felt that visual aids as well as auditory advice would improve the mother's understanding of a normal infant's growth and development as well as his behavior. It was arranged to show movies repeatedly on these subjects while the mothers were waiting to be seen by their pediatrician. Faulty feeding, such as too much or too little intake, improper formula, and faulty feeding technic are found to be major problems with these infants. Mothers were given audio-visual advice on terminal sterilization, formula preparation, and infant feeding.

During the first year of life, 6 to 8 well-baby clinic visits were arranged, and primary immunizations against diphtheria, pertussis, tetanus, poliomyelitis, and measles; smallpox vaccinations; and tuberculin tests were given routinely as well as the determination of hemoglobin and urinalysis as part of the first year's well-baby care. Any deviation from normal was studied carefully and corrected when possible.

At the end of the four-month period, growth and development of each infant were evaluated.

Despite the optimal care given to these infants, there are still two major unsolved problems: (1) broken appointments which constituted 36 per cent of our clinic population, and (2) termination of care of mothers and infants at the end of one year following delivery. With regard to the first problem, closer supervision of visiting nurse service and the provision of help to take care of the other children in the family while the mother is visiting the MIC project may help to reduce broken appointments. As for the second problem, continuation of health services beyond the first year of life, for the evaluation of developmental processes of children born to "high-risk" mothers and continuation of medical care to the families involved, should be made an integral part of the MIC project.

Patient education

Communication is all-important between all members of the MIC health team and the patient. Of major significance in this regard is the fact that many of our staff are bilingual, speaking English and Spanish with equal facility. This includes the physicians, nurses, social workers, clerks, and aides.

Thus, the language barrier has been breached.

Patient education is continuous rather than episodic. From the very first visit, physician instruction, nurse conference, nutrition consultation, and social services are geared to ongoing orientation regarding the value of continuity of care; to the concept of health care for "wellness" rather than for "sickness"; to the value of health care post partum and in the interval between pregnancies; to the advantages of family planning and planning for the family; and finally, to the concept of total family-centered care.

A mother's club is conducted every afternoon for one-half hour prior to the clinic session. A structured outline is followed and the series consists of the following topics: (1) fetal growth and development; (2) discussion of superstitions of pregnancy and instructions for comfort during pregnancy; (3) labor and delivery; (4) breast feeding; (5) formula preparation; and (6) postpartum and family planning and interconceptional care.

Further, we have recently started on a pilot basis, in cooperation with the department of psychiatry of New York Medical College, group therapy sessions for the unwed teen-agers enrolled in the MIC project. The objective is twofold: (1) to provide a group setting in which pregnant unmarried girls, sixteen years of age or younger, may explore their problems, either resulting from their pregnancy or the maladaptive behavior which led to the pregnancy; and (2) hopefully to prevent repetition of another out-of-wedlock pregnancy.

Nutrition services

Basically, the nutritionist's activities are concerned with individual counseling of prenatal and postpartum patients; ward visits; in-service training to the staff nurses; consultation on individual patients with the physicians, nurses, and social workers; and referrals for surplus foods and extra food allowances for welfare patients.

In addition, the nutritionist conducts group sessions during the interconceptional period for the overweight and underweight patients. Evaluation of patient care in terms of nutritional needs has revealed that insufficient time has been devoted to many patients because of the lack of an adequate number of nutritionists on the staff. Some patients were occasionally overlooked because of this. Increasing the nutritionist staff would remedy this deficiency. Notwithstanding, the effectiveness of having the nutritionist see patients frequently has been demonstrated. Excellent rapport has been established with these patients. They tried to adhere to diets more faithfully. They came back on their own for further advice. Their nutrition habits have improved, and more important, these improvements have been applied to their families as well. This re-emphasizes the need for more frequent contact between patient and nutritionist to achieve the goal of improved nutrition for the high-risk patient and her family.

MIC project and medical education

The MIC project thus far has proved to be somewhat of a two-way street. It has afforded augmentation of a multidisciplined staff involved in patient care which otherwise would not have been available within the budgetary framework of New York Medical College. This expanded professional and ancillary staff has fostered the improvement in quality of patient care made available to the high-risk patient. Of great additional importance is the role the MIC project plays as a teaching demonstration to medical students and residents, of coordinated, multidisciplined, medical school-hospital-based total maternity and infant care.

Third-year medical students, in groups of 4, rotate each week on an observational and instructional basis, through all aspects of care and services to the MIC patients throughout the academic year. Thus, at an early stage in their medical careers, students are exposed to maternal and child health concepts in actual practice. They observe the technical aspects of obstetrics, gynecology, pediatrics, and preventive medicine, applied and integrated to the care of individual mothers and infants. They begin to appreciate the multifaceted problems relating to human reproduction; demographic, ethnic, social, economic, psychiatric, obstetric, pediatric, and nutritional. Weekly seminars in maternal and child health reinforce this practical experience. This innovation in the teaching curriculum was initiated in the 1966 academic year and has proved most valuable.

A first-year resident in obstetrics and gynecology is assigned to the MIC project to serve as liaison between the outpatient and inpatient aspects of patient care but is not responsible for patient care. Third-year residents in obstetrics and gynecology and pediatrics rotate through the project for periods of two months each, thereby expanding their concepts of the social responsibilities involved in obstetric and pediatric practice which traditionally have been neglected in favor of teaching only the technical aspects of the respective specialties.

At both medical student and resident levels, there gradually emerges the consciousness of expanding medical care beyond the period of pregnancy and the postpartum period in the interest of improving the quality of human reproduction. In this context, we foster the concept of interconceptional care as recently defined by Gold[5] as "a specific maternal and child health practice that applies the principle of the periodic health examination throughout the entire cycle of human reproduction. It begins at birth, carries through infancy, childhood, adolescence, and young adulthood, up to conception. Now prenatal, labor, delivery, and postpartum care intervenes. Then interconceptional care resumes, cyclically, for the infant to conception; for the mother either to conception or the menopause."

A most worthy future objective, as was previously suggested in this report, should be expansion of MIC projects to enable care beyond the first year of life, the first postpartum year, to at-risk infants and high-risk mothers and the inclusion of the entire family in a program of continuing health care. The graduates of the MIC project could well serve as the core of patients with which to establish family-centered total health care programs in all communities.

Project evaluation

In developing the organizational structure of the MIC project, a biostatistical division was included with the following implied functions: (1) to assist in preparation of procedures and forms so that information necessary for patient care would be easily available; (2) to assist in preparation of procedures and forms so that data for research and evaluation would be available; (3) to plan, collect, analyze, and report operational data necessary to the program directors in their management of the program; and (4) to plan for evaluation of the program in terms of attainment of the original objectives.

In the first nineteen months of the project's existence, operational and service reports have been readily obtainable. It has become increasingly evident, however, that such activity reports do not adequately evaluate the program and objectives attainment. It is difficult to equate the impact of differences in high-risk factors with good and poor outcomes or with the difference between patients who cooperate and those who do not. Thus a future goal, in this regard, is the development of computerization of data to process more sophisticatedly the myriads of information being collected.

Appraisal

What has been learned from the foregoing experiences to enable improvements in total maternity and infant care? Such appraisal logically involves a recapitulation of innovations developed as assets to the program as well as a delineation of deficiencies noted which should serve as guides for future project implementation.

Specific innovations in providing total maternity and infant care in the project at the New York Medical College which may benefit other programs are as follows:

1. Selection of super high-risk patients by screening all applicants for care and selecting for the MIC project those patients fulfilling the preset criteria for high-risk factors.
2. Provision of hospital (medical school)-based, integrated, and multidisciplined services.
3. Expanding the concept of interconceptional care to both the patient and the family by breaking with the tradition of a single six-week postpartum examination and supplying postpartum, family planning, and interconceptional care for the mother throughout the first postpartum year and supplying periodic health care to the infant throughout the first year of life.
4. Provision of all patient care by faculty members who are qualified obstetricians and pediatricians.
5. Incorporation of family planning services as an integral part of interconceptional and total maternity care.
6. Overcoming the language barrier by providing bilingual (English and Spanish-speaking) personnel at all discipline levels.
7. Provision of continuous patient education stressing health care for wellness rather than for sickness as well as the concept of total family health care.
8. Provision of psychiatric group therapy for unwed pregnant teen-agers to prevent repetition of out-of-wedlock pregnancy.
9. Provision of interconceptional nutrition guidance.
10. Use of the program concepts of total maternity and infant care plus the social responsibilities related to human reproduction problems to re-enforce the teaching of maternal and child health practices to medical students and residents.

The nineteen-month experience in the MIC program thus far has revealed many areas where further innovations are desirable to improve patient health services. Among the more significant suggestions are the following:

1. MIC programs beyond the mother's first postpartum year and the infant's first year of life are needed, thereby establishing

family-centered total health care programs in all communities.

2. Sociocultural and motivational research is necessary to understand better the reasons for broken appointments and failure to accept family planning and child health services.
3. A program to enable continued education of the school dropout, teen-age, out-of-wedlock patient is sorely needed.
4. More nutritionist personnel is required.
5. Increased provision of home care and homemaker services may significantly reduce the incidence of broken appointments.
6. Standardization of program evaluation must be developed. In this area, a program of computerization of data should be initiated and used.

Conclusion

It is indeed gratifying to acknowledge that the 1963 maternal and child health and mental retardation amendments have provided the stimulus for provision of total maternity and infant care to high-risk mothers and infants.

While statistical proof is as yet lacking that the care rendered to mothers and infants in this project has significantly reduced infant and perinatal mortality and morbidity rates, it is obvious that improved organization and delivery of health services have already been achieved.

When the current innovations and suggested desirable improvements are incorporated in the project, the future appears bright indeed. The goal of interconceptional continuity of care leading to family-centered total health care programs in all communities may soon become a reality.

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Comprehensive Health Care for Children: Bellevue Pediatric Project

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WHAT IS TO BE described under the label "The Bellevue Pediatric Project" was alluded to in a recent editorial in *The New York Times*† as one of "the experiments in organizing comprehensive child care . . . in slum areas." The editorial suggested that nothing less than a revolution in the organization of medical care would be required to make available modern medicine to all people in the United States in the face of a critical physician shortage. That such experiments were only a beginning and not likely to bring workable solutions fast enough was clearly implied in the editorial.

Stated simply, the Bellevue Pediatric Project is a two-part program. One part is designed to render comprehensive health services to children whose parents have elected to utilize the facilities of Bellevue Hospital for part or all of their health needs. The other part is the development of a medical record system which will permit rapid sharing of medical and social information among all parties offering health services to the children living in Bellevue Hospital's district. Since the bulk of health services are rendered to ambulatory patients, the project is centered chiefly in the pediatric outpatient department. The

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* New York City Health Research Council Career Scientist.

† *The New York Times*, October 18, 1967, p. 46.

project serves all children who come to Bellevue Hospital for any purpose; obviously, not all children receive all benefits of the Project at all times. The Bellevue Pediatric Project was made possible through a grant from the Children's Bureau, U.S. Department of Health, Education, and Welfare to New York University Medical Center for Comprehensive Health Care for Chilren and Youth under Title II legislation of the 1965 Social Security amendments. It has been underway since June, 1966.

Concept of comprehensive health care

As the Bellevue project sees it, comprehensive health care for children is an orderly, systematic, planned review of health status at periodic intervals, based on availability of all medical and social information previously accumulated. Such reviews of health status include rational treatment of any health deficits detected and administration of existing preventive measures. Under this process of comprehensive care, the child's health will be under surveillance at all times through systematic and periodic follow-up. To put it another way, the Bellevue project expects to achieve comprehensive health care through a kind of "subcontracting" system: Each health facility used by a given patient is a "subcontractor" which contributes its special brand of case finding, treatment, or supervision to the child's health, makes its examinations and treatments known to all other "subcontractors," while a main contractor, using built-in check systems, assembles the parts into an orderly and complete picture, that of comprehensive health care. Who the subcontractors are will vary with each patient and the degree to which one health facility or another predominates for that patient. In effect the contractor, the medical record system, makes it possible for many different subcontractors to render comprehensive health care to that portion of the population they serve.

No single system for delivery of health services can expect to have all the advantages and none of the disadvantages of the many types of arrangements presently extant in this country. The identity and personal warmth of the family specialist who has at his fingertips full knowledge of the health problems of an entire family accumulated over the years can never be a reality for all people. Neither can the highly specialized skills of many persons with years of training be immediately available to all patients. Yet comprehensive health care, to be successful, must provide the patients with someone who is familiar to them over extended periods of time, and it must also make accessible the highly specialized knowledge of modern medicine.

Background

PREVIOUS ORGANIZATION OF CLINIC SERVICES. The Bellevue pediatric clinic and emergency room have a total of approximately 100,000 outpatient visits per year. Medical care is rendered by house officers in training, attending pediatricians on a part-time or full-time basis, and a wide variety of medical and surgical specialists working within the framework of 20 or more specialty clinics. Not all the medical information secured within Bellevue Hospital is added to a central medical record. There are at least four additional separate, partial records maintained in certain areas, which are not readily accessible to physicians and other professional personnel dealing with general health services. Nor is the central record available during emergency room visits or consistently for all follow-up visits to the general or specialty clinics. Sheer numbers of patients and traditional rotation of physicians have made exceedingly difficult the assignment of one physician to follow a given patient for even a single consecutive year.

True appointment systems existed only for the specialty clinics. Follow-up visits after acute treatment had been rendered were all given for 8:30 A.M. on the desired day. Registration for medical care could be accomplished either in the clinic area or within the emergency room. Too often true emergency cases awaited examination in turn in a crowded clinic hallway. Limited laboratory procedures were usually accomplished at a separate visit several days hence. A more extensive review of the "facts of life" of a large municipal clinic facility is not germane to this discussion.

REORGANIZATION OF CLINIC SERVICES: REGISTRATION AND APPOINTMENT SCHEDULES. The organizational effort of the

Bellevue Pediatric Project has been designed to render better health services to more people. It had to be accomplished within the existing facilities without appreciable additional space. More efficient and appropriate medical care has resulted from the establishment of a central registration area within the emergency room of the hospital where continuous attendance of a nurse and physician ensure proper assignment for care. Block assignment of house officers to the outpatient department with internal alternation between clinic and emergency room, which are physically separate, has been coupled with an appointment system, now operated by a computer, not unlike that in use by airlines to secure reservations rapidly. This appointment system has made possible a better distribution of patients in relation to available personnel, advance procurement of the medical record including laboratory studies and x-ray films, and has effected maximum continuity possible for patient and physician. It will become one of the built-in check systems by means of which the patient who did not keep an appointment for a particular health service can be immediately identified.

REARRANGEMENT AND USE OF CLINIC SPACE. What began largely as a plan both for reducing the number of times a mother undressed and dressed her child and capturing valuable space for other purposes has had unexpected and far-reaching beneficial effects. I refer to the simple device of having each examining room in the clinic and the emergency room equipped to accomplish the measurement of temperature, height, and weight and the majority of common laboratory and treatment procedures. This in effect freed one room which had been given over to the taking of temperatures, heights, and weights and a room previously used exclusively for the rendering of treatments. It also has meant that patients are conducted directly to the examining room by a nurse or nurses' aide, undressed once for all procedures, and dressed again ready to leave the clinic. To those physicians and patients who have known no other type of medical care, such a plan must seem both trivial and absurd. The greater efficiency achieved has made it possible to direct the majority of patients to the clinic area, thus relieving congestion in the emergency room. This rerouting of simple services has made possible the assignment of the permanent nurses to individual physicians and, more important, the continued assignment of those patients to the same nurse even when the rotating physician has moved on. Thus the element in comprehensive care of a person familiar to the patient has become for the Bellevue project the clinic nurse. The identification of patient and parents with the nurse who will be a continuing element in the general pediatric clinic will do much to ensure the acceptance of orderly, systematic, and periodic review of health status, that is, comprehensive health care.

OBJECTIVE OF REORGANIZATION. The prime focus of the organizational effort has been to reduce the number of separate visits made to solve a single health problem and to enhance the value of each visit. Improved laboratory facilities permit the majority of routine determinations to be performed (or specimens secured) immediately, within the clinic area. Consultants from dermatology, otolaryngology, orthopedics, and surgery as well as pediatric subspecialists, are present in the pediatric clinic on a scheduled basis for review of cases with the general clinic physicians. Immediate access to a member of the psychiatry team for preliminary consultation with the pediatrician and parent is part of an exciting effort to make maximum use of the special skills of the psychologist, psychiatric social worker, and psychiatrist, to avoid losing the patient and to enhance the selection of appropriate additional studies. Emphasis is placed on group therapy programs for behavior problems as the only way to meet the demand for the limited specialty skills.

"HOLDING UNIT." A small "holding unit" available to the emergency room and clinic where the patient and parent may stay for a few hours or overnight has established itself as a valuable means of reducing repeated visits for emergency care for acute illness and for brief observation and study of children whose clinical condition may be uncertain.

HEALTH EDUCATION. Opportunities for review of problems and appropriate education by the nutritionist, social service worker, and nurse have been created by the rearrangement of patient care and acquisition of these essential professional persons.

The utilization of a waiting room-recreation area for one element in the screening and case-finding part of comprehensive care, namely, observation and testing by skilled occupational therapists and recreation workers to detect more subtle forms of disability such as minor deficits of visual-motor perception and coordination, is under way. When all these observations are systematically included in the medical evaluation via the computerized medical record, then proper and maximum use will have been made of all professional persons toward provision of truly comprehensive health care.

PHARMACY. One "fact of life" of Bellevue Hospital which was incompatible with comprehensive health care was the interminable wait the mother faced in the pharmacy line after seeing the physician. This led to establishment of a complete pharmacy within the pediatric clinic. There is no longer a wait to obtain the needed medications and thus a far greater likelihood that they are actually received and administered. Attention to appropriate therapeutics resulted in preparation of a complete list of available drugs stocked in the Bellevue Hospital pharmacy for each examining room and also for the physician's pocket. This list is now in press, having been prepared in such manner that it can be quickly and inexpensively updated through the use of a computer.

FAMILY HEALTH CARE PORTFOLIO. To bring a modicum of order to the many identification cards and papers associated with large families and multiple health facilities, to lessen the waiting time for completion of registration because cards are left at home, and to advertise the idea of systematic health care, a family health care portfolio has been prepared. This bright orange folder has plastic pockets for identification plates, appointment slips, and service booklets, as well as information about the health services and how to find them, in English and in Spanish.

SYSTEMATIC HEALTH CARE REVIEW. This brief progress report of the organizational arrangements for delivery of health service for large numbers of patients within Bellevue Hospital has set half the stage for comprehensive health care; that is, systematic review of health status could become a reality if medical communications can be solved. A written account of that health review and the opinions of consultants and other professional persons asked to render an assessment in their area of special competence must somehow become readily and reliably available to health personnel in distant facilities also serving the same population, such as child health stations where preventive services may be best provided, other hospital clinics, private physicians, and the school health room where regular screening is the special skill, to enhance the value of those health contacts and the efficiency of the attendant personnel. And the medical and social information must also flow in the other directions, from distant facility to hospital and among distant facilities. Duplication of effort in gathering information, repeating tests unnecessarily, and waiting endlessly for report of a visit should become the exception rather than the rule if the medical record system can be accomplished. Comprehensiveness is thus accomplished by the medical record system.

Medical record: the computer

During the first twenty months of the project, the basic tools of a computerized medical record have been under development. This has required a close look at what the physician and other professionals do in various settings and under diverse circumstances to adapt that action to acceptable forms on which they will write their report. Trial of various methods of preparing reports has led to the selection of the general outline for health documents as the physician and other professionals will prepare them during their contacts with the patient.

EMERGENCY VISIT DOCUMENTS. There will be one form for emergency visits for acute illness, a form which is highly structured and designed for brevity and ease of input into the computer storage system. The input will be accomplished by having the physician's note teletyped directly into the computer, that is, "on line," twenty-four hours per day, within the emergency room area.

EMERGENCY ROOM RECORD RETRIEVAL. A word about the present plan for retrieval of the medical record in the emergency room setting. The emergency visit report will be retrieved immediately when the patient visits the emergency room again or any other clinic. It will also be secured along with all other parts of the medical record, in sequence by date of occurrence, when the total record is requested. Each patient will have what are called key data designated at the time of each visit to any area. Key data refer to major conditions, known problems, immunizations given, special diets, or chronic medications, information a physician would need immediately to provide rational and expert care. The list of key data words will be instantly retrievable, day or night, when a patient arrives for an emergency visit. In addition, a list of the diagnoses with dates established which were accumulated within the previous year will be provided with the key data. These facts would be about what the physician would search the total medical record for if he had it available in the emergency setting.

When the emergency visit is completed, the appointment system will be used to arrange a return appointment for a thorough review of the patient's general health as well as check-up for the acute illness.

INITIAL CLINIC VISIT DOCUMENT. The physician will write his findings of the health assessment on pages called work sheets or outlines which are designed for ease of use, completeness, and appropriateness to the type of assessment such as a general medical review or consultation by cardiologist or neurologist. These work sheets have built into them all the instructions the typist needs to render the document "computer-acceptable," which means typing the entries given on the work sheet onto magnetic tape, also producing simultaneously a typewritten page. The magnetic tape is then converted to computer tape for storage and retrieval. The typewritten page is corrected by the physician and will replace the work sheet in the paper record. Obviously it will be necessary to use a paper medical record until the computer storage system is fully operational. Each of the medical and surgical specialty clinics will have a work sheet with the same general outline but containing subheadings or reminder lists unique to their special field. Every effort will be made to avoid duplication of history taking unless appropriate.

REFERRAL CLINIC VISIT DOCUMENTS. After the general health assessment has been completed, referral to other members of the health team will be made in many instances. Nurses, social workers, psychologists, nutritionists, and occupational therapists will prepare their reviews on a work sheet which will then be typed for adding to the total record. Obviously the value of this material will be directly proportional to the skill and succinctness of the health professional.

The method of preparation of these assessments means that instantaneous retrieval will never be possible for these documents, and the work sheet will have to be used for brief periods until typing and computer storage have been accomplished.

SUBSEQUENT CLINIC VISIT DOCUMENTS. Follow-up visits to the physician and to all other professionals will be handled differently. The record will be handwritten on pages again designed to meet the particular needs of the individual professional but will be typed directly into the computer on line through the same devices as the emergency report. This method is chosen because the follow-up documents generally contain relatively few words, and it divides the task of preparation of material for computer storage. All documents entered into the computerized system may be retrieved in chronologic sequence, regardless of the method of input.

Hospitalization documents

At present a discharge summary is prepared in the usual style, typed with the magnetic tape typewriter, and added to the patient's computerized document file.

DOCUMENTS TO AND FROM HEALTH FACILITIES OUTSIDE BELLEVUE HOSPITAL. It is believed that the basic tools for health records being developed within Bellevue will be applicable to health facilities in the community (other hospitals, schools, and private physicians) through such means as ordinary telephone-to-dictating machine-to-typist-to delivery of typed material by messenger or mail along with which could be sent all existing material on file or telephone request for existing information in advance of an impending visit, to computer printout, to delivery of typed material by messenger or mail. The present school health records could be systematically picked up, taken to a typing center, typed into the computer, and returned. It may not even be preposterous to imagine the development of a portable teletype machine which could be plugged via a telephone-type line into the computer during the regular visits of the school health nurse or physician within existing school health rooms.

ANALYSIS OF COMPUTER-STORED HEALTH RECORDS. The potential for improvement of medical care through the ability to analyze these computer-stored and complete health records of many children accumulated over the years will become the point of interest in future discussions and one of the ways in which this project will have an impact on community wellness and indeed on perinatal survival.

Summary

What the Bellevue Pediatric Project is trying to do is expand the various "subcontracting" units or functional areas of health care for the children who use Bellevue Hospital including dentistry, nursing, social service, psychiatry, hearing and speech, and occupational therapy, as well as to make better use of those skills through effective organization. Each functional area is encouraged to develop its own program of systematic assessment, treatment, and supervision; each in effect is a subcontractor making its contribution to the comprehensive health care of the individual child. These contractors will use the computerized medical record which will make it possible for more persons in the health field to give comprehensive care to children and which with its automatic check systems will ensure that comprehensive health care is being accomplished for a large population accustomed to using more than one health facility.

Discussion

HARRIET M. FELTON, M.D., *Washington, D.C.* I have listened with considerable interest to the thoughtful presentations by Dr. Wise, Dr. Gold, and Dr. Lyman, that described many facets of the complex problems involved in the delivery of comprehensive health care. In turn, I want to consider the problems from the viewpoint of planning and of organization by the Children's Bureau.

The exciting job for those of us in the regional office of the Children's Bureau is to sit with and think along with people in the cities and throughout the country who have accepted the opportunity offered by Federal appropriation of funds to improve the health of children and youth.

Many have been with us in some thought-provoking sessions, both in New York City and other places in the country. We have sought to learn the content of the job we have undertaken trying to identify and describe the health needs of people that have to be met. We have also sought, literally by blood, sweat, and tears, to learn how to achieve solutions to urgent health problems and also how to design the places and laboratories to work in, as well as to find competent people to do the work.

I want to develop the concept of comprehensive care as it comes to us in a variety of ways, not alone from reading books but more from day-by-day experience, as we meet with friends and associates who try to do the job as each one sees it from his own vantage point. This we have gleaned today from a number of people who have described different kinds of responsibilities.

MEANING OF COMPREHENSIVE CARE. What I would like to do now is to talk about how we in the regional office of New York and in the offices of Washington feel about the intent and meaning of comprehensive care. I am indebted to Vernon Weckwerth, Ph.D., who has been given the assignment by the Children's Bureau to develop the reporting system by which the Children's Bureau will give accountability to the Congress. The reports will demonstrate what has been happening in 54 places in the United States.

PERSON. To illustrate my remarks, a series of transparencies have been made, each one superimposed in turn on the other, to add in ordered sequence specific characteristics to a basic unidentified human figure. Thus a named composite person will finally emerge from the presentation.*

At first, I present a human figure in outline. When the person represented by the figure comes into the room, the questions will arise: Who is it? Is it a female or male? I leave it up to you to conjure who this person might be. Mr. Callison could probably say that the figure is a patient who might represent the sick community. I think most of us would think this figure is apparently a patient who might come to us in a variety of circumstances. As you see this shape on the screen, it is a nameless, faceless person. Do we know this person? As we look briefly at the shape, I doubt that much would be known about this person.

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* The transparencies were prepared in the film studios of the Sturgis-Grant Productions, Inc., New York City.

In efforts to develop a feeling about comprehensiveness, one of the important things we have to do is to determine the people for whom services must be developed. We begin to search for more of these people and look around a little bit and try to decide who they are, what they are, and what their needs are.

CONCEPT OF SIGHT. In describing episodic or sporadic care or even some screening procedures, it might be said that in the initial phase of comprehensive care we "eyeball" the patient. This is now indicated in the outlined human figure in color by drawing in the eyes to give the patient sight or vision. In turn, by just passing our eyes over the patient, many things are discerned. It is from the skill and resourcefulness of those who are behind the eyes during the casual encounter that pertinent and useful data will be recorded concerning the patient.

CONCEPT OF COMMUNICATION. It is clear now that after we have made preliminary identification on seeing the patient, every one will begin to do different things about the patient. But, whatever is done must be talked about. If a patient is viewed only briefly, nothing constructive is ever going to happen. The beginning of happenings about a patient must come from communication between the patient and the person who has the first contact with the patient. The information gained must then be passed on to the next interested examiner. The communication process originating in the patient has to begin, become established, and be documented very early in the whole process of comprehensive health care.

PERSON'S NAME. During communication in the first encounter, we certainly hope that the name of the patient will be learned. But just knowing the name of the patient may not necessarily reveal anything at all about the patient. Those who have worked in large hospitals know that the name alone does not describe a person.

It has been amply demonstrated today that all physicians within their professional expertise have a contribution to make to comprehensive care. Early in relationship with the patient who needs care and who needs to be identified, whether or not needs are voluntarily brought to attention or whether or not the patient is urged through one means or another to come to a place where needs may become evident, facts begin to accumulate about the patient.

PATIENT'S IDENTIFICATION. It would seem that the next thing in the area of comprehensive care is to develop some mechanism for identifying the patient; something which we might add to a name by which we might readily gain access to detailed descriptions of this person. Thus identification can be reinforced by an appropriate code or number.

CODE. In the philosophy of comprehensive health care, the concept of a code or number identification means many things to many people. We would like it to be a constructive concept. In thinking of the design of this identification, the system described by Dr. Lyman should be recalled. It is a signal, a precise identification of the patient, not alone by characteristics, but by place in time and location.

After we have gone far enough with a person to apply a code identification, certain feelings may develop in the person that relate to the situation under which the code or number was received. Often people in health care services or otherwise have mixed feelings about being numbered: sometimes of pleasure, sometimes of resentment, at being so designated. It depends on the skill of the staff in health centers what the final reaction to the coding or numbering system will be. It also depends on the skill of the staff and the resourcefulness of hospitals and health centers what constructive and final use will be made of the numbering system. The Social Security number is commonly used for patients in the development of comprehensive care technics.

IDENTIFIED PERSON. In the development of comprehensive care after there has been a description, the knowledge that has been gained should be "put together." Facts should be organized and related to the patient. With accumulated data, a pattern of operation has been established. The basic elements of information have been woven into a design by which the person becomes known.

To carry this principle a little further, we wonder what our human figure will do, and where she will go in this attire. Have the physicians or members of the health care team prepared her to leave their hands? If, for instance, it is winter and there is snow on the ground, she is not really equipped to go outside. We must take measures within or beyond our competency to prepare and make her even better able to move forward.

PERSON'S NEEDS. We therefore make use of an outside covering as a very simple way to explain what next happens in comprehensive care. The medical care team must move beyond its own authority or the area of responsibility of its own agency. It must refer to other disciplines and provide completely for the needs of the person.

Well, now, let us think of the girl still sitting on the examining table or still sitting in our office. Her feet are bare of shoes. The final thing that we will do for this girl is to provide shoes. In putting on her shoes, she is now equipped to walk away from us.

TOTAL CARE. Within the limits of our present knowledge about this individual, each group has worked as a provider of part of her comprehensive care and has done everything possible to prepare this person to move on through life. The symbolism of the shoes indicates also that she will be followed as she carries with her all the evidence of her total services and care.

In conclusion, this has been a simplified presentation of the basic elements of comprehensiveness. I will leave it to all of you to apply what I have tried to say that is implicit in the presentations of Dr. Wise, Dr. Gold, and Dr. Lyman. Their discussions represent three very important aspects of comprehensive health care in broad sense.

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Community Attitudes: Medical and Community Partnership

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IT IS QUITE PROPER that someone connected with Citizens' Committee for Children should be asked to talk about community attitudes and involvement in health care. We have been clamoring for community involvement for most of the twenty-four years we have existed. Being a citizens' committee for children, we have called attention to unfulfilled community health needs, particularly of children. We have emphasized, too, that the care of children is fragmented and that no one seems to consider the whole child. We have further stressed that we must ask not only for comprehensive care of an individual but also of an individual in his environmental setting, and, as Dr. Felton has stated, by that we largely mean the individual in his family. While Dr. Felton developed her pictorial concept of comprehensive care, I was waiting for a member of the girl's family to appear. Without her family, she seemed like a very lonely person indeed, in spite of receiving her overcoat, her name, and her number.

Again, let me emphasize that we have tried to understand community attitudes and that we have been clamoring for involvement and participation of the community in health decisions for a long time. Not very many people listened. Suddenly something has happened. *The New York Times* called it "a revolutionary development." As I listened to the fascinating

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reports of the preceding speakers, it seemed very appropriate that certain community conditions and needs should be highlighted so that whatever is done is put into the proper perspective.

Community

AGITATION FOR COMMUNITY INVOLVEMENT. When I say that a revolutionary development seems to be taking place, I am talking, of course, about the recent agitation for community involvement. In this week alone, for instance, I was invited to attend three meetings on community problems. One is going on at this very moment in Harlem, where a group of New Yorkers who want to learn about their community is meeting with representatives of the Welfare Rights Center, a group of public assistance recipients, to hear from them what they consider to be their rightful demands as citizens of the United States. Tomorrow afternoon, five teacher-training institutions are running a workshop to decide how much the community should participate in the training of the teachers of tomorrow.

COMMUNITY CONCEPT. Now, to all these groups, "community" means the poor community, the ghetto community, and the nonwhite community. The city is full of talk about involvement and participation of the community. Look at the great excitement caused for instance by the Bundy Report on decentralization of schools. The whole intent of the decentralization is that people in the poor communities should be allowed to participate in decisions concerning the education of their children.

DEVELOPMENT OF CONCEPT: LEGISLATION. If we try to trace back the development of this viewpoint, it dates to the passage of the Economic Opportunity Act (1964), which contains the statement which I think everyone now knows: "that services rendered and community action programs developed, shall be developed and implemented with the maximum feasible participation of the poor." When the Office of Economic Opportunity decided to undertake, first on a demonstration basis and then on an expanded basis, the development and financing of the so-called comprehensive health centers, a condition for funding was participation of the people who live in a given community, that is, the poverty area, and who are to be served by whatever center is to be developed. This means bringing in the consumers and the patients, not only to interest them and to discuss with them their needs, but also to plan with them the program to be developed.

This requirement, by the way, is not confined to the Economic Opportunity Act. It is contained, too, in the Federal Aid to Education Act (1964), where many grants for local education require that community action agencies must be consulted and must take part in planning the Federally financed services and then cooperate in their implementation.

Why did Congress pass these laws? Congress is not known to be very revolutionary, nor do I believe that Congress is simply antiteacher, antieducational, or antimedical. What happened, I believe, was that more and more people became convinced that public services are not fully effective, or even not effective at all, if they are not directed at the real needs of the people, if they are not organized in cooperation with the "prospective consumers," and if consumers have not been involved in their implementation. Public assistance has not reduced dependency. Hugely increased medical expenses, even before the Medicaid program, have made little dent in the high infant mortality rates of ghetto communities.

IMPACT OF ECONOMIC OPPORTUNITY ACT: NEW "PARTNERSHIP." The requirement of "maximum feasible participation of the poor," often defined as the "target population," may have stirred up a great deal of trouble and may have led to unreasonable demands for complete control, antiprofessionalism, and antiestablishment stress in the Office of Economic Opportunity programs. Nevertheless, it also started debate about a possible new kind of partnership between the providers of services and those served, a partnership which can greatly enhance the effectiveness of services.

EDUCATION OF COMMUNITY. In the health care field, other developments contributed to the growing demand for "opening up of doors." The mystique of medicine, that is, medicine as the black art of healing and soothsaying, had begun to disintegrate, pierced by the television communication of specific medical knowledge.

Witness the demonstration of open-heart surgery, the medical programs on the Columbia Broadcasting Company-20th Century television series presented by pharmaceutical firms, the programs on hospitals, and the endless discussions among physicians on latest methods of treatment. Last year alone the National Broadcasting Company television channel had 23 programs on hospital crises and on other medical problems. The poor watch television much more than the affluent. They therefore know that tremendous advances in medical knowledge and ability to save lives have happened but have not happened to them. So they ask, "Why not?"

DISAPPEARANCE OF "CHARITY PATIENT." The most important change, however, is the fact that the "charity patient" is rapidly becoming a phenomenon of the past. Today, government pays for health care as well as, and in some instances better than, prepaid insurance plans. The government pays for first-class care. The patient has a right to it. This realization is causing a revolution, not yet fully acknowledged by medical organizations or policy makers in voluntary as well as in public institutions.

The requirement for participation by the community has met with caustic comments by some that the sick will now tell physicians how to cure them. It is furthermore stated that chaos will result, that no physician will be willing to work under such circumstances, and that medical ethics are involved. Serious-minded people, and those willing to cooperate, have been troubled by the possible destructive impact of this new partnership. We still have too little experience to say how the new partnership will work.

COMMUNITY TENSIONS. It can be said that community tensions will deepen if the true intent of the law is circumvented, as has occurred in the Jamaica district health area, where a contract has been signed by the City of New York Department of Health with Mary Immaculate Hospital for the operation of a health center. According to latest information, the local health council had not been formed. The health council is thus only a meaningless afterthought.

COMMUNITY INEXPERIENCE. It must also be said that the poor have no experience in partnership but do have much experience in receiving promises that are not kept. Exorbitant and unrealistic demands for control must be expected. Wise reaching out by the establishment, patience in working out procedures, real willingness to understand the grievances that led to present behavior, and a willingness to reexamine the effectiveness or lack of effectiveness in medical services of the past, will clear the path for cooperation.

The story of the health center in the Watts district of Los Angeles, California, is an illustration of what can be done with understanding and patience. The people in Watts demanded that they should run the whole enterprise of comprehensive health care and that physicians not only should not have the right to run their own services but also that they should not even participate in setting medical policies. The people tried to do the things for which they were not trained, and in a very short time, a matter of months, they came back for assistance. Watts is now said to be a rather well-functioning center.

PHYSICIAN PARTICIPATION: JOINT PARTNERSHIP AND RESPONSIBILITY. It should be understood, of course, that the specific task of the trained physician, diagnosis and treatment, should in no way be subjected to nonprofessional control. But much should be done in joint decision, not least the determination of what is necessary to make health services truly patient and family centered. Services should be placed where patients and their families are, so as to render coordinated care, as well as for easy referral to other social services. In short, the delivery system of health care should be a joint responsibility.

EXCESSIVE INFANT MORTALITY RATES. It would seem that the current high infant mortality rate would be a primary concern of the communities. This concern should be welcomed by pediatricians everywhere. The new partnership might even succeed in channeling more funds into health services as well as into research programs for children. Perhaps, because children cannot vote or because members of Congress are older rather than younger, they are more concerned about the high death rates caused by illnesses of the aged. At present, more than one half of all health funds are spent on the aged, even though those over sixty-five years of age constitute only one eighth of our population. Those under twenty-five years of age constitute almost one half of our population.

Communities will also remember that 40 per cent of young men examined for the draft were rejected for deficiencies of physical and mental health. Thus, demands will be made for an effective attack on these conditions. Obviously, no one would maintain that even the best health services could remedy them alone. But certainly more can be done.

Once people in the communities feel involved and have the sense that these services are theirs, I believe that they will fight hard for whatever is needed to improve the services, whether the needs are for more Federal funds, better facilities, more training funds, or more facilities for the medical profession.

The participation of the consumer in the comprehensive planning agency is of even greater importance than his part in service delivery. It is provided for in the Federal Public Health Law 89-749, even though the definition of "consumer" is most unsatisfactory.

In closing, let me state that I do believe that the medical and nonmedical community together can, if they will, turn pressures to good ends.

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Community Involvement and Responsibility

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When a lawyer begins to feel that his client's case is disappearing down the drain under the weight of evidence, he stretches his legal acumen to find some justification or mitigating circumstance which will not deny the commission of a litigable deed but may move a jury to excuse it.

Like the lawyer in such a case, I am moved to concede that but for a few problems in measurement, reporting, and interpretation, "The facts in this case are not disputed." More little children are indeed suffering and dying than there is any excuse for, more mothers are indeed failing to receive timely and adequate care than there is any reason for, more popular voices and will are muted than there is opportunity for, and more actually available resources are squandered and misdirected than there is justification for.

Sociologic implications

Who in this day and age can argue against any comprehensive health care and community involvement and responsibility? It would be a sacrilege and would be reactionary for anyone to do so, let alone a more or less respectable social worker. Permit me the freedom, however, briefly to examine comprehensive care and community involvement at least as sociologic manifestations which, as far as I am concerned, dictate a number of cautions and precautions.

One reason for this, I suppose, is that I am embarrassed to find physicians being afflicted by what Dunham[1] has described as "a mounting chorus of voices from those who jump on any bandwagon as long as it is moving." I am embarrassed because, perverse as it may sound for one who may be expected to consider the medical profession his nemesis, I have frankly found refreshing the medical profession's general disinclination to hop on even the most spectacular bandwagon. This makes life more difficult for a social agitator, but it perforce impels the agitator to think more sharply and perchance more productively as a result.

I may also be protecting a vested interest. Paxton, in a recent introduction to his whimsical lament on "Pop Art," explained that he was in a hurry to sing it while pop art was still with us, since it had been featured in *Life* magazine, and any fashion that was featured in *Life* was ipso

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facto doomed. I may be candidly worried lest an otherwise good thing be doomed in its assimilation by the medical profession.

Modern medical colossus

But let me reassure physicians that my purpose is more earnest than that. I would like to use this opportunity to do whatever I can to prevent the medical profession from making the same bloopers that are being made by other professions, with the most honorable of intentions.

What these professions have done in some instances is to institutionalize and re-enforce some of what I consider the less socially useful features of life which Freedman[2] has found to be "deeply rooted in the history of the country." I refer particularly to such things as the "solution of problems by accretion of new structures"; the "veneration for change, leading to rapid, sometimes built-in obsolescence, but generally with perseverence of the old forms"; and "uneven development throughout the Nation." With respect to the medical profession, I can only agree with Freedman that "resolution is often sought by adding a new structure, rather than producing fundamental change in existing institutions."[2]

He who is disposed to ignore both history and the errors of others is destined to repeat both, and I am here to urge that this not happen in spite of the zeal for good works implicit in comprehensive health care and community involvement.

Physician-patient relationship

Without denigrating the impulse of various human service professions to "bestride the narrow world like a Colossus" and to encompass in their zealous grasp all the causes of all the ills of all the populations—a most commendable and even scientifically founded impulse—I would like to discourage any inclination on the part of the medical profession to depart from its traditional stress on responsibility to and relationship with each patient. Such a departure would to my mind constitute an offense to the medical profession and a deprivation for our society.

My intent obviously is not to shelter the medical profession but to protect the patient and to insure for him the very kind of prevention, provision, and treatment which characterize the highest aspirations of any comprehensive care program. As for community involvement and responsibility, the most fundamental level of participation is the level of the individual patient and his family which has the most direct stake in health and medical care.

Community involvement versus responsibility

Certainly much must be done to insure the accountability of the medical profession to the people and to insure the expression of and attention to the will of the people. But the most ardent Jeffersonian can hardly insist that community involvement inevitably leads to community responsibility or that the means to community responsibility is always community involvement. On the contrary, the structures generally available to insure action on behalf of people often cease to represent them.

Community representation versus competence

Besides, one must distinguish representation from competence. Physicians may easily be made to feel heroic in sharing or delegating jurisdiction to the common man, but in some matters which require competence, judgment, and professional responsibility, such delegation is not heroic at all but sheer negligence. Again, however, one must be sure of his motivation, and again I stress that the objective is maximum and timely care for each patient. As Michels[3] soberingly concluded so long ago:

> In an era of democracy, ethics constitute a weapon which everyone can employ...in the modern life of the classes and of the nations, moral considerations have become an accessory, a necessary fiction.

Resistance to change

I do not intend here to aid and abet a general resistance to change, least of all in the medical profession. Stern[4] factored out as many inappropriate and irrelevant reasons for the resistance to change which has afflicted the medical profession throughout its history as anyone can successfully dream up for the validation of indiscriminate change.

I am not recommending, therefore, a moratorium on progress either in the practice or in the administration of medicine. Far from it; our society is faced by too many needs and problems for that. On the other hand, neither should proposals for change be subjected to less scrutiny, nor should valued traditions be discarded simply because they are traditions.

Architects of change

There is nothing inherently wrong with a shift to a broadside and democratic attack on the medical problems of young mothers and their little children; on the contrary, this must remain a collective responsibility. And this calls for considerable social change. But, as clear as Kahn and Katz[5] have made the answer sound to "the question of who the architects of change will be," more problems are introduced than are solved by their answer. They seem to imply that just about everybody is an architect of change.

Cumming has found that so-called helping agents of various kinds are increasingly and in increasing numbers seeing themselves as "prototypes of the physician to the whole man," even some "whose work does not bring them directly into contact with people."[6] She has observed that:

> It is quite possible that all who work at integrative tasks must have a diffuse, holistic approach to the individual so that their more specific skills can be used in the context of his general welfare, but if the diffuse concern is not accompanied by specific skills, ambiguity, conflict, and competition can result!

I submit that what may become true for the whole man is bound to be true for a whole community or a whole society.

Planning, strategies, and crash programs

Voluminous planning and cumulative strategies are not the same as effective planning and strategies. Under uncertain, unskilled, or diffusely motivated leadership, such planning and strategies are apt to be purely circumstantial and unsystematic, fertile ground for the proliferation and accretion of measures not always well correlated with existing needs and available resources. All that results often is a network of crash programs. Pearl and Riessman,[7] who are not averse to particular strategies for the solution of certain social problems, caution that "The trouble with crash programs is that often they do just that."

What can be a more dramatic manifestation of this than the juxtaposition of two headlines in a recent edition of *The New York Times*.[8] One blares out "Emphasis on Ills of Society Urged" to head a story in which a conference of the American Psychiatric Association is reported to conclude that "American psychiatrists must spend less time on individual patients and more on . . . social sicknesses;" and the other headline squeaks, "Some East Side Youth Programs Face Ax as Money Runs Out," which ought to say enough for our purposes.

One bold new venture constantly rears its head to displace another, and as often as not, on grounds that have relatively little to do with the merits of an approach or with the problems for which the approach is proposed.

Planned social obsolescence: change for change's sake

All I ask—and I daresay all that every patient would naturally be moved to ask—is that physicians develop and retain their perspective of the whole man and the whole community, but avoid like the plague the deification of change and instead regress a bit to the exaltation of the physician-patient relationship. No more telling title has appeared in the medical journals than that of Hesseltine[9] which asked "Does Change Imply Betterness?"

"Many Americans have a sentimental and undiscriminating view of change," Gardner[10] has written.

> They think it is, without qualification, a good thing. But death is a form of change. So is deterioration. A society must court the kinds of change that will enrich and strengthen it, rather than the kinds that will fragment and destroy it.

Individual

Although it is true that many health problems cannot be adequately solved on a case by case or disease by disease basis, it is also true that individual lives and bodies cannot inevitably be preserved on a community basis. No matter what is and must be done on a broad and inclusive basis, first principles of professional practice must continue to operate with and for each patient and his need as he experiences it.

In the very multicausal foundation of death and disease lies the pragmatic as well as philosophic import of this observation. No matter what is done about slums, housing, illegitimacy, malnutrition, and all of the other provocations to death and disease one can think of, for the foreseeable future human beings will continue to be sick, feel pain, and be exposed to physical danger. Even when all is known that must be known and done that must be done to reduce or eliminate particular hazards which confront modern man, behavior, emotion, interpersonal relations, economics, and all the other forces at work in his life cannot be so well controlled that cases will not emerge which require the skilled attention of competent physicians.

This does not differ from the implication of Goode[11] when he says with reference to illegitimacy:

> No amount of public service can create a father when there is none. The most competent professional cannot, except rarely, remove the mother from the same kinds of social influence she was under when she first began to run the risk of pregnancy. And the most skilled practitioner cannot change the social circumstances that produced both the mother and the father, and will in turn produce still more young people who will produce still more illegitimate children.

As much as prevention and treatment are necessary at the highest and most inclusive level of abstraction, they continue to be desperately needed at the lowest level of abstraction, the individual human being and his specific need or his specific complaint. He is there in the flesh, and the physician has direct access to him; and we must begin with the assumption that whatever the far reaches of his situation, he and his need are worthy.

Allocation of medical services

Allocation of medical services is no longer being taken for granted in our modern, scientific, pragmatic world, in spite of the medicosocial ethic that, in the words of Shatin,[12] "We do not differentiate among people, that all are and deserve to be helped within the complete limits of our capabilities."

Surely, as Shatin[12] insists, there is a limit to the "quantum of medical care available to the total population," and "the more of this which is delivered to any one person or population segment, the less remains available for use by others." But is the solution a formula for allocation based on arbitrary criteria of the "social worth" of a man? The fuss and fury over euthanasia notwithstanding, it makes more sense to abandon a hopeless patient who is suffering and has no will to live than to let a patient die who has a will to live but who is adjudged unworthy. We need a better solution than that!

Perverseness of medical services

The perverseness of the criteria which may be used to allocate medical care defies the imagination. What is more, the likelihood is great that, under a system presumably based on a master plan of comprehensive care, those who are not left unattended may simply lose access to the care they need. As Miller and Rein[13] suggest, "It is not so much that individuals fail to comply or utilize established programs, as it is that programs fail to devise means for meeting the needs of individuals."

Physician manpower

But the important point, as Alvey[14] insisted several years ago, is not that "there is a shortage of physicians," but that "there is a need for physicians who are interested in the total and continuing care of the patient."

If practitioners were more dispensable than they are, this would not be so much a source of concern, but they are not dispensable. Practitioners are urgently needed and as practitioners. I am hardly reassured by Stewart's[15] judgment that "more and more, the physician is functioning as a manager," and even less reassured by his judgment that this is "a job for which he is not specifically prepared, either by training or by tradition."

Physician expertise

Unlike him and increasing numbers of others, I do not think the answer lies in improving the physician's preparation in this sphere, but rather in his more effective use of the preparation he does in fact have. The zeal for comprehensive care and community involvement can easily skew the medical profession's values and, as far as I am concerned, in the wrong direction.

Physicians, as a consequence, are beginning to be infected by the "social statesmanship" bug and catching a disease which is endemic among the human service professions. Medical schools are liable to spread it and new physicians to become so attuned to the great social scene that they will not know a real live patient when they see one.

There is a place for the physician on the social scene, but perhaps Dunham's[1] sardonic comment about the psychiatrist is applicable here: if the physician "thinks that he can organize the community to move it toward a more healthy state I suggest that he run for some public office."

The dictionary definition of "comprehensive" implies that it "comprises many things" and connotes "the power to comprehend many things." But the problem, however, is not that physicians may not in every case successfully negotiate the responsibility implicit in comprehensive care, but rather that they must do now what needs doing now, what they ought to be doing, and what they can do better than anyone else.

When we talk of perinatal care and mortality rates, we are in effect doubling the ante. Much of our present and gloomy experience may be because of lost opportunity or of inadequate application of actually available knowledge, skill, and competence. Much of it may be caused by insufficient responsiveness to patients and perhaps by insufficient initiative in dealing with them.

Perhaps the most precious asset a physician has to offer is his diagnostic skill and competence, but sometimes, perhaps, it is so precious that it is unavailable unless a patient is rich enough, powerful enough, aggressive enough, articulate enough, or interesting enough to demand it. A patient can get just as lost in a fancy, up-to-date, comprehensive care clinic as he can in a physician's office.

Professional initiative

Much more professional initiative is required than patients now have access to, and by professional initiative I mean the kind that keeps the innocent client of a court-appointed attorney safe from the electric chair, the kind that gets a clothing allotment for a welfare client even though she does not know she is entitled to it, and the kind that does not necessarily require a patient or client to seek to have adequate professional service. To the extent that comprehensive care and other social programs stifle or discourage professional initiative or impede the patient's access to it, to that extent must they stand condemned as self-defeating.

If professional initiative is essential for an adult, what must it be for a child who is thrust too soon into motherhood; what must it be for a newly or recently born child. And it will take much more professional initiative than patients are experiencing at present to inspire them to seek out physicians, to free them to express their doubts and concerns, and to insure maximum unearthing of relevant data and maximum use of it. Early detection of disease is as much the physician's responsibility as it is the patient's, and perhaps more so. Physicians are very busy, of course, but to acknowledge that is not to obviate the need which persists.

Paramedical personnel

The resort to nonprofessional, subprofessional, indigenous, and paraprofessional personnel, as an antidote to the manpower shortage which is sometimes blamed for insufficient medical care, is a snare and a delusion in this context. Surely, there are economic and social purposes to be served by such an approach; surely, every human being has a right to be and to feel productive; and surely, not all service tasks must inevitably be performed by the professionally educated practitioner. But we must all be sure that we are aware of the administrative, supervisory, and other responsibilities incurred in the use of such an approach, the risks incurred in it, and the real limitations inherent in it.

This serves admirably for some purposes but not for others. The fact that a competent physician did not happen to be the one to meet a simple medical need may sometimes very well be the reason that a danger was not identified which could have been coped with in a timely and a thorough fashion.

Professional cooperation and community resources

We are far from the complete exploitation, in the interest of the health and welfare of mothers and children, of what physicians really can do. There are ample channels for collective action within the medical profession and among all of the human service professions, not to mention channels for collective action among practitioners as citizens which can affect the large social problems indeed with us. These channels should be used, and physicians owe it to themselves as well as their community to lend their practice wisdom to studies and plans for action. But before we get too far away from the nuclear premises of medical practice, can we not acknowledge among us that more can be done with basic medical talent than in fact is being done, and at a level at which it truly counts?

You may remember Gregg's[16] moving reminiscence:

> But will you ever forget those three hours of anxiety and shame that prepared you as nothing else could for your patient's parting remark . . . "Doc, I would take anything you was to put in a bottle for me just exactly like you told me. Ain't you the doctor?" . . . And all the way back to the hospital, the while reorganizing your whole existence, you could only repeat, "Ain't I?"

Maybe that is what the medical profession needs most, reorganization of its whole existence. Some of the current trends do not suggest the choicest ways of doing this. "The problem, as usual," as Huxley[17] once wrote, "is how to get out of one's light."

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Comprehensive Care and Practicing Physician

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At the June, 1967, annual meeting of the American Medical Association, it was admitted for the first time that a shortage of physicians exists in the United States. This situation has been known for many years. Recommendations were made to increase the number of medical schools and the number of admissions to existing facilities. While the recommendations appear to be a good beginning, they are hardly enough. More drastic measures are needed than those proposed.

The Federal government and other public agencies have for many years been interested in the rising costs of medical care. Now, however, it is not so much the rising costs but rather the quality of medical care that is the main subject of discussion and legislation. A complete change in our medical training and planning will be required to bring about the highest quality of comprehensive health care to all people.

Family physician

The tremendous increase of people who are covered under private insurance policies and of those who are covered under the current programs of Medicare and Medicaid has caused marked demand for and utilization of medical services. Most of the burden has fallen on the shoulders of the family physician.

Medical authorities are in agreement that although a shortage of medical personnel exists, those that are available are not being used to best advantage. Despite this, we constantly hear that the family physician is no longer necessary. It has even been suggested that the internist and pediatrician acting together could supplant him. It is indeed very interesting to learn that it would take the combined expertise of two specialists to replace one family physician!

An increase of family physicians, properly trained in family-centered practice, who would act as captains to coordinate the teamwork required of comprehensive medical care and cope with necessary referrals to specialists, would go a long way to relieve some of the shortage of medical personnel.

General practitioners must be properly recognized by the entire medical profession if we are to create more well-trained family physicians to provide medical services for the people of this country through a type of medicine that will reflect credit on the members of the American Academy of General Practice and on medicine in general. In the last quarter of this century, physicians and nonphysicians have realized that the myriad goals and functions of health care have changed. But few physicians and even fewer nonphysicians comprehend the character and magnitude of these changes. The changes have been both powerful and profound.

Medical education

The scope and function of physicians in practice are, for the most part, established by influences which are brought to bear during student days. Today medical schools do not impart to students knowledge of comprehensive health care and the behavioral aspects of medicine. To encourage greater participation by graduates in the intricacies of general or family practice, there should be no differences in the undergraduate training of physicians who intend to engage in the practice of family medicine and of those who intend to enter the specialties. Medical students, no matter what their destiny, should have a period of common training where they become imbued with the indivisibility of medicine. Physicians must understand the role of medical care in hospitals, the community, in preventive medicine, in public health service, and in the academic fields of research and advancement of knowledge.

The American Academy of General Practice has a sincere and continuing in-

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terest in undergraduate, graduate, and postgraduate education of the family physician. The need is great to encourage and assist young men and women in preparing, qualifying, and establishing themselves in general practice. To provide study courses for general practitioners and to encourage and assist practicing physicians and surgeons to participate in such training, qualified general practitioners should be appointed as clinical professors in fundamental specialty subjects. Thus the student would be exposed to the art and practice of general medicine and surgery. Another necessity is a series of lectures or panel discussions during the junior and senior years of medical education on the art of general practice. Preceptorships should be sponsored and supervised by state medical societies and medical schools. Students should be assigned to selected and approved practitioners for specified periods of time during which they would live and work with physicians who are actively engaged in daily general medical practice.

Function of family physician

The family physician, and only the family physician, is in a position to provide the individual patient and the family with continuing comprehensive medical care. He can give substantive attention to the fact that the physical, emotional, and behavioral problems of his patients are often inextricably intertwined with those of parents, progeny, and siblings of other immediate although closely related members of the family in a complex, fast-pacing society.

Comprehensive care is necessarily based on close interpersonal relationships that most readily develop through long association between physician and patient. This close relationship involves the physician with his patient's environment and more particularly with his family.

A general or family practitioner is a legally qualified doctor of medicine who does not limit his practice to a particular field of medicine or surgery. In his general capacity as family physician and medical advisor he may, however, devote particular attention to one or more special fields, recognizing at the same time the need to consult with qualified specialists when the medical situation exceeds the capacities of his own training or experience. There will always be urgent need for doctors of medicine to function as family physicians. Their education and training will relate to the needs of the community. Their learning experience must therefore be flexible. In all instances, however, their education and training must equip them to function as family physicians. With or without basic certification, they will be specialists in family health care.

Attributes of family physician

Family medicine offers a unique opportunity to physicians who possess certain attributes that should be essential or common components of all medical care. These attributes are consideration, compassion, interest, acceptance, empathy, responsibility, and flexibility. Family physicians must be willing to accept the many responsibilities that are implicit in continuing health care and health management. They must exhibit perceptive adaptability, willingness to make critical and sometimes immediate decisions, and strive to attain equanimity. They must combine the qualities of the humanitarian and the scientist and fully appreciate intellectual endeavor.

Scope of family physician practice

The practice of preventive medicine is one of the primary duties of practicing physicians. To their diagnostic and therapeutic abilities must be added the element of preventive care with emphasis on related categories. The categories are: epidemiology, immunization, health education, maintenance of health, environmental influences, accident prevention, dental hygiene, crisis information, occupational medicine, prospective preventive measures, community relations, and research. The board of directors of the American Academy of General Practice has defined applicable surgery as the surgery which is "applicable to environmental situation and the facts which obtain such as community need, practitioners' competence, skills, and ability and local custom."

Many family physicians are directly

involved in obstetrics and gynecology. An estimated 75 per cent of all deliveries are performed by family physicians. The amount of obstetrics they perform will depend largely on their interests and on the demands of practice. The gynecology performed may vary greatly from office procedures to in-hospital procedures. In any event, proficiency in these fields is mandatory. The diagnostic, therapeutic, and management technics that family physicians encompass as part of practice are often related to areas of specialized endeavor.

However, it is important that the family physician be able to relate these areas one to another and not confine thinking or efforts to any single area to the exclusion of all other areas. This again underscores the importance of viewing patients as people and treating people, not alone their diseases. Family medicine will utilize technics borrowed from and taught by the other specialities and will in turn contribute its own technics to the members of the other specialty groups. There will thus be a continuing interchange of knowledge of a mutually beneficial nature. Both family physicians and other specialists must at all times work to further and implement this interchange.

Referral of patients for consultation

Referring patients to other physicians demands accurate appraisal of health care problems and thorough knowledge of the special skills, abilities, and personalities of consultants. Family physicians must know how to refer patients and how to avoid the many pitfalls that are not always apparent. The act of referring patients should include adequate discussion of consultation fees. Both patients and their families should understand the relationship between referring physicians and consultants and should be reminded that continuity of care is important. Areas of responsibility must be clear to all concerned. Family physicians must realize that there are usually four parties to a referral, namely, the patient, his family, the referring physician, and the consultant. All must work together in the best interest of the patients.

Never before, in the history of medicine, have family physicians been able to call on as many highly trained specialists in allied and paramedical areas. These specialists perform endless functions and thus make it possible for family physicians to serve in an increasingly efficient manner. However, if these allied and paramedical people are to make their greatest contribution to total health care, family physicians must utilize their efforts in an equally efficient manner. It is not enough to point out that family physicians should constantly strive to keep abreast of medical progress. They must be imbued with a desire to accomplish this purpose and go beyond minimum requirements.

Continuity and responsibility of health care

As long as there is need for health care services, there will be need for physicians who assume continuing responsibility for the health care of patients as individuals and for their families as basic social units of society. Such physicians, presently termed general practitioners, or perhaps more appropriately family physicians, must possess basic cores of knowledge in all areas of medicine and must strive to keep this knowledge current through constant use and continued education. What is needed are physicians proficient in basic technics who know when patients require more sophisticated skills.

Clinical and social overview in health care

Such physicians are specialists; specialists in terms of the functions they perform, not specialists who treat only certain diseases or parts of the human body or specialists who limit their practice on the basis of chronologic age of patients. What other specialists may bring to patients in terms of intense concentration on a single area, specialists in family practice bring to patients in terms of clinical and sociologic overview.

They see illness and disease not only as biologic phenomena but also as possible outgrowths of emotional and environmental problems. It is far easier to outline the content of a more restrictive specialty than it is to outline the content of family medicine. This is underscored by the fact that family medicine is a specialty in breadth rather than a specialty in depth.

Family medicine as specialty

Family medicine is a specialty. It is a brand of medical technology with a composite body of knowledge separate and distinct from other disciplines. There is a general agreement that the roots of these problems lie in community and especially family relationships. It is extremely important that students be especially trained to be family physicians. Family physicians are very near to being supreme beings without getting into the religious angle. Faith in the family physicians has many aspects.

Again I repeat, family physicians and only family physicians are in a position to provide the individuals and their families with continuing comprehensive care, thus hopefully serving to better general community health and thus contributing to future improved perinatal survival.

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Utilization of Comprehensive Care and Its Evaluation

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The importance of evaluation in facilitating the delivery of health services and in maximizing its effectiveness is an accepted principle. Yet we find in too many instances, perhaps under the pressure of demand to deliver services, that there is not much more than lip service accorded to evaluation of medical care programs, lip service in the sense that grant applications are ordinarily not submitted without a section labeled "evaluation." Unfortunately, the content of this section all too frequently contains only a statement to the effect that evaluation of the proposed program will be carried on throughout a specified time period with appropriate collection and computer processing of data.

Therapeutic trial evaluation

Lip service of this type is not tolerated when medicine wears its other hat, namely, that of evaluating the efficacy and safety of a drug or therapeutic regimen. Then the grant application spells out objectives, as for example, that mortality rates will be reduced to X per cent in males aged thirty to forty-five, left-handed versus right-handed men will be contrasted as to cure rates, or that comparison will be made of the effect of several dosage levels of a drug in various vehicles. Then a detailed section will follow with data collection forms, computer processing plans, tabulations, statistical methodology, and implications. Also included will be a contrast of expected results with this therapy, a control study or universe value, and a justification of the control or of the universe value.

Goals of therapeutic trial

The therapeutic trial usually has, at best, several goals with reasonably well-justified linkages between the intermediate and the final goals. On the other hand, with evaluation the so-called goals are too frequently measurements of service which are poorly linked to an intermediate goal of accomplishment. Then too, these poorly established linkages to intermediate goals of accomplishment may erroneously be interpreted to imply the final goal.

Problem of linkages

James,[1] in discussing this problem of linkage, has stated:

> An assumption of validity must be made whenever we move from a higher order objective to a lower one. Hence, every lower-

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> level objective must assume all of the assumptions we have made for all of the objectives above it in the scale. Any program which is based on a false set of major assumptions cannot be rescued by its lower-level objectives, although quite valid evaluations might still be done for each of them individually. . . . There are only two ways one can move up the scale of objectives in an evaluation: (1) by proving the intervening assumptions through research effort, that is, changing an assumption to a fact; or (2) by assuming their validity without full research proof. When the former is possible, we can then interpret our success in meeting a lower-level objective as automatic progress toward a higher one. . . . When an assumption cannot be proved, we still must attempt to progress upward in interpreting an evaluation. . .

Therapeutic versus medical care evaluation

Why do we find this difference between evaluation of the therapeutic trial and that of the medical care programs? What are we going to do about it?

There appear to be several reasons for the difference. The clinical trial has a much longer history, and methodology is more advanced. Evaluation has more complex goals and an additional objective. In the words of Price[2]: " . . . specify what changes in procedures might be desirable. This requires that we attempt to evaluate not only the program's achievement, but also the effectiveness of each procedure or component activity in the program."

Time element in evaluation

From the viewpoint of ultimate goal, the time element in evaluation is usually much longer than in the therapeutic trial. True, we have drug and treatment studies, such as secondary rheumatic fever prevention, cancer surgery, and anticoagulants in stroke which involve long-term follow-up and treatment, but, by and large, studies such as these are the exception. For evaluation of medical care programs, we are frequently dealing with effects over longer periods of time. I have mentioned more complex goals, and indeed, in evaluation they are perhaps fuzzier goals. Instead of "lived-died" or "recurrence-non-recurrence" goals, we frequently have the goal of "healthier."

Evaluation defined

What then is evaluation and what are the questions to be asked in planning an evaluation? Numerous definitions of the term evaluation have been given by workers in the field. Excepting for certain examples, I will try to avoid bogging down in semantics. However, differentiation is necessary between the terms "evaluation" and "value." The latter term is frequently used more definitely as "social value" and is of extreme importance in allocation of scarce resources.

In a sense, evaluation determines which methodology best achieves a stated goal. Social value asks which goal takes priority. Parenthetically, the cost-effectiveness approach helps in deciding priorities by putting findings on a common base.[3]

A succinct definition is given by Levinson[4] who stated: ". . . make assessment against the explicitly stated goals of the organization." Another definition which goes a step further and includes an implication of research design for evaluation was offered by Price.[2]

> Evaluation should show how well the purpose of the research is being achieved. From the start of an evaluative study, we ordinarily hope to do more than learn how well a program's purpose is being fulfilled. We also hope. . . to specify what changes in procedures might be desirable. This requires that we attempt to evaluate not only the program's achievement but also the effectiveness of each procedure or component activity in the program. . . . Indeed, we could well stress to the public, and to administrative authorities, that no type of evaluative effort should have higher prioirty than controlled comparisons of alternative procedures for conducting the case-finding and follow-up work.

In any acceptable definition of evaluation, the implication of one facet of research design is the need to measure any changes against a base line. Most frequently this means a control group to contrast with the treatment group. Objectivity in measurements is essential to avoid a misleading dependence on unverifiable general impressions.

Hyman, Wright, and Hopkins[5] have defined evaluation as: ". . . to provide objective, systematic, and comprehensive evidence on the degree to which the program achieves its intended objectives plus the degree to which it produces other unanticipated consequences, which when recognized would also be regarded as relevant to the agency." However, Hyman, Wright, and Hopkins[5] further emphasized the need to document, as part of evaluation, what would happen and what would be the achievement of intended objectives, if the program were different, different also to include "no program."

Without belaboring the point any further, we might say that evaluation first measures the amount of success in attaining stated goals. Second, it assesses how much more successful one program is than another. Third, evaluation is concerned with cost in resources, specifically, money, attention, and effort, for each program.

Planning evaluation procedures

We are all acquainted with stories that circulate in newspaper offices, where the cub reporter is told to write his story with a lead of who, what, and where. Perhaps evaluation can be planned best if we have a similar set of lead questions to serve as a guide. Where, when, and how, does who do what to whom? Why, and to what end product? If any of the questions were changed, would the end product change and by how much?

Tayback, Bianco, and Farrell,[6] with particular reference to the maternal and infant care projects, summarized the idea of evaluation as: " . . . clinical trial studies of defined services. . . . Such studies, by control of the many social and medical variables would, in an obstetric population, permit a clean-cut decision on the efficacy of a defined service." How closely programs of care can approach this idea will determine how good our future programs will be and how little waste will exist.

Tayback, Bianco, and Farrell[6] continued: "There are some who will state that our concern with evaluation is dissipating our energies and that our job is to deliver the services. The answer is quite obvious. Grants under the MIC congressional authorization of 1963 represent one of many systems for attending to the obstetrical requirements of low-income groups."

> There is every reason to believe that the MIC grant program provides means for demonstrating methods most effective and efficient for general use among low-income groups. However, performance is what counts, not intentions. A strong system of evaluation can give MIC projects the capability of recognizing strong points, discovering deficiencies, and exhibiting the flexibility of direction characteristic of a vigorous operational program.[6]

Interpretation of evaluation

Let us now return to our questions: Where? When? What? How? The evaluator may be someone from outside the project who is not biased or, usually, evaluation may be conducted by the program staff itself. The staff must approach the problem in a cold, impersonal way, and act as if the members were on the other side of the table asking for proof; proof as strong and as well documented as in a drug trial. The appraising staff members would not accept as proof in drug trials the counts of number of pills administered, the number of examinations by neurologists, or the number of blood specimens examined. Why, then, should they accept data on utilization as proof of how good a program is, unless and until better linkage of utilization to accomplishment can be established?

Let us take an example from pediatric practice where many of our accepted ideas on the effectiveness of well-child care are based on poorly evaluated work. Consider an infant of twelve months of age who has had all his immunizations, is healthy, and is developing normally. In private pediatric practice and in well-baby clinic programs, the mother is told to bring her child back for re-examinations at four-month intervals, that is, at sixteen, twenty, and twenty-four months. The reason for this schedule is to check growth and development, to give anticipatory guidance to the mother, and to permit early case finding.

If we are interested in finding conditions early in the growth and development of the infant, why a visit every four months? Why not every two months, every month, or every day? Certainly, a proportion of conditions found at sixteen months which were not present or not diagnosed at twelve months could have been diagnosed at twelve months and one day, possibly 0.01 per cent. Actually, we do not know the pattern but have made a decision on frequency of visits. Note further, that we have also made a value decision although we have not done an evaluation. Because daily visits are too much of a drain on resources, we are risking one child in a million who is in the hospital for a longer period of time, possibly having a residual handicap, or possibly dying by our procedure of a visit every four months.

Allocation of resources

Objectively, may I suggest that proper allocation might be only one visit at twenty-four months, proper allocation meaning the evaluation of effectiveness based on the cost-effectiveness approach that stresses allocation of resources and not on the emotional decision of society.[3] Without evaluation, which implies objective collection of data to grade the attainment of objectives and comparison with other methods of attainment of the same objectives, no answer is possible. We tend ordinarily to report the number examined at each period and erroneously imply good case finding and maximum return for investment of resources. It cannot be overemphasized that utilization data may be necessary in evaluation to measure achievement, but utilization does not mean evaluation.

Evaluation and improved community wellness

The question was asked how comprehensive care will better community wellness and effect a lowering of perinatal mortality and morbidity rates. To determine the results of any program, it is necessary that appropriate data be collected and analyzed in a controlled way not different from the manner of a drug research study. Only in this way will it be possible to differentiate utilization from evaluation and develop a measure of prediction of the impact of comprehensive care on the community of the future.

Summary

This report is not intended to be a recipe on evaluation. Nor is it intended to cover all the facets and dimensions of evaluation. Only some pertinent high lights, problems, and approaches are presented. Evaluation implies the impersonal planning and carrying out of test procedures similar to that employed by the laboratory scientist in the testing of the efficacy and safety of drugs.

Description of program operations, that is, the where? When? Who? What? and Why? must be clearly and completely spelled out. Linkage of intermediate goals to final goals must be on objective, not subjective, grounds. Evaluation should be able to point up the strengths and weaknesses of programs.

Evaluation is: first, the measure of the amount of success in attaining stated goals; second, success being a relative term, the success of one approach to the goals compared with another approach; and third, the cost effectiveness, the cost in resources, for each of the programs.

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Discussion

Angelo Ferrara, M.D., *New York City*. I want to thank Mr. Rich for his lucid biostatistical approach to basic concepts of evaluation in the various areas of medical care. In a way, I feel unfamiliar treading in strange waters of the paramedical specialty of utilization and assessment, but it is a void all physicians must be aware of in the light of a few facts.

Title 19 (Medicaid) makes health services available to all the needy. This definition of needy is not clear at times. If we equate it with the welfare rolls of New York City, for instance, we include about 10 per cent of the population which in turn takes in 20 per cent of all youngsters of the city. This figure is rising at the rate of 14,000 people a month.[1] If we equate it with the true Medicaid-applicable population under the present income ceiling, this may mean 40 per cent of New York City.

Public Law 89–749, with its amended proposal, the Staggers-Hill Bill (H.R. 6418), also known as the Partnership for Health Amendment of 1967, is trying to crystallize comprehensive health planning on a state level. Hearings on the latter bill were held in May and June of 1967 before the Committee on Interstate and Foreign Commerce of the House of Representatives.

Presently the bill has been passed by the House of Representatives and the Senate and was signed into law by President Johnson, December 5, 1967. The implications of this amended law are far-reaching and undoubtedly will set a pattern of guidelines for years to come.

However, in a recent editorial it was noted that this new law lacks definition with respect to the meaning of the terms comprehensive and public health service.[2] In a way, this lack of definition is an invitation from Congress to unlimited expansion of public health beyond its traditional role in the community. A pertinent question should be considered. Does Congress intend to authorize a program of individual treatment for unidentified patients for unspecified conditions for unlimited services?

MANPOWER AND ACCESS TO HEALTH CARE. More recently, the National Advisory Commission on Health Manpower officially reported to President Johnson that medical care was in a state of crisis and that immediate recommendations should be carried out to increase the number of physicians and paramedical personnel and to improve access to medical care for the poor.[3] Obviously, the patterns of health that are being promulgated affect us all and should become the combined responsibility of physicians in practice and in hospitals, voluntary agencies, universities, and the government, at all levels.

WHAT IS COMPREHENSIVE HEALTH CARE? Before progressing further, I would like to define my understanding of the term "comprehensive care." To me, it is a family-oriented, patient-centered approach whereby one physician, working with an appropriate team, delivers the best in medical services in an ongoing fashion. Let us translate the various health care laws into practicality and ask who are the needy, where will they obtain these services, and who will deliver them? By exploring these questions, I hope to explain some problems of utilization and assessment of comprehensive care programs. The evaluation that I will discuss will be mainly from the medical aspect, to some extent from the patient's vantage point, and less so from the public health approach.

OBSTACLES TO COMPREHENSIVE CARE. *Where are the needy?* The needy are easily identifiable, if you think about it. They are people who live in what our urbanologists call "poverty pockets." Here excessive fetal, infant, and childhood mortality rates prevail. Here preventable illnesses like rheumatic fever, venereal disease, and tuberculosis flourish with higher incidence. Here poor household and neighborhood environments are the rule.

Factors plaguing the needy. But when one analyzes the factors that plague the needy, these are generally encompassed in the goals of health services as outlined by Elinson,[4] that is, the conquest of death, disability, disease, distress, and dissatisfaction. If we say we give better health services, these criteria should be affected in a positive way to a great extent in any needy population. But are all of the comprehensive care programs reaching these people? Is there a concentrated effort to dip into the community and seek out the unmet needs of the poor? Or are these comprehensive programs only available to those who elect to come to it?

First, the needy seem to be an obstacle to themselves, for lack of education and different culture, at times, are the very factors that prevent them from seeking the services. Therefore, I feel that an outreaching program that involves and understands the community is an obvious essential approach to the successful outcome of any service-oriented program. Many agree, for example, that prenatal care decreases perinatal mortality and morbidity rates. But if the mother cannot reach the medical care facility, then the hospital, through community workers and agencies, should reach out to that patient and solve any obstacles to obtaining services.

The second obstacle is the hospitals themselves where comprehensive care programs are developing. These are, in general, our teaching hospitals, that is, the voluntary, municipal, voluntary-municipal affiliated, and university-affiliated institutions, where the training of specialists is paramount and almost overshadows patient care. The following characteristics seem to be hindrances to comprehensive care:

1. These hospitals, as a group, are not far-reaching into the community and do not involve and guide general practitioners in their health areas to participate in community medicine. One solution would be that these hospitals institute continuing education and postgraduate courses for practitioners and indoctrinate them into comprehensive care programs that follow prescribed guidelines of good medical care.

2. Another factor is administrative red tape which seems to abound in large teaching hospitals. This, together with overcrowding in many ambulatory sectors of hospitals, and with impersonal dealings by medical and paramedical personnel, all make for the delivery of medical care of poor quality, both professionally and from a patient's point of view.

3. Still another problem of most hospitals is the medical records. These may be poor in information and even at times unavailable for continuity of care. To collect data for medical records, probably the two main prerequisites should include simplicity of forms and reliability of methods used. For instance, each patient-physician visit should record the patient's number, the physician's identification, the place of care and procedures carried out, and the date, diagnosis, and disposition of procedures. Then these could be computerized and easily retrieved at times of future contact with the patient.

4. Moreover, teaching hospitals are highly specialized and tend to deliver system-ailment care rather than total patient care. Departmental lines are difficult to cross. Obviously, a whole new orientation toward medicine must evolve in all levels of a hospital.

5. Finally, many hospitals that are attempting comprehensive care do not yet have a director of community or family medicine. This indicates poor planning.

The third obstacle to comprehensive care is the physician himself in a teaching hospital environment. The bulk of patient care on an ambulatory basis in most hospitals has traditionally been administered by house officers and to a varying extent with attending supervision. I must limit my remarks to pediatric house staffs whose teaching programs I have coordinated in the last six years and which I know best. Pediatric interns and residents are not being trained as far back as medical school days to think in terms of preventive medicine with a team approach and continuity of care. In a way, the pediatrician is almost denying his own specialty where preventive aspects are always sought and carried out.

Effect on morbidity and mortality rates. Many may question whether or not we shall make any impression on mortality and morbidity rates by utilizing a health team with continuity of care. Perhaps I cannot quote you any studies to show a decrease in Elinson's[4] criteria, but I certainly feel it will accomplish a tremendous improvement over the sporadic, episodic, and, at times, the impersonal care that needy children with their families are still receiving in New York City.

Physician-Patient Relationship. If we cannot or shall not approach the physician-patient relationship we have in private practice, then we must certainly believe in the double standard of medical care—those who can afford it and those who cannot. Then a vicious circle is perpetuated, and those who know less and have less seem to receive less in medical care. If this is the case, then I wonder what our new health legislation is telling us to do.

A recent survey of hospitals in the New York Metropolitan area is shown in Table I.

EXPERIENCE AT ST. VINCENT'S HOSPITAL AND MEDICAL CENTER OF NEW YORK CITY. In the last five years, Florence Wilson, M.D., has directed the medical care project at St. Vincent's Hospital. It has been a pilot study on a family-oriented, patient-

TABLE I. Summary of questionnaire on problems encountered in comprehensive health care, hospitals of New York City, Metropolitan area

Category	Hospitals Voluntary (21)	Voluntary-Municipal Affiliated (3)	University (2)	Municipal (6)	County (2)
Director of Community Medicine	Yes 5, no 16	Yes 1, no 2	Yes 1, no 1	Yes 0, no 6	Yes 0, no 2
Director of entire outpatient department	Yes 16, no 5	Yes 3, no 0	Yes 2, no 0	Yes 5, no 1	Yes 2, no 0
Pediatric outpatient department assigned:					
Public health-oriented nurses	Yes 13, no 8	Yes 2, no 1	Yes 1, no 1	Yes 5, no 1	Yes 2, no 0
Pediatric social worker	Yes 17, no 4	Yes 3, no 0	Yes 2, no 0	Yes 5, no 1	Yes 2, no 0
Volunteer interpreters	Yes 11, no 10	Yes 2, no 1	Yes 1, no 1	Yes 6, no 0	Yes 1, no 1
Attending pediatricians at all clinics to advise and teach	Yes 20, no 1	Yes 3, no 0	Yes 2, no 0	Yes 6, no 0	Yes 2, no 0
Patients seen by same pediatric house officer on each visit	Yes 14, no 7	Yes 1, no 2	Yes 1, no 1	Yes 1, no 5	Yes 2, no 0
Pediatric patients seen in specialty clinics, also seen in general pediatric clinics	Yes 21, no 0	Yes 1, no 2	Yes 2, no 0	Yes 2, no 4	Yes 2, no 0
Pediatric residents with special follow-up day	Yes 7, no 14	Yes 2, no 1	Yes 2, no 0	Yes 3, no 3	Yes 0, no 2
Siblings in particular family encouraged to see same pediatrician on each visit	Yes 17, no 4	Yes 2, no 1	Yes 1, no 1	Yes 4, no 2	Yes 2, no 0
Coordinated pediatric staff meetings with outpatient department and inpatient personnel	Yes 14, no 7	Yes 3, no 0	Yes 1, no 1	Yes 4, no 2	Yes 1, no 1
Pediatric outpatient department meetings concerning outpatient department problems or case presentations	Yes 16, no 5	Yes 2, no 1	Yes 1, no 1	Yes 4, no 2	Yes 1, no 1
Pediatric evening clinic	Yes 2, no 12, plan 7	Yes 1, no 1, plan 1	Yes 0, no 2, plan 0	Yes 0, no 3, plan 3	Yes 0, no 1, plan 1
Program joined in National Pediatric Resident Matching Program	Yes 15, no 5	Yes 3, no 0	Yes 2, no 0	Yes 4, no 2	Yes 1, no 1

centered approach, and it has been a model to which our administration wants to transform the traditional outpatient department. As a participant in this program, I decided about two years ago that the pediatric clinics should attempt delivery of better medical care.

Pediatric Resident Program. The format derived is simple. Each pediatric resident has a fixed follow-up day to see his family of pediatric patients and gives comprehensive ongoing care for one to two years, following prescribed guidelines. Attending supervision is always available, and bimonthly staff conferences are held to discuss individual families with pertinent problems. Data collecting for computers has started. Patients, once admitted to the program, are assigned a pediatric resident and given a card with the physician's name and his follow-up day. A twenty-four-hour telephone service is made known to the family. Interpreters are also present in the various clinics.

The intake of the total ambulatory pediatric patients is ideal, but the transition of this service is quite slow, and priority is given to children in a particular family with more serious or chronic problems. Eventually, every family will be given pediatric comprehensive care by our health team of pediatric resident, nurse, and social worker. This is shown in Figure 1.

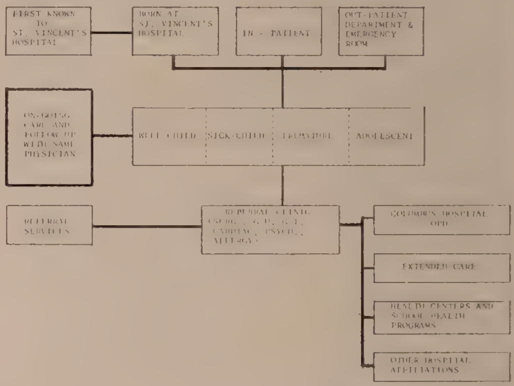
FIRST KNOWN TO ST. VINCENT'S HOSPITAL
BORN AT ST. VINCENT'S HOSPITAL
IN - PATIENT
OUT-PATIENT DEPARTMENT & EMERGENCY ROOM
ON-GOING CARE AND FOLLOW UP WITH SAME PHYSICIAN
WELL CHILD
SICK-CHILD
ADOLESCENT
REFERRAL SERVICES
REFERRAL CLINIC (NEURO., G.U., G.I., CARDIAC, PSYCH., ALLERGY)
COLUMBUS HOSPITAL OPD
EXTENDED CARE
HEALTH CENTERS AND SCHOOL HEALTH PROGRAMS
OTHER HOSPITAL AFFILIATIONS

FIGURE 1. Organization of pediatric ambulatory care services, St. Vincent's Hospital and Medical Center, New York City.

Goals of Resident Training Program. The major goals in this program are to provide optimum service to the patient and the best available training to the resident physician. I believe this type of approach to medicine provides both of these factors. The physician in our pediatric comprehensive care program feels more of a sense of accomplishment and better rapport with his family whom he sees consistently when medical care is needed. From the patient's point of view, there is less dissatisfaction and an obvious sense that some one physician cares for the family's ills. Does all of this make any dent as far as the problem of total public health is involved? This latter assessment is difficult to establish. Even before attempting an evaluation to combat disability, discomfort, and dissatisfaction, we must all be reoriented to a new approach to ambulatory medicine. Compared with inpatient hospital care, ambulatory medicine has a different spectrum of illnesses, and these and the ambulatory population have never been studied in an adequate social experience.

Classically, medical schools teach the anatomic and physiopathologic aspects of those diseases which afflict hospitalized patients and do not necessarily reflect the community ills. Instead, they should teach the ills that are more apt to confront the ambulatory patient and thus help accomplish more realistically the aims of comprehensive care.

SUMMARY. By virtue of recent legislation, but more so by fulfilling the rights of all men, the best of medical care should be delivered to everyone.

The main obstacles affecting comprehensive care are:

1. The needy themselves: These people should be sought after, identified, and understood and the goals of medical care made clear to them.

2. The hospitals themselves: Each teaching hospital should create a department of community medicine and convert their traditional outpatient department to a family-oriented, patient-centered ambulatory program. Involving the community is essential.

3. The physicians themselves: Early in their training, physicians should understand preventive medicine and the community around them. Attitudes toward all patients should be similar.

The main problems of assessment are even far greater to solve. Surveys and case studies are virtually invalid methods of evaluation. Instead, prospective experiments should be conducted in ambulatory settings to assess technics and accomplishments of all medical care programs. Only then can we use the results as valid guidelines.

There is no one solution, but perhaps the most important factor in making comprehensive care a reality would be education; education, not of one facet of comprehensive health care, but of all its parts. It involves the total community: the needy, the hospital personnel, and the physicians. Each of these has to be re-educated as to what his role is in providing and receiving health care. Only then will the physician, the patient, and the community gain immeasurably.

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Summary

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DR. ABRAMSON, ladies and gentlemen: Many questions and diverse opinions have been raised in today's discussion of comprehensive health care. What we have been talking about seems to me rather significant. The subject has really been medicine and society. In the past, the New York Academy of Medicine has done some of the most significant studies relating medicine to the social changes that have occurred within our time. These changes have been discussed in this very room. As I sat here this afternoon, I realized that the values we have talked about today are the same values considered in the very first session on health care the New York Academy of Medicine held here years ago. The conference was entitled, "Better Health for All People."

Presented by the Special Committee on Infant Mortality of the Medical Society of the County of New York, New York Academy of Medicine, New York City, December 6, 1967.

Rapid change in health care

But there is something new and exciting in the air, and that is change—not just ordinary change, but pretty rapid change. I would remind Dr. Levy that it is at a time of social and technologic change that many traditions and practices can be more readily changed. I am sure he agrees.

Why is there change at this time? We heard some of the reasons today. We heard about urbanization; we heard about the changes in the inner city that have come about in part because of increased movement of people into urban areas; we heard about specialization in medicine; we heard about failure to reduce the differences between the rich and the poor; and we heard about that new thing that I like to call "people power." We have seen "student power" and "black power" at work. Now we are seeing "people power" and "patient power." The people want in. They want and demand to have their say about the medical care they get. We also heard a little bit about the changes in the character of illness.

Cost of change

Interestingly enough, we heard only brief reference to rising costs, which is probably one of the most powerful forces leading to change. I must remind you that medicine this year is probably going to be the second largest business in the United States in terms of numbers of dollars spent and numbers of people employed. When you get that big, something is going to happen. And we did not talk much about the new ways to pay for care.

Expectations in change

Then too, we did not talk very much about rising expectations of the people. We said that people want to get in and plan with us. Today people know through television and other ways about what better medical care is, and they want better medical care. I am reminded of the three-year-old boy who came to his mother after he saw one of those exciting open-heart surgical operations and said, "Mummie, can't I have one, too?" People have already said medical care, like education, is a human right, and the Congress is responding. People have also already said they do not want two kinds of health care, one for the rich and another for the poor.

Impact of scientific research

We did not say very much about another development that has pushed change to urgent attention. Since World War II there have been more dollars available than ever before for scientific research, both in biomedical fields and in physical sciences. Those very dollars have attracted the best minds in this country into biomedical research and into the kind of research that leads to the computer and a host of other technical tools designed for other purposes, but of great potential to the practice of medicine. This means that medicine has at its command sophisticated technics, very new, sophisticated, and expensive technics, that can accomplish things undreamed of five years ago. The technics are being loaded on a system of delivery of services ill adapted to change and to using them. This is a major dilemma right now. It lies at the heart of pressures, great pressures which just more money will not resolve.

Pressures for change

The paradox really is that even with more medical knowledge, the rate of improvement in the nation's health has slowed down. However, I do want to point out that the nation's health is still improving, but at a slower pace. Infant mortality rates are coming down, but not as fast as in previous years and not as fast as they are declining, interestingly enough, in some other industrialized countries of the world. The pressures for change are rising so fast that we are in the middle of a medical revolution although a great many people have not discovered this upheaval quite yet.

Meeting pressures

Well, now, what do we do, as physicians, as community organizations, as people, or as educational institutions? What was exciting about this afternoon was the recognition that there is not any one particular way to bring about change. We took a look at three viable experiments in delivering medical services. They are not too elaborate or expensive. They are actual experiments that are going on in New York setting up variations of existing patterns in the delivery of medical care. Incidentally, I was interested that all of them are being financed largely by Federal dollars. It would appear then that as more Federal dollars become available for this kind of field research, there will be more people going into it, just as they went into biomedical research when dollars became available for it with the development of the National Institutes of Health.

Experiments with change

Let us go back to the three community projects discussed today. There are of course others that could have been discussed with profit. I think it is significant that the projects are all connected with medical schools and teaching hospitals. This arrangement means that medical students of the next generation are going to be in touch with them. The university, and probably the total university, not just the medical school, is one of the few sources that has the hardheaded intellectual ability to tackle and analyze problems associated with the delivery of health services. We should stop the wishy-washy talk that is heard around much of the time about improving medical care and get down to very hardheaded experimentation, putting our best brains to work in designing and evaluating the experiments.

New technologies

I was interested, too, that one experiment, and I take it others as well, is using new technologies that are not medical. I love the computer, although I must say I am a little afraid of it, too. I would like to suggest that we, as physicians, be pretty careful about the computer and render unto the computer only those things that are the computer's. We have to ask the human being the medical questions that are important to ask of the computer, remembering that the computer is just a tool. The day we let cost effectiveness become the criterion to make all decisions, we have lost our professional honor.

Rehumanization of medicine

The third thing I think characteristic was that these experiments are attempting to rehumanize medicine which is needed so very much. The family approach, I think, helps do that.

I was delighted, again, that experiments are being carried out with ways of using personnel. They are using allied health personnel, paramedical personnel, and call them what you will personnel. They are training neighborhood people, getting them into new careers. They are using physicians differently.

Medical-community cooperation

I was delighted, too, that all three experiments were built on what was occurring today. I have seen a good bit at Columbia Point, and I was at Watts not long ago. The trials there are atypical in many ways. I could discuss them at length. What was good about the experiments we heard of this afternoon is that they are taking services that are going on here in New York and modifying them one way or another.

However, there are lots of problems these experiments did not tackle. They did not tackle the services for the middle class. The medical revolution is just as important for these people. They did not tackle the problems of bureaucratic roadblocks in the Federal government, including the Children's Bureau, of which I am an alumna. Nor did they tackle very much the roadblocks in professional attitudes and in institutional attitudes.

Utilization versus evaluation of change

I could not decide how much effort, innovation, or hardheaded thinking was going into evaluation. How will any one know of the value of any of these efforts without it? Remember we have few tools with which to measure the effectiveness of medical care.

Then, too, discussion was lacking on the problem of reaching the people who do not come for health care. One of the things I will say about Watts is that I was fascinated to find health care was very low in priority there. Many of the people apparently come to the centers because they love to see the pictures that were painted by the Negroes of the area on the walls in the clinic. Perhaps the smartest step was to spend $22,000 for pictures painted by the Negroes. The paintings hang in the center and can be bought. It makes the people proud and gives them money which poor people need. It makes the center theirs.

It was also interesting that the problem of using the local general medical physician was discussed only by Dr. Ames. The general practitioner appears to be disappearing from certain health areas. This may be one of the reasons why more people come to the emergency room. But in many poor areas he is still there. We have to find out how best to use him and how to improve the care he gives.

Conclusion

May I say that I, too, am frightfully tired of the term "comprehensive care." I try never to use the words, because I really do not know what they mean. They seem to mean something different to each user, each listener. I suggest as well that we might get along a little better if we simplified our language.

I listened this afternoon and nobody used the word "learn"—an awfully nice word. We must go through the educational process each time!

Now, I suggest that rather than mere talk, we do need action. We need it in a very sophisticated way, but also in a very simple way, to get closer to that one goal in which we are all interested, namely, improving the health of people in a way that brings into play the best that science has to offer and still has the heart in it both for physicians and for people.

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Concluding Remarks

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In concluding the symposium, I want to thank the speakers and the discussants for their most enlightening and thoughtful contributions to consideration of one of the most pressing social and medical problems of today: comprehensive health care and its intent, meaning, and scope. The splendid attendance and audience interest in the presentations attest to the need for review of the delivery of health services, to the extent that improved community wellness will, in future generations, bring about healthier, happier families and children and substantially lessen the occurrence of avoidable illness, suffering, and death at all age levels.

In considering ways to accomplish the sought-for goals, we have raised many more questions than we have answered or could possibly answer in the light of current limitations of available resources, manpower, and experience with methods to expand and improve health services for all segments and economic levels of population. It would appear that we are presently in the experimental phase, a phase of trial, error, and correction of error, in the establishment of new approaches and guidelines to comprehensive health care.

It is evident that there is no single answer or design. It is also evident that current programs, Federal, state, and municipal, are not in harmony and urgently require standardization and coordination of procedure before unified and intelligently directed services can be administered without prejudice, duplication of effort, and waste of resources, manpower, and tax funds. Otherwise, we will be simply relocating and reusing obsolete methods in other equally obsolete areas of operation and repeat logistic errors of the past. The avoidance of these pitfalls remains the outstanding challenge to the broadened concept of health care today.

It is furthermore evident that medicine

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can no longer assume the possessive and paternalistic attitudes of the past, but must share with the community in future ventures of planning expanded health services for all. Medicine must, however, furnish active leadership, ongoing policies, and programs of education in designing and providing the expanded health services that are being demanded today. But the pressures of demand must not be allowed to produce change merely to satisfy the demand for change.

It is hoped that the discord of the Tower of Babel will not prevail to undermine studied efforts to develop and implement intelligently the concept of comprehensive health care. Improved community wellness and, in turn, heightened rates of fetal and infant survival in good health, are the goals to be actively achieved.

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Space Technology in Medicine

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THE POPULAR PRESS has dramatized both the union and the lack of union between space technology and medicine. The stage on which the drama has been enacted is the manned space flight program, its second phase so successfully completed in the form of the Gemini program, with yet many unsolved problems left in the matter of man's personal welfare in the hostile environment of space flight.

Our national goals in space exploration have captured the nation's fancy and have made it necessary to marshal together our resources in men, materials, and money to a degree commensurate with prosecuting a war for national survival. Indeed, there are even some who see the attainment of our goals in space as necessary for national survival.

However one regards our space program, it must still be evident that such a major scientific and technological effort will yield benefits to virtually all other fields of endeavor. These benefits, or the fall-out, will accrue in a given field no matter how poor the intercommunication between that field and the space program.

That medicine has worked closely with the space program and supported it there is no doubt, despite some implications in the popular press casting dire warnings of man's unpreparedness to roam in space. Many of you, I know, are especially alert to this problem and also are both very knowledgeable and contributory.

Problems

Numerous problems in space technology requiring medicine's help have been solved, and many more, some very significant, remain unsolved. The harmful effects of weightlessness is one of the most important. It has many apparent solutions, each with its own side-effects, known and unknown. The dangers of prolonged isolation in a hostile environment, in all its forms, make a knotty problem. Members of the space team have their job laid out.

But the main purpose of this report is to explore the benefits that the space program can bring to medicine. There is a high level of prosperity in space activity, and medicine is potentially a substantial beneficiary. It is my premise here that however much medicine is now gleaning from the bumper space technology crop, much more can be extracted. It should be recognized as a truism that knowledge shared represents a net gain, and it is synergism at its best.

There are two broad categories of knowledge which space technology has to share with medicine. One is the body of technology itself, and the other is the methodology for problem solving.

Body of technology

The first of these, the body of technology, consists of new materials, scientific discoveries, new sensing and measuring instruments, new fineness and sensitivity, new accuracy, new technics, and so on. For example, the skill in devising electronic circuitry is so high that virtually any requirement can be met with sufficient effort put on it. That skill is not only in devising the circuitry, but also in building it in unbelievably small size.

As a by-product too, medicine may exploit the space environment itself as a laboratory for its own researches, obtaining test conditions not otherwise available. There is a serious and productive effort

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* By invitation.

being made to effect the transfer of this knowledge to medicine. One focal point of this effort is in the National Aeronautics and Space Agency Office of Technology Utilization which husbands the Biological Sciences Communication Project. I am sure that this project has been invaluable and will continue to be so, despite the probability of the existence of a communications gap. There is a different jargon.

I am reminded of the story of the physicist and the theologian who had been arguing religion and not communicating. "Look, tell me in clear, scientific terms," the physicist insisted, "how the transsubstantiation takes place." "Well, will you tell me in religious terms," the theologian said, "how a laser works?"

Methods of problem solving

The second category of knowledge which the new space technology offers is the hitherto unknown or undeveloped methodology for dealing with complex problems. It is in this category of knowledge that I wish to rummage.

The space program has been confronted at every turn literally with such far-reaching goals that the very management of any phase of it has called for new tools and methods for dealing with the myriad of new and interrelated problems. If we had no high-powered, systematic approach to the solution of these complex problems but used only primitive methods, even educated guess or trial-and-error methods, only chaos would result, with all elements of the problem diverging in all directions at once like an expanding universe. The lack of preassured coordination between elements of a problem resembles a centipede doing a one-worm Virginia reel with the central part of its brain removed.

But the space program has very successfully developed these new methods of control. The new methods have made it possible for the program to proceed with remarkably good control. The same observation applies equally well to military weapon systems.

It is these methods I would discuss. They are systems analysis, decision making, and technical management.

With a task of moderate complexity to be undertaken, the decision maker may be able to encompass the whole problem with an overview and chart the course to follow, modifying it, to be sure, as he proceeds. The chess player does it. A machine designer does it. A military commander in a small engagement does it. A researcher attacking a single problem may do it. It depends on the scope of the problem. In each case there is a general idea of how to proceed, and steps are taken consecutively, each in turn helping to sharpen the view on subsequent steps.

On the other hand, when it was decided to place a man on the moon, it became necessary to consider at least three different ways. They were known as direct ascent, earth-orbit rendezvous, and lunar-orbit rendezvous. Only one could be the accepted plan; the size of resources needed to proceed along two or more approaches simultaneously made it absolutely prohibitive. The last of these three, the lunar-orbit rendezvous method, was chosen. But the choice was not easy. What size and configuration of rocket would be necessary, and what development requirements would exist for each? How long would each take? How much would each cost? What would the technological risks be in each case? What would the human life risk be in each case? This first tier of questions conceals a much more numerous second tier, that tier an even more numerous third tier, and so on, ad infinitum.

To manage this problem, certain people, whom we shall call systems analysts, submit the elements of the problem to formalization so that analytic technics may be used to lead to the "best" solution. This formalization process consists of representing the numerous elements of the problem by mathematic symbols, rigidly conforming to a system of mathematic rules and processes—a kind of special algebra. Then the systems analysts manipulate, or mathematicate, partly by hand but mostly with computers, and some results emerge. This is not to say that the process leads easily to the theoretically best solution. The process is not without the need for judgment, and its application calls for some art along with the science. I shall have more to say on this later. But it carries one more assuredly to a "best" solution, and without it one might get no solution, good or bad.

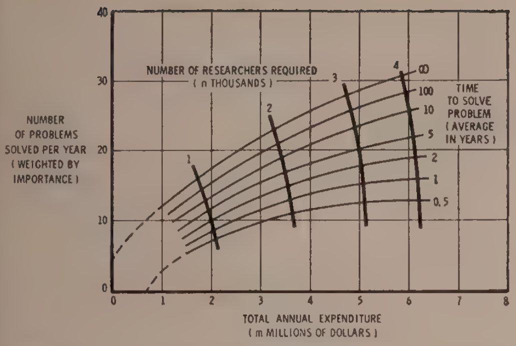

FIGURE 1. Sample table programmed by computer.

By way of emphasis I wish to insert here that in modern systems analysis, the cost is always an ingredient. This must be so for we are so high-powered today that we would never be put up against a problem that cannot be solved if we spend enough. I would ask to be spared the Gilbert and Sullivan test of "What, never?" Also, cost here is used in the broadest sense: men, materials, and time.

I envisage the following two very different problems in this field: Let us suppose that the Department of Health, Education, and Welfare were to decide that its total program in health should be realigned and that in five years it should reach an optimum structure. That optimum program would designate the fields of effort, the relative size of effort, the goals to be attained, and even the expected time scale applicable to each goal. To accomplish this, an analysis would be made involving things like the following: the number and size of in-house and out-of-house laboratories competent to work in each of the fields; the level of progress already reached in the field and the rate of progress, perhaps as a function of the size of the effort; the urgency and the gravity of the problem measured both by professional and popular standards and by social and economic considerations; the sensitivity of each program to the absolute level and the perturbations in the amount of money to be appropriated; the effort being made in other countries of the world and the effect thereon of a change in our effort; and I shall not continue to list. I think it is clear that these represent only the first tier of interrelated considerations. Hidden under them are tiers and tiers of subordinate questions such as where should a hospital be located and when should it be built, which of several laboratories in a field should be changed over to that other field that our analysis has shown requires more attention, or shall we have government in-house agencies do it or have private agencies do it under contract.

I have purposely allowed my thoughts to roam freely over the matter, but I think you can see that the mere thought of such a formidable task can be overwhelming. Let me say, with slightly hushed voice, that systems analysis methods, abetted by an electronic computer of sufficient capacity, might handle the job.

Further problems

I proposed to consider two very different problems. Let us consider a much more specific circumstance. Take a highly prevalent disease, but one which we don't quite understand, like cancer, or the common cold. Here, if I am right, we have factual, statistic, and clinical data by the warehouse full. But the task of correlating these to produce significant findings has worsted us. I would like to submit that all of this piecemeal knowledge is susceptible to computer analysis, with a high probability of yielding positive results. I know I speak out of ignorance on this detail, and I am sure that something like this has already been tried. But I am still willing to take the position that it has taken place on too small and too restrictive a scale.

Modern technics

Now the electronic computer can be fed a prodigious amount of data, for it has a voracious appetite and it is not easily satiated. Give it its task by feeding it the data and delineating the rules and let it go. Like the mill it will grind out the salt until all of the sea is salty, and it still might continue. In systems analysis problems, the computer is not called on to make the final decision. There still remain too many "judgment" factors. The computer will be programmed to print out tables and tables of highly digested material, and it is now time for the decision maker to go to work. He will have one or more, usually more, charts as shown in Figure 1. The variables might be any of several other quantities. For example, the quantity on the left instead of being "Problems Solved per Year" might be "Problems Solved per Million Dollars per Year," or "Problems Solved per Total Million Dollars Spent."

The decision maker with such trade-off charts at hand is in a better position to make his judgment, and therefore his decision.

The chart is, of course, completely hypothetical. The analysis, besides giving the proper curves, might also point out unexpected peculiarities. For example, in the curve I have shown, it may turn out that the array of numbers on "Time to Solve Problem" would fold back on itself in such a way that five years would be the topmost line. It would imply that five years is an optimum interval, on the average, for solving a problem. And it is not unreasonable to call out a time period for solving a problem in many cases. Charts like this one can show very clearly which are weak parameters and which are strong; that is, which parameters, in changing, affect the picture little and which affect it much.

I might add here that although the systems analysis part of the effort would be left to the systems analysts and not attempted by the manager, the decision making is to be done by him.

In the hierarchy of an organization committed to a technical undertaking it is still the top man who is responsible for the decisions, the progress, and the successes or failures of a program, no matter that he is remote from the technical elements of the program. Indeed, the more vast and complicated a technical program, the larger the organization of people assembled to do the work, the greater the number of echelons of management, and the more remote the man at the top. Yet the man at the top must answer for failures when they occur.

Such an arrangement must remain, of course. But we need to find a way to manage this hierarchical structure to reduce to a minimum the occurrence of those bewildering and untenable situations where the top man's reaction to a fault-finding confrontation is "Who? Me?"

The modern technical manager, besides having all of the attributes of a modern major general, uses a number of technics to do more than keep him abreast of developments; he must be ahead of developments and control them. He calls for periodic briefings on the main aspects of the program he is managing. His submanagers are trained to present a report of progress clearly, concisely, and with an analysis of the possible alternatives and their consequences. He calls for trade-off charts which he regularly studies. He names an advisory group of experts in each of several pertinent fields, individuals who have professional responsibility but no immediate personal stake in the program. He may name a board of visitors to make periodic visits to centers of effort on the program. He conducts seminars in one or more of the disciplines involved in the program and arranges to have presentations closely pertinent to the program. He may have performance evaluation review technic charts made to control the progress and provide advanced warning of serious obstacles. He may also employ under contract an independent firm, perhaps a not-for-profit type, for continuous monitoring. Overcontrol? Rarely! The very size of the program demands it.

Conclusion

Modern, complex endeavors span many disciplines. Space technology itself is a complex endeavor, and it spans many disciplines. As a pair of related words grows in popular usage, it evolves into a hyphenated word and then into a single word and enters the language permanently. In a similar way, multidiscipline technologies evolve and ultimately may be regarded as distinctive disciplines in their own right. So it was with industrial engineering, business administration, and biochemistry. In time, space medicine will come to be known as a discipline. But in the meantime, there need to be centers for space medicine set up at the universities that now have the capabilities in medicine and in all of the other disciplines that are required in this new field. Such centers create the necessary union of branches of knowledge. At first joint projects are undertaken. Graduate students specialize in the unified field. Whole curricula of studies emerge. And ultimately graduate degrees are offered, and a center then becomes a school.

A parallel action takes place in numerous laboratories throughout the land. Certain appropriately equipped industrial organizations create special laboratories in space medicine. A number of other actions take place, and the new discipline matures.

We have not yet evolved to that point. And it is my guess that we have progressed only a small fraction of the whole way. I would say that a very effective and necessary next step in this direction would be to create these centers for space medicine in several universities. A parallel step, also important, calls for providing many meeting grounds for interchange of ideas.

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Gas gangrene with intramuscular injections

P. W. Harvey, M.B., and G. V. Purnell, M.B., writing in a recent issue of the *British Medical Journal*, have reported a fatal case of gas gangrene following therapeutic intramuscular injection of epinephrine (Adrenaline) mucate into the buttocks of an asthmatic patient in a hospital ward. The gangrene is thought to have been caused by spores from the patient's own feces contaminating the skin at the injection site and driven into the muscle by the needle. The environment induced by the epinephrine facilitated the germination of the spores. Since there is no adequate way of sterilizing the skin to prevent this occurrence, epinephrine injections should never be made in the buttocks. The vasoconstriction caused by the drug lowers the oxygen tension to a point which allows the anaerobic organisms to grow. It has been shown experimentally that infection by Clostridium welchii, in particular, is greatly enhanced by the presence of epinephrine at the injection site. A strain of bacilli cultivated from this patient's feces was, in colonial appearance and cultural reaction, consistent with Cl. welchii. This patient, significantly, suffered from fecal incontinence when admitted to the hospital.

The patient was a twenty-two-year-old man admitted with severe status asthmaticus. During the first eighteen hours of his hospitalization, he was treated with intravenous injections of aminophylline, then intramuscular injections of aminophylline, and intramuscular injections of hyperduric epinephrine and phenobarbital sodium. The patient improved on the second day but complained of pain in the buttocks. There was, however, apparently no evidence of inflammatory reaction or focal tenderness. Early on the third day, the patient appeared restless and ill. He was found to be in acute peripheral circulation failure; his blood pressure was unrecordable. There was a diffuse swelling over one buttock and the lateral apect of the upper third of the thigh. There was obvious crepitation on palpation of the latter area, and a diagnosis of gas gangrene was made. Treatment was started at once with administration intravenously of anti-gas gangrene serum, penicillin, and norepinephrine transfusions. Initially, 1 million units of penicillin were given intramuscularly and 500,000 units intravenously. In spite of all measures, the patient died four hours later. Necropsy findings were those of classical gas gangrene infection, apparently arising from a needle track 5 cm. (2 inches) long in the muscle of the buttock. Subsequent histologic study confirmed the necropsy findings and revealed a generalized septicemia due to gram-positive bacilli.

Medical Reporting of Child Abuse

Patterns, Problems, and Accomplishments*

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IN 1968 ALMOST FIVE YEARS will have elapsed since legislation requiring reporting of child abuse was first introduced in the United States. Aroused by well-publicized descriptions of abused children, a shocked public put strong pressure on legislative bodies, and within a short period, 1963 to 1966, at a pace with little precedence in recent legislative history, almost all states passed laws mandating the reporting of child abuse incidents. Although the definition of abuse and the method of implementing the laws has varied considerably among the states, the common objective of all the reporting legislations has been to identify abused children to protect them from further harm. The statutes stipulate who should report and where to report, assigning clear-cut responsibilities for carrying out the letter and intent of the law.

What have been the results? What kinds of reporting patterns have developed? What impact has the reporting process made at the local community level? Answers to these questions are not available in most parts of the country. In New York City, however, response to the reporting law has been followed closely since the statute became effective in July, 1964, providing one of the longest case studies on record. Despite the uniqueness of New York City, its experience with child abuse reporting legislation has counterparts in many cities and states, and a review of these events has widespread relevance.

Background of reporting legislation

Even before passage of the new reporting laws, all states had one or more legal provisions under which child abuse might be handled.[1,2] Provisions of the criminal law could always be invoked to punish persons who inflicted harm on a child, the juvenile court could provide protective supervision for a child or order his removal from a home where there was evidence of "neglect" or abuse, and in many states legislation authorized the provision of "protective services" for abused and neglected children as part of the public child welfare program. Why then the sudden furor and concern in the early 1960's about legislating the reporting of child abuse incidents?

Quite simply, the existing statutes could only be applied and could only provide protection in situations where abuse was known about or where someone had made a complaint. Citizens are reluctant to accuse their neighbors or bring them to the attention of community authorities. The New York State Penal Law of 1909 stated:

"Force or violence is not unlawful when committed by a parent to restrain or correct his child and the force or violence used is reasonable in manner and moderate in degree."

The concept still holds that child rearing is the business of families. Because the roots of most child neglect and abuse lie within the privacy of the home, the full-blown picture may not come to public light

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until too late for preventive efforts, and even then the substantial evidence required for court action may not be available. The major objective of the new child abuse statutes, therefore, was to legalize reporting of suspected cases so that the appropriate protective measures, both legal and social, might be called into play promptly.

The initial reporting legislation in most states was focused chiefly on hospitals and physicians for a number of reasons. The medical profession is in regular and close contact with a high proportion of a community's children and has the skill and experience to recognize suspicious physical signs and symptoms of abuse and perhaps even to document the evidence. Despite these opportunities and advantages, the medical profession had never been a productive source of abuse referrals. The mandating of medical reporting would highlight the problem of abuse for the profession, raise the level of suspicion, legitimize physician responsibility to report to a community authority, and assure referral procedures. To promote this objective, the laws provided a variety of immunities for the protection of the designated reporters.

In New York State, the child abuse legislation took the form of an amendment to the Penal Law, which became effective July 1, 1964, and read:

> Section 1. The penal law is hereby amended by inserting therein a new section to be section four hundred eighty-three-d, to read as follows:
>
> 483-d. Reports of certain injuries inflicted upon children under the age of sixteen years. 1. Every physician or surgeon, including doctors of medicine and dentistry, licensed osteopathic physicians, residents and interns, examining, attending or treating a child and having reason to believe that such child has had serious injury or injuries inflicted upon him or her as a result of abuse or neglect, or the superintendent, manager or person in charge of any hospital, sanitarium or other institution where such a child is being treated, shall immediately report the matter to a society for the prevention of cruelty to children or other duly authorized child protective agency or to a public welfare official in the county where such physician, surgeon, hospital, sanitarium or other institution is located.
>
> 2. Any person or institution participating in good faith in the making of a report pursuant to this section shall have immunity from any liability, civil or criminal, that might otherwise be incurred or imposed because of the making of such report.

As in most other states, central registration of reported cases was not included in the initial legislation in New York State and was thus not instituted at the State level for many months. In New York City, however, a registry was established which became active the day the State Law went into effect. This registry, located in the Bureau of Child Welfare, received, filed, and maintained follow-up casework records on all reports of suspected child abuse under the new statute. The sheer size of the city's population gave some assurance that if reporting was at all successful, a substantial cohort of cases would be registered. The completeness with which individual case records are maintained has permitted month-by-month observations of the reporting trends and characteristics.

Findings

REPORTING PATTERNS. Medical reporting in New York City began promptly July 1, 1964. In the first year 293 families were registered and in the second year 315. The slight but gradual increase in numbers, however, failed to hold up, and in the third year reports for several successive months dropped below the previously recorded monthly average of 25 cases (Table I).

What was happening? Had the first two years absorbed a backlog of cases which no longer existed? Had community and professional interest in child abuse waned? Was there a breakdown in communication and reporting procedures? Clearly some explanation was needed.

Passage of the New York State child abuse statute had been accompanied by months of publicity and public ferment. By July 1, 1964, the effective date of the law, physicians, hospitals, and other designated reporters could hardly fail to be aware of their new responsibilities. In addition, State and local medical and hospital journals carried notices about the law, and the State Department of Social Welfare requested assistance from State medical, dental, and osteopathic societies and the State Hospital Association in disseminating information to their members regarding the legislative requirements. In New York City the Commissioner of Welfare publicly

TABLE I. Families reported to child abuse register, New York City

Calendar Quartile	1964 to 1965 (First Year) Number	1964 to 1965 (First Year) Average Per Month	1965 to 1966 (Second Year) Number	1965 to 1966 (Second Year) Average Per Month	1966 to 1967 (Third Year) Number	1966 to 1967 (Third Year) Average Per Month	1967 to 1968 (Fourth Year) Number	1967 to 1968 (Fourth Year) Average Per Month
July-August-September	69	23	77	26	61	20	114	38
October-November-December	79	26	71	24	70	23	167	56
January-February-March	78	26	93	31	78	26	207	69
April-May-June	67	22	74	25	126	42	. . .	. . .
TOTALS	293	24	315	26	335	28	. . .	. . .

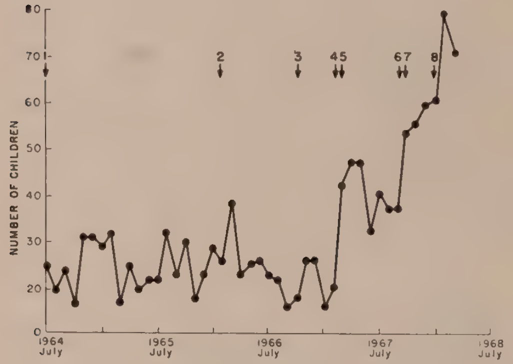

FIGURE 1. Registered child abuse, New York City· (1) July 1, 1964: Law became effective, Central Registry established. (2) February, 1966: First amendment to law passed. (3) October 1, 1966: First amendment to law became effective. (4) February 7, 1967: University information bulletin mailed to hospitals. (5) February 21, 1967: Second amendment to law passed. (6) September 1, 1967: Second amendment to law became effective. (7) September 25, 1967 (approximately): Department of Social Services information bulletin reached hospitals, medical societies, and service agencies. (8) December 27, 1967: Executive notice sent to Health Department bureaus and district offices.

announced the creation of the central registry and wrote to all medical and hospital associations in the city explaining the new law and asking their cooperation. The Greater New York Hospital Association contacted all its member hospitals, urging them to set up reporting procedures within their institutions, and the New York City Commissioner of Health sent an executive notice to all health officers, bureau directors, and central staff to inform them of the new arrangements.

Following the initial flurry of press releases, bulletins, and professional directives, however, the excitement generated at the launching of the legislation gradually subsided, and even public airing of child abuse incidents through the news media abated. During the second year of reporting, in February, 1966, the child abuse law was transferred quietly and without fanfare from the Penal code to the Social Welfare Law and was amended for the first time. This revision had little direct relevance to reporting in New York City since it merely established a statewide register and required that all reports be submitted through the local welfare agencies to the State Department of Social Welfare. Although brief, the publicity accorded this change in legislation might have accounted for the slight peaking of case reports in the city during March, 1966, one month after the amendment was passed (Fig. 1). The increased reporting was transient, however, and the monthly average thereafter declined rapidly so that by the time this first amendment actually became effective eight months later, on October 1, 1966, the reporting curve in New York City was near an all-time low.

To test the possibility that the fall-off in child abuse reporting during the third year might be caused by professional apathy, the Columbia University School of Public Health and Administrative Medicine prepared an information packet which included a recently published article about the characteristics of child abuse in New York City,[3] a review of the local reporting patterns, and a covering letter informing recipients of the drop in registered cases. This material was mailed to administrators and pediatric department chiefs in every municipal, voluntary, and proprietary hospital in the city, as a professional courtesy, reaching these institutions the first week of February, 1967. Within a month, the number of registered cases rose dramatically peaking at an all-time high for three months (Fig. 1). Following a slight decline, associated perhaps with the annual June-July assignment of new interns and residents to hospital services, abuse registration rose again and finally leveled off at a higher plateau than ever before.

To all intents and purposes, the test had proved its point. A single introduction of professional material into the hospital system appeared to have stimulated a dramatic upsurge in abuse reporting. Furthermore, the effect had lasted for several months, possibly reflecting the depth of penetration the reminders had made on those responsible for perpetuating the reporting mechanism within the institutions. Still, doubts lingered. Might some other factors have been at play?

Somewhat inadvertently, another test was made eight months after the first, during the fourth year of reporting, when a second amendment to the New York State child abuse law became effective. This amendment, passed quietly and without publicity late in February, 1967, introduced many changes: (1) It modified the list of designated reporters to include optometrists, podiatrists, registered nurses, and Christian Science practitioners; (2) it delineated reporting procedures more explicitly; (3) it expanded the function of the public welfare agency by making it responsible for receipt of all abuse reports; (4) it broadened the definition of abuse to include other than physical maltreatment; and (5) it invalidated physician-patient and husband-wife evidentiary privileges. The amendment became effective September 1, 1967, and the Department of Social Services issued an information bulletin describing the new legislative provisions and defining procedures specific to New York City. This flyer reached the following city agencies at the end of September: (1) Department of Hospitals, City of New York; (2) City of New York Department of Health; (3) Chief Medical Examiner, City of New York; (4) Greater New York Hospital Association; (5) United Hospital Fund; (6) voluntary hospitals (administrator, chief of pediatrics, and chief of pathology); (7) county medical societies of the City of New York; (8) New York Academy of Medicine; (9) Medical Society of the State of New York; (10) Osteopathic Society of the City of New York; and (11) First, Second, and Eleventh District dental societies.

TABLE II. Sources of reports of child abuse

	Families Reported (Per Cent)	
Reporting Sources	1964 to 1965	1965 to 1966
Hospitals	87.0	93.3
Municipal	51.5	54.0
Voluntary	33.5	39.0
Proprietary	1.0	0.3
Federal	1.0	. . .
Other sources	13.0	6.7
Health Department	2.7	1.6
Public schools	2.7	1.0
Private physician	2.4	1.9
Police	1.7	. . .
Medical examiner	1.0	1.0
Anonymous	1.0	. . .
Welfare examiner	0.7	0.3
Visiting nurse association	0.4	. . .
Day care center	0.4	. . .
New York Foundling Home	. . .	0.3
Mortuary	. . .	0.3
Unknown	. . .	0.3
	100.0	100.0
TOTAL NUMBER	293	315

October reporting soared (Fig. 1). A new high of 53 families was registered that month, and the figures continued to climb so that in the first six months of the fourth year, almost twice the number of cases were recorded as during a comparable period in the previous three years (Table I).

These reporting patterns appeared to reflect reporter sensitivity more than abuse occurrence or changes in the law. From the outset, sources of reports in New York City showed a heavy institutional bias. In the first year, hospitals reported 87 per cent of the total number of abuse cases, while public school and health department clinics accounted for 10 per cent of reports and private physicians less than 3 per cent (Table II). In the second year of legislation, there was a significant ($p = <0.02$) relative increase in hospital reporting. Neither passage of the 1967 amendment expanding the categories of personnel designated as reporters and removing physician liability under traditional rules of physician-patient confidentiality nor the issuance in December, 1967, of a second executive order to health department

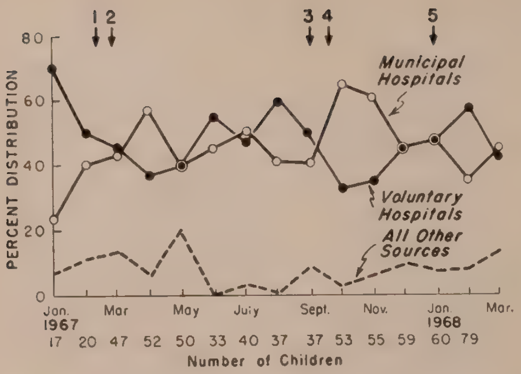

FIGURE 2. Patterns of child abuse reporting, by source of reports, New York City. (1) February 7, 1967: University information bulletin mailed to hospitals. (2) February 21, 1967: Second amendment to law passed. (3) September 1, 1967: Second amendment to law became effective. (4) September 25, 1967 (approximately): Department of Social Services information bulletin reached hospitals, medical societies, and service agencies. (5) December 27, 1967: Executive notice sent to health department bureaus and district offices.

bureaus and districts, describing these changes, succeeded in altering the predominance of hospital reporting (Fig. 2).

Institutional domination of abuse reporting seen in New York City is neither typical of the national scene[4] nor of the upper New York State picture. Although reasons behind this unique pattern are varied, they probably reflect in a general way both the sociocultural climate of the metropolitan community and the way members of the medical profession feel about their role as reporters. For example, private physicians in New York City seem to prefer the anonymity of institutional auspices and are more comfortable if abuse reports are handled through hospital channels. Urban physicians in solo practice are less likely than those in agencies or institutions to be fully cognizant of their role under the child abuse regulations and of how to handle the procedural details of making reports.[5] The Committee on Infant and Pre-School Child of the American Academy of Pediatrics has even suggested that physicians depend on the hospital for medical evaluation, diagnosis, and disposition of cases of child abuse.[6]

This advice may account in part for the high proportion of hospital-reported cases, although another aspect must be considered. Professional staffs in hospitals, especially those serving impoverished neighborhoods, may have a higher index of suspicion of abuse and less hesitancy in filing reports than physicians in private practice. A majority of all registered families in New York City are from the lower end of the socioeconomic spectrum.[3] Of course, there is no way of knowing how many other incidents escape the public eye because they are not reported. The failure of private physicians to file abuse reports may be more apparent than real, but it leaves a gap of unknown proportions, especially in relation to abuse occurrence in the more affluent families. The low number of cases referred by such public facilities as child health stations and school health services, with their unrivaled access to the city's population of children, leaves still another void. The observed trends and patterns suggest that complete medical compliance with the reporting law will take more time to develop.

RESULTS OF REPORTING. Reporting of child abuse incidents under the law in New York State is primarily a medical responsibility. What happens as a result of reporting passes largely from the medical domain into the jurisdictions of social welfare and the courts. A certain amount of medical frustration, uncertainty, and even suspicion, often expressed but poorly documented, accompanies this shift of professional authority. For example, physicians are likely to be disturbed about the procedures, inconveniences, and repercussions of court appearances. The immunity granted to reporting physicians under the statute does not obviate the need to testify in cases that are taken to court. Similarly, physicians are sometimes dismayed when a child is discharged from the hospital, recovers from his physical injuries, but continues living with his family under the nonmedical supervision of a social worker from some protective service or welfare agency with which the physician has had little prior experience.

Child abuse is a sociolegal as well as a medical problem. To function effectively in their assigned case-finding role, medical people need to understand their duties as reporters and also what will be done to protect the child as a result of the report.[5]

In New York City, voluntary agencies like the Society for the Prevention of

Cruelty to Children had been the chief purveyors of child protective services over the years. Following the 1962 Social Security amendments, a new policy was formulated to establish child protective services as a public responsibility. The child abuse legislation in 1964 lent impetus and support to this concept, and as the number of registered child abuse cases in the city has increased, public protective services to handle the load have also grown in both availability and personnel. With passage of recent amendments to the reporting law, complete responsibility for both receipt of abuse reports and case follow-up as well has been assigned in New York City to the Department of Social Services, Bureau of Child Welfare. Thus in the first two years of medical reporting, one third of the reporting hospitals referred cases to the voluntary agencies, whereas in 1968 all but 10 per cent of the referrals were to the public agency. These administrative developments are in line with current public sentiment that protective services are a total community responsibility.

Along with the shift in responsibility for handling child abuse cases has come a change in philosophy about how they should be treated. A de-emphasis on punishing perpetrators of abuse has taken place, and greater stress is now laid on family rehabilitation wherever possible. The voluntary agencies traditionally operated on the principle that the child's safety and welfare should take precedence over other considerations. Thus, in the past, immediate removal of a child from an inadequate or abusive home, on court order, was a common practice. The current trend involves the more expensive and time-consuming task of trying to work with the child and his family in the home setting, using voluntary placement of the child elsewhere when necessary. The cost of carrying out this rehabilitative concept undoubtedly facilitated the transfer of responsibilities for child abuse cases from the voluntary to the public domain.

Other evidence of the general move away from a punitive approach is seen in recent changes in reporting laws. In several states the police department is no longer designated as the recipient of abuse reports, and in New York State the child abuse statute, originally passed as an amendment to the Penal Law, has been transferred to the Social Welfare Law.

Conclusion

What has child abuse legislation accomplished in New York City? If the intent of legislating child abuse reporting was to abet the movement to broaden the availability and the scope of protective and preventive services for children, then legislation has been successful. Furthermore, reporting is the first step in a continuing process of identifying, diagnosing, and rehabilitating families who have a disturbing sociomedical symptom in common. When registered as a group, these families can be studied for clues to prevention, and the registry can be used as a statistical base for following child abuse patterns and trends in the community.

However, if the principal intent of the law was to increase case finding substantially, it seems doubtful that this goal has been achieved. Although national figures suggest that more cases are being exposed since the laws were passed,[4] this information cannot be verified because comparative base line figures had not been established prior to enactment of the reporting bills. Experiences in New York City following introduction of mandatory reporting indicate, if anything, a general apathy toward identifying abuse and a continuing resistance to report it. Although the original statute in New York State has been revised in the hope of gaining better access to the total spectrum of abuse, the new provisions per se appear to have had little effect on reporting patterns in New York City. Periodic direct exposure of professional persons, agencies, and institutions to the theme of child abuse and to their role in case finding seem to have been necessary to maintain registration levels.

Legislation alone is not the final answer to identifying or protecting abused children. Case finding depends not only on occurrence of abuse but also on its recognition, on the sensitization and concern of designated reporters, on knowledge and acceptance of reporting procedures, and on the assurance that reporting leads to prompt and sustained action.

Better lines of communication need to be developed between medical reporters and their social and legal colleagues. One line might start where medical and social responsibilities coincide, for example, during the diagnostic phase which is frequently carried out in a hospital setting. Scheduling joint case-study conferences to include the professional staffs of the hospital and the child protective service might lead to closer understanding of common goals and how they may be achieved. Another line of communication could begin where medical responsibility ceases. A periodic feedback mechanism from the child protective service to the referring physician or hospital might go far toward maintaining medical awareness of the child abuse problem, as well as informing the medical reporters on how reported cases are being handled.

In the long run, solutions to the problem of child abuse call for an enlightened population willing to identify the children and families involved and to accept the responsibilities implied in the social concepts of the law. Should this utopia be achieved, the need for legislation might well disappear.

ACKNOWLEDGMENTS. Appreciation is given to the professional staff of the City of New York Department of Welfare, and in particular to Jacob Posner, Director of the Bronx Office, Bureau of Child Welfare, for continuing interest, counsel, and help in conducting the study.

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Share Your Medical Journals With Colleagues Overseas

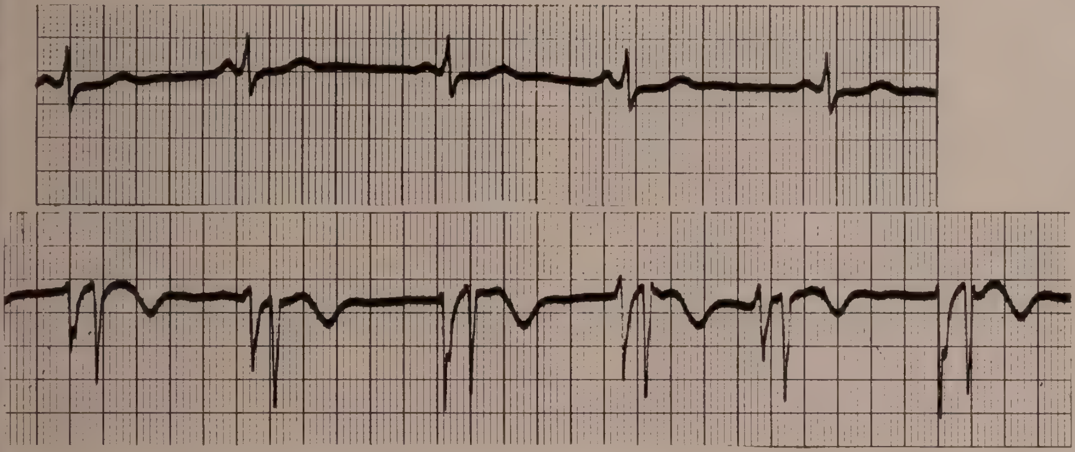
The doctors of the U.S.A. are being asked to send their medical journals—after they have read them—to colleagues overseas (Asia, Latin America, and Africa) who wish to have access to current medical literature but, either because of currency regulations or actual cost involved, cannot themselves subscribe to medical periodicals. We can supply you with the name, address, and medical specialty of doctors in these areas who would be happy to receive these much wanted journals, (*particularly speciality journals*), which you will mail direct to your overseas colleague.

This is a direct "Doctor-to-Doctor" program which is being sponsored by the American Medical Association with the collaboration of The World Medical Association to help alleviate the lack of current medical publications and to further international good will. Your cooperation in this program will be greatly appreciated and your contact with these colleagues in other countries, we can assure you, will prove very gratifying. If you wish to participate in this program, send your name, address, and titles of journals you will contribute to DOCTOR-TO-DOCTOR PROGRAM, The World Medical Association, 10 Columbus Circle, New York, New York 10019.

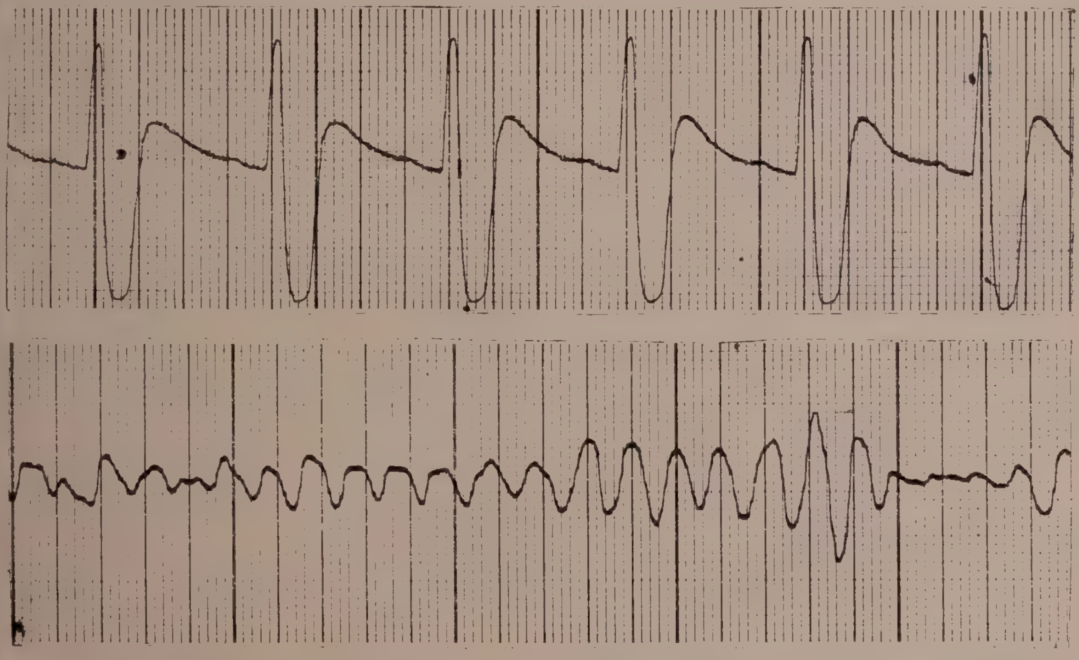
Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

Editors
IRA L. RUBIN, M.D.
Head, Department of Electrocardiography
JULIAN FRIEDEN, M.D.
Associate Head, Department of Electrocardiography



QUESTION 27. The top strip, lead II, was taken from a sixty-five-year-old man. The lower strip was an intra-atrial lead taken a few minutes later through a central venous pressure catheter. What is the interpretation?



QUESTION 28. The top strip, lead II, was taken from a patient with cardiac arrest. The bottom strip is of the same lead following successful cardiac resuscitation. What is the interpretation of these two rhythms?

Electro-
cardiograms
of Month

ELUCIDATION

QUESTION 27. The patient has bradycardia with a slightly irregular rate. Note the varying configuration of the P wave; the second P wave in the top strip is more sharply peaked than the first. The rhythm is a "wandering" atrial pacemaker. It is of no clinical significance. The lower tracing was taken through a central venous pressure catheter utilizing 7 per cent sodium bicarbonate solution as the conductor filling the catheter. The V lead was attached with an alligator clamp to a metal three-way stopcock that connects to the catheter. The result is an intra-atrial lead. Such a lead magnifies the P wave up to 10 times and is useful in identifying atrial activity when not clearly visible in standard leads. In this instance the variation in the configuration of the P wave is clearly demonstrable.

QUESTION 28. The top strip reveals chaotic electrical activity of the heart characteristic of ventricular fibrillation. Note the variation in the form of the fibrillatory waves. The bottom strip, taken after electrical shock, shows sinus rhythm with a small P wave before each QRS. The QRS is widened. Note that the S wave runs on a straight line into the T wave. Such QRS widening associated with small P waves may be seen in hyperkalemia. Distortion of the QRS and S-T-T segments may also be due to poor frequency response of the recording device. This was the case in this patient.

Medical Society of the State of New York

Annual Convention

February 9 through 13, 1969

The Americana, New York City

BILLSBORD

Serenadings by a Fat "Camp Cat" (Seventh Day: Is It, Then, a Name Game?)

As one grows older, for some reason defying rational explanation, North Country summers, as do women's skirts, get shorter and shorter, while North Country winters, as do cigarets, get longer and longer, and the North Country spring, simulating justice, comes later and later. It is only autumn which with steadfast integrity bestows on native and visitor alike, regardless of age, its annual dividend of beautiful fall days which resist description by word or brush but somehow compensate for a never-ending winter, a never-coming springtime, and a never-was summer.

Arising on this, the seventh day at camp, and completing my yawning, stretching, and scratching routine, I stumbled to the window and found the day one of nature's superlative efforts in the field of autumnal weather. Realizing that this week's corps of hunters departed camp early in the day and next week's nimrods were not due until late evening, the opportunity presented itself to spend a day in the woods free from the danger of errant bullet or the boredom of unwanted companionship; but I soon discovered the truth of the adage about well-laid plans and found my day was to be spent in another and more prosaic fashion.

For, no sooner had our fellow campers departed than Ole Doc informed me that we must help prepare for next week's guests. Our task was to take all the beer mugs hanging behind the bar, each emblazoned with the nickname of one of the departing hunters, clean them, and then rechristen each one with the familiar appellation of a guest-to-be; also care must be used that certain of the cups with recognizable defects or secret marks be assigned to certain individuals. I must admit it all seemed silly to me, and I grumbled about the inanity of the time-consuming chore, expostulated as to how meaningless names are, and asserted rather defiantly that the beer would taste just as good from a mug without the name; it was at this point Ole Doc decided to interrupt.

"Your misconception as to the nonsignificance of individual names is, I suppose, a product of the impersonal, assembly-line society in which we live; but nothing could be more erroneous. The major factor in the problem of 'public relations' or 'image making' is one of interpersonal relationship; nothing forges the bonds of loyalty as does the recognition by one individual of another, calling him by name, or even better, by nickname; and, conversely, nothing causes more chagrin and latent hostility than lack of such expected recognition.

"The truth is, each of us, whatever our status, feels the need to belong, to be an important cog in the particular wheel of life that we occupy; this requires an interpersonal empathy in which a name becomes very important: so important, in fact, that man suffers from a universal phobia that his name will be forgotten and seemingly attempts to combat this fear by every means at his command. There is, as you know, a school of pragmatism which believes one can evaluate the cause from the effect in the study of behavior; for instance in their book *Pragmatics of Human Communication*, Watzlawick, Beavin, and Jackson in the chapter 'Effect vs. Cause' describe it thus:

> Where the Why ? of a piece of behavior remains obscure, the question, What For ? can still supply a valid answer.

"If one should apply this formula to the why and wherefore of life, then it might well seem that man's only purpose is the attempt to perpetuate his name.

"No sooner is he able to write than he starts his campaign against the ruthless obliteration of individual identity by time. He scratches his initials and name in a neighbor's newly laid cement sidewalk. As he grows older he carves it in the top of a school desk, paints it on roadside boulders, and writes it on the walls of public places, on the pages of borrowed textbooks, and in library books. A little later it is carved in the bark of a growing tree, usually in association with someone dear to him, and enshrined within a heart. Later he has his identification engraved on his jewelry, embroidered on his shirt, painted on his automobile, or he buys special identifying number plates; it is embossed on calling cards and imprinted on about everything from memo pad to flashlight.

"He gives his name to his offspring and failing the availability of such means of name perpetuation will try to impose it on the child of another through the process of blood relationship, godfatherhood, or adoption, either real or simulated.

"It is a drive common to all of us without regard to intellect, ability, or social position. Royalty and leaders of a democracy both yearn to see name and head on their nation's stamps and coins. Legislators attach their names to what they consider important and lasting legislative acts. Learned investigators manage to affix their identity to a newly discovered star, a new invention, an original description of a heretofore unknown disease, a vaccine, a food recipe, and any new contribution to the world of science, the humanities, or the experience of living. The wealthy endow hospitals, libraries, and universities, most such gifts contingent on name memorialization. Most of us are peculiarly susceptible to the come-on that promises inclusion of our name in this or that publication said to represent the important individuals in society, profession, or geographical area, accompanied by the inevitable subscription blank.

"Not even in our declining years are we able to free ourselves from this lifelong compulsion; actually if anything it is stronger than ever as it impels us to the final gesture of the cemetery monument emplaced on a small plot of grass for which we have provided perpetual care.

"Perhaps it is true that only the famous deserve to be remembered, but the rest of us do everything possible not to be forgotten. Eugene Field once wrote in 'Pike's Peak':

> The sturdiest peak is Fame's!
> And there be many on its very height,
> Who strut in pride and vaunt their empty
> claims,
> While those poor human asses who delight
> To place them there have unremembered
> names!

"But of one thing you may be very sure those 'poor human asses' hoped in some way that their efforts would result in perpetuating their own memories and enshrining their own names and so indicate that they too had passed this way."

WRC

Announcement

1968 District Branch Meetings

Branch	*Date*	*Place*
First	Sunday, February 11	The Americana, New York City
Second	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
Third and Fourth	Saturday, September 28	Holiday Inn, Lake George
Fifth and Sixth	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
Seventh and Eighth	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
Ninth	Monday, February 12	The Americana, New York City

Necrology

Nicola Brunori, M.D., of The Bronx, died on June 9 at the age of eighty-nine. Dr. Brunori received his medical degree from the University of Florence in 1903.

Joseph E. Connery, M.D., of Elmhurst, died on June 11 at the age of seventy-seven. Dr. Connery graduated in 1914 from University and Bellevue Hospital Medical College. He was an attending physician at Bellevue Hospital and a consulting hematologist at Nassau Hospital (Mineola). Dr. Connery was a Diplomate of the American Board of Pathology (Clinical Pathology), a Diplomate of the American Board of Internal Medicine, and a member of the American Society of Clinical Pathologists, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Philip Barry Connolly, M.D., of Port Washington, died on July 14 at the age of eighty-two. Dr. Connolly graduated in 1909 from University and Bellevue Hospital Medical College.

Jacob Dissick, M.D., of New York City, died on May 13 at the age of seventy-one. Dr. Dissick graduated in 1922 from New York Homeopathic Medical College and Flower Hospital. He was an associate attending obstetrician and gynecologist (Off Ward Service) at Brookdale Hospital Center. Dr. Dissick was a Fellow of the International College of Surgeons, a Fellow of the American College of Obstetricians and Gynecologists, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Nathan Eisen, M.D., of Rego Park, died on June 20 at the age of sixty-two. Dr. Eisen received his medical degree from the University of Berlin in 1935. He was an assistant attending dermatologist and syphilologist at Bellevue Hospital and an associate attending dermatologist at Physicians Hospital. Dr. Eisen was a member of the American Academy of Dermatology, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Vittorio C. Fanoni, M.D., of Port Chester, died on July 9 at the age of seventy-six. Dr. Fanoni received his medical degree from the University of Naples in 1919. He was an honorary staff surgeon in ear, nose, and throat at United Hospital. Dr. Fanoni was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Julius Fern, M.D., of Forest Hills, died on June 15 at the age of sixty. Dr. Fern graduated in 1931 from University and Bellevue Hospital Medical College. He was an attending surgeon at Physicians Hospital. Dr. Fern was a Fellow of the International College of Surgeons and a member of the New York State Society of Industrial Medicine, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Armand Lawrence Greenhall, M.D., of New York City, died on May 16 at the age of sixty-eight. Dr. Greenhall graduated in 1927 from McGill University Faculty of Medicine. He was a member of the American Psychiatric Association, the American Academy of Compensation Medicine, Inc., the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Julius H. Grossman, M.D., of Brooklyn, died on May 13 at the age of sixty-one. Dr. Grossman graduated in 1932 from New York Homeopathic Medical College and Flower Hospital.

Lawrence A. Kamer, M.D., of The Bronx, died on June 25 at the age of forty-six. Dr. Kamer graduated in 1945 from Middlesex University School of Medicine. He was a member of the medical staff in general practice at Parkchester Hospital. Dr. Kamer was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ludwig Koebner, M.D., of New York City, died on April 13 at the age of sixty-nine. Dr. Koebner received his medical degree from the University of Berlin in 1923.

Maurice Kornberg, M.D., of New York City, died on July 16 at the age of sixty-eight. Dr. Kornberg graduated in 1924 from Boston University School of Medicine. He was a Diplomate of the American Board of Otolaryngology and a member of the American Psychiatric Association, the Academy of Psychosomatic Medicine, the American Academy of Ophthalmology and Otolaryngology, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Morton Landau, M.D., of New York City, died on May 1 at the age of seventy-two. Dr. Landau received his medical degree from the University of Vienna in 1929. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Kurt Loewenthal, M.D., of Freeport, died on July 14 at the age of seventy. Dr. Loewenthal received his medical degree from the University of Munich in 1923. He was an associate attending dermatologist (affiliate) at Kings County Hospital Center and an attending dermatologist at Kings Park State and Doctors Hospitals. Dr. Loewenthal was a Diplomate of the American Board of Dermatology, Inc., and a member of the Society for Investigative Dermatology, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

James Franklin McVeigh, M.D., of Syracuse, died on March 24 at the age of fifty-three. Dr. McVeigh graduated in 1939 from Syracuse University College of Medicine. He was an attending ophthalmologist at St. Joseph's and Veterans Administration Hospitals, an associate attending ophthalmologist at Syracuse Memorial Hospital, and an assistant attending ophthalmologist at the Hospital of the Good Shepherd (Syracuse University). Dr. McVeigh was a Diplomate of the American Board of Ophthalmology and a member of the American Academy of Ophthalmology and Otolaryngology, the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Victor Menschel, M.D., of New York City, died on July 17 at the age of seventy-one. Dr. Menschel received his medical degree from the University of Vienna in 1923. He was a clinical assistant physician at Jewish Memorial Hospital and an assistant attending physician at St. Elizabeth's Hospital. Dr. Menschel was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Bacon Nugent, M.D., of Rochester, died on February 7 at the age of sixty-four. Dr. Nugent graduated in 1931 from the University of Rochester School of Medicine. He was an associate attending physician at Rochester General Hospital. Dr. Nugent was a member of the Rochester Academy of Medicine, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Herbert O'Regan, M.D., of New York City, died on July 11 at the age of seventy. Dr. O'Regan graduated in 1928 from McGill University Faculty of Medicine. He was a consulting pediatrician at Lenox Hill and The New York Hospitals. Dr. O'Regan was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Nathan Ravin, M.D., of The Bronx, died on July 1 at the age of sixty-nine. Dr. Ravin graduated in 1923 from the University of Buffalo School of Medicine. He was an associate attending pediatrician (off service) at Bronx-Lebanon Hospital Center. Dr. Ravin was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joshua Ronsheim, M.D., of Great Neck, died on July 11 at the age of eighty-five. Dr. Ronsheim graduated in 1907 from Cornell University Medical College. Retired in 1946, he had been a professor of clinical obstetrics and gynecology at Long Island College of Medicine.

Robert Schwartz, M.D., of Brooklyn, died on June 19 at the age of seventy-one. Dr. Schwartz graduated in 1921 from University and Bellevue Hospital Medical College. He was director of surgery emeritus at Williamsburgh General Hospital. Dr. Schwartz was a Fellow of the American College of Surgeons and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Isaac Zarch, M.D., of New York City, died in April at the age of ninety-eight. Dr. Zarch graduated in 1897 from New York University-Bellevue Medical Center.

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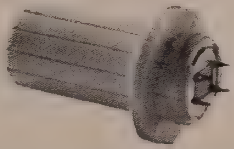

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Adverse Effects: Talwin is relatively free from the undesirable s effects associated with morphine, such as constipation, urinary tention, or severe respiratory depression. Furthermore, Talwin p duces less nausea, vomiting, and diaphoresis than meperidine.

In over 12,000 patients who received Talwin intramuscularly, sub taneously, or intravenously, nausea, the most frequent adverse fect, occurred in approximately 5.0 per cent. In decreasing order occurrence were vertigo, dizziness or lightheadedness; vomiti and euphoria. Respiratory depression was reported as an adve reaction in 1.0 per cent.

The incidence of each of the other adverse effects was well bel 1.0 per cent: constipation, circulatory depression, diaphoresis, u nary retention, alteration in mood (nervousness, apprehensi depression, floating feeling), hypertension, sting on injection, he ache, dry mouth, flushed skin including plethora, altered uteri

on-narcotic

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brand of

pentazocine

(as lactate)

/HATEVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

'alwin should not be used for patients with
creased intracranial pressure,
ad injury or pathologic brain conditions.
Intil sufficient experience is gained, it should not
administered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

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Less diaphoresis than with meperidine

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Talwin relieves pain of all types and all degrees —mild, moderate, and severe—in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ntractions during labor, dermatitis including pruritus, dreams,
resthesia, and dyspnea occurred rarely after administration of
lwin. Furthermore, each of the following adverse reactions oc-
rred in less than 0.1 per cent: tachycardia, visual disturbance
lurred vision, diplopia and nystagmus), hallucinations, disorienta-
n, weakness or faintness, muscle tremor, chills, allergic reactions
cluding edema of the face, taste alteration, insomnia, diarrhea,
amps, and miosis; laryngospasm in one patient.

lwin (brand of pentazocine) has not produced severe respiratory
nbarrassment in adults (never apnea), even with large amounts. A
nall number of newborn infants whose mothers received Talwin
ring labor had transient apnea. The incidence of temporary dim-
ution in the rate or strength of uterine contractions is low after
lministration of Talwin, similar to that following meperidine hydro-
loride. (In reporting no interference with normal labor in patients
ceiving Talwin, one investigator further stated that the drug may
crease uterine activity.) Generally, no significant fetal heart rate
ange occurs.

boratory tests of blood and of liver and kidney functions have
vealed no significant abnormalities. A minimum and probably
significant increase in the per cent of eosinophils in peripheral
ood counts and bone marrow occurred occasionally.

lwin is well tolerated by patients with diabetes mellitus, and no
anges in insulin requirements have been observed.

sage and Administration: *Adults, Excluding Patients In Labor.*
erage recommended single parenteral dose is 30 mg., by intra-
scular, subcutaneous, or intravenous route; may be repeated
ery three to four hours. Pain has been relieved in most patients
th not more than three doses daily. Infrequently, selected patients
ve received single doses as high as 60 mg.

tients In Labor. A single, intramuscular 30 mg. dose has been most
mmonly administered. An intravenous 20 mg. dose has given adequate pain relief to some patients in labor when contractions become regular, and this dose may be given two or three times at two- to three-hour intervals, as needed.

Children Under 12 Years of Age. Since clinical experience in children under twelve years of age is limited, the use of Talwin (brand of pentazocine) in this age group is not recommended.

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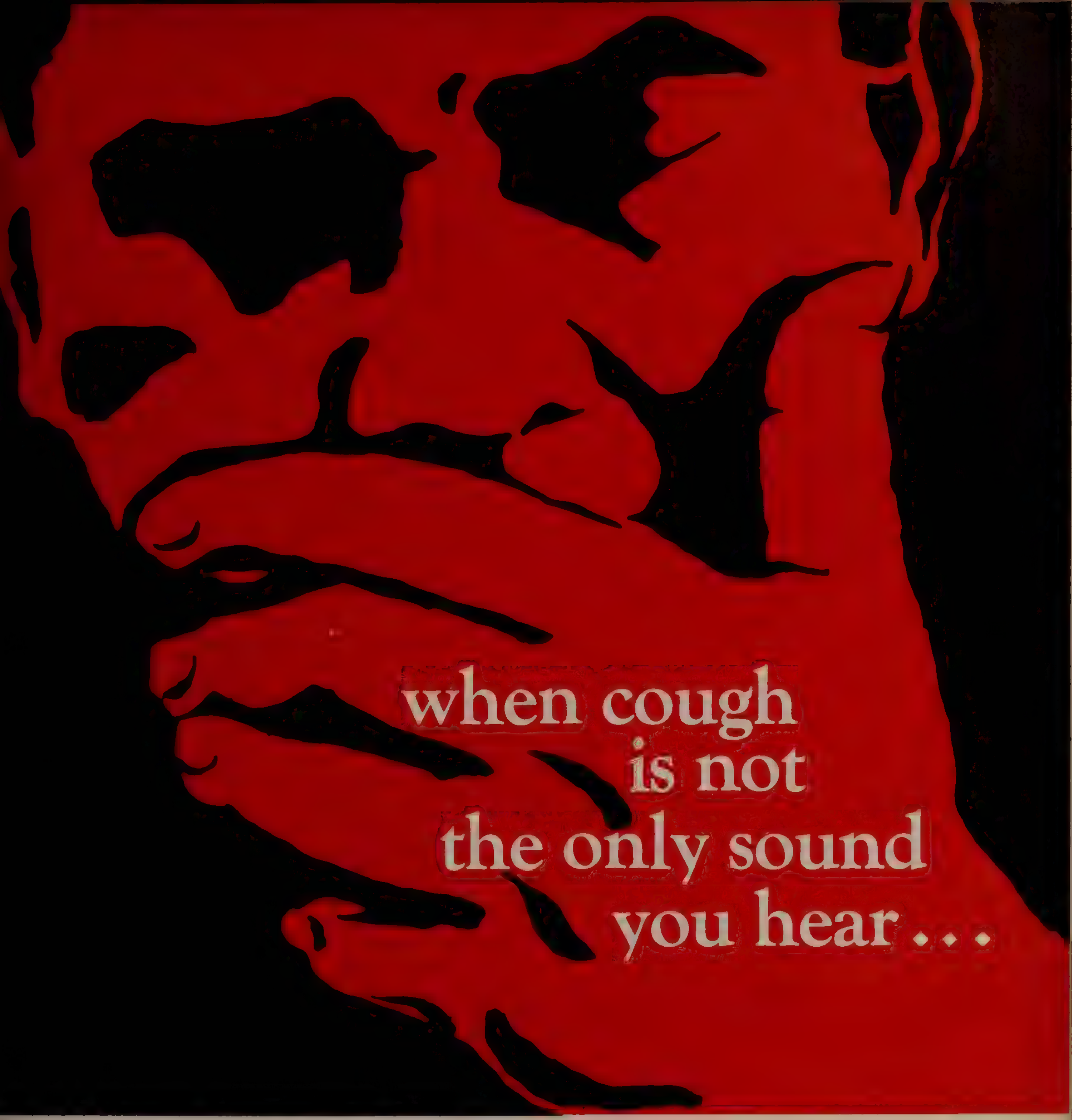

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Before prescribing or administering, see Sandoz literature for full product information, including adverse reactions reported with phenothiazines. The following is a brief precautionary statement.
Contraindications: Severe central nervous system depression, comatose states from any cause, hypertensive or hypotensive heart disease of extreme degree.
Warnings: Administer cautiously to patients who have previously exhibited a hypersensitivity reaction (e.g., blood dyscrasias, jaundice) to phenothiazines. Phenothiazines are capable of potentiating central nervous system depressants (e.g., anesthetics, opiates, alcohol, etc.) as well as atropine and phosphorus insecticides. During pregnancy, administer only when necessary.
Precautions: There have been infrequent reports of leukopenia and/or agranulocytosis and convulsive seizures. In epileptic patients, anticonvulsant medication should also be maintained. Pigmentary retinopathy may be avoided by remaining within the recommended limits of dosage. Administer cautiously to patients participating in activities requiring complete mental alertness (e.g., driving). Orthostatic hypotension is more common in females than in males. Do not use epinephrine in treating drug-induced hypotension. Daily doses in excess of 300 mg. should be used only in severe neuropsychiatric conditions.
Adverse Reactions: *Central Nervous System*—Drowsiness, especially with large doses, early in treatment; infrequently, pseudoparkinsonism and other extrapyramidal symptoms; nocturnal confusion, hyperactivity, lethargy, psychotic reactions, restlessness, and headache. *Autonomic Nervous System*—Dryness of mouth, blurred vision, constipation, nausea, vomiting, diarrhea, nasal stuffiness, and pallor. *Endocrine System*—Galactorrhea, breast engorgement, amenorrhea, inhibition of ejaculation, and peripheral edema. *Skin*—Dermatitis and skin eruptions of the urticarial type, photosensitivity. *Cardiovascular System*—Changes in the terminal portion of the electrocardiogram have been observed in some patients receiving the phenothiazine tranquilizers, including Mellaril (thioridazine hydrochloride). While there is no evidence at present that these changes are in any way precursors of any significant disturbance of cardiac rhythm, several sudden and unexpected deaths apparently due to cardiac arrest have occurred in patients previously showing electrocardiographic changes. The use of periodic electrocardiograms has been proposed but would appear to be of questionable value as a predictive device. *Other*—A single case described as parotid swelling.

Mellaril®
(Thioridazine HCl)
25 mg. t.i.d.

for moderate to severe anxiety and mixed anxiety-depression

SANDOZ SANDOZ PHARMACEUTICALS, HANOVER, N. J. 68-169

Medical Schools

Albert Einstein College of Medicine

Neighborhood Maternity Center director appointed. Antero Lacot, M.D., has been appointed director, Albert Einstein College of Medicine/Lincoln Hospital Neighborhood Maternity Center. The Center is a modern medical center designed to upgrade prenatal care in an area where the acute shortage of clinic facilities resulted in an unusually high number of premature births and infant mortality. Dr. Lacot will direct and coordinate the services of the Center which will include prenatal and child care, family planning, nutrition, vocational guidance, social service, and mental health counseling.

Special premedical studies. The Martin Luther King-Robert F. Kennedy Program for Special Studies will begin in the fall of 1968 to help educationally disadvantaged young men and women qualify for admission to medical schools. The students will begin a full-time course of studies to qualify them for admission to medical schools of their choice, in New York or in any part of the country. The College will provide tuition scholarships for students, faculty, and facilities for the program. Funds are being sought from private sources for the personal financial support of the students who will be awarded King-Kennedy Scholarships. A three-year grant totalling $30,000 has been received already from the Frieda Foundation.

Cornell University Medical College

New professorship. Thomas Killip, III, M.D., has become the first Roland Harriman Professor of Cardiovascular Medicine. The new professorship has been endowed by Mr. and Mrs. E. Roland Harriman and its purpose is to provide for the coordination of research, teaching, and patient care in the broad field of cardiovascular medicine. Dr. Killip will supervise the work being done not only in those specialties dealing specifically with the heart but in all areas involving diseases of the circulation. Dr. Killip joined the faculty in 1955 and in 1961 became Head, Division of Cardiology. In 1964 he was appointed director of The New York Hospital's new Coronary Care Unit. Dr. Killip's team is currently collaborating with the Department of Surgery in the evaluation of new heart-assist devices being developed by the surgeons. The Division of Cardiology is responsible, also, for the medical evaluation of possible candidates for heart transplant surgery, together with physiologic studies of recipient and donor. As the head of Cardiology, he directs the training of residents and the cardiovascular teaching of the second-, third-, and fourth-year medical students. A fellowship program established under his direction in 1961 has provided post-doctoral training for 15 cardiologists and this program will be expanded considerably over the next two years. As professor of cardiovascular medicine, Dr. Killip will have administrative responsibility for the Anti-Coagulant Clinic, which was the first in the world, and for the Vascular Clinic, which has produced some 60 fellows. In the past, these groups have carried out their work under the direction of Irving S. Wright, M.D., emeritus clinical professor of medicine, and Ellen McDevitt, M.D., associate professor of medicine. Dr. McDevitt will continue with direct responsibility for this effort and Dr. Wright will act as consultant.

Downstate Medical Center

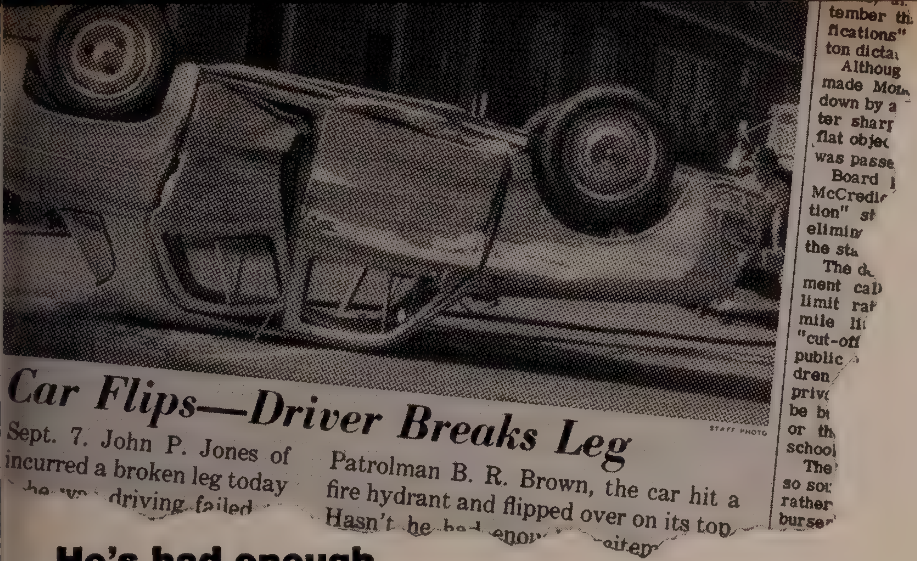
New radiologic technology degree program. A new Radiologic Technology Program will be offered for the first time in the fall of 1968 by the College of Health Related Professions. The two-year program will comprise the junior and senior college years and will be open to students who have completed 64 liberal arts college credits. On completion of the course, a Bachelor of Science degree will be awarded. Courses will include radiologic technology, nuclear medicine, physics, anatomy, physiology, and radiobiology. Special courses will be given in administration, personnel management, curriculum planning, teaching methodology, and medical research and writing will be offered also. Acting chairman of the new programs is Harry Z. Mellins, M.D., professor and chairman, Department of Radiology.

Record number of graduates. The largest number of graduates—195—received M.D.'s on June 6. Not only was this the largest in Downstate's history but it was the second largest class in the United States.

Interdisciplinary Seminar. The 11th Interdisciplinary Seminar was held on May 15. "The Medical Student: How is He Chosen?" was discussed by George Perrera, M.D., associate dean, Columbia University College of Physicians and Surgeons; Dr. Robert F. Furchgott, chairman, Downstate's Department of Pharmacology; Schuyler G. Kohl, M.D., associate dean of the Medical School and chairman, Committee on Admission; and Robert Argand, class of 1969.

New faculty appointments. Abner Berkwits, M.D., Danilo A. de Soto, M.D., Bernard

continued on page 2352



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STAFF PHOTO

Car Flips—Driver Breaks Leg

Sept. 7. John P. Jones of incurred a broken leg today driving failed

Patrolman B. R. Brown, the car hit a fire hydrant and flipped over on its top. Hasn't he

He's had enough excitement for one day.

For the patient who has been through an accident, the worry and anxiety following the experience may actually heighten the perception of pain. This is why there's a classic ¼ grain *sedative* dose of phenobarbital in Phenaphen with Codeine—*to take the nervous "edge" off,* so the rest of the formula can control the pain more effectively.

The compound analgesic that calms instead of caffeinates

Phenaphen® with Codeine

Phenaphen® with Codeine No. 2, No. 3, or No. 4 contains: *Phenobarbital* (¼ gr.), 16.2 mg. (Warning: may be habit forming); Aspirin (2½ gr.), 162.0 mg.; Phenacetin (3 gr.), 194.0 mg.; Hyoscyamine sulfate, 0.031 mg.; Codeine Phosphate, ¼ gr. (No. 2), ½ gr. (No. 3), or 1 gr. (No. 4). (Warning: may be habit forming).

Indications: Phenaphen with Codeine provides relief in severer grades of pain, on low codeine dosage, with minimal possibility of side effects. Its use frequently makes unnecessary the use of addicting narcotics. **Contraindications:** Hypersensitivity to any of the components. **Precautions:** As with all phenacetin-containing products excessive or prolonged use should be avoided. **Side effects:** Side effects are uncommon, although nausea, constipation and drowsiness may occur. **Dosage:** 1 or 2 capsules at 2 to 4 hour intervals, or as directed by physician. For further details see product literature.
A.H. ROBINS COMPANY, RICHMOND, VA. 23220

A·H·ROBINS

continued from page 2350

Juris, M.D., Edward D. Kaplan, M.D., and Konrad M. Sipa, M.D., as clinical instructors in the Department of Anesthesiology. Allan M. Wolfe, M.D., clinical assistant professor, and Joel M. Ingegno, M.D., clinical instructor in the Department of Medicine. John J. Bioletti, M.D., and Nicolo Scarino, M.D., as clinical instructors in the Department of Obstetrics and Gynecology. In the Department of Ophthalmology, Martin Corwin, M.D., has been appointed clinical assistant professor. Erlinda C. Roldan, M.D., clinical assistant professor, and Violet Friedman, M.D., clinical instructor, in the Department of Pediatrics. In the Department of Radiology: Bernard S. Epstein, M.D., professorial lecturer; Philip J. Goldstein, M.D., Harold M. Jones, M.D., Khodarahm Khodarahmi, M.D., Paul K. Woodrow, M.D., and Mansour S. Zandieh, M.D., clinical instructors. Bernard Sandler, M.D., has been appointed clinical professor of rehabilitation medicine. In surgery: Henry Burns, M.D., and William J. Jarrett, D.D.S., clinical instructors.

Recent promotions. Eli A. Friedman, M.D., to associate professor of medicine; Anthony J. Cantore, M.D., clinical assistant professor in obstetrics and gynecology.

Student-faculty-administration conference. The second annual Student-Faculty-Administration Conference was held at Yale. There were 14 students, 15 faculty members, and seven members of the administration attending the conference at which some of the topics discussed were: curriculum, student guidance and academic evaluation, establishment of an honor system, and student participation in decision making. The Conferences were initiated by Downstate President Joseph K. Hill.

Link between alcoholism and oral cancer. Benjamin Kissin, M.D., professor of psychiatry and director, Alcoholism Division, began a multidisciplinary study of a possible link between heavy drinking and oral cancer on September 1. The study has been made possible under a grant recently awarded by the Cancer Control Program, National Center for Chronic Disease Control. Test subjects represent a broad segment of the population. Each patient will be interviewed and x-rayed and all abnormalities of the head and neck area will be followed up carefully in an effort to elucidate factors that stimulate the growth of cancerous and precancerous lesions of the oral cavity, pharynx, and larynx.

Ophthalmic microscope developed. Richard C. Troutman, M.D., professor and head, Division of Ophthalmology, has developed a microscope for ophthalmic surgery. The microscope has motorized focusing, a motorized magnification changer with a zoom lens system, and foot controls for focusing and magnification which allows the surgeon to use both hands for operative procedures. The Troutman Microscope is manufactured by Edward Weck and Company, Inc.

Grants. A total of $577,116 was received during May, 1968, for 20 research and training grants. The awards provide for three new projects, renewal of 11 studies already in progress, and six supplements. The new grants include studies on oral contraceptives, mechanisms of alveolar collapse, and radiation recovery of lymph nodes.

Mount Sinai School of Medicine

Health careers program established. Health Careers Program has been established for which high school juniors will be recruited in the Harlem and East Harlem communities for training in health services. These young people will be given special training during their last two years in high school in preparation for career education in nursing and other areas of health services. The program has been initiated and made possible by a grant of $548,750 from the Louis Calder Foundation for an initial five-year period.

New York Medical College

New appointment. Milton Terris, M.D., M.P.H., immediate past president of the American Public Health Association, has been appointed chairman, Department of Preventive Medicine. Dr. Terris, also professor of preventive medicine, succeeds Jonas Muller, M.D., who has resigned the chairmanship of the Department but will continue as a professor.

Chairmenship effective July. Richard M. Friedenberg, M.D., assumed his posts as professor and chairman, Department of Radiology, and David Spiro, M.D., assumed his service as professor and chairman, Department of Pathology.

New York University School of Medicine

Recent appointments. W. Alden Spencer, M.D., has been appointed professor, Department of Physiology and Biophysics, and Eric R. Kandel, M.D., has been named professor, Departments of Physiology and Psychiatry. John H. McClement, M.D., has been appointed professor of medicine. Since 1955, Dr. McClement has been director of the chest service, Bellevue Hospital Center, under Columbia University College of Physicians and Surgeons, and he will continue in this capacity under the professional and administrative domain of New York University.

State University of New York at Buffalo School of Medicine

New appointments. Stanley Cohen, M.D., formerly a medical officer (Captain, Marine Corps), Walter Reed Army Institute of Re-

continued on page 2356

Is it depression?

He says "It's my stomach..." ...but his other symptoms:
functional somatic complaints, anxiety, insomnia, anorexia, feelings of guilt
strongly suggest
an underlying depression.

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when the diagnosis is depression

ELAVIL®HCl
(AMITRIPTYLINE HCl | MSD)

Indications: Mental depression and mild anxiety accompanying depression.

Contraindications: Glaucoma and predisposition to urinary retention. Not recommended in pregnancy.

Precautions and Side Effects: Drowsiness may occur within the first few days of therapy. Patients should be warned against driving a car or operating machinery or appliances requiring alert attention. When depression is accompanied by anxiety or agitation too severe to be controlled by ELAVIL HCl alone, a phenothiazine tranquilizer may be given concomitantly. Suicide is always a possibility in mental depression and may remain until significant remission occurs. Supervise patients closely in case they may require hospitalization or concomitant electroshock therapy. Untoward reactions have been reported after the combined use of antidepressant agents having varying modes of activity. Accordingly, consider possibility of potentiation in combined use of antidepressants. Monoamine oxidase inhibitor drugs may potentiate other drugs and such potentiation may even cause death; permit at least two weeks to elapse between administration of two agents; in such patients, initiate therapy with ELAVIL HCl cautiously with gradual increase in dosage required to obtain a satisfactory response. Caution patients about errors of judgment due to change in mood, and that the response to alcohol may be potentiated. May provoke mania or hypomania in manic-depressive patients.

Side effects include drowsiness; dizziness; nausea; excitement; hypotension; fine tremor; jitteriness; weakness; headache; heartburn; anorexia; increased perspiration; incoordination; allergic-type reactions manifested by skin rash, swelling of face and tongue, itching; numbness and tingling of limbs, including peripheral neuropathy; activation of schizophrenia which may require phenothiazine tranquilizer therapy; epileptiform seizures in chronic schizophrenics; temporary confusion, disturbed concentration or, rarely, transient visual hallucinations on high doses; evidence of anticholinergic activity, such as tachycardia, dryness of the mouth, blurring of vision, urinary retention, constipation; paralytic ileus; jaundice; agranulocytosis.

Careful observation of all patients is recommended. The antidepressant activity may be evident within 3 or 4 days or may take as long as 30 days to develop adequately, and lack of response sometimes occurs. Response to medication will vary according to severity as well as type of depression present. Elderly patients and adolescents can often be managed on lower dosage levels.

Supplied: Tablets ELAVIL HCl, containing 10 mg., 25 mg., and 50 mg. amitriptyline HCl, bottles of 100 and 1000; Injection ELAVIL HCl, in 10-cc. vials, containing per cc.: 10 mg. amitriptyline HCl, 44 mg. dextrose, 1.5 mg. methylparaben, and 0.2 mg. propylparaben.

For more detailed information, consult your Merck Sharp & Dohme representative or see the package circular.

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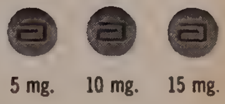
An anorectic will help her lose weight–but can she keep it off? You need more than a pill (even ours) to do that!

That's why Abbott offers you a pill plus a program.

The Product

For smooth appetite control plus mood elevation

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form



For patients who can't take plain amphetamine

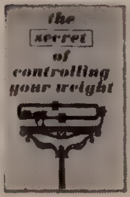
DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.



Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories. 801444

To help you control your weight...

Please see Brief Summary on next page.

Ask Your Abbott Man For Free Supplies

Brief Summary

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

ABBOTT

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search, Washington, D.C., Department of Immunochemistry, has been appointed associate professor of pathology. LeRoy A. Pesch, M.D., was appointed on July 1 as dean, School of Medicine, and director, University Hospital. On August 1 Robert T. McCluskey was appointed professor and chairman, Department of Pathology. Dr. McCluskey succeeds Floyd Skelton, M.D., who resigned as department chairman several months ago to devote full time to teaching and research.

University of Rochester School of Medicine and Dentistry

Honored. John Romano, M.D., chairman, Department of Psychiatry, has been honored with the rank of Distinguished University Professor. Dr. Romano has been professor and chairman of the Department since 1946, when the department was established.

Hospital outpatient department utilization

The public's utilization of hospital outpatient departments, which has been steadily increasing for more than a decade, reached a new peak of 9,589,478 visits in April, 1968, according to figures compiled by the American Hospital Association. The April figure was 10 per cent higher than in April of last year.

The statistics suggest that a community views its hospitals as the source of a wide range of health services and that outpatient care is an integral part of these services. Hospitals serve from 2.5 to 5.5 outpatient visits for each inpatient admission. The ratio of visits to admissions increases as the bed size of the hospital increases, indicating that larger hospitals provide proportionately more outpatient than inpatient care.

Other statistics, based on data from a sampling of 656 hospitals across the country, show that admissions per day in April, 1968, averaged 78, 356, a level significantly higher than in April, 1967. The daily average a year ago was slightly more than 74, 000.

Admissions of Medicare-age patients increased by 5.6 per cent over the April, 1967, figure, while admissions of patients under sixty-five increased by 5.5 per cent.

There were 462,590 patients sixty-five and over discharged from hospitals during April, after spending an average of 13.5 days as inpatients. The average length of stay for patients under sixty-five was 6.6 days in April.

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CONJUGATED ESTROGENS (equine)

PREMARIN (conjugated estrogens—equine) is a naturally occurring, orally active, water-soluble estrogen presented as the complete equine estrogen complex. CAUTION: *In the female:* To avoid continuous stimulation of breast and uterus, cyclic therapy is recommended (3 week regimen with 1 week rest period—Withdrawal bleeding may occur during this 1 week rest period). *In the male:* Continuous therapy over prolonged periods of time may produce gynecomastia, loss of libido, and testicular atrophy. AVAILABLE in 4 potencies for individualized treatment: *Tablets*—2.5 mg. (purple), 1.25 mg. (yellow), 0.625 mg. (red), 0.3 mg. (green); bottles of 100 and 1,000. 2.5 mg. tablets also available in 20's.

803

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Month in Washington

"Improving the quality of life in this country requires that far greater national effort be devoted to reducing the incidence of preventable diseases, accidents, and premature death." This was the theme of a proposal to President Johnson to establish a Commission on Disease Prevention and Health Protection, appointed by the President, to make recommendations within a year.

The President was told that "to continue the present national emphasis on treatment and after-the-fact remedies, as opposed to prevention, must be regarded as a failure of the health professions to adequately protect the public."

Said the plan's sponsors, headed by Senator Warren Magnuson (Democrat, Washington), chairman of the Senate Commerce Committee:

"Many of the diseases currently prevalent can be prevented entirely. Others can be detected and cured in the early stages. In some cases, it is simply a question of instilling awareness, recognizing symptoms, or the importance of diet and exercise. Technical personnel and automated laboratory and computerized recording procedures can utilize known technics to operate comprehensive screening programs. These prevention and early detection programs can save money and conserve scarce physician time. People can be educated to expect health rather than to tolerate illness, to demand prevention rather than to admire belated treatment."

The statement continued:

"Benefits can be derived through legislation. Others will accrue through public and professional education. Still further benefits would come from financial support for special professional and nonprofessional training in the practice of preventive medicine. The following are just a few examples of things that can be done now. For example, we now have the authority to clean the polluted air over most of the major urban areas of this country.

"Other approaches include new methods of paying for and organizing health services. We, at present, invest huge sums in medical care through public and private support. The same means of coverage, however, such as Title 18, do not provide for 'health protection': there is no payment for periodic health appraisal on an out-of-hospital basis, with provision for follow-up care. This should include individual and group counseling services necessary for health maintenance, given by a physician or other health professional."

The Magnuson group said that "despite the convincing case for prevention, about two thirds of all medical schools do not have departments of preventive medicine. This lack is appalling. We should at once encourage the establishment, or strengthening, of these departments in all medical schools and emphasize a more realistic training program for the physicians of tomorrow."

* * *

The 1968 supplemental report on smoking and health issued by the Surgeon General, U.S. Public Health Service, reaffirmed that cigaret smoking is a hazard to health.

The report was sent to Congress the same day the Federal Trade Commission sent a recommendation that cigaret advertising be banned from television and radio.

Highlights of the report on smoking were:

—New evidence indicating that life expectancy among young men is reduced by an average of eight years in "heavy" cigaret smokers, those smoking more than two packs a day, and an average of four years in "light" cigaret smokers, those smoking less than one-half pack per day.

—Cigaret smoking can contribute to the development of cardiovascular disease and particularly to death from coronary heart disease. Some of the harmful cardiovascular effects appear to be reversible after cessation of cigaret smoking.

—New evidence supporting the previous finding that cigaret smoking is the most important cause of chronic bronchopulmonary disease in the United States.

—Additional evidence that cigaret smoking is a main cause of lung cancer in men and is causally related to lung cancer in women.

* * *

Robert Q. Marston, M.D., was appointed to succeed James A. Shannon, M.D., as director of the National Institutes of Health, effective September 1.

Dr. Marston, age forty-five, had been administrator of the Health Services and Mental Health Administration of the National Institutes of Health since April 1. He joined the National Institutes of Health in 1966 as the first administrator of the Heart Disease, Cancer, and Stroke Regional Medical Programs. Before that, he had been vice-chancellor and dean of the University of Mississippi Medical School.

In accepting his new post, Dr. Marston listed knowledge first and then money and manpower as the key factors in future improvements in the health of Americans. "The ultimate constraint of our ability to effect the health of the people is neither dollars nor manpower, but

continued on page 2360

Prepared by the Washington, D.C., Office of the American Medical Association.

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the knowledge gained through research," he said.

"A major problem of the future will be to insure institutional stability, during times of manpower and fiscal shortages, on which future [medical research] success is dependent."

In appointing Dr. Marston, President Johnson said the new director faces a "staggering job" because not only the United States but the entire world needs "rescue from death and disability that medical research promises."

Johnson expressed the hope that Dr. Marston's leadership in research would play an important role in an effort to reduce the death rate from serious diseases by 10 per cent by 1976.

* * *

The John E. Fogarty International Center for Advanced Study in the Health Sciences has been established in memory of the late Rhode Island congressman who was a leader in health legislation for many years. Congress provided an initial appropriation of $500,000 for the new center to start operation in the National Institutes of Health until its own building is completed. The center's first director is Milo D. Leavitt, Jr., M.D., who had been director of the Office of Program Planning, National Institutes of Health.

* * *

U.S. Attorney General Ramsey Clark appealed for broad support and cooperation of the public in enforcement of the laws against the use of marijuana and LSD (lysergic acid diethylamide). Otherwise, he said, the law cannot be effectively enforced. Enforcement must be accompanied by research and education, he said and added: "The youth of today are extremely sophisticated about drugs, and they are also highly selective of the wave lengths they tune in on—the channels of information they select."

* * *

President Johnson named a special committee to develop a five-year program for providing more effective birth control methods. The study committee will be headed by Wilbur J. Cohen, secretary, U.S. Department of Health, Education, and Welfare, and Mrs. John D. Rockefeller, III, New York, will serve as his cochairman. An official said one matter to be studied would be the fact that present methods of contraception are not adequate. He said the so-called "pill" is too expensive for widespread use in some areas, and it was difficult to educate illiterate people in its use.

* * *

The National Institutes of Health has asked processors of whole pooled human blood plasma to halt its interstate shipment because the substance has been causing hepatitis in 1 out of 10 patients receiving transfusions. The move is expected to halt use of most such plasma of which about 300,000 pints are given annually to about 100,000 patients in the United States. The agency acted on a report issued in April by the National Research Council saying use of whole pooled plasma should be discouraged and even discontinued because of the danger of hepatitis.

* * *

The Senate Health Subcommittee was told that the nation talks more and does less about its five million alcoholic addicts than about any of its other health problems. Michael Gorman, a spokesman for the National Council on Alcoholism, said that the losses from alcoholism are now estimated to be about $2 billion a year. Philip R. Lee, M.D., assistant secretary, H.E.W., supported Gorman. According to Dr. Lee, alcoholism was an "enormous economic liability to the nation" in terms of job absenteeism, lowered productivity, and medical insurance expenses.

Worms in children

New York City's quarter-million Puerto Rican school-age children have a high incidence of parasitic infections: Trichuris or whipworm 40 per cent, amebic infections 30 per cent, Ascaris or roundworm 18 per cent, hookworm 15 per cent, Strongyloides 15 per cent, and Schistosoma 10 per cent. Added to dietary deficiencies, these worm loads can stunt a child's growth and cause lifelong impairment. Although it is said that a pound of Ascaris equals 9 pounds of pork, meaning that each pound of worms flushed from a pig gives 9 pounds more pork on the hoof, it is common for a child to harbor a half pound or more of worms.

The Health Research Council of the City of New York supports several studies on such parasites, aimed at eliminating them with enzymes, nutrient control, interrupting mating cycles, and so on, with the eventual goal a preventive vaccine.

Abbott Antihypertensive Building Blocks

A simplified approach to the practical management of hypertension

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Enduron: (methyclothiazide) A basic building block for mild hypertensives

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Excellent day-long Na^+ output, yet easy on the K^+

Enduron provides an excellent starting therapy. Your patient's sodium excretion is greatly enhanced. Yet potassium loss is low.

The therapeutic action is smooth, and persists for a full 24 hours. With Enduron you can prescribe convenient once-a-day dosage without skimping your patients on day-long thiazide effectiveness.

Of course, as with all thiazides, supplemental dietary potassium should also be considered.

Use Enduron as a basic therapy in patients with mild to moderate hypertension. A single 5-mg. tablet each day is ample in most cases.

Once a day, every day

ENDURON®

METHYCLOTHIAZIDE

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

Enduronyl: Its deserpidine component adds response in moderate hypertension

DESERPIDINE
METHYCLOT ZIDE
ENDURONYL

Less frequent rauwolfia side effects than with reserpine

When you wish to build further response, consider shifting to Enduronyl.

Enduronyl adds a building block of *deserpidine*. This is a purified rauwolfia alkaloid available only from Abbott. It adds good antihypertensive and tranquilizing activity. Yet its incidence of untoward effects, particularly lethargy and depression, is lower than with reserpine.

Enduronyl is available plain or Forte. The latter provides its variation where most helpful, by doubling the deserpidine.

Use Enduronyl for patients throughout the broad range of mild to moderately severe hypertension.

Once a day, every day

ENDURONYL®

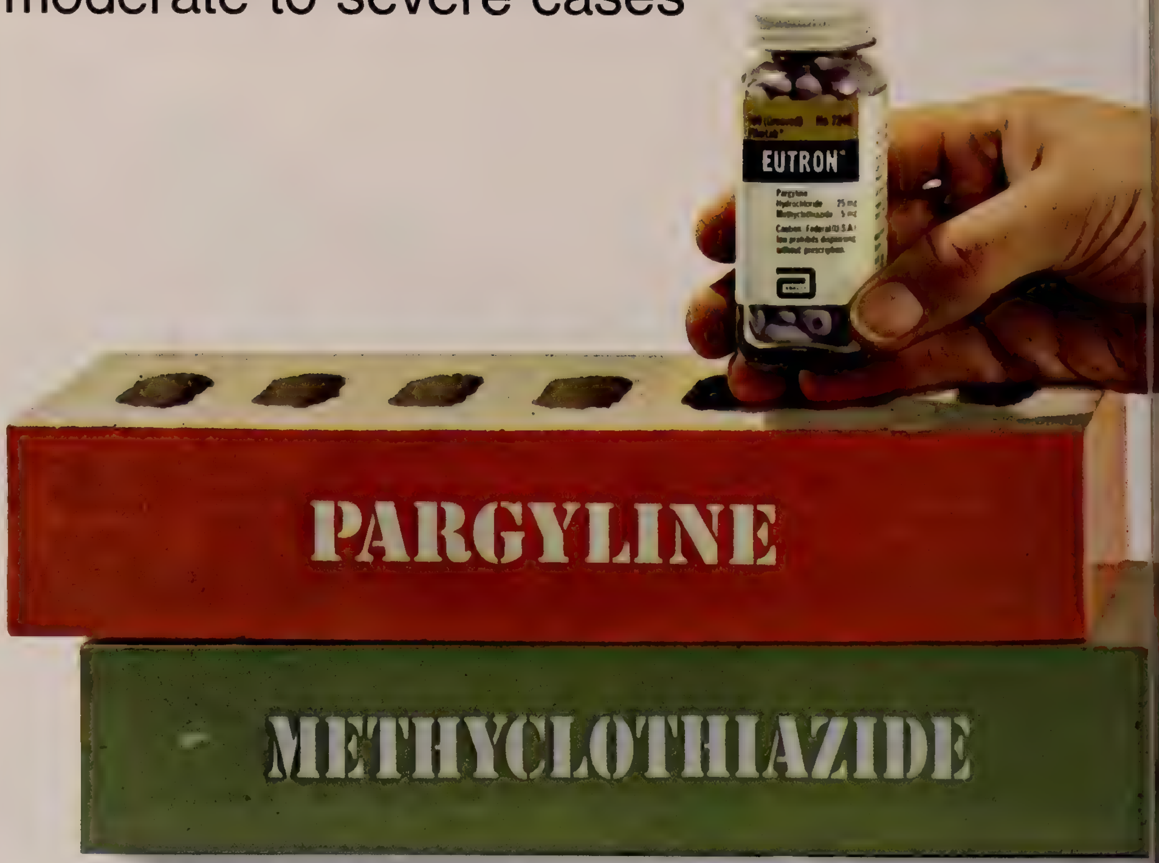
METHYCLOTHIAZIDE 5 mg. with
DESERPIDINE 0.25 mg. or (FORTE) 0.5 mg.

MILD
TO
MODERATE
TO
SEVERE

See Brief Summary on final page of advertisement

801094

Eutron: A unique combination for handling moderate to severe cases



Affords almost uniform diastolic reduction in all body positions

Eutron lowers diastolic pressures nearly equally, whether your patient is standing up or lying down.

Thus, in clinical trials, average *standing* diastolic readings were reduced from 112 pre-treatment to 90 post-treatment; *sitting* from 115 to 95; and *recumbent* from 112 to 94.

Note that following Eutron, the diastolic reductions were nearly alike in all three body positions.

Use Eutron for managing your moderate to severe cases. Its building blocks enhance each other; hence lesser doses often suffice.

Once a day, every day

EUTRON™

PARGYLINE HYDROCHLORIDE 25 mg.
with METHYCLOTHIAZIDE 5 mg.

MILD TO MODERATE TO SEVERE

See Brief Summary on final page of advertisement

801094

ENDURON®

METHYCLOTHIAZIDE

ENDURONYL®

Each tablet contains
Methyclothiazide 5 mg. with
Deserpidine 0.25 mg. or 0.5 mg.

Indications: Edema and mild to moderate hypertension (Enduron), and mild to moderately severe hypertension (Enduronyl). More potent agents, if added, can be given at reduced dosage.

Contraindications: Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease or impending hepatic coma (hepatic coma due to hypokalemia has been reported in patients on thiazides). Do not use Enduronyl in severe mental depression, suicidal tendencies, active peptic ulcer, or ulcerative colitis.

Warnings: Consider possible sensitivity where there is history of allergy or asthma. If added potassium is indicated, dietary supplementation is recommended. Reserve enteric-coated potassium tablets for cautious use only when necessary, as they may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation often requiring surgery; discontinue them immediately if abdominal pain, distention, nausea, vomiting, or g.i. bleeding occurs. Neither Enduron nor Enduronyl contains added potassium.

Precautions: Use thiazides cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery, thiazides may reduce response to vasopressors, and increase response to tubocurarine. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia) in all patients. In hypokalemia (especially in digitalized patients) give supplemental potassium. In hypochloremic alkalosis, give supplemental chloride.

Use rauwolfias with caution in patients with history of peptic ulcer. Rauwolfias with anesthetics may produce hypotension and bradycardia. Discontinue Enduronyl two weeks before elective surgery. Consider vagal blocking agents during emergency surgery. In epilepsy, adjust anticonvulsant dosage. In electroshock, shorten stimulus strength and duration. In occasional patients with depressive tendencies, rauwolfias may precipitate severe mental depression that usually disappears when drug is stopped.

Adverse Reactions: Thiazide reaction include blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, serum uric acid or blood sugar; anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice, symtomatic gout, and pancreatitis. Cutaneous vasculitis in the elderly has been reported with other thiazides. Adverse effects with deserpidine are qualitatively similar to those with reserpine, but their incidence is lower. These include nasal stuffiness, abdominal cramps or diarrhea, nausea, headache, weight gain, reduced libido and potency, peptic ulcer aggravation, epistaxis, skin eruption, asthma in susceptible patients, electrolyte imbalance, excessive salivation, and a reversible Parkinson's syndrome. Excessive drowsiness, fatigue, weakness, and nightmares may signal mental depression. Thrombocytopenia, purpura, and a symptom manifested by dull sensorium, deafness, uveitis, glaucoma, and optic atrophy are rare allergic reactions to other rauwolfias. Hypotension from antihypertensive agents may precipitate angina attacks in susceptible individuals. Usually adverse reactions disappear when drug is withdrawn.

EUTRON™

Each tablet contains
Pargyline Hydrochloride 25 mg.
with Methyclothiazide 5 mg.

Indications—Moderate to severe hypertension.

Contraindications—Pheochromocytoma, paranoid schizophrenia, hyperthyroidism and advanced renal failure. Not recommended in malignant hypertension, children under 12, pregnant patients.

Do not use with: centrally or peripherally acting sympathomimetic drugs; foods high in tyramine (e.g., aged and natural cheeses); parenteral reserpine or guanethidine; imipramine, amitriptyline, desipramine, nortriptyline or their analogues; **other monoamine oxidase inhibitors; methyldopa or dopamine; separate Eutron and these agents by two weeks.**

Sensitivity to thiazides; severe renal disease (except nephrosis) or shutdown; severe hepatic disease; impending hepatic coma from thiazide-induced hypokalemia.

Warnings—Patients: 1. No other drugs (particularly "cold preparations" and antihistamines), cheese or alcohol without physician's consent. 2. Promptly report orthostatic symptoms, severe headache, other unusual symptoms. 3. Angina pectoris or coronary artery disease patients must not increase physical activity with improved anginal symptoms or well-being.

Physicians: 1. Use antihistamines, hypnotics, sedatives, tranquilizers and narcotics (meperidine contraindicated) cautiously in reduced doses. 2. Stop Eutron two or more weeks before elective surgery; in emergency surgery reduce premedication (narcotics, sedatives, analgesics, etc.) to 1/4 to 1/5; carefully adjust anesthetic dosage to patient response. 3. Use cautiously in advanced renal failure. 4. Pargyline may induce hypoglycemia. 5. Consider possible sensitivity reactions when a history of allergy or asthma is present. 6. If potassium is indicated, dietary supplement is recommended; enteric-coated potassium tablets may induce serious or fatal small bowel lesions (stenosis with or without ulceration), cause obstruction, hemorrhage, and perforation frequently requiring surgery; discontinue medication immediately if abdominal pain, distention, nausea, vomiting or gastrointestinal bleeding occurs; Eutron does not contain added potassium. 7. Possible systemic lupus erythematosus has been reported for thiazides.

Precautions—Pargyline: Use cautiously at reduced dosage: caffeine, alcohol, antihistamines, barbiturates, chloral hydrate, other hypnotics, sedatives, tranquilizers, narcotics. Periodically do urinalyses, blood counts, liver function tests, etc. Use with caution in liver disease. Watch for orthostatic hypotension, especially in impaired circulation (e.g., angina pectoris, coronary artery disease, cerebral arteriosclerosis); also, augmented hypotension in concomitant febrile illnesses. Reduce or discontinue if hypotension is severe. In impaired renal function watch for cumulative drug effects, elevated BUN and other evidence of progressive renal failure; withdraw drug if these persist. In surgery increased central depressant response (hypotension and increased sedative effect) can be controlled by (1) discontinuing at least two weeks prior; (2) in emergency surgery lowering dose of premedication; (3) when necessary, administering a vasopressor. Do not use in hyperactive and hyperexcitable patients. Pargyline may unmask severe psychotic symptoms where emotional problems pre-exist. Use cautiously in Parkinsonism, especially with antiparkinsonian agents. In prolonged therapy, examine for change in color perception, visual fields, fundi and visual acuity. Also, prolonged therapy has made certain patients refractory to nerve blocking effects of local anesthetics.

Methyclothiazide: Use cautiously in severe renal dysfunction, impaired hepatic function or progressive liver disease; also in pregnancy (bone marrow depression, thrombocytopenia, and altered carbohydrate metabolism have been reported in certain newborn). In surgery thiazide may reduce vasopressor response and increase tubocurarine response. Antihypertensive response may be enhanced following sympathectomy. Watch for electrolyte imbalance (e.g., hyponatremia). Give supplemental chloride if hypochloremic alkalosis occurs and supplemental potassium if hypokalemia occurs (especially in digitalized patients). Thiazides may decrease serum P.B.I. without signs of thyroid disturbance.

Adverse Reactions — Pargyline: Orthostatic hypotension and associated symptoms, mild constipation, fluid retention, edema, dry mouth, sweating, increased appetite, arthralgia, nausea, vomiting, headache, insomnia, difficult in micturition, nightmares, impotence, delayed ejaculation, rash, purpura, weight gain, hyperexcitability, increased neuromuscular activity and other extrapyramidal symptoms. Drug fever is extremely rare. Reduction in blood sugar and hypoglycemic effects are possible. Congestive heart failure has been reported in a few patients with reduced cardiac reserve.

Methyclothiazide: Blood dyscrasias (thrombocytopenia with purpura, agranulocytosis, aplastic anemia); elevation of BUN, blood sugar or serum uric acid (gout may be induced); anorexia, nausea, vomiting, diarrhea, headache, dizziness, paresthesia, weakness, skin rash, photosensitivity, jaundice and pancreatitis. Cutaneous vasculitis in elderly patients has been reported with other thiazides.

If side effects are severe or persist, reduce dosage or withdraw drug. 804439R

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Do you have patients who try to hide anguish behind arrogance?

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense. The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you.

Whether depression is open or secretive, Aventyl HCl assists you in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

Lilly Eli Lilly and Company, Indianapolis, Indiana 46206

Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline
Hydrochloride

800315

(See last page for prescribing information.)

Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl® HCl (nortriptyline hydrochloride, Lilly) is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid, 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500.

[101267]

Additional information available to physicians upon request. 600315

Lilly
Eli Lilly and Company
Indianapolis, Indiana 46206

Medical News

N.Y.U. establishes research program on metabolism

A three-year research program for the diagnosis and study of patients with inborn errors of metabolism related to mental retardation and neurologic handicaps has been established at the New York University Medical Center by the American Institute for Mental Studies with a grant of $160,000. The research will be carried out in the Medical Center's Department of Psychiatry and Neurology, under the direction of S. Bernard Wortis, M.D., professor and chairman of the department. The grant will also support The Metabolic Laboratory for Mental Retardation, a facility for detection of inborn errors of metabolism in patients with mental retardation, seizures, and other neurologic disorders. The laboratory will conduct appropriate tests for physicians desiring to utilize its facilities for diagnostic purposes where metabolic disease and disorders are suspected.

The department of psychiatry and neurology of the New York University Medical Center has long been interested in studying the metabolic factors which influence mental function.

Two pediatric pulmonary centers established

As part of a national effort to reduce the infant mortality rate in the United States, the Health Services and Mental Health Administration of the U.S. Public Health Service announced the establishment of two pediatric pulmonary centers. The centers—one located in Philadelphia and the other in Los Angeles—will seek to develop and improve the quality and availability of care for children with respiratory disease. By expanding its interest to childhood respiratory diseases, the Public Health Service will be able to investigate the possible relationship of respiratory disease in infancy and childhood to the development of chronic, crippling lung disease during the adult years. In the past, the Chronic Respiratory Diseases Control Program has concentrated on the control of emphysema and chronic bronchitis, two chronic lung diseases causing more than 25,000 deaths yearly.

Sharing in the $438,000 project spanning three years are the Los Angeles County-University of Southern California Medical Center and three university hospitals in Philadelphia: Hahnemann Medical College, Temple University, and the University of Pennsylvania.

Medical mission ships more than one million pounds of medical supplies

Shipments of drugs, medicines, and hospital supplies to overseas medical missions during the first half of 1968 totalled 1,207,727 pounds and had a wholesale value of more than $4 million, reports the Catholic Medical Mission Board, New York City.

During the six-month period, the Board shipped to 1,624 missions and mission areas in 36 countries in Africa, Asia, the Caribbean, Central and South America, and Oceania. New mission areas receiving the Mission Board's shipments were Biafra, Malawi, Mexico, and St. Vincent Island. Largest mission country served by the Board is India with 283 missions, which received 222,455 pounds of supplies. The next largest shipments went to Brazil, Bolivia, and Ecuador, which received 147,973 pounds, 110,414 pounds, and 108,809 pounds, respectively.

The assistance program of the Catholic Medical Mission Board is designed to help the staffs of overseas Catholic hospitals, dispensaries, clinics, schools, orphans' homes, and other institutions with material supplies to heal the needy sick. It helps approximately 5,000 medical missions in 87 countries. These missions, manned by practically all of the Catholic Church's mission orders, societies, and congregations, treat an estimated 60 million poor people every year, regardless of race, nationality, and creed.

Personalities

Elected. As officers of the New York Rheumatism Association: Albert W. Grokoest, M.D., president; Stanley L. Wallace, M.D., president-elect; Leonard E. Meiselas, M.D., vice-president; and Arthur I. Snyder, M.D., secretary-treasurer.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

anticostive* hematinic

60
Lederle
PERITINIC
Hematinic with Vitamins and Fecal Softener
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Hematinic with Vitamins and Fecal Softener

A tablet-a-day provides:

● Elemental Iron (as Ferrous Fumarate)	100 mg
● Dioctyl Sodium Sulfosuccinate (to counteract constipating effect of iron)	100 mg
Vitamin B_1	7.5 mg
Vitamin B_2	7.5 mg
Vitamin B_6	7.5 mg
Vitamin B_{12}	50 mcgm
Vitamin C	200 mg
Niacinamide	30 mg
Folic Acid	0.05 mg
Pantothenic Acid	15 mg

Bottles of 60

*

anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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The ventilator pill

Dainite® KI bronchodilator/expectorant

Each tablet contains: Aminophylline 3.00 gr, Phenobarbital 0.25 gr, (WARNING: May be habit forming), Ephedrine HCl 0.25 gr, Potassium iodide 5.00 gr, Dried Aluminum Hydroxide Gel 2.50 gr, Benzocaine 0.25 gr.

Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

It helps reduce frequency and severity of asthma attacks, too. And, because it's systemic, you know you get action where you want it . . . in the system.

You might say The Ventilator Pill is a good name for DAINITE KI. Your patients will probably say the same thing.

Indications: For the treatment of mild or severe bronchial asthma, and in pulmonary emphysema, in chronic asthma, in chronic bronchitis and in those patients who consistently develop a thick, viscous, tenacious sputum and thus have difficulty in expectorating accumulated secretions from the bronchial tree during and following an asthmatic attack. DAINITE® KI has been specifically formulated to provide extensive therapeutic action in the asthmatic patient. Anti-nauseant factors afford the administration of a therapeutic dose of aminophylline without the high frequency of gastric intolerance usually associated with this drug. *Contraindications:* Should not be administered to patients sensitive to aminophylline or sympathomimetic drugs and should be used with caution in patients with cardiovascular disease and hypertension. Also contraindicated in those patients who have had a severe reaction or are sensitive to or have an idiosyncrasy to potassium iodide. *Precautions:* See contraindications. In some elderly patients, barbiturates may cause excitement rather than depression. *Side Effects:* Occasionally nausea, vomiting and gastric irritation occurs. In addition, side effects attributable to potassium iodide may occur, acne, rhinorrhea, metallic taste and parotitis. Prolonged use of iodides may rarely lead to hypothyroidism. Skin rash may be observed in patients hypersensitive to barbiturates. *Dosage:* Adults—1 tablet on arising, 1 tablet at 4 P.M., and 1 or 2 tablets at bedtime.

Neisler Laboratories, Inc., Decatur, Ill.
Subsidiary of Union Carbide Corporation.

NEISLER UNION CARBIDE

Abstracts

Witebsky, E.: Immunologic basis of immunohematologic disorders, New York State J. Med. **68:** 2387 (Sept. 15) 1968

Thyroglobulin, an organ-specific protein, was selected to determine whether or not autoimmunization against known antigenic substances could be produced experimentally. In vitro and in vivo studies were done. Apparently a combination of an environmental factor as well as genetically controlled constitutional factors come into play on the development of autoimmune diseases.

Albanese, A. A., Lorenze, E. J., Orto, L. A., and Wein, E. H.: Nutritional and metabolic effects of some newer steroids; V. Norbolethone, New York State J. Med. **68:** 2392 (Sept. 15) 1968.

Norbolethone, an anabolic steroid with favorable anabolic-androgenic activity, was studied to assay it in terms of its steroid protein activity and its anti-corticocatabolic activity indexes and its effects on lipid and carbohydrate metabolism and other metabolic parameters. Assays were made of its anabolic activity, anticorticocatabolic activity, lipidemic effects of norbolethone administration, and the effect of norbolethone on carbohydrate utilization. The studies were done in patients recovering from a variety of surgical procedures or acute diseases. The highest steroid protein activity values were obtained at 7.5 mg. per day. The steroid mitigated known protein catabolic effects of corticosteroids used in managing arthritic patients. It possesses a significant hypolipidemic activity and had no significant or consistent effect of fasting blood sugar levels or glucose tolerance curves under conditions of the assays.

Baron, H. C., and Purdy, R. T.: Arterial insufficiency of abdominal aorta and iliac arteries; current therapy, New York State J. Med. **68:** 2407 (Sept. 15) 1968.

The symptoms of atherosclerotic and arteriosclerotic disease are intermittent claudication, rest pain, and gangrene. Various operations for occlusive arterial disease are successful in aortoiliac disease. These include thromboendarterectomy, excision of the diseased segment with graft replacement, and bypass grafting of the occluded area. Combinations of these may be employed.

Abstracts in Interlingua

Witebsky, E.: Base immunologic de disordines immunohematologic (*anglese*), New York State J. Med. **68:** 2387 (15 de septembre) 1968.

Thyroglobulina, un proteina organospecific, esseva seligite pro determinar si o non autoimmunisation contra cognoscite substantias antigenic pote esser experimentalmente producite. Esseva effectuate studios in vitro e in vivo. Apparentemente un combination de un factor ambiental con factores constitutional—iste ultimes de regulation genetic—ha partes in le disveloppamento de morbos autoimmun.

Albanese, A. A., Lorenze, E. J., Orto, L. A., e Wein, E. H.: Effectos nutritional e metabolic de certe nove steroides; V. Norbelethona (*anglese*), New York State J. Med. **68:** 2392 (15 de septembre) 1968.

Norbelethona—un steroide anabolic distinguite per su favorabile activitate anabolic-androgenic—esseva studiate con le objectivo de determinar su indices de activitate steroidoproteinic e anticorticocatabolic e etiam su effectos super le metabolismo del lipidos e carbohydratos e altere parametros metabolic. Esseva effectuate essayos pro determinar su activitate anabolic e su activitate anticorticocatabolic e le effectos de su administration super le lipidemia e le utilisation de carbohydrato. Le studios esseva effectuate in patientes

continued on page 2375

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MEPERIDINE 75 mg
SPARINE 100
MEPERIDINE 100 mg
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THIOMERIN
TETANUS ANTITOXIN

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WYCILLIN S M
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Only TUBEX® offers so complete a line of closed system injectables and it's still growing.

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- **stability**—glass cartridges can't deteriorate o react with medication
- **acceptability**—presharpened, siliconized nee dles lessen pain of injection; patients apprecia single-use equipment

Just select, inject, throw away

TUBEX®

Wyeth ©

UNIT DOSE MEDICATION

sterile cartridge-needle unit
Wyeth Laboratories Philadelphia, Pa.

ontinued from page 2372

qui se trovava in le periodo de restablimento ab un varietate de procedimentos chirurgic de morbos acute. Le plus alte valores de activitate steroido-proteinic esseva obtenite a 7,5 mg per die. Le steroide attenuava cognoscite effectos proteino-catabolic de corticosteroides usate in le tractamento de patientes arthritic. Illo possede un significative activitate hypolipidemic. Sub le conditiones del experimentos hic reportate illo habeva nulle significative o uniforme effecto super le nivellos de sucro sanguinee in stato jejun o super le curvas de tolerantia pro glucosa.

Baron, H. C., e Purdy, R. T.: Insufficientia arterial del abdominal aorta e arterias iliac; therapia hodierne (*anglese*), NEW YORK STATE J. MED. **68:** 2407 (15 de septembre) 1968.

Le symptomas de morbo atherosclerotic e arteriosclerotic es: claudication intermittente, dolor in stato de reposo, e gangrena. Varie operationes usate in le therapia de occlusive morbo arterial es successose in casos de morbo aortoiliac. Le operationes in question es: thrombo-endarterectomia, excision del segmento afficite (con graffage de reimplaciamento), e graffage a shunting pro le area occlusionate. Etiam combinationes de istos es possibile.

Elderly population and hospitals

The nation's over-sixty-five population continued to make increasing use of hospital facilities in the first quarter of 1968, according to *Journal of the American Hospital Association.*

The recent report noted an 8.4 per cent increase in the rate of admissions of persons sixty-five and over to community hospitals through the first three months of 1968 over the comparable period of 1967. At the same time, the admission rate for persons under sixty-five decreased by 0.5 per cent.

In all, patients sixty-five and over accounted for 20.6 per cent of admissions in 1968's first quarter and also accounted for 33.3 per cent of all inpatient days.

Statistics for March, 1968, show that the average length of hospital stay for elderly patients decreased slightly from a February high of 13.7 days to 13.2 days. The February figure was the highest since the start of Medicare in July, 1966. Patients under sixty-five stayed an average of seven days.

In March, there were 75,856 admissions per day to community hospitals, with 15,361 persons over sixty-five being admitted each day. Outpatient visits per day totaled 297,514. Hospital expense per patient day for the month averaged $60.71.

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Medical Meetings

Medical writers association to hold annual meeting

The twenty-eighth annual meeting of the American Medical Writers Association (AMWA) is to be held September 19 through 22 at the Mayflower Hotel, Washington, D.C. Theme for the session will be "national perspectives in medical communications."

Herbert L. Ley Jr., M.D., newly-appointed commissioner of the Food and Drug Administration, is one of several nationally-known personalities who will take part in the four-day session. Dr. Ley will address the medical writers as part of a panel on "Doctors, Drugs, and Government: Is There a Happy Ending?"

Among other featured speakers are Louis Rousselot, M.D., deputy assistant secretary for health and medical affairs, Department of Defense, and Philip R. Lee, M.D., assistant secretary for health and scientific affairs, Department of Health, Education, and Welfare.

"What the Press Wants to Know and Why," will be the subject of another panel. Byron Scott, medical news editor of the *Journal of the American Medical Association,* will be moderator. Panelists are Col. Hamilton B. Webb, Medical Officer, United States Air Force; J. Stewart Hunter, associate director (public services), Office of Public Information, Department of Health, Education, and Welfare; Jonathan Spivak, reporter, *Wall Street Journal;* John Walsh, news editor, *Science Magazine;* and Wallace Werble, editor and publisher, *Drug Research Reports.*

Saturday's program will include a plenary session on health manpower. Concluding the annual convention on Sunday morning will be two medical communications workshop sessions—one on "Communicating with the Physician" and the other on "The Medical Press."

Neurology topic of continuing medical education course

"Workshops in Neurology," a postgraduate course on various aspects of neurologic practice, sponsored by the division of neurology, Department of Medicine, Downstate Medical Center; the Brooklyn-Cumberland Medical Center; and the Kingsbrook Jewish Medical Center, in cooperation with the Brooklyn Neurological Society, is to be held under the direction of Ladislav P. Hinterbuchner, M.D., clinical associate professor of neurology, Downstate Medical Center.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

continued on page 2378

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continued from page 2376

Participants may register for one or more of the following courses:

—General session: Monday, September 30, 8:30 P.M., Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, New York.

—Clinical workshop number 1: Mondays, beginning October 7, at 4:30 P.M., for 8 to 10 sessions, at the Brooklyn-Cumberland Medical Center, 39 Auburn Place, Brooklyn, New York.

—Clinical workshop number 2: Mondays, beginning October 7, at 8:30 P.M., for 8 to 10 sessions, at the Kingsbrook Jewish Medical Center (formerly Jewish Chronic Disease Hospital), 86 East 49th Street, Brooklyn, New York.

—Neuroanatomy: Tuesdays, starting October 8, at 8:30 P.M., for 8 sessions, at Downstate Medical Center.

—Neurotology: Wednesdays, starting October 9, at 8:30 P.M., for 6 sessions, at the Kingsbrook Jewish Medical Center.

—Lecture series: Thursdays, beginning October 10, at 8:30 P.M., for 4 sessions, at Downstate Medical Center.

—Electroencephalogram: Mondays, starting February 3, at 4:30 P.M., for 6 sessions, at the Brooklyn-Cumberland Medical Center.

This program is accepted for 36 accredited hours by the American Academy of General Practice.

There is no registration fee.

For further information contact: Charles M. Plotz, M.D., director of continuing education, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, New York 11203.

Pan-Pacific Surgical Association to meet in Hawaii

The eleventh congress of the Pan-Pacific Surgical Association is to be held in Honolulu, Hawaii, October 14 through 22, following the meeting of the American College of Surgeons in San Francisco, October 6 through 10.

The scientific program will feature concurrent meetings on the following subjects: Colon and Anorectal Surgery, General Surgery, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Thoracic and Cardiovascular Surgery, and Urology. Topics on anesthesiology and radiology will also be included in the program.

Surgery and rehabilitation of hand topic of symposium

A two-day Symposium on the Hand, sponsored by the Institute for the Crippled and Disabled, is to be held November 7 and 8 at the Institute for the Crippled and Disabled, First Avenue and 23rd Street, New York City.

Chairman of the symposium is Lawrence W. Friedmann, M.D., medical director of the Institute, and will feature the following guest speakers: Emanuel B. Kaplan, M.D., consultant in orthopedic surgery, Hospital for Joint Diseases; Irwin Tichauer, M.D., research professor of biomechanics, Department of Rehabilitation Medicine, New York University Medical Center; Philippe Bauwens, F.R.C.P., St. Thomas's Hospital, London, England; Irvin M. Klein, M.D., medical director, New York State Workmen's Compensation Board; Edward Kiessling, M.D., research director, American Institute of Prosthetic Research; and Charles Long, II, M.D., medical director, Department of Physical Medicine and Rehabilitation, Highland View Hospital, Cleveland, Ohio.

Tuition fees for the symposium are $35 for the two days or $20 per day. There are reduced fees for medical residents and interns. Registration is limited to 150. For registration and information contact: Lawrence W. Friedmann, M.D., Institute for the Crippled and Disabled, 400 First Avenue, New York, New York 10010.

New York State anesthesiologists to meet

A debate on the use of flammable anesthetic agents in hospital practice and a symposium on the respiratory problems faced by man in unusual environments will be two of the highlights of the New York State Postgraduate Assembly in Anesthesiology, which will be held at the New York Hilton on December 16 through 18. The assembly is sponsored annually by the New York State Society of Anesthesiologists.

According to William S. Howland, M.D., chairman of the scientific program committee, the debate on flammable anesthetics will be moderated by Gordon M. Wyant, M.D., professor of anesthesiology, University of Saskatchewan; participants will be John Dillon, M.D., professor and chief of anesthesia, School of Medicine, University of California; H. Barrie Fairley, M.D., professor of anesthesia, University of Toronto; C. Ronald Stephen, M.D., professor of anesthesia, Southwestern Medical School; and Stuart L. Vandewater, M.D., professor and chairman, Department of Anesthesia, Queen's University, Kingston, Ontario, Canada.

Serving as chairman of the symposium on controlling the atmosphere in unusual environments will be Leslie Rendell-Baker, M.D., professor and chairman, Department of Anesthesiology, Mt. Sinai Medical School; other participants will be: John Billingham, M.D., biotechnology division, Ames Research Center, National Aeronautics and Space Administration; Eugene B. Konecci, M.D., professor of clinical medicine, San Antonio Medical School, and professor of aerospace engineering, College of Engineering University of Texas; A. W. Petrocelli, M.D., assistant manager of development engineering for materials, General Dynamics Corporation; and Carl Schaefer, M.D., scientific manager, bio-medical science division, U.S. Naval Submarine Medical Center, New London, Connecticut.

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Association of American Medical Colleges report on national intern and resident matching program, 1958–1968*

Since its inception in 1951, 120,000 U.S. medical school graduates have taken advantage of the National Intern and Resident Matching Program. Table I summarizes the number of participating graduates and the number of positions offered and filled during the years 1958 to 1968. Except for the continued increases in the number of intern positions offered and students participating, there have been no significant changes over the years. The percentage of graduates participating in the program has remained consistently at 96 per cent. The rate of increase of the number of internships offered has kept pace with the number of participants so that the percentage of internships filled has remained essentially constant.

Of significance, however, are the changes in the proportion of interns matched to major teaching hospitals with medical school affiliations and of nonaffiliated hospitals. A direct comparison of the 1968 NIRMP program with that of 1958 (Table II) shows that in 1968 the number of interns matched to major teaching hospitals was 11.2 per cent higher than in 1958. Nonaffiliated hospitals showed an 8.6 per cent decline in the number of in-

TABLE I. Summary of the number of participating medical graduates and the number of internships offered and filled 1958-1968

Year	Total Participants	Total Matched	% Matched	Total Internships Offered	% Internships Filled
1958	7,131	6,734	94.4	11,958	56.3
1959	6,729	6,478	96.3	12,250	52.9
1960	6,911	6,673	96.6	12,390	53.9
1961	6,856	6,637	96.8	12,686	52.3
1962	6,962	6,748	96.9	12,705	53.1
1963	7,180	6,954	96.9	12,456	55.8
1964	7,351	7,130	97.0	12,601	56.6
1965	7,598	7,342	96.6	13,038	56.3
1966	7,836	7,588	96.8	13,463	56.4
1967	8,000	7,753	96.9	14,178	54.7
1968	8,306	8,007	96.4	14,566	55.0

TABLE II. Experience of NIRMP participants according to matching results

NIRMP Participants Matched to:	1958 Number Matched	1958 % of Total	1968 Number Matched	1968 % of Total
Major Teaching Hospital	3,385	47.5	4,873	58.7
Nonaffiliated Hospital	2,356	33.0	2,030	24.4
Minor Teaching Hospital	467	6.5	582	7.0
Federal Service	526	7.4	522	6.3
Total Matched	6,734	94.4	8,007	96.4
Unmatched	397	5.6	299	3.6
Total Participants	7,131	100.0	8,306	100.0

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* In 1968, the National Intern Matching program (NIMP) was reincorporated as the National Intern and Resident Matching Program (NIRMP).

TABLE III. Matching experience of hospitals with and without major medical school affiliations

Per Cent of Interns Obtained Through NIRMP	1958 Hospitals Number	1958 Hospitals %	1958 Interns Number Sought	1958 Interns Number Matched	1958 Interns % Matched	1968 Hospitals Number	1968 Hospitals %	1968 Interns Number Sought	1968 Interns Number Matched	1968 Interns % Matched
	Major Medical School Affiliations					Major Medical School Affiliations				
50–100	124	81.0	3,756	3,203	85.3	145	75.9	5,416	4,632	85.5
0– 49	29	19.0	574	182	31.7	46	24.1	946	241	25.5
TOTAL	153	100.0	4,330	3,385	78.2	191	100.0	6,362	4,873	76.6
	No Medical School Affiliations					No Medical School Affiliations				
50–100	188	31.4	2,426	1,931	80.0	103	22.5	1,828	1,496	81.8
0– 49	411	68.6	3,890	425	10.9	355	77.5	4,607	534	11.6
TOTAL	599	100.0	6,316	2,356	37.3	458	100.0	6,435	2,030	31.5

terns matched in 1968 as compared with the 1958 level. The number matched to minor teaching and federal service hospitals have remained relatively constant.

Table III compares the success of hospitals which have a major medical school affiliation in obtaining interns through the NIRMP with those having no medical school affiliation. In 1958, 81 per cent of hospitals with a major affiliation received one half of their desired total intern quota through NIRMP as compared with 76 per cent in 1968. The percentage of interns matched remained the same (85 per cent) in both years.

The proportion of nonaffiliated hospitals receiving more than one half of the interns sought through the NIRMP program decreased from 31 per cent in 1958 to 23 per cent in 1968; the percentage of interns matched increased by nearly 2 per cent.

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*Complete list of references on request.

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Scientific Articles

Immunologic Basis of Immunohematologic Disorders*

THYROGLOBULIN, *an organ-specific protein, was selected to determine whether or not autoimmunization against known antigenic substances could be produced experimentally. In vitro and in vivo studies were done. Apparently a combination of an environmental factor as well as genetically controlled constitutional factors come into play in the development of autoimmune diseases.*

ERNEST WITEBSKY, M.D.
Buffalo, New York

From the Department of Bacteriology and Immunology,
State University of New York at Buffalo,
and The Buffalo General Hospital

THE CONCEPT of autoimmunity as the cause of several blood diseases, such as acquired hemolytic anemia, certain forms of leukopenia, thrombocytopenic purpura and, last but not least, systemic lupus erythematosus, is accepted by some but opposed by others. My assignment is to discuss the immunologic background of these hematologic diseases.

In investigations on goats, Ehrlich and Morgenroth[1] were able to produce isoantibodies by exchanging blood of different individual goats. However, autoantibodies were never formed. For this reason they coined the term, "horror autotoxicus," the fear of the living body to destroy itself. Landsteiner's[2] discovery of the human blood groups is based on the principle that there are antibodies in normal human serum directed against those constituents of the blood cells which are absent in the individual himself. More recently, Burnet and Fenner[3] referred to the biologic principle which enables the living body to differentiate between its own constituents and foreign constituents as "self recognition." Yet, there is a disease known for a long time which seems to involve the mechanism of autoimmunization, paroxysmal cold hemoglobinuria. A patient suffering from this disease, when exposed to the cold and later returned to normal temperature, suffers from an attack of hemoglobinemia followed by hemoglobinuria. Donath and Landsteiner[4] discovered a factor in the serum of such patients which combines with the patient's own red blood cells as well as with those of other human beings, in vitro and in vivo, provided the temperature is decreased. For almost fifty years there were two reasons why investigators shied away from referring to this blood factor as an autoantibody: (1) the failure to reproduce the disease in experimental animals by autoimmunization and (2) the lack of the recognition of the specific antigen against which this particular factor is directed. The hallmark of an antigen-antibody reaction is its specificity, meaning that the antibody can combine with and through specific combining sites—receptors only, distributed over the surface of the blood cells—but not with the blood cells per se.

About thirty years ago, Dameshek and Schwartz[5] prepared an antiserum against guinea pig erythrocytes in the rabbit. The injection of such an antiserum back into guinea pigs produced hemolytic syndromes closely comparable to those seen in acquired hemolytic anemia of the adult. They also

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TABLE I. Agglutination of tanned human erythrocytes coated with human thyroid extract by sera of patients with thyroiditis*

Serum Dilution	Patients 1	2	3	4	Normal Human Serum
1:5	++	++	+++	+++	−
1:10	+++	+++	+++	+++	−
1:20	+++	+++	+++	+++	−
1:40	+++	+++	++	+	−
1:80	++	++	++	−	−
1:160	++	++	−	−	−
1:320	++	++	−	−	−
1:640	++	++	−	−	−
1:1,280	−	++	−	−	−
1:2,560	−	−	−	−	−

* Plus and minus signs designate degree of reaction: + = weak; ++ = moderate; +++ = strong; − = no reaction

reported hemolysins in the sera of 3 patients with acute hemolytic anemia. When it was found later that patients suffering from acquired hemolytic anemia of the adult frequently exhibited a positive reaction in the direct Coombs' test, the question of autosensitization as the cause of the disease arose again. It did not take long before the concept of autoimmunity as a cause was extended to other blood diseases.

In vitro study

To find out whether autoimmunization against known antigenic substances could be produced experimentally at all, we[6] selected thyroglobulin, an organ-specific protein which could be chemically purified and studied; besides, thyroglobulin is stored in the colloid of the thyroid follicles and is therefore somewhat separated from the general circulation. Chronic thyroiditis could be elicited in laboratory animals by active immunization with thyroglobulin.[7,8] The pathologic lesions were frequently accompanied by circulating antibodies highly specific for thyroglobulin. The histologic picture of the experimental disease resembled closely that of chronic thyroiditis, or Hashimoto's disease, in man. In addition, thyroglobulin antibodies are frequently found in the serum of patients suffering from this disease. However, from the start we could not convince ourselves that the thyroglobulin antibody, as such, was responsible for the changes in the target organ, and we considered the presence of these antibodies an indicator rather than the cause of the disease. Therefore, in the first clinical article published from our laboratory we suggested that at least four criteria should be fulfilled to prove the role of autoimmunity in the pathogenesis of a particular human disease, as illustrated in the case of thyroiditis, namely, (1) the direct demonstration of free, circulating antibodies that are active at body temperature or of cell-bound antibodies by indirect means (Table I); (2) the recognition of the specific antigen against which this antibody is directed (Fig. 1); (3) the production of antibodies against the analogous antigen in laboratory animals (Table II); and (4) the appearance of pathologic changes in the corresponding tissues of an actively immunized laboratory animal that are basically similar to those in the human disease (Fig. 2).[9] Actually, other criteria could be added, such as the production of changes in the target organ by passive transfer of antibody-containing serum or immunologically competent cells, at least in laboratory animals. The first four criteria mentioned are fulfilled in the case of Hashimoto's

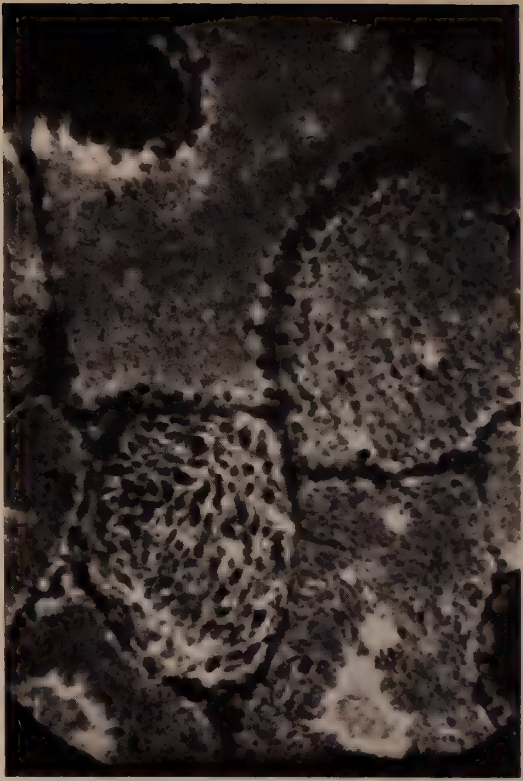

FIGURE 1. Indirect immunofluorescent staining of colloid of section of normal thyroid gland previously treated with antibody-containing serum of patient suffering from thyroiditis.

TABLE II. Reaction of pooled normal rabbit thyroid extract*

Antiserum Dilution	Rabbit Thyroid Antiserum 214c	222c	223c	Normal Rabbit Serum
1:10†	+++	++	++++	−
1:20	+++	++	++++	−
1:40	+++	++	++++	−
1:80	++	++	+++	−
1:160	++	++	+++	−
1:320	++	+	++	−
1:640	++	−	++	−
1:1,280	+	−	++	−
1:2,560	+	−	+	−
1:5,120	+	−	+	−
Saline	−	−	−	−

* Hemagglutination test. Plus and minus signs designate degree of reaction: + = weak; ++ = moderate; +++ = strong; ++++ = very strong; − = no reaction.

† Pipettes were changed between dilutions.

disease although even here the question arose as to what the trigger mechanism is in the human disease which would correspond to the complete Freund adjuvant used in producing the experimental disease. A preceding viral infection was and is suspected, but certainly this has not as yet been proved. Let us now ask to what extent these criteria are fulfilled in the case of human blood diseases referred to as being autoimmune.

In vivo study

ITP (idiopathic thrombocytopenic purpura) is especially difficult to evaluate. Harrington *et al.*,[10] by transfusing himself with ITP plasma, induced a state of severe ITP which almost killed him. According to investigations by Shulman, Marder, and Weinrach,[11] this factor was absorbed by platelets and was present in the 7S gamma globulin fraction. Patients in remission, when injected with their own previously drawn plasma, suffered a relapse. In other words, these in vivo experiments seem to prove the antibody and possibly autoantibody nature of the factor involved in con-

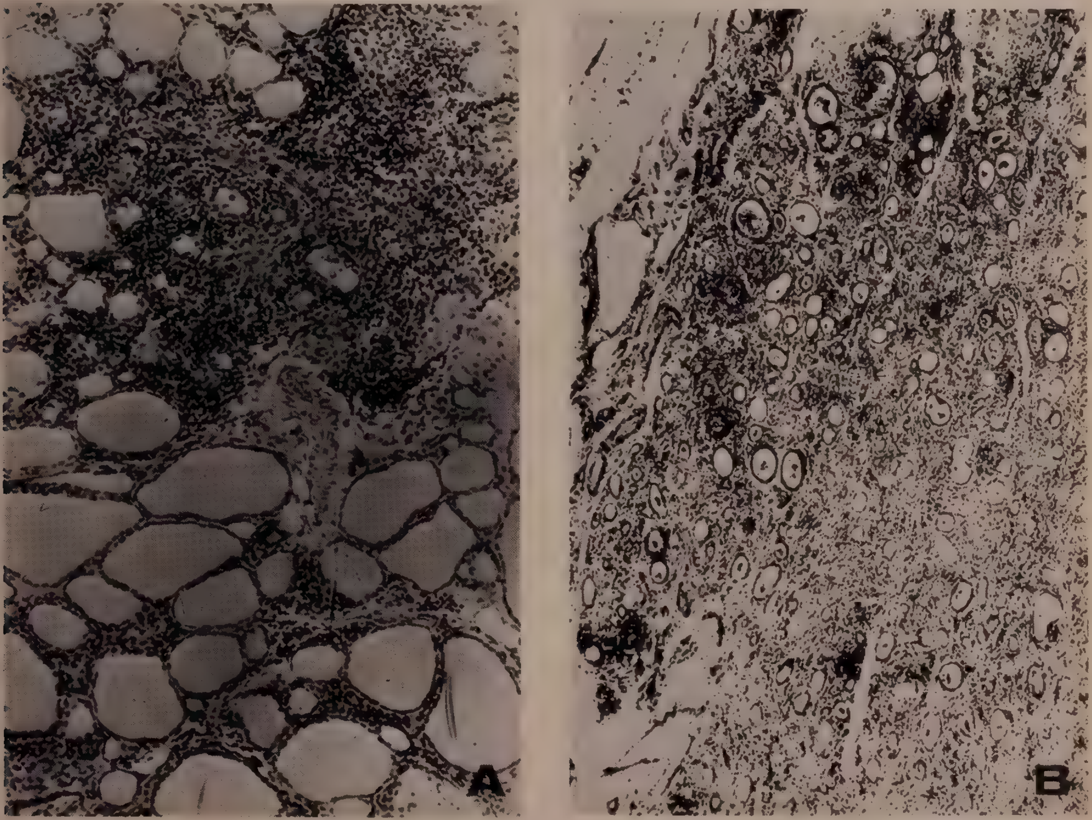

FIGURE 2. (A) Focal infiltration of thyroid gland of rabbit actively immunized with pooled extract of rabbit thyroid glands incorporated into complete Freund adjuvants. (B) Massive infiltration and destruction of architectural structure of thyroid gland of a different rabbit immunized in the same way as described in A.

TABLE III. Incidence of antinuclear factor in various patients

Diagnosis	Number of Cases	Positive Reactions Number	Positive Reactions Per Cent
Systemic lupus erythematosus	41	34	83
Rheumatoid arthritis	117	37	32
Sjogren's syndrome	21	10	48
Myasthenia gravis	27	3	11
Thyroiditis	24	2	8
Controls (hospital)	156	9	6

trast to the in vitro experiments which apparently, because of methodologic difficulties, are not yet useful in this respect.

The discovery of the lupus erythematosus cell phenomenon in systemic lupus erythematosus opened a new experimental approach. Indeed, antinuclear antibodies are frequently found in the circulation of these patients. The interesting situation here is that the nuclei of any human or animal organ can combine with nuclear antibodies. In other words, the targets are the nuclei, irrespective of the organ, paralleling the varied clinical manifestations which patients suffering from systemic lupus erythematosus frequently exhibit. In this case, however, there are two major difficulties as to the significance of these antibodies in relation to the disease. First of all, the typical lupus erythematosus cell picture so characteristic for lupus is in a way an artifact, so to speak, and most likely does not occur in vivo. However, partially destroyed cells, whose nuclear surface is exposed, might combine with the circulating antibodies. In the case of lupus nephritis, however, a different mechanism might come into play, as reported by Dixon, Feldman, and Vazquez.[12] This clinical phenomenon might be caused by complexes produced by antigen-antibody reactions which might be filtered off in the glomeruli of the kidney and lodged there, producing a lesion for mechanical reasons rather than as a direct effect of the kidney antibody. The second difficulty is that in other diseases, such as rheumatoid arthritis and certain connective tissue disease, nuclear antibodies are frequently found (Table III). Does this observation indicate a common denominator as far as cause is concerned, or is it just an incidental finding? The role of circulating antibodies in systemic lupus, as in other human diseases suspected of being autoimmune in nature, is therefore still uncertain, and we will have to consider the question seriously as to what extent these antibodies are the sequelae rather than the cause of the morbid process.

A positive Coombs' test result, per se, means only the absorption of gamma globulin or of some other globulin by the red blood cells. As a matter of fact, it might not be an antibody at all. However, circulating antibodies were found in the sera of some patients with positive Coombs' reaction who suffered from acquired hemolytic anemia. These antibodies frequently involved the Rh group. Are these antibodies really autoantibodies or are they isoantibodies? To obtain the information about this important question, sera of some of these patients with circulating Rh antibodies were frozen at minus 20 F. In the meantime the patients were successfully treated with steroids, rendering their blood cells Coombs-negative. These cells then were exposed to the patient's earlier antibody-containing serum which had been previously frozen. Agglutination occurred again, proving the autoantibody nature of the original circulating antibody.[13] I am therefore convinced now that, at least in some instances, autoantibodies attached to the patient's cells are indeed responsible for the positive Coombs' test finding in acquired hemolytic anemia.

As mentioned in the beginning, one of the two reasons for wondering about the autoimmune mechanism of paroxysmal cold hemoglobinuria was our ignorance about the antigen. The problem seemed to be especially hopeless because all human erythrocyte samples which had been tested proved to combine with the Donath-Landsteiner factor. Recently Levine, Celano, and Falkowski[14] were able to find people whose red blood cells showed negative reactions in the Donath-Landsteiner experiment. We are dealing here, therefore, with a blood group antigen which is almost universally present in human subjects, with some rare exceptions. But these exceptions present to us our needed negative control, so to speak, revealing the fact that we are indeed dealing with a specific blood group antibody, anti Tj^a as follows:

1. Practically all human beings are Tj(a+)
2. The Tj(a−) phenotype is an extreme rarity
3. The Tj(a−) subjects have natural anti-Tj^a isoantibodies
4. The Tj system is part of the P system (Sanger)
5. The new nomenclature for phenotypes:
   P_1 and P_2 = Tj (a+)
   P = Tj (a−)

Obviously, the study of the impact of constitutional, genetically controlled factors on health and disease in the human subject is as challenging as it is difficult to analyze. There are many clinical observations which have led us to suspect a genetic background for not only the type of blood diseases under discussion but also of connective tissue diseases. The familial incidence of several of these diseases, especially in some instances of larger families, is impressive. In addition, ITP, for instance, can be present as an isolated although deadly phenomenon, and the corresponding immunologic basis has to involve constituents of the platelets exclusively. However, ITP might be associated with systemic lupus erythematosus; as a matter of fact, there might be ITP, acquired hemolytic anemia, and leukopenia, with and without systemic lupus erythematosus. In other words, in these instances we are dealing with multiple sensitivities, and obviously the immunologic reaction must be directed against a multiplicity of antigens present in the different target cells. If a genetic aberration of the immunologic apparatus is considered the underlying basis of this situation, this abnormality must involve either a very specific selected part or an over-all immunologic responsiveness.

As an example of the difficulties in blaming hereditary predisposition in the development of diseases of this kind, I would like to refer to an article by Thier *et al.*[15] who reported a family in which 5 of 8 members had evidence of chronic lymphocytic thyroiditis. The authors discuss the possibility of a genetic basis for the development of thyroiditis, or, as an alternative hypothesis, the involvement of an environmental factor. In such a case, a viral infection occurring within the family might assume the role of the complete Freund adjuvants so very essential for the production of the corresponding experimental autoimmune disease in animals. It appears to me, however, that a combination of both, namely, an environmental factor as well as genetically controlled constitutional factors, might come into play in the development of autoimmune diseases.

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Nutritional and Metabolic Effects of Some Newer Steroids

V. Norbolethone

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ANABOLIC STEROIDS EVOLVED from work done some thirty years ago by Kochakian and Murlin[1] in which nitrogen retention and weight gain were demonstrated in castrated dogs after injection of human male sex hormone. However, the mechanism by which such substances influence protein metabolism is not yet clearly understood. Some investigators have characterized testosterone as a protein- and glucose-sparing agent rather than an active protein builder.[2] Others believe the anabolic steroids not only inhibit catabolism but also directly accelerate protein synthesis.[3] Since testosterone derivatives possess undesirable virilizing activity, their clinical use as protein anabolic agents has been limited.

During the past decade, a number of compounds with favorable anabolic-androgenic activity have become available and have been employed to offset excessive protein deterioration in body tissues arising from many clinical conditions. The most recent of these is norbolethone (Genabol), a totally synthetic oral steroid which has been found in extensive animal experiments to show one of the best separations of anabolic and androgenic effects.[4-6] Prior metabolic studies in man have shown this compound to induce significant improvement in nitrogen balance of 5 elderly males and females[7] and 6 healthy but mentally retarded children.[8] Norbolethone was also clinically evaluated by Greenblatt, Jungck, and King[9] in 126 patients, including 35 growth-retarded boys and girls, seven to eighteen years, who gained satisfactorily in height with 1.25 mg. per day of the steroid for thirty to fifty days, and in 71 underweight adolescents and adults who gained some 6 pounds each in an average of twenty-five days with widely varying dosages of norbolethone. Of 19 institutionalized and emaciated elderly patients, sixty-six to ninety years, 4 gained 4 to 12 pounds in thirty-five days, and 5 showed increased alertness and strength but no weight gain with a total of 137 mg. of norbolethone for the trial period.

The sum total of these clinical observations made it desirable to assay norbolethone in terms of its SPAI (steroid protein activity index) and ACAI (anticorticocatabolic activity index) and its effects on lipid and carbohydrate metabolism and other metabolic parameters. Our findings during three years of study are recorded in this report.

Procedures and methods

Norbolethone, the generic name for dl-13,17 alpha-diethyl-17-hydroxygon-4-en-3-one, was prepared by Smith[4] by total synthesis, thus permitting a chemical control of biologic and therapeutic properties heretofore unrealizable. The product is pharmaceutically available in 2.5-mg. tablets. Rat assays revealed that norbolethone is 3.4 times as potent as testosterone propionate and has about 15 per cent of its androgenic characteristics. It possesses a marked myotropic action at nonandrogenic dosages, that is, an anabolic-androgenic ratio of 20:1. Oral administration of norbolethone to normal adult rats induced a marked nitrogen retention and counteracted the nitrogen catabolism induced by cortisone injection.

Extensive acute and chronic toxicity studies in adult and newborn rats and mice showed tolerance to norbolethone in these species to be approximately 200 times the effective anabolic dose in man on a weight basis.

Administration of 20 mg. per kilogram per day in mature dogs for one year produced no significantly abnormal changes in serum glutamic pyruvic transaminase, serum glutamic oxalopyruvic transaminase, blood urea nitrogen, and sulfobromophthalein sodium retention.[10]

The patients who consented to participate in these studies were, for the most part, adult males and females in the recovery phase of cerebral vascular accidents resulting in hemiplegia. Since within the age range represented, twenty-four to eighty years, many of the patients were elderly, the incidence of hypogonadism was high. With few exceptions, their activities were regulated by a progressive program of physical rehabilitation. Subjects were considered for metabolic studies only after they had become well adjusted to their environment and activities. Gross nutritional status was estimated from tables of the Metropolitan Life Insurance Company.[11]

Deviations of the observed weight from desirable weight indicated by these tables are reported as per cent of standard weight, per cent S, in reference to the age-height-weight parameter.

Meals at this institution are prepared to provide an approximate calorie distribution of: protein, 15 per cent; carbohydrate, 50 per cent; and fat, 35 per cent. Tabular measurements of the food intake of patients showed an over-all average daily caloric intake of 1,860, with 78.1 Gm. of protein. On an average body weight basis, this represents 27 calories and 1.15 Gm. of protein per kilogram of body weight, a range in good agreement with recommended dietary allowances.[12]

After the period of adjustment, studies were initiated consisting of successive control and test periods of varying duration. The placebo and test substances were given orally in the daily dosage ranges indicated by prior experience.

NORBOLETHONE, *an anabolic steroid with favorable anabolic-androgenic activity, was studied to assay it in terms of its steroid protein activity and its anti-corticocatabolic activity indexes and its effects on lipid and carbohydrate metabolism and other metabolic parameters. Assays were made of its anabolic activity, anticorticocatabolic activity, lipidemic effects of norbolethone administration, and the effect of norbolethone on carbohydrate utilization. The studies were done in patients recovering from a variety of surgical procedures or acute diseases. The highest steroid protein activity values were obtained at 7.5 mg. per day. The steroid mitigated known protein catabolic effects of corticosteroids used in managing arthritic patients. It possesses a significant hypolipidemic activity and had no significant or consistent effect on fasting blood sugar levels or glucose tolerance curves under conditions of the assays.*

During each week of study, twenty-four-hour urine collections and corresponding diet records were obtained for three or four consecutive days. Fasting blood samples were obtained on the third or fourth day of each week of study.

The daily nitrogen output was determined by Kjeldahl analysis[13] and creatinine by the Jaffé reaction.[14] Blood derived from weekly collections was analyzed for hemoglobin,[14] hematocrit,[15] sodium and potassium,[16] chlorides,[17] thymol turbidity,[18] bilirubin,[19] blood sugar,[20] cholesterol,[21] total lipids,[22] and free fatty acids.[23]

The average nitrogen balance changes for each period were determined from summations of the daily nitrogen intake as derived from the tables of Taylor,[24] the total daily urinary nitrogen output determined by the Kjeldahl method, and 10 per cent of the urinary nitrogen as an estimate of fecal nitrogen.

Frequent spot checks of the estimated dietary and fecal nitrogen by the Kjeldahl analysis have shown uniform agreement within plus or minus 5 per cent.

MEDICATION	AS-90P 5 mg. BID	AS-90 5 mg. BID	AS-90 5 mg. BID
Days on medication	1 - 3	2 - 4	9 - 11
Average nitrogen intake (Gm./day)	14.8	15.4	15.2
Average daily caloric intake	2356	2316	2228
Hemoglobin (Gm.%)	12.1	12.6	11.9
Hematocrit (%)	39.0	40.5	38.5
Sodium (mEq/L)	146	150	140
Potassium (mEq/L)	4.3	4.8	4.9
Chlorides (mEq/L)	83	80	80
FBS (mg.%)	110		
Thymol turbidity (units)	2.7	2.7	0.8
Bilirubin (mg.%)	0.4	0.4	0.4
Cholesterol (mg.%)	237	206	227
Urine:			
Calcium/nitrogen	0.014	0.014	0.009
Phosphorus/nitrogen	0.060	0.054	0.060
Nitrogen/creatinine	12.0	8.3	10.6

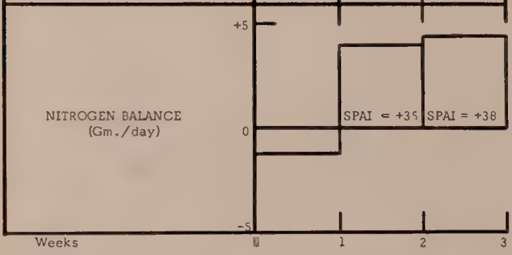

FIGURE 1. Male patient, age forty-nine years, height 66 inches, weight 132 pounds (87 per cent of standard weight). Diagnosis amputation, ankle to knee. AS-90P = Placebo for norbolethone, AS-90 = norbolethone.[36]

Detailed serial studies by one of us[25] with some 48 adult males, by Braucher[26] with 29 adult females, and by Sargent *et al.*[27] with 12 male military persons, have shown that under conditions of normal protein intake, approximately 1 Gm. per kilogram of body weight, the fecal nitrogen may range from 2 to 15 per cent of the urinary nitrogen. However, the range follows the normal distribution curve in which 10 per cent value represents maximal frequency. Because of this and other confirmatory knowledge and the difficulties and errors inherent in the collection and handling of feces, it has become common practice in this area of nutritional pharmacology to disregard the fecal nitrogen or to estimate it as 10 per cent of the urinary nitrogen.[28,29] In the interest of greater accuracy, we have chosen the latter alternate. Moreover, since increases of 0.5 Gm. per day or less in nitrogen balance are not considered a significant anabolic response in these studies, it is obvious that a rather improbable error, as great as plus or minus 100 per cent of the estimated fecal nitrogen, would not influence appreciably the results or their interpretation.

Results

Assays of anabolic activity. *Scoring method.* Since changes in appetite constitute a recognized and integral part of the pharmacodynamics of steroid medication, the use of assay procedures which restrict food and protein consumption to some predetermined level could only be expected to yield data of limited physiologic and clinical value. In an attempt to overcome this shortcoming, an assay procedure has been devised which permits examination of the protein metabolic effects of steroids under conditions of self-selected regimens.[30–32] This is based on an examination of the theory of nitrogen balance as presented by earlier investigators which disclosed that the effect of various agents on protein metabolism could be compared more systematically in terms of nitrogen balance to nitrogen intake ratios than in terms of nitrogen output or balance per se.[33–35] This relationship, which we have designated as the SPAI, is obtained from the equation:

$$\mathrm{SPAI} = \frac{\mathrm{NBSP}}{\mathrm{NISP}} - \frac{\mathrm{NBCP}}{\mathrm{NICP}} \times 100$$

where:

NBSP = Nitrogen balance in steroid period
NISP = Nitrogen intake in steroid period
NBCP = Nitrogen balance in control period
NICP = Nitrogen intake in control period

Thus, the ratios

$$\frac{\mathrm{NBSP}}{\mathrm{NISP}} \text{ and } \frac{\mathrm{NBCP}}{\mathrm{NICP}}$$

indicate the fraction of dietary protein retained by the body during the steroid and control periods, respectively. Treatment of the data in this manner has the practical advantage of compensating for the changes in nitrogen intake which may occur in the course of the study. In this frame of reference, administration of steroids having anabolic activity will result in an SPAI of positive value, and the magnitude will be proportional to the metabolic activity of the test steriod. Conversely, administration of corticosteroids may result in an SPAI of proportionately negative value. Obviously, the proposed scoring method could simplify the choice and dose of an anabolic steroid which may be considered as an antidote for the protein catabolic activity of a given corticosteroid.

The over-all plan of a typical assay of norbolethone is shown graphically in Figure 1. Results of studies with 13 males, twenty-four to seventy-eight years, and 8 females, sixty to eighty years, to determine the effective dosage range of the steroid in a variety of clinical conditions which are associated with substandard nitrogen retention are collected in Table I.

The relation of dosage to the anabolic effects of norbolethone was established in terms of SPAI. This is summarized graphically in Figure 2. It is apparent from this representation that although high SPAI values were obtained with the administration of as little as 2.5 mg. of norbolethone per day, the most consistently effective anabolic response was obtained with 7.5 mg. per day. Administration of 10 mg. per day did not seem to offer any nutritional or metabolic advantages.

Close scrutiny of the data in Table I reveals that several factors other than dosage of norbolethone may affect the SPAI. The first of these relates to the nutritional status of the subject at the beginning of the assay. In severely or moderately severe nitrogen-depleted patients, such as Cases 13, 14, 15, 16, and 17, exceptional improvements in nitrogen retention were associated with the administration of 7.5 to 10 mg. of norbolethone per day. In patients in various stages of nitrogen repletion, the response to the anabolic steroid varied but could be induced in some patients showing high positive nitrogen balance in the control period, such as Cases 7, 12, 19, and 21. It is apparent from these results that administration of the steroid to subjects in a state of high nitrogen retention was generally associated with a moderate or good improvement in protein utilization with no untoward metabolic effects. Clinically, it would be desirable to establish a practical screening procedure to ascertain the protein status of the patient prior to anabolic steroid therapy. Pending such developments, there appears to be no contraindication to this medication where protein repletion has been initiated by normal convalescent processes.

A second factor frequently affecting the SPAI of the test anabolic agent is the level of food intake in terms of both calories and protein. It has long been established from animal experiments that the efficacy of anabolic steroids may be reduced significantly by inadequate food intake. Administration of anabolic steroids can only improve the utilization of protein nitrogen; it cannot create protein nitrogen. In human studies, we have found that significant responses are obtained with diets providing a minimum of 1 to 1.5 Gm. of good quality protein and from 35 to 45 calories per kilogram per day. An example of this effect is seen in a nutritionally substandard patient, Case 16. In period 2, an SPAI of plus 18 was obtained with a daily nitrogen intake of 8.6 Gm., whereas in period 3, when the nitrogen intake fell to 7.6 Gm. per day, an SPAI of plus 4 resulted. In period 4, the daily nitrogen intake rose to 11 Gm. per day, due probably to the appetite-stimulating effect of the steroid, and the SPAI increased to plus 41.

A third factor influencing efficacy of steroid therapy is the duration of medication. In general, but not always, there is a tendency for the SPAI to decline with prolonged administration of the steroid. In other studies, this effect has been noted primarily with doses greater than the optimal. This phenomenon is illustrated by the results obtained with Case 21. Additional studies to clarify this metabolic reaction are in progress.

The findings on some clinically significant metabolites are summarized in Table II. It would appear that administration of the test steroid for assay periods as long as four weeks duration was not associated with any measurable hematologic or hepatic effects or appreciable alterations of the sodium, potassium, or chloride levels. A significant decrease in blood cholesterol was found, and this will be examined subsequently in detail. The decrease in total urinary nitrogen to creatinine ratio, although small (minus 1.4), correlates significantly with the anabolic activity of the steroid. Unfortunately, the average magnitude of this change is too small to allow its use as a criterion of nutritional effects of norbolethone. However, in nutritionally substandard patients, the magnitude of this change may be sufficiently great to be of practical value in assessing the protein metabolic effects of the steroid (Table I).

As shown in Table III, the application of

TABLE I. Nitrogen balance studies with norbolethone; all results given as daily averages of each study period

Case Number	Age (Years)	Sex	Body Weight (Kilograms)	Per Cent S	Diagnosis	Norbolethone mg. Per Day	Calorie Intake	Nitrogen Intake (Grams)	Nitrogen Balance (Grams)	Change in Nitrogen Retention (Grams)	SPAI (Per Cent)
1	54	M	69.4	100	Gastritis; gastrectomy	None	1,855	13.0	+ 2.8	. . .	. . .
						2.5	1,774	12.3	+ 5.5	+2.7	+23
						2.5	2,006	13.0	+ 5.5	+2.7	+20
2	69	M	76.8	98	Prostatectomy	None	2,441	16.4	− 0.5	. . .	. . .
						2.5	2,379	15.4	− 0.1	+0.4	+ 2
3	78	M	49.1	74	Intertrochanteric fracture	None	1,651	10.5	+ 4.4	. . .	. . .
						2.5	1,889	12.8	+ 7.0	+2.6	+13
4	47	M	59.0	82	Bilateral bronchopneumonia	None	2,691	17.3	+ 5.1	. . .	. . .
						3.75	2,363	14.4	+ 3.7	−1.4	− 4
						3.75	2,239	11.9	+ 3.0	−2.1	− 5
5	67	F	55.5	75	Hemiplegia of right side	None	1,540	10.9	+ 1.7	. . .	. . .
						3.75	1,954	13.5	+ 7.6	+5.9	+40
						3.75	1,637	12.1	+ 3.8	+2.1	+15
6	40	M	64.5	95	Toe amputation	None	2,268	16.4	+ 4.5	. . .	. . .
						3.75	2,339	15.4	+ 2.5	−2.0	−11
						3.75	1,954	15.7	+ 3.1	−1.4	− 7
7	44	M	59.0	72	Duodenal ulcer; pancreatitis	None	2,608	15.1	+ 7.8	. . .	. . .
						5.0	2,477	15.5	+10.4	+2.6	+15
8	47	M	64.1	88	Hepatic failure	None	1,519	9.6	+ 1.0	. . .	. . .
						5.0	1,201	7.2	+ 1.0	±0	+ 4
9	80	F	67.4	101	Osteoporosis	None	1,601	8.4	+ 1.2	. . .	. . .
						50.0	1,741	10.7	+ 3.8	+2.6	+22
10	49	M	53.2	74	Fracture, ankle	None	1,484	11.4	+ 8.0	. . .	. . .
						5.0	1,645	11.0	+ 7.7	−0.3	± 0
						5.0	1,334	9.4	+ 6.1	−1.9	− 5
11	64	M	81.5	116	Hemiplegia of right side	None	1,845	13.7	− 2.3	. . .	. . .
						5.0	1,854	14.9	− 1.0	+1.3	+10

12	73	F	54.0	89	Hemiplegia of right side	None	2,263	13.6	+ 3.9		
						7.5	2,122	14.0	+ 6.9	+3.0	+21
						7.5	1,827	14.0	+ 6.7	+2.8	+20
13	63	M	49.0	64	Pneumonia	None	2,015	12.8	+ 0.1	...	...
						7.5	1,785	10.1	+ 4.5	+4.4	+44
						7.5	1,497	8.7	+ 4.2	+4.1	+47
14	63	F	57.3	95	Fracture, right humerus	None	1,444	10.5	+ 0.6	...	...
						7.5	1,459	12.1	+ 3.3	+2.7	+21
						7.5	1,700	14.0	+ 4.4	+3.8	+25
						7.5	1,594	11.4	+ 2.6	+2.0	+17
15	70	F	67.3	117	Osteoarthritis	None	1,265	9.5	+ 1.0	...	...
						7.5	1,261	11.6	+ 6.1	+5.1	+42
						7.5	1,491	9.6	+ 3.9	+2.9	+30
16	67	F	61.0	88	Parkinson's disease	None	1,594	9.6	+ 0.4	...	...
						7.5	1,467	8.6	+ 1.9	+1.5	+18
						7.5	1,547	7.6	+ 0.6	+0.2	+ 4
						7.5	1,844	11.0	+ 4.9	+4.5	+41
17	49	M	60.0	87	Amputation above knee	None	2,356	14.8	− 1.3		
						10.0	2,316	15.4	+ 4.0	+5.3	+35
						10.0	2,228	15.2	+ 4.4	+5.7	+38
18	60	F	55.0	83	Cerebral vascular accident	None	1,589	10.5	+ 1.5	...	...
						10.0	1,533	10.3	+ 4.3	+2.8	+28
					Bleeding* internally after fall	10.0	1,395	9.9	+ 4.1	+2.6	+27
						10.0	866	5.8	+ 0.2	−1.3	−10*
19	75	F	59.6	99	Hemiplegia of right side	None	1,305	10.3	+ 4.8	...	...
						10.0	1,344	9.6	+ 6.3	+1.5	+19
20	24	M	59.0	Cast	Bilateral os calcis fractures	None	2,617	17.4	+ 4.7	...	...
						10.0	2,219	16.4	+ 2.1	−2.6	−14
						10.0	2,347	17.3	+ 5.5	+0.8	+ 5
21	65	M	68.0	92	Hemigastrectomy	None	1,867	13.8	+ 5.2	...	...
						10.0	2,171	14.0	+10.9	+5.7	+40
						10.0	2,411	16.2	+10.6	+5.4	+27
						10.0	2,546	15.7	+ 6.3	+1.1	+ 2

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* Patient bleeding internally after fall.

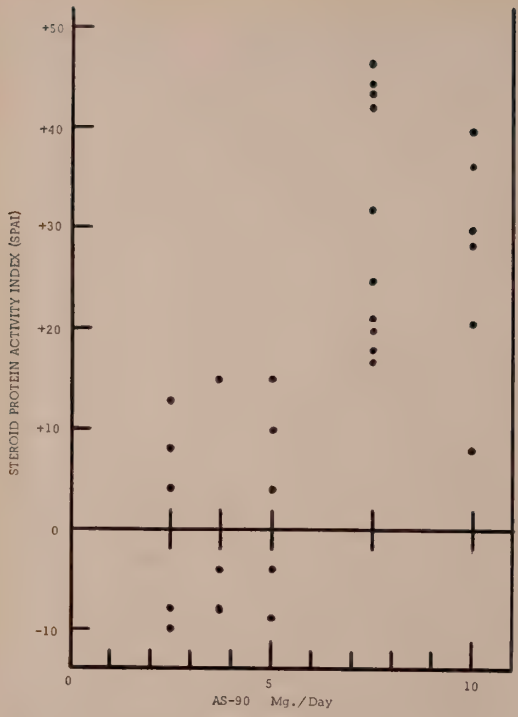


FIGURE 2. Dosage range data for AS-90 (norbolethone) in terms of SPAI values.[37]

the scoring method to the available data and the assignment of a value of unity to the SPAI of testosterone propionate permits a determination of the relative nutritional effects of various anabolic and catabolic steroids. The wide range of metabolic responses, in terms of SPAI values, that may be encountered, is clearly indicated by the data in Table I. For purposes of ready comparison, the average values are shown in Table III. It is apparent that the SPAI of norbolethone compares favorably with that of other anabolic steroids previously studied.

ASSAYS OF ANTI-CORTICOCATABOLIC ACTIVITY. With the data on hand for the protein anabolic activity of norbolethone, we proceeded to determine the effect of this steroid on the protein catabolic action of prednisone and dexamethasone. In these studies, the same biochemical and metabolic technics previously described were employed with similar patient categories. The general scheme of the assay procedure for this series is illustrated in Figure 3. It will be noted that despite the increased food and protein intake of this patient, associated with the corticosteroid therapy, a severe loss of nitrogen was sustained. To quantitate the beneficial effects of the anabolic steroids, we have proposed its measurement in terms of ACAI, which we have defined as:

$$\text{ACAI} = \frac{\text{NB}}{\text{NI}}(\text{CS} + \text{AS}) - \frac{\text{NB}}{\text{NI}}(\text{CS}) \times 100$$

where:

$\frac{\text{NB}}{\text{NI}}(\text{CS} + \text{AS})$ = ratio of nitrogen balance (NB) to nitrogen intake (NI) in the corticosteroid (CS) plus anabolic steroid (AS) period; and

$\frac{\text{NB}}{\text{NI}}(\text{CS})$ = the ratio of nitrogen balance (NB) to nitrogen intake (NI) in the corticosteroid (CS) period.

By means of this formula, the ACAI of norbolethone was ascertained with the three corticosteroids. The pertinent data are collected in Table IV, and the findings are summarized in Table V. These observations reveal that norbolethone yielded a

TABLE II. Effect of norbolethone on some constituents of blood and urine; results represent the average of 18 assays

Constituent	Control	Test	Difference
Blood			
Hemoglobin (Gm. per 100 ml.)	12.7	12.8	+0.1
Hematocrit (mm.)	42	42	0
Sodium (mEq. per liter)	146	147	+ 1.0
Potassium (mEq. per liter)	4.3	4.4	+ 0.1
Chlorides (mEq. per liter)	82	82	0
Thymol turbidity (units)	1.7	1.6	− 0.1
Bilirubin (mg. per 100 ml.)	0.4	0.4	0
Cholesterol (mg. per 100 ml.)	276	219	−57
Urine			
Total nitrogen to creatinine ratio	9.9	8.5	− 1.4

TABLE III. Comparison of SPAI of some newer oral steroids in convalescent adults, twenty-five to eighty-seven years

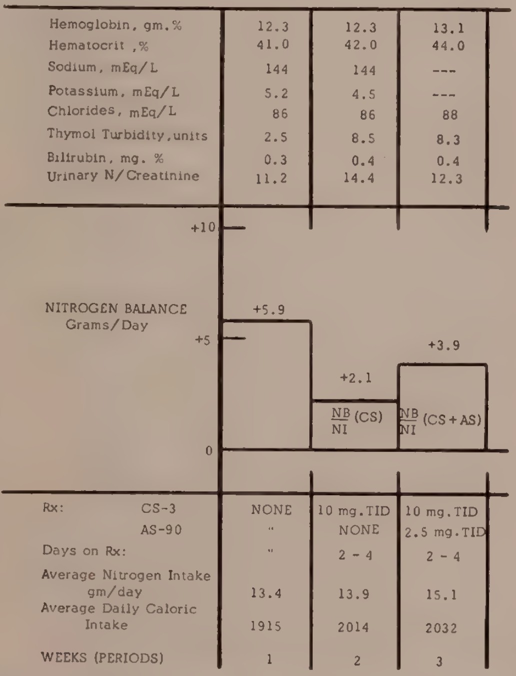
Therapeutic Agent	Number of Assays	Dosage Range (mg. Per Day)	Average SPAI
Anabolic steroids			
Testosterone propionate	12	10 to 25	+ 6
19-nortestosterone	14	25 to 75	+ 9
Norethandrolone	10	30 to 60	+ 8
Oxandrolone	27	10 to 20	+20
4-OH MT*	14	15 to 45	+11
Methandrostenolone	16	5 to 30	+16
Stanozolol	10	6 to 12	+29
BAS-71†	9	15 to 25	+30
Norbolethone	11	7.5	+33
Corticosteroids			
Prednisone	4	30	−38
Prednisolone	7	30	−33
Triamcinolone	8	12 to 24	−17
Dexamethasone	7	2.25	−11
Paramethasone acetate (Haldrone)	13	6	− 8
Betamethasone (Celestone)	4	3.60	−19

* 4-hydroxy-17alpha-methyltestosterone.

† 17beta-hydroxy-17alpha-methylandrost-4-eno-(3,2-c)-pyrazole.

positive ACAI at low as well as high levels of prednisone administration. It is significant that the ACAI values of norbolethone frequently equaled its SPAI, indicating the capacity of this steroid to compensate for the metabolic losses of body proteins usually induced by the test corticosteroids.

Since these encouraging results were for the most part obtained in studies of relatively short duration, questions could reasonably be raised regarding the metabolic efficacy of anabolic steroids in patients who had received corticosteroid medication for long periods of time. To this end, a study was done on a sixty-two-year-old female who was suffering from severe rheumatoid arthritis and who had received triamcinolone for some two years prior to admission to this hospital (Fig. 4). At that time, in addition to her principal complaint, she presented x-ray evidence of generalized osteoporosis. Nitrogen balance measurements done for two weeks during continuation of her therapy showed a low positive value. When norbolethone was added to her medication for three weeks, the nitrogen balance improved markedly and returned to the initial value when administration of the anabolic steroid was terminated. From this and prior observations of this nature, it would appear that nitrogen balance response to anabolic steroid therapy is not impaired by prolonged exposure to corticosteroid medication.[38]



Hemoglobin, gm.%	12.3	12.3	13.1
Hematocrit ,%	41.0	42.0	44.0
Sodium, mEq/L	144	144	---
Potassium, mEq/L	5.2	4.5	---
Chlorides, mEq/L	86	86	88
Thymol Turbidity,units	2.5	8.5	8.3
Bilirubin, mg. %	0.3	0.4	0.4
Urinary N/Creatinine	11.2	14.4	12.3

Rx: CS-3	NONE	10 mg.TID	10 mg.TID
AS-90	"	NONE	2.5 mg.TID
Days on Rx:	"	2 - 4	2 - 4
Average Nitrogen Intake gm/day	13.4	13.9	15.1
Average Daily Caloric Intake	1915	2014	2032
WEEKS (PERIODS)	1	2	3

FIGURE 3. Male patient, age sixty years, height 68.5 inches, weight 128 pounds (79 per cent of standard weight). Diagnosis bronchiectasis. AS-90 = norbolethone, CS-3 = prednisone.

TABLE IV. Nitrogen balance studies with norbolethone

Agent and Case Number	Age (Years)	Sex	Body Weight (Kilograms)	Per Cent S	Diagnosis	Norbolethone mg. Per Day	Corticosteroid mg. Per Day	Calorie Intake	Nitrogen Intake (Grams)	Nitrogen Balance (Grams)	ACAI
Prednisone											
22	60	M	58.2	79	Bronchiectasis	None	None	1,915	13.4	+5.9	. . .
						None	30	2,014	13.9	+2.1	. . .
						7.5	30	2,032	15.1	+3.9	+18
23	64	M	76.8	85	Hernia repair	None	None	1,723	11.1	+5.7	. . .
						None	30	1,861	11.5	+1.2	. . .
						7.5	30	1,975	12.4	+5.1	+39
24	53	M	57.5	74	Gastric resection	None	None	1,674	10.5	+2.6	. . .
						None	30	2,375	16.9	+7.7	. . .
						7.5	30	2,547	16.5	+8.5	+ 8
25	69	F	59.1	90	Cerebral vascular insufficiency	None	None	1,656	12.2	+3.7	. . .
						None	30	1,975	14.3	+1.1	. . .
						7.5	30	2,148	13.9	+4.9	+38
26	54	M	70.9	95	Sympathectomy	None	None	2,532	17.0	+2.8	. . .
						None	30	2,799	18.6	−0.1	. . .
						7.5	30	2,920	18.7	+1.9	+20
27	53	F	40.9	65	Small-bowel obstruction; lupus; osteoporosis	None	7.5	1,511	9.7	+3.3	. . .
						7.5	7.5	1,569	11.6	+7.7	+44
Dexamethasone											
28	72	F	50.9	81	Cerebral vascular accident	None	None	1,455	9.1	+0.9	. . .
						None	2.25	1,353	9.9	+2.0	. . .
						7.5	2.25	1,501	11.8	+5.5	+35
Triamcinolone											
29	62	F	63.6	93	Rheumatoid arthritis	None	2.0	2,005	9.0	−0.1	. . .
						None	2.0	2,056	9.3	+1.1	. . .
						7.5	2.0	2,039	8.9	+3.1	+20

TABLE V. ACAI of norbolethone

Corticosteroid mg. Per Day	Norbolethone mg. Per Day	Number of Cases	Average SPAI of Corticosteroid	Average ACAI of Norbolethone
Prednisone				
30	7.5	5	−38	+24
7.5	7.5	1	. . .	+44
Dexamethasone				
2.25	7.5	1	−11	+35
Triamcinolone				
2.0	7.5	1	−17	+20

Lipidemic effects of norbolethone administration. Considerations of known Krebs cycle-linked pathways of metabolism suggest that the protein effects of anabolic steroids could reasonably be expected to exert feedback alterations on the mobilization of body fats and carbohydrates. The effect of large doses of testosterone on 4 elderly men was studied by Nathan, Cahill, and Gardner,[2] who found that in each instance a significant loss of body fat occurred during twenty-five to forty days of androgen administration. Hypocholesterolemic and hypolipidemic effects of some of the newer anabolic steroids of low androgenic titer have also been reported.[39,40] Recently, Gherondache, Dowling, and Pincus[41] found that administration of 7.5 mg. per day of oxandrolone for periods of three months has a statistically significant cholesterol- and triglyceride-lowering activity in both adult males and females. In our assays it was found that administration of norbolethone to hyperlipidemic patients was associated with appreciable reductions of blood cholesterol, total lipids, and free fatty acids.

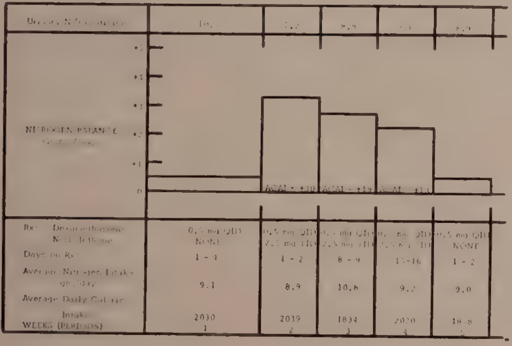


FIGURE 4. Female patient, age sixty-two years, weight 140 pounds (93 per cent of standard weight). Diagnosis rheumatoid arthritis.[37]

In the first series of studies, the effect of a single dose of norbolethone on fasting levels of blood lipid was determined in 4 subjects (Table VI). These measurements disclosed that decreases of varying magnitude of the three blood lipid fractions were associated with norbolethone administration. The most significant changes occurred in the total lipid and free fatty acid fractions. Reductions in cholesterol levels were relatively small. In Case 33, however, the negative blood cholesterol change was as great as that resulting from prolonged maintenance of subjects on diets of high polyunsaturated to saturated ratio.[42] It is of interest to note that in this patient the effects of norbolethone were not significantly different with a 10- or a 20-mg. dose of the steroid.

These results indicated that a study on blood lipid changes induced by prolonged administration of norbolethone would prove worthwhile. Four elderly ladies, residents of the Osborn Memorial Home, who had previously participated in a ten-year study on the effects of dietary fat changes, volunteered for this undertaking. The pertinent data of this assay are shown in Table VII, but varying decreases in the major blood lipid fractions were associated with daily administration of norbolethone with a dose (7.5 mg. per day) which had been shown to induce marked nitrogen retention (Fig. 2).

In 3 of these subjects, the decrease in blood cholesterol level found with fourteen to forty-two days of steroid administration was as great if not greater than that obtained with six months of a regimen having a polyunsaturated to saturated ratio of 0.5 to 0.7. During this investigation, parallel measurements of alpha and beta lipoproteins were done, but no consistent trend with medication was achieved in these blood fractions, individually or in terms of the

TABLE VI. Effect of norbolethone on fasting lipid levels*

Case Number	Age (Years)	Sex	Body Weight (Kilograms)	Per Cent S	Diagnosis	Test Substance mg. Per Day	Total Lipids: Fasting mg. Per 100 ml.	Total Lipids: Change mg. Per 100 ml.	Free Fatty Acids: Fasting mg. Per 100 ml.	Free Fatty Acids: Change mg. Per 100 ml.	Cholesterol: Fasting mg. Per 100 ml.	Cholesterol: Change mg. Per 100 ml.
30	54	M	52	78	Pneumothorax, right lung	None (control)	350		42		237	
						10	330	− 20	33	− 9	225	−12
31	39	M	69	102	Skin grafts to legs	None (control)	370		47		224	
						10	350	− 20	40	− 7	214	−10
32	66	M	63	88	Postoperative gastrectomy splenectomy; syncope	None (control)	420		34		172	
						10	240	−180	19	−15	170	− 2
33	52	M	48	66	Postoperative thoracoplasty	None (control)	510		50		273	
						10	410	−100	29	−21	255	−18
33	52	M	48	66	Postoperative thoracoplasty	None (control)	340		48		266	
						20	240	−100	21	−27	242	−24

* Protocol: Fasting blood samples were collected and analyzed for lipids on day 1 (control). At noon and at bedtime on day 1, the subjects were given 5 or 10 mg. of norbolethone. On the morning of day 2, fasting blood samples were again collected and analyzed for lipids.

beta to alpha ratios. This finding is consistent with previous reports.[41]

The third phase of the lipid study was undertaken to compare the nitrogen retention and hypolipidemic effects of norbolethone. The procedures, protocols, and methods employed were similar to those previously described. The design of these assays is illustrated graphically in Figure 5. The patient characteristics and results of 12 other assays are collected in Table VIII.

These findings indicate that the hypolipidemic and nitrogen-retention (SPAI) effects of norbolethone are associated pharmacologic characteristics and that at the optimal dose (7.5 mg. per day), the magnitude of the hypolipidemic, like the protein-repletion, effect of the steroid, is of useful clinical significance.

The results also indicate that the hypolipidemic effects of norbolethone may be achieved at dosages lower than those yielding a positive SPAI.

EFFECT OF NORBOLETHONE ON CARBOHYDRATE UTILIZATION. Tainter *et al.*[43] have discussed in detail some applications of anabolic steroids in the management of diabetic patients. In prior studies we demonstrated that anabolic steroids possess a significant mitigating effect on hyperglycemia induced by corticoid administration.[44] These experiences prompted us to ascertain the effect of a single dose of norbolethone on fasting blood sugar levels as well as glucose tolerance. These assays were done with the cooperation and consent of 13 patients convalescing from a variety of diseases. The fasting blood sugar differences between the control and steroid test days ranged from minus 24 to plus 24 mg. per 100 ml., with an average of minus 4 mg. per 100 ml. for the group. The differences in the glucose tolerance curves at the sixty-, one hundred twenty-, and one hundred eighty-minute intervals were similarly inconsistent and unimpressive.

Comment

The literature has not allowed us to make the specific statement that anabolic agents should be used routinely in conjunction with corticosteroids. In this study, we have attempted to utilize parameters of protein utilization to show that there is, in fact, definite value to this type of approach

TABLE VII. Hypolipidemic activity of norbolethone in elderly females

								Lipids		
Case Number	Age (Years)	Sex	Body Weight (Kilograms)	Per Cent S	Diagnosis	Norbolethone mg. Per Day	Days Post Control	Cholesterol mg. Per 100 ml.	Total Lipids mg. Per 100 ml.	Free Fatty Acid mg. Per 100 ml.
34	89	F	40.2	68	Healthy, normal	None	...	324	640	28.8
						7.5	7	312	610	21.6
						7.5	14	324	560	17.6
						7.5	21	314	540	14.3
						7.5	28	314	530	16.5
						7.5	35	270	500	13.6
						7.5	42	218	400	6.1
35	77	F	69.1	113	Arteriosclerotic cardiovascular disease with hypertension	None	...	261	550	26.7
						7.5	7	256	530	28.7
						7.5	14	254	410	27.9
36	94	F	58.8	92	Arteriosclerotic cardiovascular disease; sciatica	None	...	234	540	25.6
						7.5	7	226	510	17.6
						7.5	14	227	400	14.8
						7.5	21	203	360	12.3
						7.5	28	216	390	17.4
						7.5	35	205	350	18.5
						7.5	42	200	310	17.2
37	87	F	58.5	92	Arteriosclerotic cardiovascular disease	None	...	260	430	33.8
						7.5	7	237	410	19.5
						7.5	14	227	410	12.6

with anabolic agents of minimal androgen activity.

To this end, the nutritional and metabolic effects of norbolethone were studied in some 50 patients. Measurements of the protein anabolic effect (SPAI) were made in patients recovering from a variety of clinical episodes such as strokes, 5; surgery, 5; infection, 3; fractures, 4; and miscellaneous, 4. Results indicate that norbolethone at the oral dose of 7.5 mg. per day for periods of one to four weeks induced a significant and consistent improvement in protein utilization (SPAI) in most of these patients. It is noteworthy that in no instance were any untoward clinical symptoms observed in patients receiving the steroid in dosage levels of 2.5 to 10 mg. per day for periods up to forty-two days. Also, no biochemical evidence of electrolyte imbalance or liver damage was found during the period of norbolethone therapy or following it.

Subsequent studies in 8 patients revealed that norbolethone is useful in quantitatively mitigating in part or in toto the known protein catabolic effects of prednisone, triamcinolone, and dexamethasone. This property of the anabolic steroid was observed in patients who were exposed to corticoid medication for periods of one to two weeks or for as long as two years. It is apparent from these and previous reports, that simultaneous administration of anabolic steroids and corticosteroids provides a definite clinical advantage in the management of patients requiring corticoid therapy.[38] The quantitation of dosage relationships reported here for achieving this purpose should prove useful to clinicians confronted with the nutritional problems of patients needing extended corticosteroid medication (Table V). It would appear that further clinical experience in this area is mandatory.

Testosterone derivatives, as well as some of the newer anabolic steroids, have been shown to possess a hypolipidemic activity in man. We have attempted to determine the mechanism of this effect of norbolethone on fat metabolism. The immediate effect was a significant reduction in the total lipid and free fatty acid fractions, with little or no change in blood cholesterol levels.

Subsequent determination of blood lipids in subjects receiving norbolethone at 7.5 mg. per day for periods up to six weeks disclosed that decreases in serum cholesterol and total lipids, as well as free fatty acids,

TABLE VIII. Hypolipidemic activity of norbolethone (AS-90)

						Lipids			
Case Number	Age (Years)	Sex	Per Cent S	Diagnosis	Norbolethone mg. Per Day	Cholesterol mg. Per 100 ml.	Total Lipids mg. Per 100 ml.	Free Fatty Acid mg. Per 100 ml.	SPAI
17	49	M	87	Amputation, above knee	None	237	400	24.4	. . .
					10	206	390	24.4	+35
					10	227	480	32.6	+38
38	39	M	85	Cirrhosis	None	364	670	28.2	. . .
					10	348	900	30.8	−58
12	73	F	89	Cerebrovascular accident, hemiparesis of right side	None	300	470	31.7	. . .
					7.7	258	470	24.4	+21
					7.5	242	340	10.9	+20
13	63	M	64	Pneumonia	None	264	470	14.0	. . .
					7.5	199	380	14.0	+44
					7.5	188	310	14.8	+47
10	49	M	74	Fracture, right ankle	None	346	610	24.4	. . .
					5	341	490	13.0	± 0
					5	320	510	16.3	− 5
9	80	F	101	Osteoporosis	None	278	390	25.6	. . .
					5	256	420	25.6	+22
11	64	M	116	Cerebrovascular accident, hemiplegia of right side	None	291	440	36.5	. . .
					5	257	350	34.8	+10
					5	229	330	11.6	− 4
8	47	M	88	Hepatic failure	None	185	370	24.0	. . .
					5	165	370	24.0	−11
					5	172	320	34.8	+ 4
5	67	F	75	Cerebrovascular accident, hemiparesis of right side	None	266	360	47.8	. . .
					3.75	276	400	41.2	+40
					3.75	206	470	18.6	+15
6	40	M	95	Amputation, toe	None	336	. . .	. . .	
					3.75	305	410	16.7	−11
					3.75	282	310	13.9	+ 7
2	67	M	98	Prostatectomy	None	344	610	23.9	. .
					3.75	274	430	18.3	+ 2
					3.75	254	380	11.6	−18
3	78	M	74	Intertrochanteric fracture	None	256	370	11.1	. . .
					2.5	240	340	12.2	+13
					2.5	174	310	10.3	−17

were associated with medication. The effects so observed were similar in magnitude to those found in the same subjects who in an earlier study had been maintained for six months on a dietary regimen high in polyunsaturated fatty acids (polyunsaturated to saturated ratio 0.7).

In addition, parallel determinations of the effect of norbolethone on protein and fat metabolism were undertaken in 12 patients. These investigations disclosed that at the optimal dose of 7.5 mg. of norbolethone per day, the magnitude of the hypolipidemic, like the protein repletion effect, appears to be of useful clinical significance.

Preliminary studies were done to ascertain the effect of norbolethone on carbohydrate metabolism in terms of changes in fasting blood sugar and glucose tolerance curves. Although norbolethone administration in previous assays had proved effective in reducing the hyperglycemia associated with corticosteroid therapy, given alone it failed to alter significantly the parameters of carbohydrate metabolism employed in this study.

There seems little to deny the effectiveness of the norbolethone utilized in this study to effect an increase in the ACAI which is a direct index of catabolic versus anabolic activity. The results were consistent and the side-effects nil. The use-

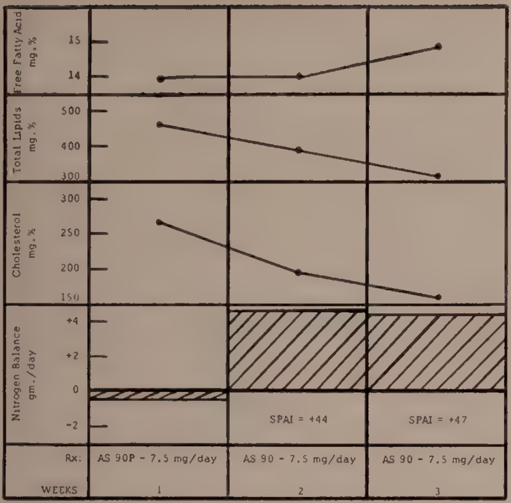


FIGURE 5. Diagram of effects of anabolic steroids on lipid and nitrogen metabolism in male patient, sixty-three years of age (74 per cent of standard weight). Diagnosis pneumonia. AS-90P = placebo for norbolethone, AS-90 = norbolethone.

fulness in parameters such as lowering lipid levels is alluded to, but this does not allow direct clinical usefulness at this time. Obviously, there is little to indicate any significant effect on carbohydrate metabolism.

Summary

Norbolethone, a new anabolic steroid prepared by total synthesis, was assayed in patients in the recovery phase of a variety of surgical procedures or acute diseases. Tests in 21 patients showed that the steroid effectively improved nitrogen retention in the dosage range of 3.75 to 10 mg. per day. However, the highest and most consistent SPAI (steroid protein activity index) values were obtained at the 7.5 mg. per day dosage level. The observed improvement in protein utilization was not associated with any adverse alterations in blood measurements of electrolyte levels or liver function in the dosage range studied.

Additional studies in 8 patients receiving prednisone, triamcinolone, or dexamethasone showed that norbolethone is useful in mitigating in part or in full the known protein catabolic effects of corticosteroids widely employed in the management of arthritic patients.

Measurements of total lipids, cholesterol, and free fatty acids in the blood of 20 patients receiving 2.5 to 10 mg. of norbolethone per day under various test conditions, for a single day up to as many as forty-two days, showed that this steroid possesses a significant hypolipidemic activity.

Determinations in 13 patients showed that administration of from 5 to 10 mg. of norbolethone per day for periods of one to two weeks had no significant or consistent effect on fasting blood sugar levels or glucose tolerance curves under conditions of the assays. It should be noted that these assays were done under conditions simulating those which prevail in the use of the steroid in medical practice.

Acknowledgment. Grateful acknowledgment is made to Maurice L. Woodhull, M.D., Mr. R. Eugene Curry, Mrs. Muriel E. Rosenquest, Miss Lorraine A. Kiernan, and Miss Irmgard Hillmann for their assistance in the conduct and performance of these investigations.

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Summer accidents

It has been stated that July is the most dangerous month of the year. H. S. Ingraham, the State Health Commissioner, has recently warned of the need for increased safety consciousness, stressing the fact that in the last three years, more people have been killed in accidents during July than in any other month of the year, that is, 2,141 fatalities since 1965. Vacation periods seem to be the main cause.

Aside from motor vehicle accidents, which accounted for 863 of the total number of deaths, the biggest toll resulted from swimming and water sports.

These safety tips have been suggested: (1) Walking barefoot can be dangerous. To avoid cuts and infections, be alert for nails, tacks, splinters, pins, needles, scissors, razor blades, broken glass, and knives; (2) pans of boiling water should never be left unattended on the stove if small children are in the house. As an added precaution, the handles should be turned so that they can't be reached easily by a toddler; (3) to prevent food poisoning, hot foods should be kept at 150 F. or higher to prevent bacterial growth; (4) in backing out of a driveway, watch out for children. In driving along a street where cars are parked at the curb, anticipate that children may suddenly dart into the street, and if you see a ball rolling onto the pavement, a child may well follow; (5) discarded refrigerators and freezers attract children. Remove the doors so no one can be locked inside; and (6) when moving to a new home or summer camp, look for and destroy any discarded medicines and chemicals that you find. These are sometimes fatal lures to children.

Arterial Insufficiency of Abdominal Aorta and Iliac Arteries

Current Therapy

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THE SYMPTOMS OF *atherosclerotic and arteriosclerotic disease are intermittent claudication, rest pain, and gangrene. Various operations for occlusive arterial disease are successful in aortoiliac disease. These include thrombo-endarterectomy, excision of the diseased segment with graft replacement, and bypass grafting of the occluded area. Combinations of these may be employed.*

VASCULAR INSUFFICIENCY is the most common cause of death and debility among the middle-aged and older populations. Given the impetus of improved methods in diagnostic angiography and modern surgical technics, we have achieved a better understanding both of the disease entity itself and the results current therapeutic approaches will yield. The problem is circular but, fortunately, one for which surgical advances permit increasingly successful resolution: That is, as the percentage of aging population increases, so does the incidence of atherosclerotic obliterative disease of the lower extremities; however, owing to improved diagnostic technics and the development of reconstructive surgical procedures, the disease once of principally academic interest now lends itself to early recognition and successful treatment. The operative procedures applied in suitable patients have resulted in the reversal of the ischemic processes, the salvaging of disabled limbs that would otherwise have been amputated, and the restoration of patients to a more comfortable and useful existence.

Review

EARLY ADVANCES. In 1940 the French surgeon Leriche[1] described a syndrome related to thrombotic obliteration of the terminal abdominal aorta. This syndrome as originally described was found primarily in adult male patients in the fifth and sixth decades of life and was associated with occlusion of the terminal aorta and iliac arteries, along with inability to maintain an erection, extreme fatigue of both lower limbs, atrophy of both lower limbs, and loss of power in the legs. Characteristically, the pathologic lesion inciting thrombotic obliteration of the terminal aorta was an atheromatous plaque located within the arterial wall. Owing to its bulk, the plaque intruded on the lumen of the artery, causing cessation of arterial flow in the involved artery. This first report was followed by others.[2,3]

The method of treatment employed at that time was lumbar ganglionectomy and, in some instances, aortectomy of the distal aorta combined with bilateral lumbar ganglionectomy. Lumbar ganglionectomy was performed in an effort to improve the peripheral circulation to collateral pathways below the obliterated segment. The rationale for removing the thrombotic portion of the aorta was to suppress the vasoconstrictor reflexes thought to emanate from the periarteritis associated with the aortic thrombosis.

The next major therapeutic advance was the restoration of circulation in the artery by dissection of the occluding atheroma. This procedure, consisting of resection of

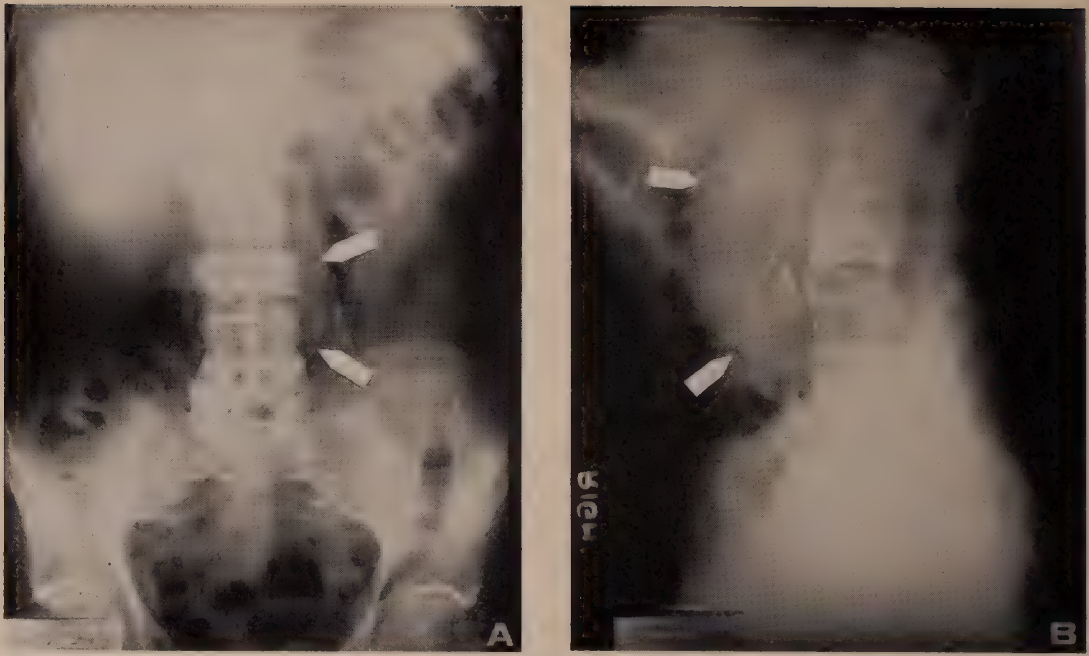

FIGURE 1. Calcifications in wall of atherosclerotic lower-aorta aneurysm. (A) Posteroanterior view. (B) Lateral view.

the intima and diseased portion of the media, was termed "thrombo-endarterectomy." Chronologically, thrombo-endarterectomy was the earliest type of direct arterial surgery performed. It was first described in 1947 before the French Academy of Surgery by Dos Santos,[4] who at that time reported 3 "endarterectomies." It was his conceptual pioneering, the recognition of the importance of thrombo-endarterectomy as an operative procedure for treating arterial occlusive disease, that ushered in wide interest in vascular surgery as a definitive form of therapy. The feasibility of performing the procedure depends on utilizing a pathologic cleavage plane within the media of the arterial wall. It is within this layer that the accumulation of a cholesterol-like substance, fatty acids, and tissue debris creates a natural line of separation between the uninvolved outer layer and the diseased inner layer of the media. Subsequent to this report, Wylie, Kerr, and Davies[5] published their results using endarterectomy on lesions involving the lower aorta and iliac arteries.

The reason for the frequent segmental localization of the atherosclerotic process at certain points in the arterial system is not yet clearly understood. However, as one becomes familiar with the disease process, one notes the phenomenon in a large number of patients. A number of interesting hypotheses have been suggested.

A physical basis for such segmental localization has been advanced by Texon, Imparato, and Helpern,[6] who found that the vascular lesions correspond to areas of diminished lateral pressure in accordance with the law of fluid dynamics. Low pressure (suction) zones are determined by the local hydraulic specifications, especially blood velocity and anatomic pattern. This relationship according to Texon, Imparato, and Helpern[6] accounts for the predilective occurrence of atheromatous lesions in the vascular tree at sites of curvature, branching, bifurcation, tapering, and external attachments. An example of the latter may be the vascular lesion that occurs in the superficial femoral artery as it transverses the adductor hiatus.

Wesolowski *et al.*[7] made observations based on a study of the distribution of atherosclerotic lesions and have suggested that they are produced by "a critical injury in the walls as a result of high frequency vibration." They also theorized that the occurrence of the atheroma is aided by local suppression of lipid secretion from the arterial wall, secondary to hypertension. In 1962 Sako[8] produced atheromatous lesions in dogs by thyroidectomy and use of a high-fat diet. He noted that the lesions were accentuated by local hypertension proximal to artificially created arterial stenoses. It was his contention that turbulence was a factor in the formation of the atheroma.

Patient classification. "Arteriosclerosis is a generic term embracing many diseases of the arterial wall such as senile subintimal fibrosis, Mönckeberg's sclerosis (calcification of the media—nonlipid related) and—the major cause of interest—atherosclerosis, the lipid related arterial lesion."[9] "Demonstration of lipid in a lesion of the intima (and, but not necessarily also, in the media) is the sine qua non of the atherosclerotic process."[9]

Atherosclerosis characteristically leads to atheroma which involves the abdominal aorta more extensively than the thoracic portion (Fig. 1). Its frequent occurrence in coronary, cerebral, and intrarenal arteries is too well known to require further comment. The symptoms resulting from atheromatous lesions are produced as the atheroma, often situated at a point of bifurcation, encroaches on the lumen of the artery, causing obstruction of the flow of blood because of stenosis or complete occlusion. Any artery in the body may be affected by this process; however, the abdominal aorta and major arteries of the lower extremities are most frequently involved, atheromas having a predilection for segmental involvement in the vicinity of a bifurcation, and arteriosclerosis more frequently involving the length of the artery.

Lesion characteristics. The typical atheromatous lesion is a focal deposition of lipid material streaking the intima of the artery. These streaks in plaques may occur in the intima of any artery. As plaques coalesce, the intimal surface of the artery ulcerates and a thrombus forms where the intima is deficient. At first the atheromatous plaque consists mainly of a thickening of the intima. However, as the lesion progresses, the internal elastic laminae and the media become involved when more lipid is deposited. Later, lipid is extruded from degenerating cells, and collections of grumose cholesterol-rich material form at the base of the plaques. Calcification occurs at a varying rate, and the distribution of lesions is irregular but inevitably progressive. Small atheromatous plaques tend to coalesce into larger plaques; ulceration with superimposed thrombosis may give rise to local stenosis or occlusion, less commonly to embolic phenomena. Calcification of the damaged vessel wall leads to weakening of same and aneurysm formation.

Degrees of involvement. The exact degree of arterial stenosis necessary to produce symptoms caused by decreased flow varies with the site of stenosis and with the anatomic location of the artery. The insidious process caused a collateral circulation to develop around the stenotic block which, if it is adequate, prevents ischemic necrosis from developing; however, when the collateral circulation is not sufficient to provide an adequate flow of arterial blood to the involved limb during periods of work, work ischemia results. When the thrombotic episodes are multiple and involve more than one artery in an extremity or when the occlusion spreads and reduces the number of available collaterals to a given area, ischemia may precipitate gangrene of the involved limb.

In patients with atherosclerotic lesions, those who may usually be considered for direct arterial surgery are: (1) the patient in the fourth, fifth, or sixth decade who has disabling claudication of one limb but who is otherwise in good general health; and (2) the patient in the fifth, sixth, or seventh decade who suffers from rest pain and evidences severe limb ischemia with the threat of impending loss of limb.

Increasing knowledge concerning atherosclerotic disease forces a readjustment in conceptualizing the age commonly associated with the onset of the disease. It is not uncommon in younger people. It is not unusual to find patients in their late thirties and forties who have symptoms resulting from a condition of several years standing: diminished arterial flow to an extremity. In a group of 6,400 subjects aged fifteen to sixty-four, surveyed for occlusions of limb arteries, an occlusion in a peripheral artery was found in 99 extremities of 75 subjects.[10] The prevalence of the occlusion rose progressively from 0.1 per cent below age forty to 8 per cent in men sixty to sixty-four years old. In the group studied, only 5 per cent of the occlusions of peripheral arteries were caused by inflammatory arterial disease. All other occlusions existed on an atherosclerotic basis. Evidence of extensive arterial involvement was not infrequent: 41 per cent of the men with occlusions of a major peripheral artery had occlusions in more than one extremity.

Symptoms

The natural history of obliterative arterial disease is usually one of slow intermittent progression. The rate of progression and the severity of the disease depend on two factors: the unpredictable rate at which the basic involvement of the artery may advance and the efficiency of any existing collateral circulation. The lower-extremity symptoms of chronic vascular insufficiency vary as to (1) the degree of arterial involvement; (2) whether the arterial involvement is completely occlusive, partially stenotic, segmental, or diffuse; and (3) the degree of existing collateral circulation. Three major groups of symptoms—intermittent claudication, rest pain, and gangrene—may be found in the disease process. The triad may occur in concert or individually as indicators of the presence of severe underlying vascular disease.

Intermittent claudication refers to the intermittent limping associated with ischemic disease, the word "claudication" being derived from the Latin "claudicare"—to limp. By definition, intermittent claudication is a cramp-like pain present in a muscle group in the lower extremity which is brought on by exercise and eliminated by rest. This symptom is perhaps the commonest example of "work ischemia" present in a limb, often representing the first manifestation of vascular insufficiency. The patient starts walking, but after a variable distance pain, caused by an inadequate flow of blood to the muscles, is felt, causing the patient to limp. The distance it takes for this symptom to appear is termed the "claudication distance," and even though a definite distance is covered before the pain occurs, the distance varies considerably from day to day in the same patient.

The location of the pain of intermittent claudication varies and is related to the level of the muscle groups that are the first to show evidence of ischemic involvement. Generally, the calf muscles are affected first, with the pain referred to the skin over the calf muscles. If the hamstring muscles or glutei are involved in the ischemic process, the pain is felt in the buttock or back of the thighs.

Rest pain is a distressing symptom that indicates the presence of severe limb ischemia. The presence of rest pain or ischemic neuropathies may produce a constant form of pain in the involved extremity. The pain, which is described as a severe aching or throbbing, is felt first in the deeper portions of the foot and is sometimes paroxysmal and described as burning. The pains are aggravated by elevation of the extremity and improved by dependency.

Aside from the ischemic neuropathies, arterial insufficiency caused by reduced blood flow to the peripheral nerves may cause other symptoms such as anesthesia, paresthesia, or even motor paralysis.

Gangrene resulting from atherosclerosis of a major artery is usually of the dry type and starts in the toes. As a rule, the gangrene is associated with a history of long-standing intermittent claudication and other lesser symptoms indicative of arterial insufficiency.

Moist gangrene subsequent to skin injury often accompanies diabetes mellitus, which may be a contributory factor. The diabetic patient may develop this form of infective gangrene or he may develop the usual atherosclerotic form of gangrene described.

Rarely does a patient complain of symptoms other than those of intermittent claudication, rest pain, and gangrene. On careful questioning, other minor symptoms may be elicited before any of the three major ones have developed. Frequently a patient will complain of unilateral chronic limb fatigue, a feeling of numbness, or increased sensitivity to cold in the involved extremity, especially in the toes.

The combination of low-back pain, limb fatigue, weakness, and muscular atrophy, especially when the symptoms are unilateral, has often led to confusing the disease with patterns of a neurologic origin. Patients are then referred to the vascular surgeon after having had extensive neurologic, orthopedic, and psychiatric consultations.

When unilateral, the symptoms listed reflect the severity of the arterial insufficiency in the more critically involved extremity, tending to obscure any lesser symptoms present in the opposite extremity where arterial insufficiency may also exist. Of paramount importance in the evaluation of the patient are those symptoms produced by atherosclerotic vascular insufficiency in other parts of the body.

EXAMINATION. *Signs*. The most important diagnostic sign is an absent or greatly diminished pulse in the artery under study. A weak pulse with a systolic murmur or bruit audible over the femoral artery in the groin is suggestive of a partial arterial block. Patients with complete occlusion of the terminal segment of the abdominal aorta and with an unusually good collateral circulation may have weak femoral arterial pulses at rest. However, after the patient's slight exercise, such pulses will further diminish or disappear completely. Other signs of vascular insufficiency include an extremity that is cooler to touch than the opposite member, atrophy of the muscles and trophic nail changes, and development of a severe pallor when the extremity is elevated and deep rubor when it is returned to dependency.

Angiography. Contrast vascular roentgenology has made possible precise evaluation of occlusive arterial disease. The patient's history and physical findings can provide only evidence suggestive or indicative of vascular obstruction. Contrast vascular angiography, however, makes it possible to determine the status of the arterial tree under study and to localize the level and extent of the vascular block. In addition, the arterial "run-in" and "run-off" may also be assessed. This information makes it possible to plan precise surgical procedures.

The great improvement in vascular surgery results shown during the past decade can be attributed to the availability of contrast media of high density and safety, improved roentgenographic technics, and expanded experience with operative procedures selected to deal with the particular pathologic processes determined.

Intravenous aortography, total body angiography, has been recommended as a suitable screening process.[11] We have found, however, that while the procedure may be useful for establishing the over-all vascular status in selected patients, the degree of contrast achieved in the lower aorta and its major divisions is inadequate. Thus, while it may sometimes establish the presence and site of an obstruction subject to more specific examination, the method's negative findings are not conclusive, and hence follow-up by regional arteriography is necessary. The method using a retrograde femoral catheter is often impractical because of luminal obstruction since the catheter can be inserted only with difficulty through stenotic arteries. When the need for selective angiographic procedures dictates, we employ the retrograde transfemoral approach using a pressure injector.

Our preferred procedure is that of percutaneous translumbar aortography which we find to be safe and more reliable than the other methods. Although a 50 per cent solution of sodium diatrizoate (Hypaque) is frequently used for this purpose and is quite satisfactory, we prefer to employ a 75 per cent solution of the mixed sodium and meglumine diatrizoate (Hypaque-M). We achieve superior contrast with this medium, thus allowing greater flexibility in our timing procedures. At the same time, we have found that the 75 per cent solution is at least as well tolerated as the 50 per cent sodium solution; we have to date observed no serious local or systemic reactions with its use.

Surgical procedures

Operative procedures are performed directly on arteries for the purpose of eliminating an area of occlusion or stenosis within the lumen. At present, this type of arterial surgery affords a reasonable degree of success when the operation is limited to the major elastic-walled arteries and the smaller arteries with only a moderate amount of smooth muscle in the walls.

As alluded to earlier, the first operative procedure used to treat aortoiliac obstruction was bilateral lumbar sympathectomy, with or without concomitant resection of the occluded aortic bifurcation. Sympathectomy antedates direct arterial surgery by approximately twenty-five years and is performed to eliminate smooth-muscle tone or spasm by severing the muscles' afferent nerve supply. The arte-

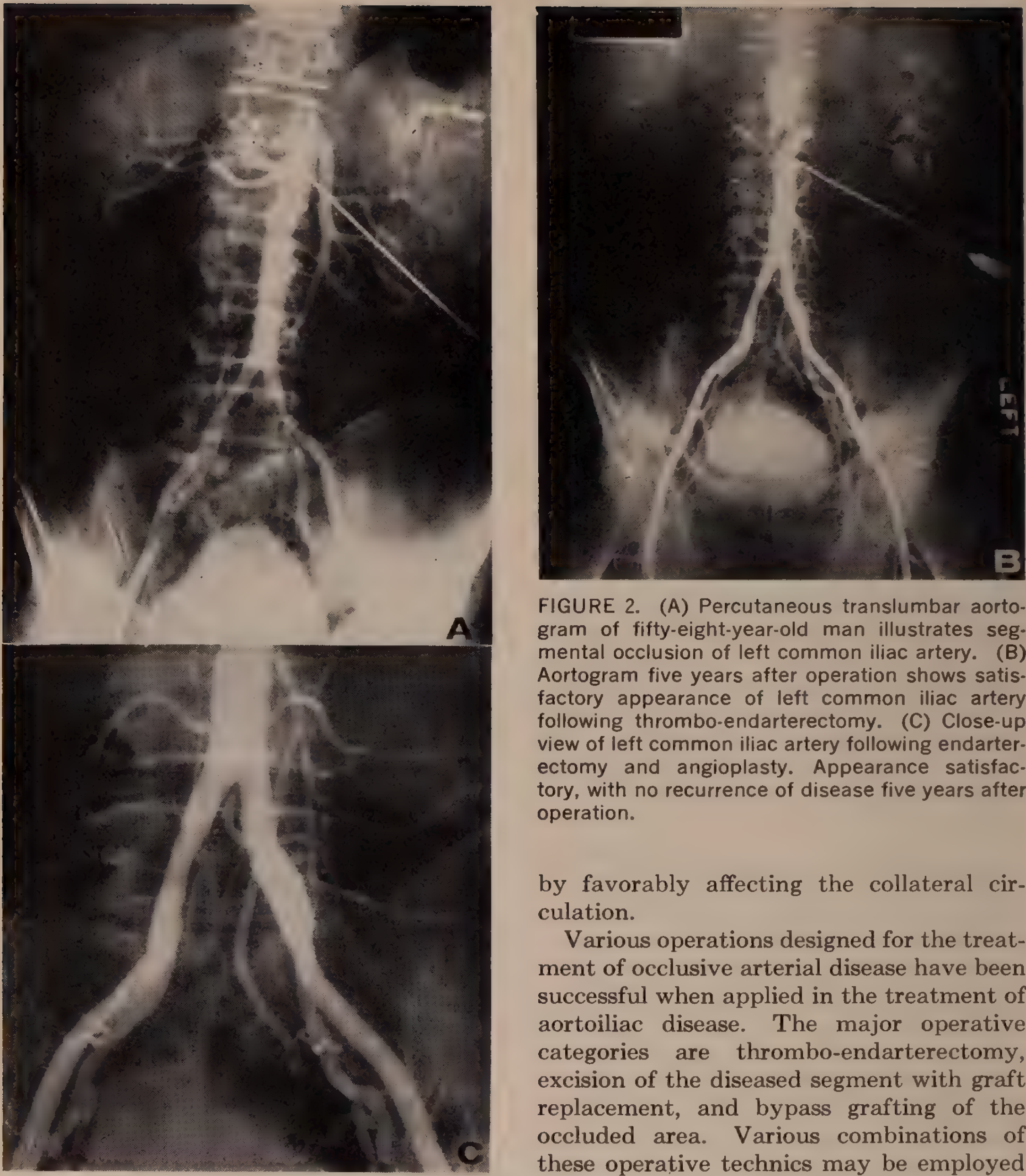

FIGURE 2. (A) Percutaneous translumbar aortogram of fifty-eight-year-old man illustrates segmental occlusion of left common iliac artery. (B) Aortogram five years after operation shows satisfactory appearance of left common iliac artery following thrombo-endarterectomy. (C) Close-up view of left common iliac artery following endarterectomy and angioplasty. Appearance satisfactory, with no recurrence of disease five years after operation.

ries chiefly affected by this procedure are the smaller smooth muscle ones comprising the "collateral circulation." While it is true that there is scant reason for the use of sympathectomy in treating arterial disease affecting the major arteries, the operation does offer benefits, especially when there is extensive arteriosclerosis extending into the collateral arterial conduits. Sympathectomy is still of value in specific instances when arterial reconstruction is precluded, and it may help to maintain a viable limb by favorably affecting the collateral circulation.

Various operations designed for the treatment of occlusive arterial disease have been successful when applied in the treatment of aortoiliac disease. The major operative categories are thrombo-endarterectomy, excision of the diseased segment with graft replacement, and bypass grafting of the occluded area. Various combinations of these operative technics may be employed if the arterial disease is extensive.

THROMBO-ENDARTERECTOMY. Since the introduction of thrombo-endarterectomy by Dos Santos,[4] many surgeons have recorded their experiences with this operative technic. The validity of the operation rests on its rationale, the re-establishment of patency by removing the obstructing lesion. When properly employed for correcting segmental vascular disease of the major arteries, the operation yields excellent results. Some workers have employed the technic for treating extensive lesions of the aortoiliofemoral vessels.[12] We have pre-

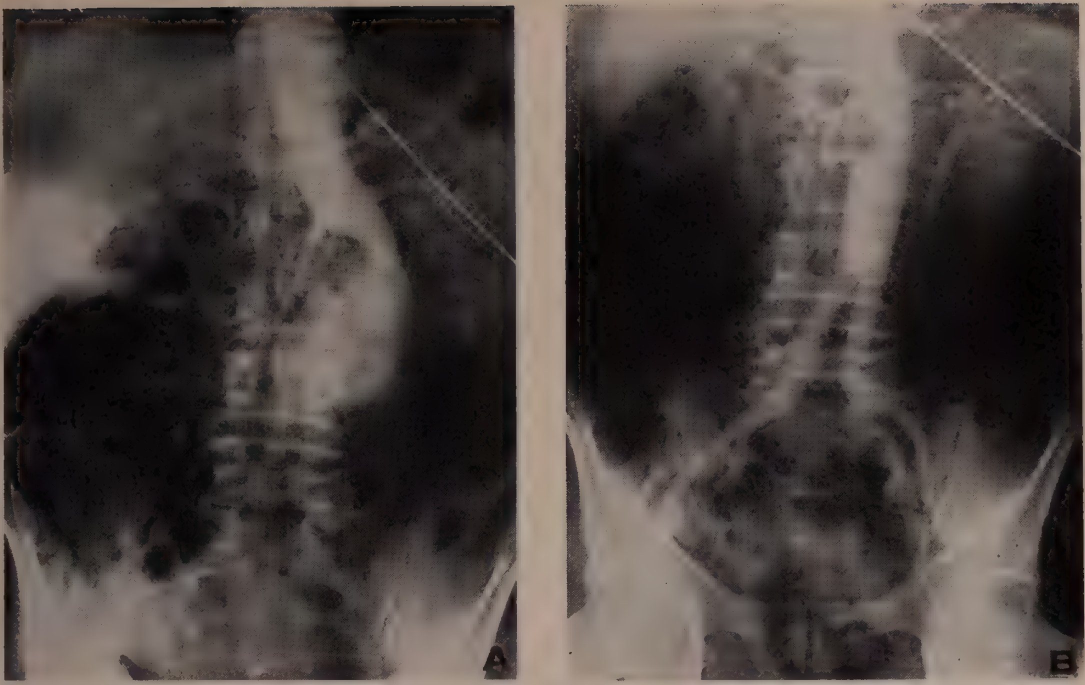

FIGURE 3. (A) Percutaneous translumbar aortogram illustrating aneurysm of distal aorta associated with atherosclerotic disease in iliac arteries. (B) Postoperative aortogram illustrates excision and graft replacement for arteriosclerotic aneurysm of distal aorta.

ferred to limit its use to segmental lesions of the major arteries and have used an autogenous vein patch graft in closing the arteriotomy (Fig. 2).

We have been utilizing a new technic, pneumoendarterectomy, with favorable results. This method of removing a luminal obstruction has been reported by Sobel *et al.*[13] Our results using this form of endarterectomy will be the subject of a later publication. The use of a patch graft for closing the arteriotomy after thrombo-endarterectomy is an important factor in influencing the success of the operation. Constriction may be manifested after arteriotomy closure in arteries having the caliber of the internal carotid, mesenteric, external iliac, and femoral, especially if the arteriotomy is extended over the bifurcation.

Autogenous veins can be successfully inserted into medium-caliber arteries without the risk of aneurysm formation or dilatation. A vein patch is biologically more suitable than is synthetic fabric, although on occasion such material may be unobtainable if the patient has been subjected to previous saphenous vein stripping. The technic of using the patch to maintain an adequate caliber in the lumen of the reconstructed artery was originally described by Crawford *et al.*[14] It offers an excellent means of averting constriction at the arteriotomy site so important in the prevention of thrombosis in the immediate postoperative period.

Another essential factor in preventing postoperative thrombosis at the site of endarterectomy is maintenance of high flow rate. Flow rate is predicated on the presence of a good proximal flow of blood (run-in) and a patent distal (run-off) arterial tree. Patients who have again required surgical intervention in the immediate postoperative period for acute thrombotic reocclusion often have proved to have as the incident's direct cause an inadequate run-off, a result of failing to carry the thrombo-endarterectomy far enough distally. Dissection of the remaining atheroma at the distal extent of the thrombo-endarterectomy may also contribute to the formation of postoperative thrombotic occlusion. Perhaps the most important element in operative failure is that of prolonged arterial occlusion time

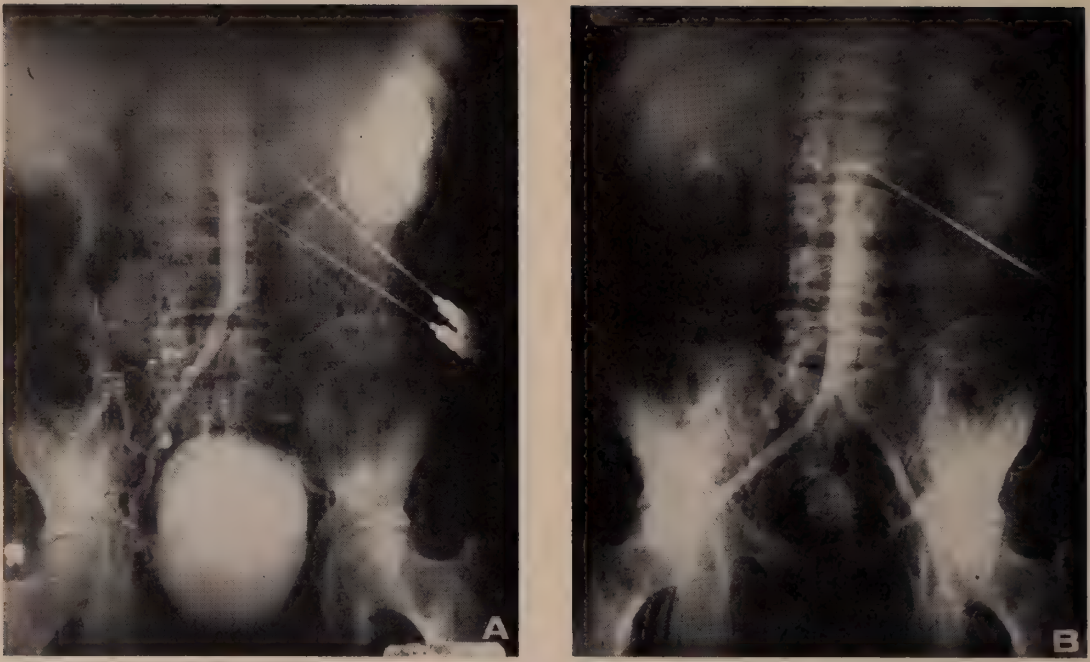

FIGURE 4. Preoperative percutaneous translumbar aortogram of fifty-six-year-old man reveals extensive aortoiliac occlusive disease. (B) Postoperative aortogram shows bifurcation prosthesis functioning satisfactorily. Proximal portion of graft anastomosed to abdominal aorta below renal artery's origin. Distal anastomoses attached to common femoral arteries at profunda artery's origin.

because of performing too extensive a thrombo-endarterectomy.

Excision and graft replacement. Extensive disease of the terminal abdominal aorta and proximal iliac arteries may be dealt with by resection of the diseased distal segment, replacing it with a synthetic Dacron graft. This procedure is best performed when the lesion is too extensive for simple bypass grafting or when aneurysmal disease or extensive calcification of the aorta make it the procedure of choice (Fig. 3).

The distal anastomosis may be performed by joining the end of the graft to the common iliac arteries, or the graft may be attached to either the external iliac arteries or brought out into the thigh and joined to the common femoral arteries.

Bypass graft. Bypass grafting with a Dacron prosthesis is employed quite frequently in the case of extensive disease of the lower aorta and iliac arteries. Rather than dealing directly with the vascular problem, the procedure bypasses or "jumps" the lesion. In this manner extensive disease of terminal aortic vessels can be handled with minimal operative trauma. The anastomoses generally are performed end-to-side to the abdominal aorta below the origin of the renal arteries. The distal anastomoses may be attached to the iliac arteries or brought out in the thigh and attached to the femoral arteries, depending on the distal limits of the atherosclerosis process (Fig. 4). During the performance of a bypass, localized thrombo-endarterectomy at the site of insertion of the graft is often of great help in improving flow to the affected limb, especially if the site of insertion is at the level of the bifurcation of the superficial and profunda femoral vessels.

It has been our experience that even in the presence of severe occlusive disease of the major extremity arteries, bypass grafting from the abdominal aorta to the level of the profunda femoris artery can be of great benefit to the patient. The profunda femoris arterial circulation is not so frequently involved in the atherosclerotic process as is the superficial femoral arterial circulation.

By bringing in an adequate flow of blood to the extremity via this circulation, the viability of the extremity may be maintained and, in many instances, amelioration of symptoms may result.

Conclusion

As a result of our circumscribed knowledge regarding the causes of atherosclerotic and arteriosclerotic processes, we are limited to treating the symptoms of the disease as they occur in a progressively deteriorating vascular system. The vascular surgical approach occupies an important place in the management of this disease.

When atherosclerotic disease is present in the aortoiliac arteries, it is one manifestation of an underlying pathologic process which may simultaneously attack the peripheral, renal, coronary, cerebral, and intestinal arterial systems. This progression of the basic disease, while disconcerting, is to be expected. Atherosclerotic occlusive disease involving the abdominal aorta and iliac arteries may be treated by a variety of operative technics, including thrombo-endarterectomy and bypass grafting with either removal of the diseased segment or simple bypass of the diseased area.

The immediate results when any of the vascular surgical technics are employed are nearly perfect when the operation is performed competently. Follow-up studies over a number of years indicate continuing satisfactory results in the majority of the arterial reconstructions. In a small percentage of cases, reocclusion has occurred either because of the basic disease itself or as a result of a donor rejection of one of the synthetic grafts. In the smaller smooth-muscle arterial conduits, however, the immediate and late failure rate is still a problem in a significantly larger number of cases.

The operative technics employed have resulted in the salvage of the "ischemic" lower extremity, preventing impending amputation in many instances. In addition, the rehabilitation to useful lives of patients who would otherwise be chronically disabled is a worth-while goal and may be achieved in a significant number of those patients considered "vascular cripples." Our own results following vascular surgery justify pursuing an aggressively positive attitude in evaluating the salvage possibilities in limbs affected by ischemia or frank gangrene.

Acknowledgment. The authors wish to acknowledge the inspirational guidance of J. Cid Dos Santos, and Edwin J. Wylie, whose early work in the field has contributed greatly to the growing success of vascular surgery.

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Acute Glomerulonephritis in Childhood*

Long-Term Follow-Up

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BECAUSE OF THE CONTINUING INTEREST regarding the frequency of complete recovery in children with acute glomerulonephritis, we undertook a study of the outcome of acute glomerulonephritis in patients seen at The New York Hospital since 1942.

Some observers consider acute glomerulonephritis a completely benign disease in which chronic nephritis never occurs, but there is no foundation in the literature for this viewpoint.

Case material in this report concerns patients admitted to The New York Hospital pediatric service with classic acute glomerulonephritis with definitive laboratory findings supporting its diagnosis. Immunologic studies to verify the presence of preexisting streptococcal infection were not routinely obtained in all cases. Recent studies in this hospital have indicated that, when appropriate serologic studies for recent streptococcal infection are made, up to 96 per cent will have evidence of such recent streptococcal infection. We thus assume that the major etiologic agent was streptococcal infection. We included all patients less than fifteen years of age who met the following criteria: (1) abrupt onset of hematuria and proteinuria and admission to The New York Hospital in the acute stage; (2) no history of previous renal disease or ill health suggesting renal disease; and (3) laboratory studies that supported the diagnosis. Patients with nephritis due to anaphylactoid purpura, acute lupus erythematosus, periarteritis, the hemolytic uremic syndrome, nephritis with sepsis, or that caused by drug ingestion were not included.

Table I presents general epidemiologic information of the group from which our report was made. The initial group consisted of 190 cases; 62 per cent were male with a mean age of 6.7 years, and 38 per cent were female with a mean age of 6.8 years. Throat cultures were done in 91 per cent and were positive for beta-hemolytic streptococci in 50 per cent. Status of renal function and general health two years after onset was established by examination of 101 of the original 190 patients. Composition of the group in terms of males and females, mean age, and bacteriologic studies are identical with the original group.

The number of patients in whom we have knowledge of status five years or longer after onset was 73. Again, composition of the group with regard to sex and age was similar to the initial group. The outcome of these cases is shown in Figure 1.

TABLE I. Acute glomerulonephritis at New York Hospital 1942–1963

Studies	Number of Patients	Sex Break-Up (Per Cent)		Age (Years)				Beta-Hemolytic Streptococci (Per Cent)	
				Mean		Range			
		Male	Female	Male	Female	Male	Female	Cultured	Positive
Original	190	62	38	6.7	6.8	8 mo. to 14+	10 mo. to $14^{3}/_{4}$	91	50
Two-year	101	64	36	6.5	6.9	2 to $13^{2}/_{3}$	2+ to $14^{3}/_{4}$	96	50
Five-year	73	63	37	7.1	7.6	2 to $13^{2}/_{3}$	2+ to $14^{3}/_{4}$	96	50

Presented at the 161st Annual Meeting of the Medical Society of the State of New York, New York City, Section on Pediatrics, February 14, 1967.

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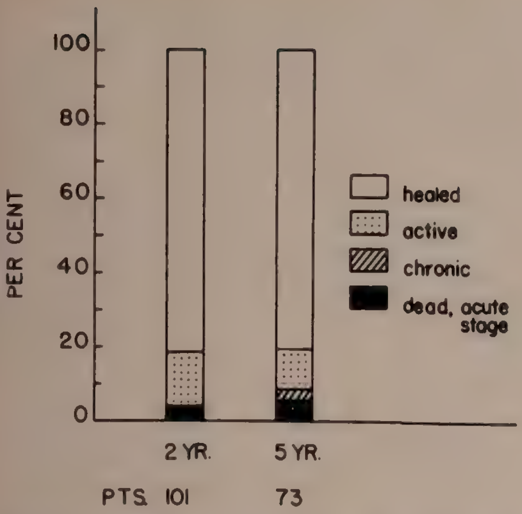

FIGURE 1. Follow-up of children with acute glomerulonephritis.

Status of the patients at completion of the study is indicated in the graph by a clear area for those who were healed, stippled area for those whose condition was active, cross-hatched for those with chronic disease, and solid for those who had died. Only those patients with normal quantitative Addis count and physical examination were considered healed. The term "active" applied when the Addis count or routine urinalysis had either some protein or abnormal sediment, but the patients were clinically normal with no abnormality in renal function. Chronic indicated not only abnormal urine findings but also abnormal renal function with evidence of reduced concentrating ability, reduced urea clearance, or both. The classification "dead" referred to death from renal failure only and not from other causes.

Two years after onset of their disease, 81.2 per cent of the 101 patients were entirely healed. There were 4 deaths, all of which occurred in the acute stage within two months of onset; 14.8 per cent were classified as active. There were no patients with established chronic nephritis. The 73 patients studied after five years of onset revealed no appreciable change in the per cent recovered (80.8 per cent) and no new deaths. After five years there were 2 patients (2.8 per cent) with evidence of chronic nephritis. Both of these had previously been in the active group. The active group now accounted for 10.9 per cent of the total.

The final outcome reflected in this study of children, whose disease began between 1942 and 1963, compares closely with comparable reports of similar studies in the literature.

Reports considered suitable for comparison met the following criteria: (1) The follow-up group had to consist of at least 50 cases with complete data on all patients initially admitted to the study, including death. (2) Only those cases were included that were observed by the same author at onset and during follow-up with a minimal two-year period of study. (3) Estimation of status at the end of the study period had been based on physical examination and quantitative measurement of urinary sediment and renal function. (4) Diagnostic criteria for inclusion were comparable to ours.

Data from three comparable reports in the literature that have appeared since 1920 are presented in Table II. Two were from the United States[1,2] and one from Sweden.[3] The time period covered in these studies extends from 1920 to 1941. The first important observation is that the

TABLE II. Acute nephritis in childhood

Author	Number of Patients	Years After Onset	Outcome (Per Cent) Healed	Active	Chronic	Death Acute	Death Chronic
Davis and Faber[2] (1920–1941)	102	2+	81.4	7.8	0	5.9	4.9
Gachet[1] (1926–1936)	124	2+	81.5	3.2	5.6	9.7	0
Frisk and Klackenberg[3] (1924–1933)	230	10	87.4	4.7	5.6	2.3	0
McCrory and Shibuya* (1942–1963)	101	2	81.2	14.8	0	4.0	0
	73	5+	80.8	10.9	2.8	5.5	0

* Present study.

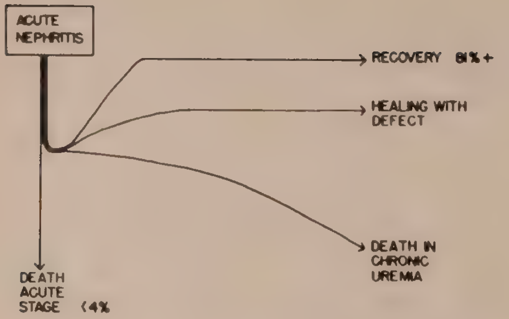

FIGURE 2. Course of acute glomerulonephritis in childhood.

percentage of patients healed is similar in these studies to our results. The mortality figures are considerably higher. These involve deaths from only acute nephritis. Those figures have now decreased to less than 1 per cent because of improvement in medical care.

The study of Frisk and Klackenberg[3] is unique because follow-up data are available on 95 per cent of 230 patients comprising the original study group. This is the only kind of study which permits calculation of a true survival rate. This report was also unusual because it described the status of patients ten years after the onset of acute glomerulonephritis. Complete recovery was obtained in 87.4 per cent, 4.7 per cent were still active, and 5.6 per cent were classed as chronic. The Swedish study provides the highest survival rate of 92.1 per cent, including patients who had recovered and those with active disease but well, that we have found reported. If all patients classified in our study as active finally recovered, the maximal recovery rate would have been 91.7 per cent.

The outcome of cases we have classified as active may follow one of three paths: Some of these patients may ultimately recover completely; the condition of others may progress with the appearance of chronic nephritis; and some may recover with persistent proteinuria but no progressive loss of renal function, a pattern Addis called "healing with a defect" (Fig. 2).

Long-term follow-up will be required to establish whether healing with defect is a true final outcome distinct from slowly progressive nephritis that ultimately ends in uremia.

Summary

This long-term follow-up study of acute glomerulonephritis in the postantibiotic age reveals that the great majority of children recover completely. Chronic nephritis developed five years after onset in only 3 per cent of children followed up after acute glomerulonephritis. No deaths from chronic nephritis occurred during that time. Although this represents a small number of total cases of chronic nephritis evolving from acute glomerulonephritis, a significant number continues as clinically well but as active (10.9 per cent at five years). The potential for developing progressive chronic nephritis exists in some of these patients.

We conclude that these figures provide evidence in support of the belief that acute glomerulonephritis in childhood must still be considered one of the etiologic factors contributing to the development of chronic glomerulonephritis in the second or third decade of life.

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Boyden's (Choledochal) Sphincter

Clinical Significance

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In 1937 Schwegler and Boyden[1] described a choledochal sphincter. Boyden[2,3] and Kreilkamp and Boyden[4] called further attention to the choledochal part of the sphincter of Oddi complex. In 1941 Boyden[5] reported a case in which a stone was blocked in the common duct by an hypertrophied or irritable choledochal sphincter. Grant[6] applied the eponym, Boyden, to this sphincter. Poppel, Jacobson, and Smith[7] devoted a section to it in their book.

Anatomy

The choledochal sphincter is located in the intramural portion of the bile duct proper. This is always present and is responsible for filling of the gallbladder. It often hypertrophies to block a stone entering the duodenal portion of the bile duct. The extrahepatic ducts are fibrous tubes containing many elastic fibers with columnar epithelium; a muscle coat is first seen at the location of the choledochal sphincter. Cinefluorographic studies record peristaltic activity with a periodic to and fro whiplash phenomenon at this level. The anatomic arrangement of the sphincteric muscle bundles is diagrammatically illustrated in Figure 1.

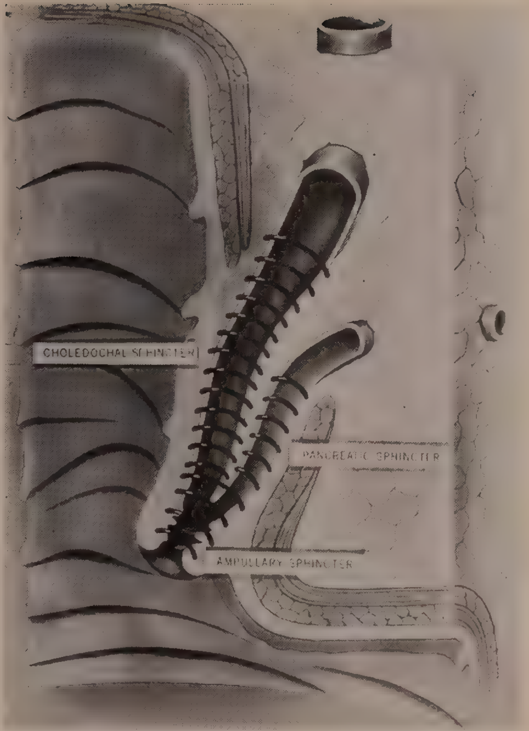

FIGURE 1. Anatomic diagram of sphincter of Oddi complex. (Courtesy of E. A. Boyden, M.D.)

Clinical material

Eight patients were operated on in whom operative cholangiograms, performed after choledocholithotomy, demonstrated a choledochal sphincter. A common finding was failure of contrast material, sodium diatrizoate 50 per cent (Hypaque), to enter the duodenum. In the absence of retained stones, it was decided to complete the operration and to repeat the cholangiograms postoperatively. These demonstrated dye entering the duodenum in all patients. T-tubes were clamped for twenty-four hours before removal, and all patients had a smooth recovery.

In 2 additional patients, it was difficult

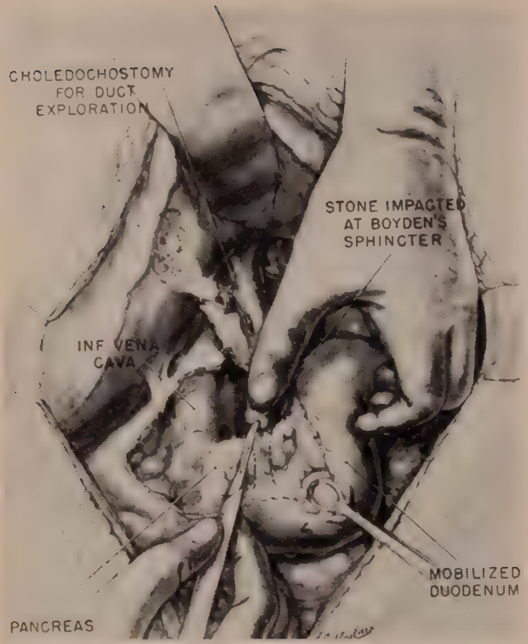
CHOLEDOCHOSTOMY FOR DUCT EXPLORATION
STONE IMPACTED AT BOYDEN'S SPHINCTER
INF VENA CAVA
MOBILIZED DUODENUM
PANCREAS

FIGURE 2. Drawing showing surgical approach to stone impacted at choledochal sphincter.

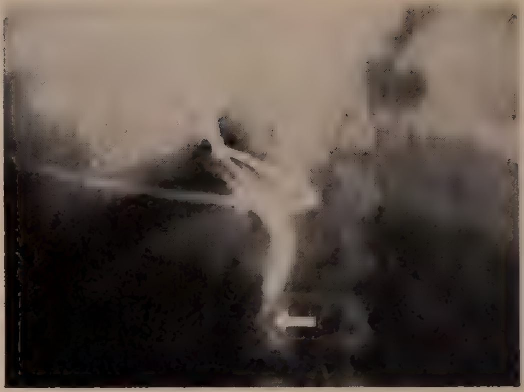

FIGURE 3. Operative cholangiogram following cholecystectomy and choledocholithotomy demonstrating failure of dye to enter duodenum because of spasm of sphincter of Oddi.

to remove stones because of impaction at the choledochal sphincter. Working with scoops and forceps through a conventional choledochostomy above, and through a duodenotomy to which was added section of the sphincter of Oddi, stones could not be dislodged. Their removal required, first, thorough mobilization of the second portion of the duodenum, retraction of the duodenum and the head of the pancreas

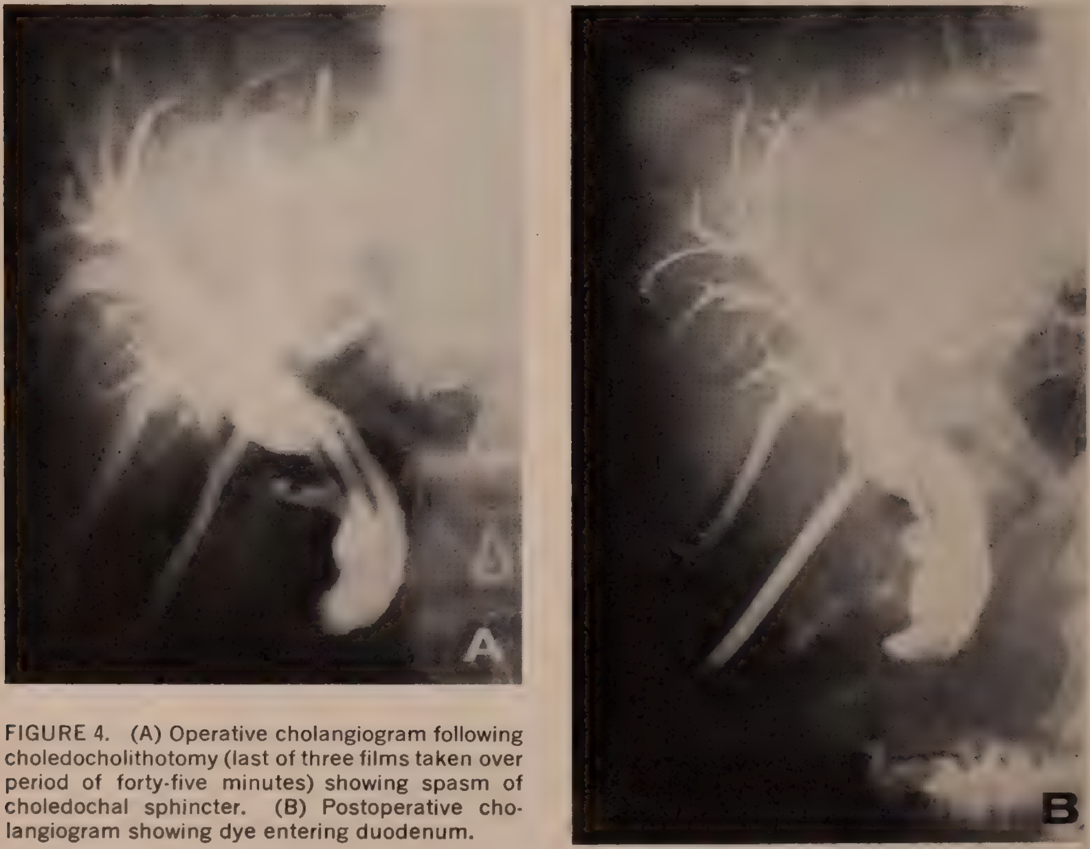

FIGURE 4. (A) Operative cholangiogram following choledocholithotomy (last of three films taken over period of forty-five minutes) showing spasm of choledochal sphincter. (B) Postoperative cholangiogram showing dye entering duodenum.

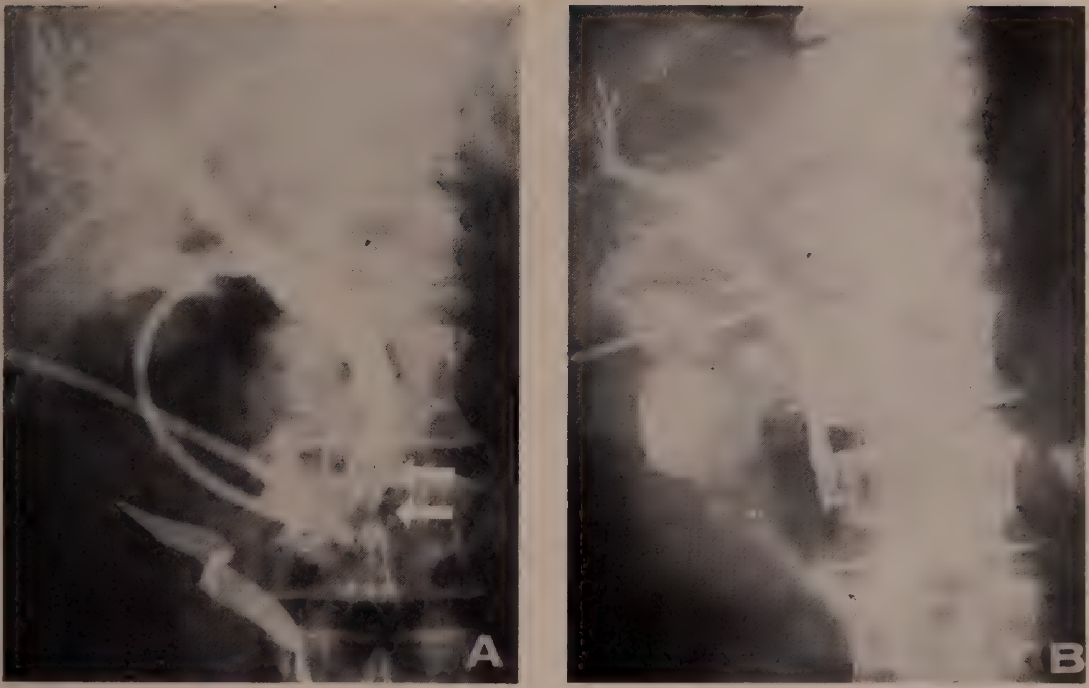

FIGURE 5. (A) Operative cholangiogram showing stone at choledochal sphincter, second stone at sphincter of Oddi, and dye entering duodenum. (B) Postoperative cholangiogram showing dye entering duodenum; stones have been removed.

medially, and a postero-inferior approach to the common bile duct. Incision of the duct directly over the palpable stone permitted its removal with ease (Fig. 2). For comparison, an operative cholangiogram demonstrating spasm and tapered appearance of the sphincter of Oddi is shown in Figure 3.

Case reports

CASE 1. A fifty-nine-year-old white male with spasm of the choledochal sphincter underwent cholecystectomy and choledocholithotomy in 1961. In 1962 duodenotomy and sphincterotomy were performed for obstructive jaundice, and in 1963, he underwent a second choledocholithotomy because of chills and fever. Surgery disclosed stones in the common duct and unusual patency of the lower end of the common bile duct. Operative cholangiogram (T-tube) following removal of stones showed persistent spasm and bulbous appearance of the choledochal sphincter (Fig. 4A); postoperative cholangiogram showed the dye entering the duodenum (Fig. 4B).

CASE 2. A fifty-four-year-old white male underwent a cholecystectomy because of acute and chronic cholecystitis with stones. An operative cholangiogram (catheter in cystic duct stump) showed a stone at the choledochal sphincter and another stone at the sphincter of Oddi; the dye entered the duodenum (Fig. 5A). Choledocholithotomy, duodenotomy, and section of the sphincter area permitted removal of the stone impacted at the sphincter of Oddi. To remove the stone impacted at the choledochal sphincter required an approach from behind the common bile duct as shown in Figure 2. A postoperative cholangiogram showed the dye entering the duodenum (Fig. 5B).

Comment

Failure of dye to enter the duodenum, as shown on operative cholangiograms, may be due to spasm at Boyden's (choledochal) sphincter, located 1 to 2 cm. above the sphincter of Oddi. In the absence of retained stones or tumor, additional operative cholangiograms are unnecessary. Postoperative cholangiograms will usually show dye entering the duodenum.

Stones impacted at Boyden's sphincter may be difficult to remove when working through a conventional choledochostomy incision, or combined with a duodenotomy, to which section of the sphincter of Oddi has been added. Their removal may require a postero-inferior approach to the common bile duct, with a carefully placed incision in the duct directly over the stone.

Summary

Boyden's (choledochal) sphincter is described. A technic for removing stones impacted at the choledochal sphincter is shown. Illustrative cases are presented.

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New artificial lung for newborn babies

Long-term maintenance of blood-oxygen levels in newborn infants suffering from respiratory distress syndrome may soon become a practical clinical reality with a new artificial lung, a highly efficient and disposable membrane lung which safely maintains adequate blood-oxygen levels in newborn lambs during continuous use in testing for periods up to four days. These findings have been published in a recent issue of *Transactions of the American Society for Artificial Internal Organs* by Theodor Kolobow, M.D., *et al.*

Heretofore, prolonged blood oxygenation with an artificial lung has been limited in duration to less than twelve hours in newborn laboratory animals and has been accompanied by severe damage to the lungs, blood cells, and blood proteins as well as the formation of dangerous blood clots and air bubbles in the blood.

The cylindrical, pint-sized lung contains a thin silicone rubber membrane formed into a flat tube or envelope that is wound around a central spool. The envelope is fitted with oxygen inlet and outlet ports. Blood enters one end of the lung's cylindrical housing, flows between layers of the spirally-wound silicone envelope and, still flowing parallel to the cylinder's axis, exits at the other end. As in other membrane lungs blood oxygen and carbon dioxide exchange occurs by diffusion across a membrane. However, unlike most membrane lungs, the spiral coil lung is suction-actuated, that is, oxygen is pulled through the lung by the intermittent application of a slight vacuum to the oxygen outlet port.

The new lung owes most of its safety advantages as well as its high oxygenating efficiency to this gentle, cyclic application of negative pressure, as it prevents oxygen bubbles from entering the blood should pin-hole leaks occur in the membrane, and the pulsatile motion it imparts to the membrane greatly increases blood oxygenation by eliminating the stagnant boundary layer of oxygen-saturated blood immediately adjacent to the membrane. Thus, more blood is brought into contact with the membrane where oxygenation occurs. Finally, the low perfusion pressure and pulsatile motion, along with normal arterial blood pressure, acts to propel blood through the lung and eliminate the need for a separate blood pump with its attendant damage to fragile blood components.

From the excellent performance of the spiral coil lung and the over-all benign effects of its prolonged use in animals, it is felt that its use should be considered as a method of treating respiratory distress in the newborn infant or adult. This lung can oxygenate up to 450 cc. of blood per minute, yet has a total priming volume of only 45 cc.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

Lenox Hill Hospital
New York City
May 26, 1967

Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by RICHARD S. CRAMPTON, M.D.,
and LAWRENCE P. SHEA, M.D.

Intractable Heart Failure, Abnormal Cardiac Catheterization Findings, and Celiac Arteriograms

Case history

STEPHEN CARTER, M.D.: This was the third Lenox Hill Hospital admission of a seventy-one-year-old white male who was admitted on August 1, 1966, with the chief complaint of abdominal distention of five weeks duration.

The patient was first admitted to Lenox Hill Hospital in September, 1965, with a history of dyspnea on exertion of walking one-half a block and marked swelling of both legs and abdomen. A venous pressure at that time was 310 mm. of water and a dehydrochloric acid (Decholin) circulation time (arm to tongue) was forty seconds. An electrocardiogram revealed atrial fibrillation, left ventricular hypertrophy, and myocardial ischemia (Fig. 1A). He was treated with digitalis and meralluride, in addition to hydrochlorothiazide, and was discharged slightly edematous to be followed in the cardiac clinic. He remained edematous and dyspneic and in June, 1966, was readmitted with chest pain, and an electrocardiogram showed an acute anterior wall infarction (Fig. 1B). However, after a short stay he signed out against advice. He was readmitted for the last time on August 1, 1966, after having become confused in the interval and showed an increase in abdominal girth. On admission he was taking gitalin 0.5 mg. three times a day. He denied any chest pain but admitted to dyspnea, orthopnea, and ankle edema. He denied any history of heavy alcoholic intake and was a nonsmoker. He denied chronic cough or hemoptysis. He gave a history of a 20-pound weight loss over the past year but stated that his appetite was good. He denied abdominal pain, nausea, vomiting, change in bowel habits, melena, or a history of jaundice. The remainder of his review of systems was noncontributory. The past history was unremarkable except for a herniorraphy twelve years previously. There was no admitted history of hypertension, diabetes, tuberculosis, or rheumatic fever.

Physical examination showed an elderly, chronically ill-appearing white male with a thin upper trunk and distended abdomen; there was marked edema of the lower extremities. His blood pressure was 96 systolic and 70 diastolic, and his pulse rate was 76 per minute and regular. The temperature was 99.6 F. and respirations 24 per minute. Examination of the head, eyes, ears, nose, and throat was unremarkable except for opacities of both pupils. His neck veins were distended and filled from below. Auscultation of the lungs revealed a few subcrepitant rales at both bases with no dullness to percussion. The point of maximal cardiac impulse was felt at the anterior axillary line. The rhythm was regular, and there were no murmurs, gallops, or thrills detected. The abdomen was markedly distended with an everted umbilicus, and

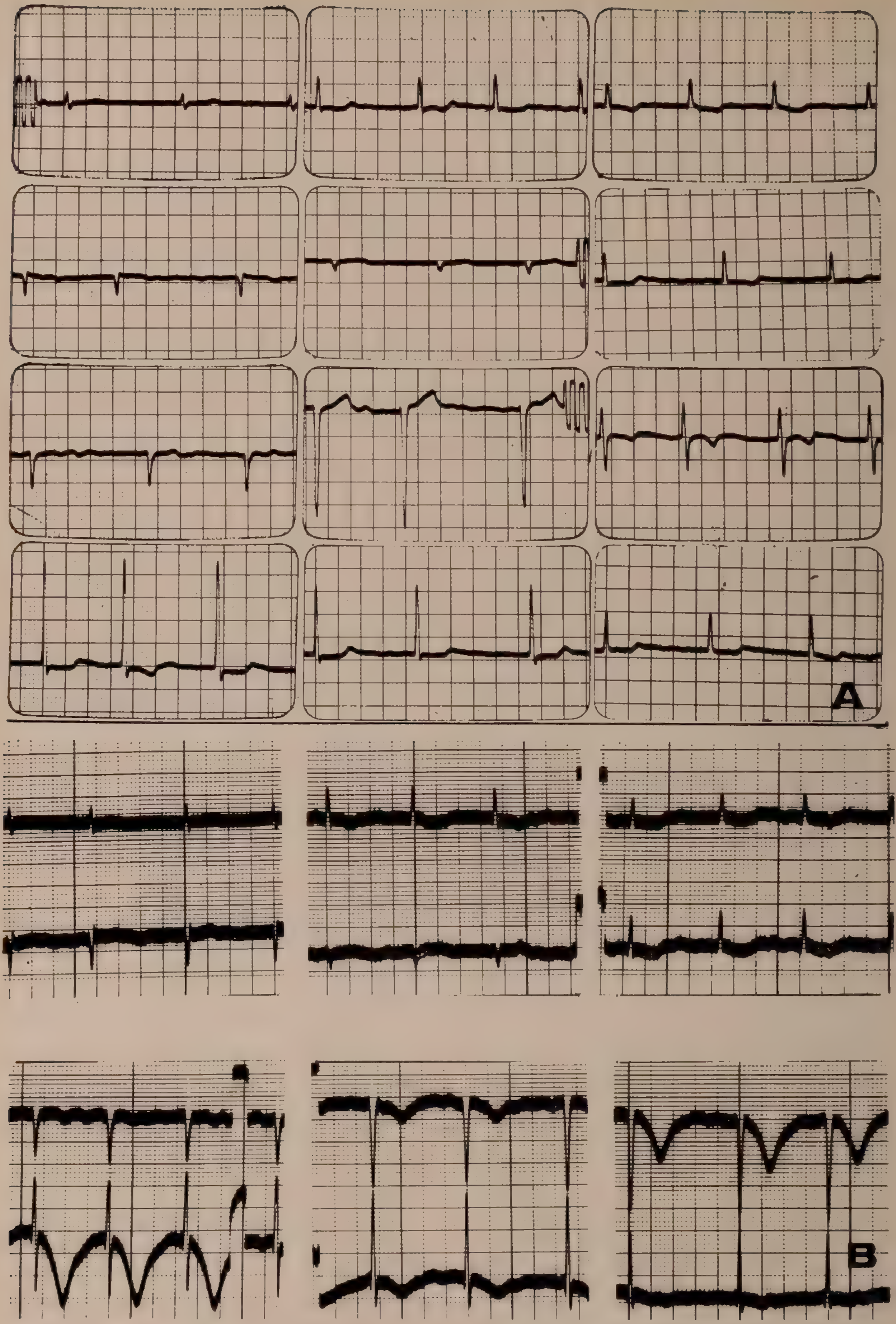

FIGURE 1. Electrocardiograms showing (A) atrial fibrillation, left ventricular hypertrophy, and myocardial ischemia (September, 1965, hospital admission), and (B) normal sinus rhythm with acute anterior wall infarction pattern (June, 1966, hospital admission).

both shifting dullness and a fluid wave were elicited. The liver was balloted 3 fingerbreadths below the right costal margin and was tender; a positive hepatojugular reflux was elicited. The spleen was not felt, but an inguinal hernia on the right side was present. Rectal examination was unremarkable except for a moderately enlarged, smooth prostate gland. The lower extremities showed marked, diffuse, pitting edema with all peripheral pulses palpable; there was stasis dermatitis, and venous varicosities were present. The neurologic examination showed normal findings. An initial peripheral venous pressure was 23 cm. of water, and a dehydrochloric acid circulation time was thirty-five seconds (arm to tongue).

The admission hemoglobin was 11.4 Gm. per 100 ml. with a hematocrit of 34. The white blood cell count was 6,405 with 80 per cent neutrophil, 78 segmented, 19 per cent lymphocytes, and 1 monocyte. The erythrocyte sedimentation rate was 41 mm. in one hour. Urinalysis was completely unremarkable. The fasting blood sugar was 97 mg. per 100 ml. The blood urea nitrogen was 25 mg. per 100 ml. The serum sodium was 132 mEq., potassium 4.4 mEq., chlorides 97 mEq., and bicarbonate 23 mEq. per liter. The total protein was 7.2 Gm. with albumin 3.5 Gm. and globulin 3.7 Gm. per 100 ml. The serum enzymes were within normal limits as were the calcium, phosphorus, alkaline phosphatase, cephalin flocculation, and thymol turbidity determinations. The serum bilirubin was 1.6 mg. per 100 ml. on admission and five days later was 0.9 mg. per 100 ml. The sulfobromophthalein retention was 20.5 per cent. The prothrombin time was fourteen seconds with a control of eleven seconds, representing a prothrombin content of 60 per cent. The total cholesterol was 152 mg. per 100 ml. His admission chest x-ray film showed cardiac enlargement with a cardiothoracic ratio of 15:28. There was a moderate accentuation of lung markings bilaterally, and the left cardiophrenic angle was obliterated by what appeared to be a tortuous aorta. A flat x-ray film of the abdomen was unremarkable. His electrocardiograms showed atrial tachycardia with varying atrioventricular block and evidence of an old myocardial infarction (Fig. 1B). Left ventricular hypertrophy was also present. A diagnostic paracentesis was performed, and 90 cc. of clear yellow fluid were aspirated. The total protein was 4.7 Gm. per 100 ml., and its specific gravity was 1.015. The smear revealed an occasional polymorphonuclear leukocyte and many hyperchromic small and larger cells singly and in clumps; no malignant cells were seen. A smear for acid-fast bacilli and cultures gave negative results. Purified protein derivative tuberculin skin tests of first and second strength showed negative findings. Over the next ten days with bed rest, diuretics, and sodium restriction the patient lost 15 pounds; the venous pressure dropped to 12.5 cm. of water and the circulation time to ten seconds. An iodine-131-labeled rose bengal liver scan showed the liver to be small but otherwise normal. A serum electrophoresis revealed an albumin of 50.6 per cent, alpha-1 globulin 5.9 per cent, 10.5 per cent of alpha-2, beta 11.2 per cent, and gamma 21.7 per cent. Further radiographic studies included an intravenous pyelogram which showed normal findings and a barium enema examination which was unremarkable except for a probable polyp in the distal sigmoid colon, which was confirmed by air contrast study and sigmoidoscopic examination. An upper gastrointestinal x-ray film series gave normal results. An oral cholecystogram failed to visualize the biliary tree. An intravenous cholangiogram showed faint opacification of the bile ducts and gallbladder which were all normal. A celiac arteriogram was performed through a right femoral artery puncture. A rather indistinct vascular blush was seen in the right paravertebral area supplied by one of the pancreaticoduodenal arteries in an area corresponding to the region of common duct and head of pancreas. No vessel displacement was noted, and the liver appeared enlarged. Through the sigmoidoscope a biopsy of the previously noted rectal polyp was read as showing a benign adenomatous polyp. A rectal biopsy stained for amyloid gave negative results. The patient again began to gain weight, and the venous pressure rose to 225 mm. of water despite continued diuretic therapy. On September 12, 1966, catheterization of the right side of the heart was performed through a cutdown in the right median vein. A number

7 N.I.H. catheter was advanced into the superior vena cava, right atrium, right ventricle, main pulmonary artery, left pulmonary artery, and right pulmonary artery. The pressures (millimeters of mercury) were as follows: mean superior vena cava 16; mean right atrium 15; right ventricular systolic 18 and diastolic 1; and pulmonary arterial systolic 15, diastolic 8, and mean 18.

On September 13, 1966, an exploratory laparotomy was performed because of suspected intra-abdominal malignant disease. A large amount of greenish clear fluid with some fibrin flecks and a liver which was dark reddish-brown, but not obviously cirrhotic and firm, were present. The rest of the abdomen was unremarkable. A biopsy of the liver was taken and read as consistent with early postnecrotic cirrhosis. An omental lymph node showed only chronic lymphadenitis.

Postoperatively the patient continued to show atrioventricular block pattern on the electrocardiogram, usually 2:1. He was not febrile, and no murmurs were heard. He continued to gain weight, and the venous pressure rose to 25 cm. of water despite the continued use of diuretics. Repeat serum electrolytes were normal, and the laboratory data remained unchanged. On November 7, 1966, he vomited some coffee-ground material which gave positive findings on reagent tablet test (Hematest). He became markedly dyspneic and moist rales were heard throughout the lung fields. While treatment was being instituted, cardiac arrest occurred. External cardiac massage failed, and the patient expired ninety-nine days after admission.

Discussion

Richard S. Crampton, M.D.*: This discussion concerns a patient who had two major problems, one involved the heart and the other the abdomen. I should like to examine these problems separately and will begin with the heart condition.

Fourteen months before his death, the patient showed symptoms and signs of pulmonary and systemic venous congestion. The circulation time was prolonged. The electrocardiogram showed atrial fibrillation with S-T and T-wave changes consistent with myocardial ischemia (Fig. 1A). Treatment with digitalis and mercurial diuretics resulted in improvement, but some edema was still present at the time of discharge. He appeared at the hospital ten months later with the same symptoms. The rhythm was now normal sinus, and an acute anteroseptal infarction pattern was present on the electrocardiogram (Fig. 1B). He left the hospital against advice, and a month later he entered the hospital for the final time, complaining of increasing abdominal distention. He appeared confused, and this, perhaps, is why he had taken gitalin 0.5 mg. 3 times daily. In addition he had lost 20 pounds, and examination showed a narrow pulse pressure with pulmonary and systemic venous congestion. The heart was enlarged to the left by palpation. No murmurs, gallops, or thrills were noted. There was hepatic enlargement with ascites. There were varicosities of the legs, a great amount of edema, palpable foot pulses, a right inguinal hernia, and evidence of benign hypertrophy of the prostate. Except for the complaint of confusion the neurologic examination showed normal findings. The venous pressure was elevated, and the circulation time prolonged. A mild anemia was consistent with hemodilution of the congested cardiovascular system. The erythrocyte sedimentation rate was elevated, and the blood urea nitrogen also was slightly elevated. There was chemical jaundice on entry, but the bilirubin fell to normal after five days of treatment with rest, a low-sodium diet, and diuretics. The electrocardiogram showed atrial tachycardia with variable atrioventricular block and evidence of the infarction as well as hypertrophy of the left ventricle. I wonder if Dr. Eidenschenk would interpret the results from the chest x-ray films at this time?

Erich Eidenschenk, M.D.: The chest roentgenogram shows the heart is enlarged in its transverse diameter with prominence of both the left and right heart borders (Fig. 2A). The cardiothoracic ratio is 15:28. The aorta is uncoiled and contains faint calcifications in its walls. There is slight widening of the mediastinum by vascular shadows. The lungs are clear, and the lung markings are unremarkable,

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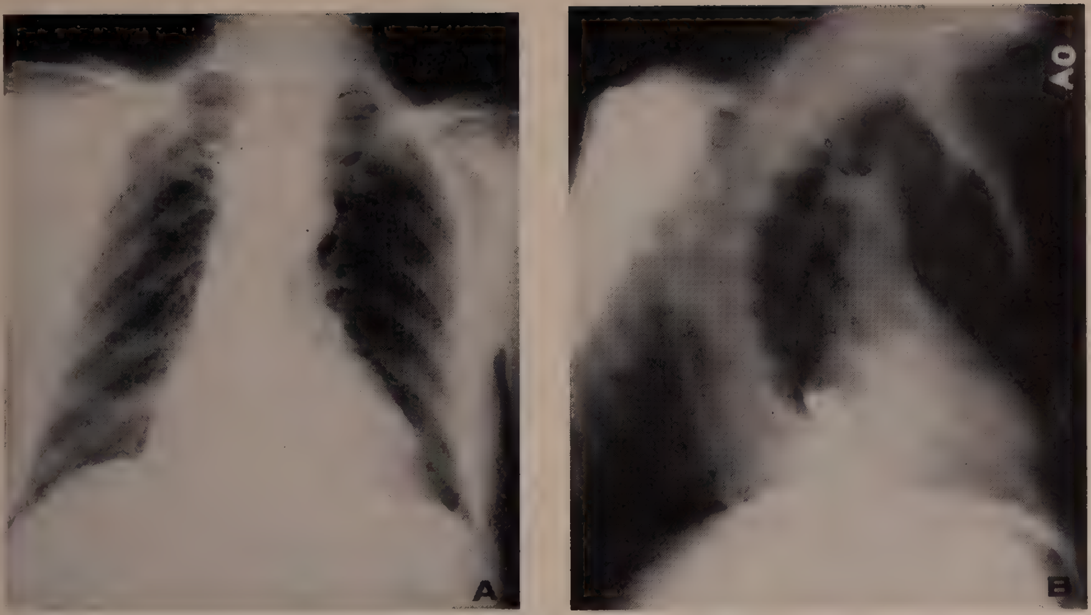


FIGURE 2. (A) Initial chest x-ray film showing enlarged heart with prominent left and right cardiac borders; aorta is uncoiled, elongated, and contains calcifications in walls. (B) X-ray film of right anterior oblique projection with barium swallow demonstrating posterior heart border projecting beyond esophagus and partially superimposed on dorsal spine.

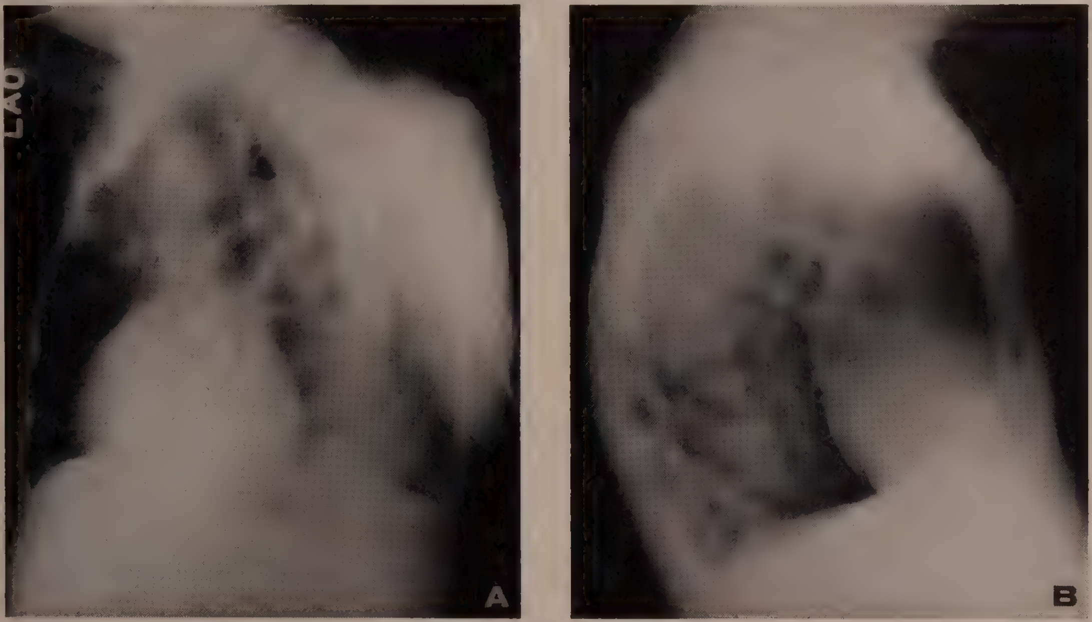
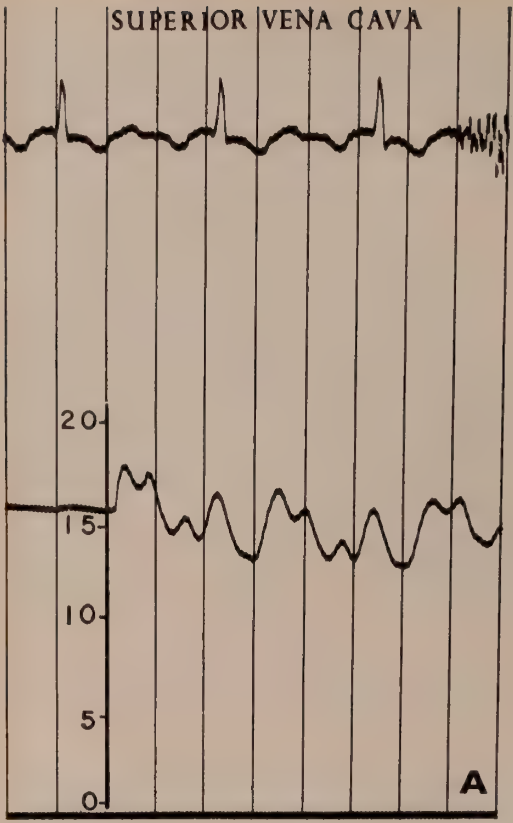


FIGURE 3. X-ray films of (A) left anterior oblique projection demonstrating slightly enlarged left ventricle and normal aortic window, and (B) left lateral view of chest fails to reveal any evidence of intracardiac or pericardial calcium deposits.

with no evidence of an effusion. The right anterior oblique chest x-ray film reveals minimal prominence of the pulmonary artery segment (Fig. 2B). The barium-filled esophagus is not displaced. The inferior portion of the posterior heart border projects beyond the esophagus and is partially superimposed on the dorsal spine.



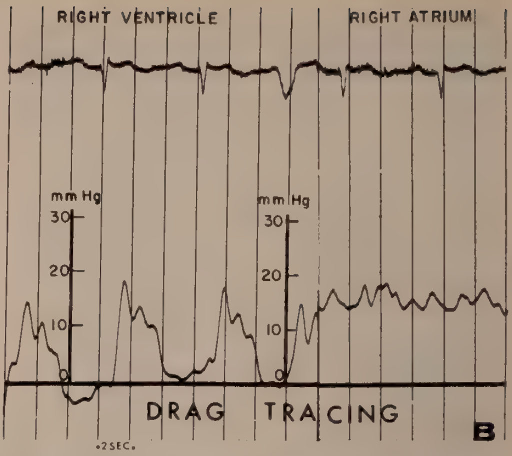
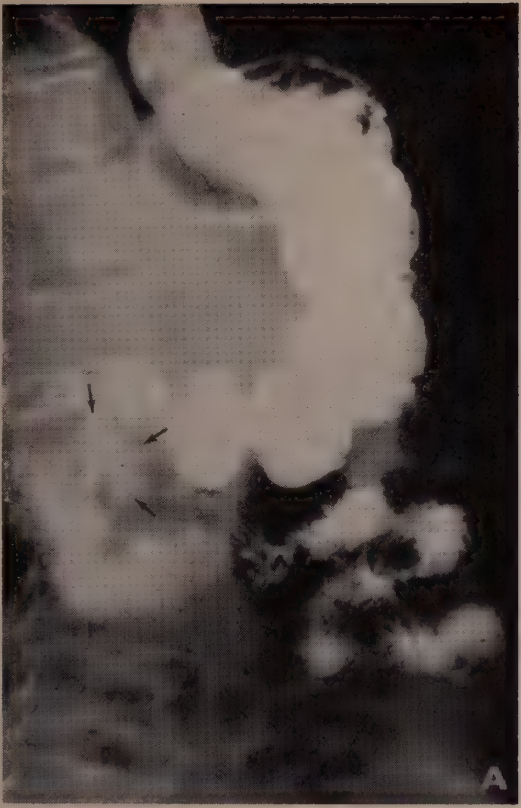


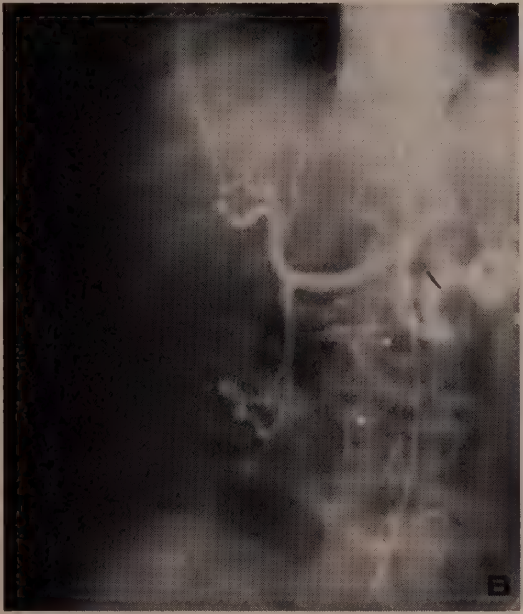
FIGURE 4. (A) Simultaneous electrocardiogram and catheterization curve of superior vena cava during 2:1 atrioventricular block. A waves interrupt Y descent of V waves, and a deep Y-trough is not seen. (B) Drag tracing on catheterization of right ventricle and atrium during 2:1 atrioventricular block showing 14-mm. Hg. gradient between right atrial pressure and right ventricular end-diastolic pressure by withdrawal of catheter from ventricle to atrium.

It is quite prominent and represents an enlarged right atrium. Two linear calcifications are seen dorsally to the enlarged right atrium and represent calcifications in a tortuous aorta. The left anterior oblique x-ray film of the chest reveals a slightly enlarged left ventricle (Fig. 3A). The aorta is uncoiled and moderately dilated, and the aortic window is not encroached on. The left lateral x-ray film of the chest is essentially unremarkable (Fig. 3B). A trace of barium is present in the distal esophagus superimposed on the posterior heart border. In none of the films is there any evidence of intracardiac or pericardial calcium deposits.

In summary then these radiographs demonstrated arteriosclerotic heart disease with slight enlargement of the left ventricle and a diffusely dilated and tortuous aorta. The right atrium is also enlarged.

Dr. Crampton: Thank you, Dr. Eidenschenk. In summary, these x-ray films showed enlargement of the right atrial chamber. There was enlargement of the heart as well as a dilated tortuous aorta. The pulmonary artery was also modestly prominent. There was no pericardial or intracardiac calcification noted. The cardiac catheterization showed venous hypertension in the superior vena cava (Fig. 4A). Rather prominent A waves rising above the base line indicate the presence of atrial tachycardia which, at the time of the cardiac catheterization was associated with a fixed atrioventricular block and therefore constant heart rate. Because of this arrhythmia, the V wave was confused with the A wave, but the V does not show a sharp Y descent or deep Y trough which tends to rule out chronic constrictive pericarditis. As the catheter was withdrawn from the right ventricle to the right atrium, no equalization of diastolic pressures occurred in the atrium and ventricle (Fig. 4B). A 14-mm. mercury end-diastolic gradient existed between the right atrium and the right ventricle and was the most striking feature of this study. This gradient indicated a considerable obstruction to flow between the right atrium and the right ventricle. The diastolic dip or deep Y trough of chronic constrictive pericarditis was again absent. The withdrawal tracing in the pulmonary artery and right ventricle showed normal pressures





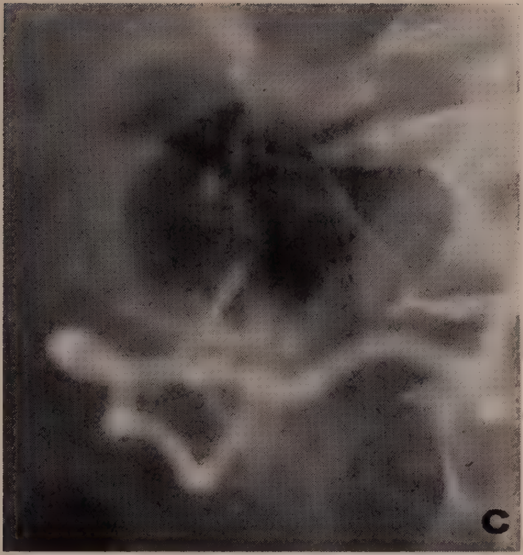


FIGURE 5. (A) X-ray film of upper gastrointestinal series showing large diverticulum in descending portion of duodenum and normal duodenum sweep. (B) Selective celiac arteriogram at two seconds revealing moderate tortuosity of distal segments of intrahepatic branches of hepatic artery, particularly in inferior aspect of right lobe of liver. (C) High-power view of celiac arteriogram showing large size of anterior branch of superior pancreaticoduodenal artery which supplies conglomeration of small tortuous vessels that are still opacified beyond capillary phase.

and no systolic gradient between the right ventricle and pulmonary artery, ruling out an obstruction between the right ventricle and pulmonary artery. The diagnoses of cardiac disease suggested by the clinical course and confirmed by laboratory data include coronary arterial obstruction with myocardial infarction and an obstruction to blood flow between the right atrium and right ventricle.

I shall now turn to the abdominal findings. The patient had noted a weight loss of 20 pounds without other more specific symptoms; there was ascites as well as hepatic enlargement. This weight loss might be attributed to cardiac cachexia, but a chronic infection or tumor might also produce it. Tuberculosis appears to be excluded because of the negative results from the skin tests and smears of the ascitic fluid. The ascitic fluid was clear and yellow and had a specific gravity suggestive of a transudate. The total protein was remarkably elevated. Many cells of various sizes with hyperchromic nuclei were seen, but no malignant cells were found. The sulfobromophthalein retention was 20 per cent and might be explained by the hepatic congestion or by cirrhosis. The elevation of serum proteins involved the globulin fraction and was modest. The iodine-131 rose bengal liver scan showed no space-occupying lesion in a small liver. The decrease in size of the enlarged liver probably indicated diminution of congestion resulting from treatment. The biliary tree and gallbladder were normal by intravenous cholangiography. An intravenous urogram showed normal findings. The x-ray films of the abdomen produced more questions than answers, and I would like to ask Dr. Eidenschenk to discuss them now.

Dr. Eidenschenk: The upper gastrointestinal x-ray film series reveals a normal stomach and duodenum (Fig. 5A). A large wide-mouthed diverticulum is seen arising from the inner aspect of the descending portion of the duodenum. The duodenal loop and mucosa are normal. A selective celiac arteriogram with the catheter in the celiac artery shows a tortuous splenic artery and normal hepatic arteries (Fig. 5B). The intrahepatic branches are attenuated, and their distal segments show moderate tortuosity, particularly in the inferior aspect of the right lobe of the liver, suggestive of an early stage of atrophic cirrhosis. There is no displacement or truncation of the intrahepatic arteries nor is there any evidence of tumor staining. The gastroduodenal artery is rather large in caliber, and there is good visualization of the posterior and anterior branches of the superior pancreaticoduodenal artery. The right gastroepiploic artery is prominent. There is no displacement by adjacent masses. The anterior branch of the superior pancreaticoduodenal artery appears rather large in size and supplies a conglomeration of small tortuous vessels (Fig. 5C). They filled early in the arterial phase and remained opacified beyond the capillary phase. Those small tortuous vessels, however, do not have the characteristic appearance of tumor vessels usually seen in malignant neoplasms, and there is no arteriovenous shunting or recognizable early venous filling. On the basis of this, it was thought that the presence of a malignant (vascular) neoplasm of the head of the pancreas could be ruled out. A neoplasm of the duodenum or common bile duct was excluded by normal findings of gastrointestinal and intravenous cholangiographic studies. However, a definite diagnosis could not be made; the possibility of a vascular anomaly or a benign neoplasm of the head of the pancreas, such as a hormone-inactive insulinoma, were suggested.

Dr. Crampton: I have patiently waited to ask one question. Could the supposed vascular blush represent a metastatic carcinoma to the pancreas?

Dr. Eidenschenk: Yes, that is possible but no arteriovenous shunts are present. That is one of the criteria needed to identify carcinoma on arteriography.

Dr. Crampton: In summary then these last films show a vascular blush near the head of the pancreas and in the region of the diverticulum of the descending portion of the duodenum. The vascular blush is rather small and might be consistent with a benign rather than a malignant tumor of the head of the pancreas. The hepatic arterial tree appeared normal. The barium enema examination showed two polyps of the sigmoid colon, one of which was removed and found to be benign.

A rectal biopsy was negative for amyloid. An exploratory laparotomy disclosed a change of color in the ascitic fluid. It was greenish and clear, indicating oxidation of bilirubin to biliverdin. Excessive conversion of bilirubin to biliverdin may occur in cancer of the head of the pancreas; the neoplastic cells may be rich in oxidizing enzyme systems, and the result is green ascitic fluid.[1] It is also possible that tumor metastasizing to the pancreas may distort the gland, making pancreatic enzymes available to oxidize bilirubin. The dark, reddish-brown liver was firm and consistent with long-standing hepatic venous congestion and perhaps with early cirrhosis. A biopsy of this organ suggested early postnecrotic cirrhosis. The remarkable elevation of the protein content of the ascitic fluid is consistent with postnecrotic cirrhosis and also with neoplasm involving the peritoneum. An omental lymph node showed chronic lymphadenitis.

During the eight weeks after operation, the venous congestion and weight gain constituted a major therapeutic problem despite vigorous diuretic treatment. In addition, the atrial tachycardia with variable atrioventricular block persisted. On the day of his death, the patient vomited a small amount of partially digested blood, suddenly acquired dyspnea and signs of pulmonary edema, and suffered a cardiac arrest.

The cause of death does not appear to have been sudden hemorrhage from the gastrointestinal tract, for no red blood was vomited or passed per rectum. It is possible that the tortuous aorta dissected or ruptured, but the patient was not hypertensive nor was there typical tearing pain in the chest, back, or abdomen. An infarction of the diaphragmatic myocardium might have caused nausea, vomiting, acute failure of the left ventricle, fibrillation, and death. A fatal arrhythmia might have arisen from treatment with digitalis, a drug known to induce nausea, vomiting, and atrial tachycardia with atrioventricular block. A pulmonary embolus could explain the sudden dyspnea. Clots may have formed in the leg veins of this patient who had severe edema and varicosities and swept on to occlude the pulmonary artery.

The rapid downhill course of refractory, congestive failure of the right side of the heart over one year does not seem adequately explained by the observed left ventricular failure and myocardial infarction. In fact, an obstruction at the level of the tricuspid valve physiologically might protect the lungs from congestion during failure of the left ventricle by limiting inflow to the lungs. A consideration of causes of obstruction at the level of the tricuspid valve may prove helpful. Rheumatic tricuspid stenosis seems to be excluded since it rarely occurs in the absence of mitral lesions, and no typical features such as a murmur, opening snap, or peaked right atrial P waves were detected.[2] A carcinoid tumor metastatic to the liver may cause tricuspid stenosis, but the absence of characteristic symptoms, signs, and laboratory test abnormalities of this syndrome rule it out.[3] Obstruction to the inflow tract of the right ventricle by asymmetrical hypertrophy of the heart may simulate tricuspid stenosis, but it is rare and seems unlikely in the absence of a familial history and a diastolic flow murmur in the tricuspid area.[4] Similarly, congenital tricuspid stenosis is quite rare, and its auscultatory signs are absent in this patient. Obstruction at the level of the tricuspid valve may be caused by a variety of primary cardiac tumors. Myxoma, fibroma, sarcoma, lymphoma, and rhabdomyoma may originate in the atria, ventricles, or valves. Rhabdomyoma seems least likely since mental retardation, epilepsy, tuberous sclerosis of the brain, adenoma sebaceum of the skin, and multiple kidney tumors were absent in this patient.

Secondary tumors of the heart must also be considered. Metastatic tumor involved the right atrium in 15 of 182 cases in one series.[5] Tumors of the lung and breast most commonly spread to the heart. Tumors of kidney, esophagus, testis, naso-oropharynx, and pancreas also not infrequently metastasize to the heart and pericardium.[6] The manifestations of malignant disease of the heart include pericardial effusion, pericardial constriction, obstruction to flow between chambers by growth on valves, nonspecific S-T and T-wave changes, and atrioventricular conduction defects. However, the changes shown in the electrocardiogram in this case might be attributed to coronary atherosclerosis and digitalis treatment.

The diastolic pressure gradient between the right atrium and right ventricle indicates reduction of the cross-sectional area of the pathway of blood flow between these chambers. The cause of this obstruction may be a pedunculated tumor of the atrial septum, a free ball-valve thrombus in the atrium, an endocardial tumor of the valve, or a protruding mass of myocardial tumor. A myxoma of the right atrium could account for the clinical course of this patient. Right atrial myxoma constitutes 13 per cent of primary cardiac tumors but is four times less frequent than myxoma of the left atrium. Right atrial myxoma has been complicated by thrombus formation, and emboli of myxomatous tissue have lodged in the lungs and invaded the media of the pulmonary arteries, causing death.[7,8] However, in this patient, chronic obstruction of the pulmonary artery by clot or tumor emboli seems unlikely in the absence of pulmonary arterial hypertension at catheterization.

Atrial myxoma very rarely occurs bilaterally; such a bicameral growth might embolize to lungs and to a coronary artery accounting for the myocardial infarction. In the absence of other evidence of systemic embolization and without symptoms or signs of left atrial myxoma, bilateral atrial myxoma should be dismissed.

What about the vascular blush that lurked in the region of the head of the pancreas? It might represent an early cancer of the head of the pancreas, clinically unrecognizable at operation. The likelihood of pancreatic cancer spreading to the heart depends on which report one chooses to quote. In 476 cases of carcinoma, there were 91 with cardiac metastases, and of 33 pancreatic cancers, 7 spread to the heart, involved subepicardial lymphatics and the trabeculae of the right ventricle, and produced nodules in the myocardium and pericardial effusion.[9] In another series 106 of 500 cases showed cardiac metastases, and 2 of 4 carcinomas of the tail of the pancreas involved the heart, but the statement was made that cardiac metastases are always associated with widespread involvement of other organs.[10] A third study indicated 217 cardiac metastases in 4,124 cases, and 4 of 148 pancreatic cancers spread to the heart.[5] In a fourth review of 116 cases of metastases to the heart the pancreas as the primary site was not depicted.[11] I think one can assume that pancreatic cancer does involve the heart. However cancer of the head of the pancreas tends to remain localized, and a tumor was not detected at laparotomy after demonstration of a vascular blush by an arteriogram. Perhaps this tumor did not arise from the cells of ducts or acini but originated from islet-cell tissue. Tumors of islet cells are rarely malignant, may compress adjacent pancreatic tissue, often are encapsulated, usually are well vascularized, and elaborate insulin or insulin-like substances in 70 per cent of cases.[12] This patient did not have symptoms of hypoglycemia, so one must assume there was no secretion of insulin by a tumor of the islet cells. These small, well-vascularized tumors not infrequently show incomplete fibrous encapsulation and tend to spread slowly. In fact, removal of islet-cell tumor has been followed by the appearance of metastases many years later.[12] A primary malignant tumor or secondarily disrupted normal pancreas in contact with the ascitic fluid were suggested by the elevated protein content and by the oxidation of bilirubin to biliverdin. The arteriogram indicated a small vascular blush without the rich vascular network associated with ductal or acinar pancreatic cancer. It is not unreasonable to suspect a nonfunctioning, islet-cell tumor at the head of the pancreas, but I do not think spread to the heart with death in one year is very likely in view of the indolent nature of this tumor.

Could a cardiac tumor have metastasized to the pancreas? Primary sarcoma of the heart is quite common, comprising 21 per cent of all primary tumors of the heart. This tumor arose from the right atrium in 27 of 100 cases.[13] Sarcoma is an infiltrating, firm tumor which may extend to the cardiac chambers and vena cava. Metastases occur in 30 per cent, commonly in the lungs and pleura. Spread occurs to the mediastinal, tracheobronchial, and retroperitoneal lymph nodes from which the sarcoma may gain access to the pancreas. Six of 100 cases of cardiac sarcoma showed metastasis to the pancreas.[13] Sarcoma originating in the right atrium is a most attractive diagnosis, and I shall choose it. It accounts for relentless tricuspid obstruction with venous hypertension and for refractory edema due to obstruction of the inferior vena cava. Direct invasion of the right atrium, interventricular septum, and atrioventricular conduction system might account for the atrial fibrillation, the atrial tachycardia with atrioventricular block, and possibly for the anteroseptal infarction pattern by compression and occlusion of the septal branches of the left anterior descending coronary artery. Invasion of the superior vena cava seems unlikely at the time of the cardiac catheterization because the approach to the right side of the heart was by way of the median vein. However, primary cardiac sarcoma grows rapidly, and the tumor may well have invaded the superior cava before death. The vascular blush at the head of the pancreas may represent a sarcomatous metastasis. The invasion of the right atrium and vena cava resulted in severe obstruction to blood flow, thrombosis of the right side of the heart, and death.

Clinical diagnoses

1. *Arteriosclerotic heart disease*
2. *Old anterior wall myocardial infarction*
3. *Congestive heart failure with cardiac cirrhosis and ascites*
4. *Tumor of right auricle with increased systemic venous congestion*
5. *? Pancreatic adenoma*

Dr. Crampton's diagnoses

1. Primary sarcoma of the heart originating from the right atrium with extension to inferior vena cava, atrioventricular conduction system, interventricular septum, and anterior wall of left ventricle and metastases to the head of the pancreas

2. Secondary thrombosis of right cardiac chambers due to obstruction of blood flow by tumor

Michael S. Bruno, M.D.: Thank you, Dr. Crampton. Would Dr. Moreno like to elaborate further on the results of the exploratory laparotomy?

Augusto Moreno, M.D.: The major findings were those stated in the protocol and by the discussant. The liver was congested and did not typically look or feel like the usual cirrhotic liver. The pancreas was normal to palpation. The ascitic fluid was clear, and there was no nodulation over the peritoneum.

Dr. Bruno: Lester Honig, M.D., from the gastroenterology section, saw the patient in consultation. The patient was in the medical ward and presented many different, diagnostic problems on daily ward rounds. I wonder if he would tell us what the attending physician's feelings were.

Lester J. Honig, M.D.: We initially considered systemic amyloidosis as the most plausible diagnosis in this case. The negative results from rectal biopsy made the possibility of primary amyloidosis remote. It was then that our attention was shifted from the abdomen to the chest and heart. The rest of the work-up was as already described.

Dr. Bruno: Nicholas DePasquale, M.D., saw this patient in consultation, and his laboratory performed the cardiac catheterization. Unfortunately he could not attend this conference, but I know that he was unhappy that angiography was not done at the same time.

John V. Waller, M.D.: I am wondering if the celiac arteriography pattern could be secondary to the advanced chronic congestive heart failure that was present?

Dr. Eidenschenk: That may be one plausible explanation since engorgement of arteries in the presence of acute hepatic congestion or even cirrhosis is known to occur.

Gerson I. Lesser, M.D.: On reviewing the case again and the discussion to this point, the evidence for disease below the diaphragm is very small. I would rather favor a benign process in the right atrium, namely a myxoma. Certainly the cardiac catheterization curves and pressures are compatible with it, and angiography with cine study would have been most helpful in establishing the diagnosis.

Dr. Bruno: All that you say is absolutely valid. Would Dr. Missier like to make some comments about sarcomas of the right atrium and tell us whether or not he has seen any cases or operated on any of them?

Peter A. Missier, M.D.: No, I must admit I have never seen or operated on such a case. Since I know the final diagnosis, I would rather hold my comments until later.

Dr. Bruno: Would Dr. Fischer like to add anything to the discussion?

Walter W. Fischer, M.D.: I have never seen a sarcoma of the right atrium, but several months earlier we successfully operated on and removed a right atrial myxoma from a five-year-old boy who has since returned to school and is doing very well. Although the patient's catheterization curves and pressures were suggestive, the cine study with angiography under television image intensification were diagnostic. The myxoma was seen to move about in the right atrium, at times occluding the tricuspid valve and at other times not.

Dr. Bruno: I reviewed the angiocardiographic studies of the case you mentioned Dr. Fischer and must say they were absolutely diagnostic of a right atrial myxoma. The surgical results in that case were brilliant. Would Dr. Shea please review the pathologic material of this case?

Pathologic report

Lawrence P. Shea, M.D.*: At postmortem examination there was generalized arteriosclerosis with moderately severe sclerosis of the coronary arteries, which were not occluded. The heart weighed 490 Gm. The right atrium was nearly filled by a soft spheroidal mass measuring 7 cm. in diameter, which was firmly attached to the posterior wall of the atrium just below the opening of the superior vena cava and to the adjacent interatrial septum as far as the rim of the fossa ovalis (Fig. 6A). The external surface of the mass was smooth and dark red. The dark-red gelatinous cut surfaces contained a few small foci of calcification. The cut surfaces did not exude mucinous fluid. The right atriun was dilated, and the left and right ventricles were mildly hypertrophied. There were no lesions of the cardiac valves.

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Microscopic sections of the right atrium at the site of attachment of the pedunculated mass showed fibrosis of the myocardium. The mass in this region was composed mainly of coagulated red cells and granulation tissue containing foci of lymphocytes, plasma cells, and macrophages with granules of hemosiderin in the cytoplasm (Fig. 6B). Sections of the central and peripheral portions of the mass likewise consisted of loose fibrous tissue with dilated capillary vessels, a few similar chronic inflammatory cells, and focal collections of red blood cells and fibrin. The loose myxomatous fibrous tissue contained a trace of mucicarminophilic material and several macrophages (Fig. 6C).

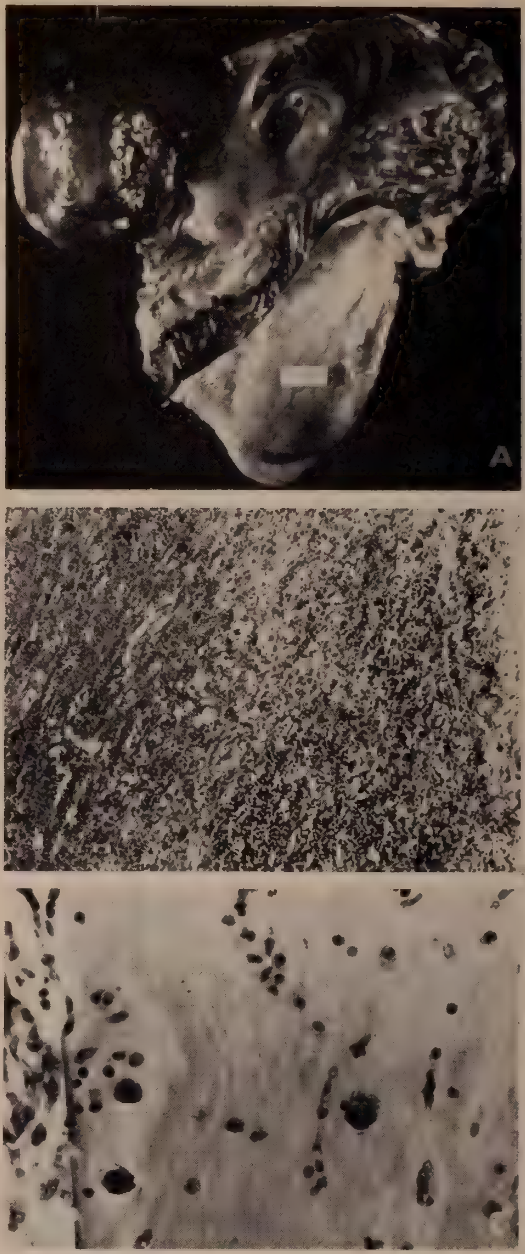

FIGURE 6. (A) Pedunculated myxoma attached to posterior and septal walls of right atrium. (B) Section of junction of mass and atrial wall showing abundant granulation tissue containing lymphocytes and macrophages (× 185). (C) Section of center of intra-atrial mass showing loose myxomatous fibrous tissue containing several macrophages (× 280).

The lungs showed moderate chronic passive congestion and focal emphysema with several bullae in the apical regions. The liver weighed 1,200 Gm. and was diffusely increased in consistency. The cut surfaces were dark reddish-brown. Microscopic sections showed severe centrilobular congestion. Fibrous tissue was increased in amount around the central veins and in the periportal spaces where there were small foci of lymphocytes. Mild regenerative changes in the parenchyma were suggested by a slight increase in nuclear variability of size and in the number of binucleate hepatic cells. The gallbladder showed chronic cholecystitis and cholelithiasis. A few small black calculi were noted in Rokitansky-Aschoff sinuses in the gallbladder wall. The spleen weighed 150 Gm., the capsule was fibrotic. The cut surfaces were dark red and firm. Microscopic sections showed chronic passive congestion. No gross or microscopic lesions were noted in the pancreas. In the second part of the duodenum there was a diverticulum measuring 1.5 by 1.5 by 2 cm. All layers of the duodenal wall were included in the diverticulum. The right and left kidneys weighed 140 and 180 Gm., respectively. The surfaces were finely granular. Microscopic sections revealed mild intimal fibrosis and hyalinization of the glomerular arterioles and arteriosclerosis of the intrarenal arteries. In the right kidney there was a small cortical adenoma. The prostate was enlarged, and microscopic examination showed fibromuscular and glandular hyperplasia. The lining of the esophagus was congested and mottled with dark, apparently eroded areas. Microscopic sections of the esophagus showed multiple superficial acute ulcerations.

Dr. Crampton: Did the pancreas reveal anything either grossly or microscopically?

Dr. Shea: We looked for a small adenoma throughout multiple sections of the pancreas but found none microscopically. The pancreas revealed only arteriolosclerosis in the pancreatic vessels and minimal atrophy. We considered doing a postmortem celiac angiogram to reidentify the "stain," but a technical problem prevented this.

Dr. Fischer: I wonder if angiography had been done at the time of his cardiac catheterization, would the patient then have been a candidate for surgical removal of the tumor?

Dr. Bruno: I would have to say yes, since this procedure could have been done with cardiopulmonary bypass and minimal heart trauma. The results of surgery under cardiac bypass technic, using a special filter to catch any fragments which may be released, are good.[14]

Martin E. Bloomfield, M.D.: Was there any evidence of right atrial infarction present to explain the origin of the right atrial myxoma or thrombus?

Joseph Kessler, M.D.: We considered that, and after reviewing the patient's old tracings in the record room and those on his present chart, we could find no evidence of elevation of the T_a wave or prolonged T-wave width greater than 0.12 seconds. The changing atrial arrhythmias and atrioventricular block were interpreted as secondary to excess digitalis.

Dr. Shea: The thrombus had a fibrous band at its base attaching it to the right atrial wall. I think the question of whether or not necrotic atrial muscle from a previous atrial infarction might have led to its formation and propagation is purely conjectural.

Dr. Bruno: Dr. Crampton, would you care to make any last comments about this case now that you know the pathologic diagnosis?

Dr. Crampton: I considered right atrial myxoma in my differential diagnosis but felt that its association with coronary artery disease was rare, and, hence, I chose the more inclusive sarcoma of the right atrium. I agree with Dr. Fischer that an intravenous angiocardiogram would have shown the tumor.[15] I also agree with Dr. Fischer and Dr. Bruno that this patient had a lesion readily treatable by open-heart surgery under present cardiopulmonary bypass technics. The slight elevation of the globulins is a point of some interest. Goodwin[16] has reported a patient with left atrial myxoma and elevation of gamma globulin which returned to normal after removal of the tumor. Finally, what we can learn from the correlation of celiac arteriography with the postmortem examination in this patient is that all that blushes in the region of the head of the pancreas is not vascularized tumor.

Dr. Bruno: With myxomas, particularly left atrial, there are signs of general systemic disease, such as anemia, loss of weight, fever, and increased sedimentation rate with abnormal blood proteins. These may be due to protein being squeezed into the blood and setting up an auto-immune reaction.[17] Other people have suggested that the myxoma acts as a mechanical erythrocyte-disintegrating machine. Rarely, I must admit, is a cardiac myxoma first diagnosed when emboli occur, and the mass is then removed by a surgeon.

Dr. Kessler: Are these true tumors or are they pseudotumors, Dr. Bruno?

Dr. Bruno: These tumors are not true myxomas because they do not have typical stellate myxoma cells. Some people postulate that they are derived from endothelium or endocardium;[18] others say they exhibit a limited degree of invasiveness. One case has been described in which tumor emboli from a right atrial myxoma impacted in the pulmonary arteries, infiltrated through the media of the involved vessels, and finally extended into the surrounding adventitia.[8] The final answer to your question, as to whether or not myxomas are true tumors, has yet to be heard.

Anatomic diagnoses

1. *Myxoma of right atrium*
2. *Arteriosclerosis, generalized, moderate*

3. *Coronary arteriosclerosis, moderate*
4. *Myocardial ventricular hypertrophy, bilateral, mild*
5. *Dilatation of right atrium*
6. *Chronic passive congestion of lungs, liver, and spleen*
7. *Cardiac cirrhosis of liver*
8. *Ascites*
9. *Arterial and arteriolar nephrosclerosis*
10. *Chronic cholecystitis*
11. *Cholelithiasis of gallbladder*
12. *Diverticulum of duodenum*
13. *Cortical adenoma of right kidney*
14. *Focal pulmonary emphysema*
15. *Hyperplasia of prostate*
16. *Acute ulcerative esophagitis*

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Correlation Conferences in Radiology and Pathology

St. Luke's Hospital Center
New York City

Editors
NATHANIEL FINBY, M.D.
Director of Radiology
CHARLES F. BEGG, M.D.
Director of Laboratories

Cancer of Duodenum

Case history

Ronald Ermini, M.D.: A thirty-five-year-old Negro woman had been in good health until two months prior to admission when she began to experience anorexia, nausea, vomiting, constipation, pain on the left side of the abdomen, and weight loss. Her bowel movements were dark in color. The pain was severe, especially after eating, and radiated to the left lower quadrant of her abdomen. During these two months she had lost 25 pounds, and at the time of admission she appeared chronically ill, malnourished, and "nervous."

Her past history was unremarkable except for an ectopic pregnancy ten years prior to the present admission. This necessitated a left salpingo-oophorectomy. The family history was entirely noncontributory.

Physical examination on admission disclosed positive findings limited to the abdomen which was soft without evidence of enlargement of the liver, spleen, or kidney. A firm, movable, tender mass was palpated in the periumbilical area. Blood pressure was 120/80 mm. Hg, pulse 90 and regular, respirations 20 per minute, and her temperature was 99.4 F. She showed evidence of melena and severe anemia. The clinical impression on admission was that the patient had an abdominal neoplasm; how-

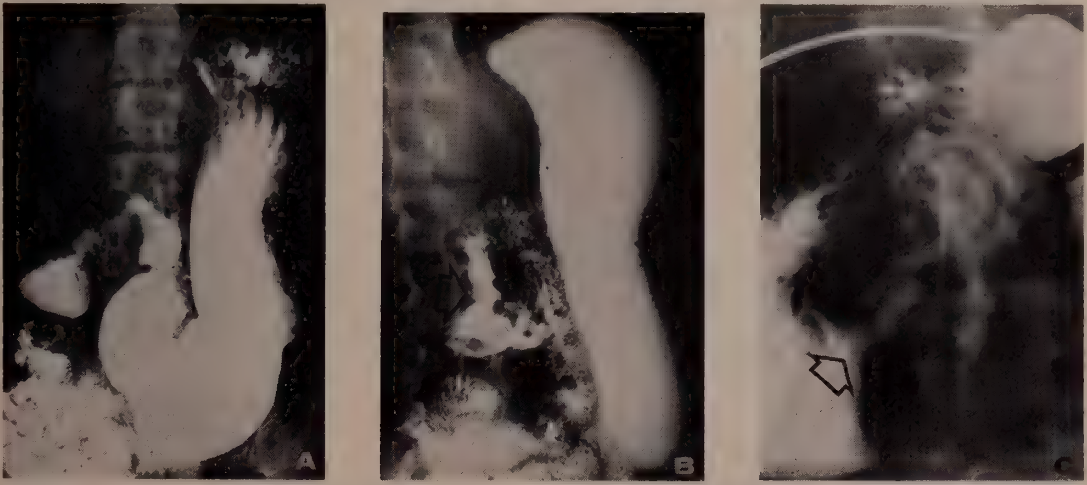

FIGURE 1. (A) Stomach appears normal. Dilatation and partial obstruction of distal second portion of duodenum. (B) Gross distortion of mucosal pattern in rigid, dilated third portion of duodenum (arrow). (C) Spot roentgenogram with pressure shows dilatation of second portion and gross irregularity of third portion of duodenum. Arrow indicates proximal margin of lesion.

ever, peptic disease and anorexia nervosa were also considered in the differential diagnosis.

Radiologic discussion

Dr. Ermini: Roentgenograms of the chest and colon showed no abnormality. Roentgen study of the gastrointestinal tract including cineradiography demonstrated a normal esophagus and stomach. Slight delay of the passage of contrast was noted in the third portion of the duodenum where the mucosal pattern was destroyed, and overhanging edges were seen at both extremities on an area of annular constriction. Duodenal dilatation was seen immediately proximal to the lesion (Fig. 1). The small intestine distal to the area demonstrated no abnormalities.

While primary tumors of the duodenum, benign or malignant, are not common,[1] the lesion here appeared to be primary. The destruction of the mucosal pattern, the overhanging edges, and the prestenotic dilatation, were all signs that the lesion was malignant and primary in the duodenum.

Surgical discussion

Robert W. Fraser, Jr., M.D.: A constricting mass lesion 4 cm. in diameter was found intrinsic to the third portion of the duodenum. This lesion was localized to the duodenum and did not extend to the ampulla of Vater. There was no invasion of the serosa on gross observation.

The head of the pancreas surrounding the duodenum was freely mobilized from the duodenum, and there was no invasion of the tumor into the pancreatic substance. The portion of the duodenum involved with tumor was resected segmentally leaving the head of the pancreas, the common duct, and the ampulla of Vater intact. The lesion was resected along with a 3-cm. margin proximally and a larger 6-cm. margin distally.

An end to end duodenal anastomosis was performed in two layers. There was no evidence of localized lymphadenopathy either in the region of the dissection or in the periaortic, periportal, or perisuperior mesenteric artery areas or the region of the vena cava; nor was there any apparent liver involvement. These findings were ascertained by performing all the motions of a Whipple dissection. After performing these maneuvers, it was judged that there would be no greater benefit to the patient in the performance of a Whipple resection. Hence, a localized segmental duodenectomy was performed.

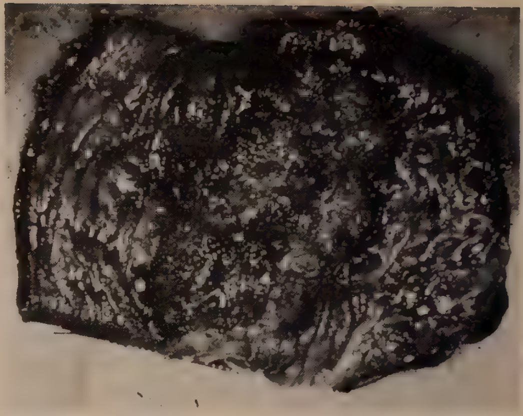

FIGURE 2. Raised, firm tumor completely encircles bowel.

Pathologic discussion

Charles F. Begg, M.D.: The resected specimen of the third portion of duodenum is 12 cm. long. There is a constricting lesion in its midportion, and the lumen is reduced to a diameter of 1 to 1.5 cm. The opened specimen is shown in Figure 2. The constricted area is 4 cm. long with 4 cm. of normal bowel on each side. The constriction is caused by a completely encircling cuff of firm tissue continuous with and protruding above the mucosa. This tissue extends to the inner muscle layer but does not appear to invade it. Figure 3A is a profile of the lesion demonstrating exuberant growth of fairly regular branching papillae into the bowel lumen. The muscle coat is pulled into the base of the lesion and is superficially invaded. Figure 3B illustrates this invasion by fairly well-differentiated, nonmucin-forming tumor cells. They form irregular spaces into which low papillae grow.

Comment

Nathaniel Finby, M.D.: Aphorisms are dramatic and effective teaching aids for the medical student. Thus, such state-

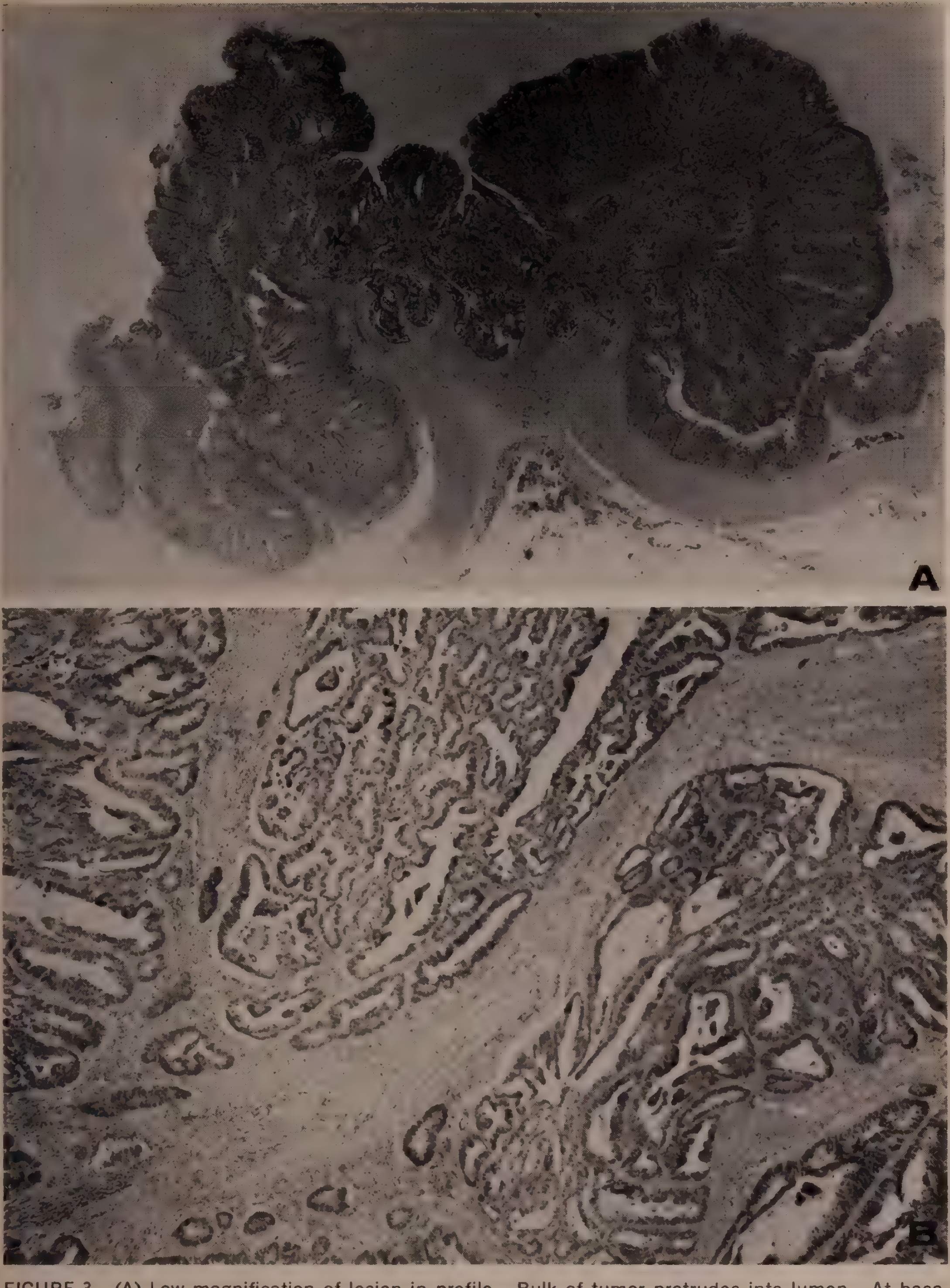

FIGURE 3. (A) Low magnification of lesion in profile. Bulk of tumor protrudes into lumen. At base, rounded tumor nodules present at border of muscle coat. (B) Fairly well-developed tumor cells form spaces with intraluminal budding.

ments as "*all* ulcers on the greater curvature of the stomach are malignant," "calcification in the ascending aorta *always* indicates syphilitic aortitis," and "primary carcinoma is *never* seen in the duodenum" are usually remembered by physicians as diagnostic truisms until experience, newer modalities of therapy, and the increasing age of our patient population teach us to form different opinions.

Training of a specialist in radiologic diagnosis requires a change in emphasis to question, "What else could these gross pathologic changes represent?" Indeed, one of the fascinations of radiologic diagnosis is that one must "never say never" about diagnostic possibilities in the differential diagnosis.

Carcinoma of the duodenum is uncommon as a primary lesion.[1,2] Nevertheless, it is seen often enough, and the chances of surgical cure are sufficiently great so that every effort must be made for proper diagnosis.

Radiologic study is the prime method of diagnosis of primary cancer of the duodenum but requires careful and complete scrutiny because overlapping of contrast shadows may easily hide the lesion. Partial obstruction should always arouse suspicion when encountered in the duodenum and should be carefully evaluated by fluoroscopy, cineradiography, and positional maneuvers to differentiate benign obstruction and extrinsic lesions from intrinsic primary cancer of the duodenum.

Ochsner and Kleckner[2] reviewed the literature of this entity, and their experience with 17 cases confirmed the finding that, in relation to length, carcinoma of the duodenum is more common than primary carcinoma of the remainder of the small intestine. They divide duodenal cancer by region into suprapapillary, peripapillary, and infrapapillary neoplasms. The latter were the least common in Ochsner and Kleckner's series but, as in our patient, their patients all showed evidence of gastrointestinal hemorrhage and eventually suffered abdominal pain. They emphasized the need for repeat studies to document the lesion whenever suspicious findings are encountered.

Differential diagnosis includes intermittent obstruction due to pressure of the superior mesenteric artery, benign tumors of the duodenum, and, most important, invasion of the duodenum by carcinoma of the pancreas. Chiat and Faegenburg[3] showed 2 patients with carcinoma primary in the pancreas, invading the duodenum, and simulating a primary lesion of the duodenum. Although secondary involvement of the duodenum by pancreatic cancer is probably more common than primary cancer of the duodenum, the differential diagnosis can be made in most instances by other radiographic and clinical signs of the primary pancreatic lesion.

Cineradiography has been a splendid advance for study of the upper gastrointestinal tract. Cineradiographic study of our present patient verified the lesion better than routine or spot film exposures. Hypotonic duodenography, utilizing the improved technic developed by Bilbao *et al.*[4] is another interesting development and should prove a worth while addition to our diagnostic armamentarium for the diagnosis of duodenal lesions.

DR. BEGG: Carcinoma of the duodenum is extremely rare. In eighteen years we have seen only 4 cases in this laboratory, one of which originated in the ampulla. In this same period there have been 219 cases of carcinoma of the stomach and 652 cases of carcinoma of the colon.

Other tumors may involve the duodenum. These include lymphoma, leiomyoma and leiomyosarcoma, hamartoma, lipoma, adenomatous polyps, and carcinoids. In our files there are 3 cases of lipoma, 4 of hamartoma, 1 of leiomyoma, and 1 adenomatous polyp. With the exception of adenomatous polyps, these tumors arise beneath the mucosa and thus are easy to distinguish from carcinoma by radiologic examination.

This patient was fortunate that intraluminal growth of the lesion called attention to its presence by producing partial obstruction before there had been significant invasion of the underlying wall. Although the postoperative follow-up is short, we view her prognosis with optimism because of the superficial location of the lesion.

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Acute Porphyria in American Negro

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The acute porphyrias are uncommon disorders reported to occur almost exclusively in white patients. In Watson's[1] series of 274 cases of porphyria of all types including 161 cases of acute intermittent porphyria and an unspecified number of variegate porphyria, there were no Negroes. Schmid[2] states, "Its (acute porphyria's) occurrence in Negroes is extremely rare," citing 2 cases.[3,4] A review of the American literature has yielded only 17 adequately documented cases.[3,5-15] Six additional cases are the basis of this report.

Methods

The following quantitative technics were employed: the method of Mauzerall and Granick[16] for urinary delta-aminolevulinic acid and porphobilinogen, the method of Rimington[17] for urinary porphyrins, and the method of Holti *et al.*[18] for fecal coproporphyrin and protoporphyrin. Uroporphyrin was extracted from fecal samples by the method of Schwartz *et al.*[19] and determined spectrophotometrically according to the method of Rimington.[17] Using this procedure, I have not found more than 7 micrograms of uroporphyrin per gram of dried feces in normal patients and not more than 13 micrograms per gram of dried feces in patients with acute intermittent, that is, Swedish, porphyria. The following qualitative methods were used: The Watson-Schwartz[20] test for urinary porphobilinogen and the Goodman-Lyon[21] test for urinary uroporphyrin.

Case reports

Case 1. A twenty-three-year-old unmarried Negro woman suffered from increasingly severe, cramping abdominal pain associated with such bizarre behavior that her local physician changed his initial diagnosis of pelvic inflammatory disease to hysteria. When finally placed in a hospital, she was passing dark urine which was positive for porphobilinogen. Three months later the urine was strongly positive for uroporphyrin although the Watson-Schwartz[20] test gave negative findings. She had never had cutaneous symptoms.

Case 2. A forty-eight-year-old childless Negro housewife recalled a bullous dermatitis which had appeared on her face and hands in the summer of her thirteenth and fourteenth years. She has a photograph of herself fully clothed and under a parasol at the Oak Street Beach, Chicago, surrounded by her siblings in normal bathing attire. She had had no further difficulty until abdominal pain and progressive weakness of the legs occurred at age forty-six. In the hospital, a twenty-four-hour urine collection became so dark that her physician told her she had black-water fever. Eventually acute porphyria was diagnosed, and she made a complete recovery. Two years later the Watson-Schwartz[20] test gave negative results, but the urine was strongly positive for uroporphyrin.

Case 3. A twenty-eight-year-old unmarried Negro woman developed generalized convulsions after a dilatation and

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TABLE I. Excretion of porphyrins and precursors by Cases 3 to 6

	Urine (Milligrams per Liter)		Urine (Micrograms per Liter)		Stool (Micrograms per Gram Dry Weight)		
Category	ALA*	PBG†	Uro.**	Copro.††	Uro.**	Copro.††	Proto.***
Normal	<5	<2	<20	<175	<10	<30	<50
Case 3	11	40	...	...	...	...	...
Case 4	2.3	2.0	94	280	43	306	32
Case 5	8.2	5.7	1,110	290	109	1,005	82
Case 6	1.5	0.5	30	...	32	88	155

* ALA = δ-aminolevulinic acid.
† PBG = porphobilinogen.
** Uro. = uroporphyrin.
†† Copro. = coproporphyrin.
*** Proto. = protoporphyrin.

curettage for an incomplete septic abortion. Her hospital course was marked by colicky abdominal pain, constipation, tremulousness and weakness of the extremities, transient amblyopia, and the passage of port wine-colored urine. She also developed a transient hemolytic anemia and thrombocytopenia in association with acute hepatitis but was fully recovered by the end of her five-month hospitalization.

CASE 4. A twenty-two-year-old Negro man suffered recurrent abdominal pain and lost 50 pounds over the course of a year. Acute porphyria was diagnosed on the basis of elevated urinary porphyrins and porphobilinogen. His pain abated, and his weight gradually returned to normal. In the ensuing twenty years and up to the present time, he noted occasional mild abdominal pain and constipation but otherwise enjoyed excellent health. He never had skin lesions.

CASE 5. A sixteen-year-old Negro boy, the son of the patient in Case 4, was under the care of a psychiatrist for schizoid behavior. He was physically normal and denied weakness, abdominal pain, and cutaneous symptoms.

CASE 6. A forty-three-year-old unmarried Negro woman, the sister of the patient in Case 4, suffered from "nervousness," mild abdominal pain, and constipation throughout her adult life. She had never experienced skin lesions. Quantitative data for Cases 3 to 6 are seen in Table I.

Comment

Acute porphyria is extremely rare in pure Negroes, but this is not an important consideration in a genetically dominant disorder in the American Negro, whose white genetic component has been estimated at one-third.[22] Thus, in South Africa, Eales[23] was able to link some of his cases of acute porphyria in Negro patients with known white porphyric families. The paucity of reported American Negro porphyric patients may be a result of the small number of Negro patients seen at academic medical centers and a low index of suspicion among physicians at hospitals dealing with a large volume of Negro patients.

I have encountered 19 cases of acute porphyria during the course of internship and medical residency. The 6 American Negro patients described represent 35 per cent of the total reported to date. My experience suggests that this total, 17 patients, is misleadingly small. The incidence of the acute porphyrias in the American Negro should be one-third that of the white population, based on the estimate of Franklin, Logan, and Brown.[22] Thus, the race of the patient should not deter one from considering the diagnosis of acute porphyria when the clinical presentation is suggestive.

Summary

Six new cases of acute porphyria in American Negroes bring the reported total to 23. Acute porphyria is not so rare in American Negroes as the existing literature suggests.

Addendum

Since this manuscript was submitted, 2 additional, unrelated Negro patients with acute porphyria have been seen at The Mount Sinai Hospital.

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Reporting of child abuse

A total of 706 suspected child abuse cases were reported to the State Department of Social Services in 1967, 70 per cent over the 1966 total of 416. Commissioner George K. Wyman said recently that the increase probably reflects more conscientious reporting of child abuse rather than a great multiplication of cases.

State law requires that cases of child abuse be reported orally as soon as practicable and that a written report be submitted to local social services officials within forty-eight hours. In New York City and in Erie and Westchester Counties, child abuse cases are also reported to and handled by societies for the prevention of cruelty to children.

Specifically required by law to report cases of child abuse are physicians, surgeons, dentists, osteopaths, optometrists, chiropractors, podiatrists, residents, interns, registered nurses, and Christian Science practitioners. The law also requires local social service officials to send a copy of each such report to the State Department of Social Services, which keeps an up-to-date state-wide register.

After getting a report of injury, abuse, or maltreatment, a social service worker is assigned to investigate the case and try to prevent further injury to the child, safeguard his welfare, and preserve and stabilize family life whenever possible.

Children up to four years old comprise two thirds of the cases. The remainder are mostly between five and eleven. Total cases reported were about equally divided between boys and girls. For 9 out of every 10 children reported, the adults involved were parents or parent substitutes. Half of the remaining cases involved persons living in the home of the child. Of the 706 cases reported, New York City accounted for 505; the remainder were from Upstate.

Postlumbar Puncture Chemical Meningitis*

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INTRODUCTION OF A NEEDLE into the epidural or subarachnoid spaces for diagnostic, therapeutic, or anesthetic purposes is generally regarded as a safe procedure with an acceptably low rate of mortality. However, among the problems that confront the physician, chemical meningitis remains an acknowledged complication of spinal anesthesia. This has been variously attributed to the trauma of the puncture procedure, the irritative effect of the anesthetic agent, and finally as a reaction to some irritant contaminating the spinal needles, the syringes, or the ampules of anesthetic agent.[1] In addition, aggravation of pre-existent disease of the central nervous system by spinal anesthesia has been reported.[2]

This communication presents 2 cases of postpartum chemical meningitis following spinal anesthesia, presumed secondary to detergent-contaminated syringes and needles.

Case reports

CASE 1. A twenty-eight-year-old Negro female, gravida 3, para 2, was admitted in December, 1964, in active labor following an uncomplicated pregnancy. A low spinal (saddle block) anesthesia, utilizing 3 mg. of tetracaine hydrochloride, was administered. Delivery was uncomplicated. Two hours after the administration of spinal anesthesia, the patient experienced the acute onset of a severe bifrontal and bitemporal headache, partially relieved by the administration of parenteral analgesics. This was followed by the appearance of fever and nuchal rigidity over the ensuing two hours. A lumbar puncture performed prior to the institution of antibiotic therapy revealed a cloudy spinal fluid under normal pressure. The total cerebrospinal fluid cell count was 329 per cubic millimeter with 225 polymorphonuclear leukocytes, 8 lymphocytes, and 96 red cells. The cerebrospinal fluid protein and glucose were respectively 228 and 27 mg. per 100 ml. Gram stain revealed no organisms. Subsequent cerebrospinal fluid, blood, and urine cultures revealed no growth. A peripheral white cell count was 17,800 with a left shift. On the basis of the initial clinical impression of a bacterial meningitis, therapy was initiated with chloramphenicol (Chloromycetin) and sulfadiazine. The patient remained febrile for the ensuing forty-eight hours. Headaches and nuchal rigidity persisted for twenty-four and forty-eight hours, respectively. The subsequent hospital course was uneventful. A repeat lumbar puncture on the seventh day revealed normal findings including cell count, chemistries, and bacteriology. Follow-up examination as an outpatient over the ensuing year revealed no neurologic sequelae.

CASE 2. A twenty-two-year-old Caucasian female, gravida 2, para 1, was admitted in May, 1965, in active labor after an uncomplicated prenatal course. A low spinal (saddle block) anesthesia using 3 mg. of tetracaine hydrochloride was administered. Subsequent delivery was uncomplicated. Nine and a half hours following the administration of spinal anesthesia, the patient experienced the acute onset of throbbing frontal headache. Physical examination at that time revealed the presence of an oral temperature of 101 F. and

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The opinions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

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minimal nuchal rigidity, in the absence of other neurologic signs. A lumbar puncture, performed prior to the institution of antibiotic therapy, revealed a cloudy spinal fluid under normal pressure. The total cerebrospinal fluid cell count was 286 per cubic millimeter with 247 polymorphonuclear leukocytes, 35 lymphocytes, and 4 erythrocytes. The cerebrospinal fluid protein was 152 mg. per 100 ml. and the glucose 56 mg. per 100 ml. A simultaneous blood sugar was 108 mg. per 100 ml. Gram stain and India ink preparations of the cerebrospinal fluid revealed no organisms. Cerebrospinal fluid and blood cultures subsequently were negative. A peripheral white cell count was 13,900 with a left shift. On the basis of the initial clinical impression of a bacterial meningitis, antimicrobial therapy was initiated with penicillin and sulfisoxazole. There was subsidence of fever within twelve hours, headache within twenty-four hours, and nuchal rigidity within seventy-two hours. The subsequent hospital course was uncomplicated. Repeated lumbar punctures on the sixth and twelfth hospital days revealed normal findings except for a cerebrospinal fluid protein of 56 mg. per 100 ml. on the former. Follow-up examination over the ensuing six months as an outpatient revealed no neurologic sequelae.

Comment

Aseptic meningitis is one of several syndromes that may occur following spinal anesthesia. As in the patients described in this communication, the onset is typically six to twenty-four hours after spinal anesthesia with nausea, vomiting, headache, fever, and nuchal rigidity. Cerebrospinal fluid studies reveal a polymorphonuclear leukocyte response with corresponding elevation of protein. Bacteriologic studies give negative results.[3] The ensuing course is benign without neurologic sequelae. The cause of the syndrome of aseptic meningitis following spinal anesthesia remains conjectural in most instances. The trauma elicited by the performance of a lumbar puncture has been implicated.[4] After extensive evaluation of cerebrospinal fluid specimens in spinal anesthesia, Merritt and Fremont-Smith[5] concluded that the injection of any foreign substance into the subarachnoid space will result in an aseptic meningeal reaction in the majority of instances. However, conflicting opinions are present in the literature.[6,7]

Experimentally, the anesthetic agents employed in spinal anesthesia have produced pathologic changes in the spinal cord and its meninges.[8,9] The changes are generally proportionate to the concentration of the anesthetic.

Winkelman in 1952[10] was the first to suggest that the syndrome of aseptic meningitis complicating spinal anesthesia might be secondary to detergent-contaminated syringes and needles. Subsequent reports in the literature support this observation.[11-13] Experimentally, pathologic alterations have been produced both by detergent-contaminated syringes and needles as well as by the direct intrathecal instillation of detergents.[14,15] In the cases described in the present report, investigation of the lots of the anesthetic agents did not implicate them as the causal agents. However, review of the sterile technics employed in the preparation of the spinal trays by the obstetric service revealed that both syringes and needles were customarily cleansed with an alkyl-arylsulfonate detergent. This was followed by an alcohol-acetone bath and a sterile water rinse prior to autoclaving. In contrast, the department of anesthesia, utilizing a similar protocol with the exception of a detergent, reported no instances of chemical meningitis.

Following the adoption of the latter protocol by the department of obstetrics, no further cases were noted.

On the basis of these observations, it would appear that these cases of aseptic meningitis were secondary to detergent-contaminated syringes and needles. It is imperative that spinal trays be prepared in a meticulous manner, with strict avoidance of any contact with detergents or antiseptics.

Summary

Two cases of aseptic meningitis complicating spinal anesthesia are presented. These are presumed to be secondary to detergent-contaminated syringes and needles.

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Team approach for child with birth defect

The need for a comprehensive team approach in aiding a child with a birth defect to develop into a productive human being is emphasized by M. Winick, M.D., writing of this in a recent issue of *Bulletin of the New York Academy of Medicine.* Pediatricians, he feels, with limited previous experience with severe congenital malformations, may advise the parents to do nothing because the child might soon die. Time passes, and the child does not die, emerging as a hopeless physical and mental invalid for whom little can be done.

At one birth defect clinic, the parents are helped to accept the fact that they have a malformed child, and it is only after they understand the nature of the defect and prognosis that a plan of management involving many disciplines is worked out.

Proper timing of treatment is carefully weighed; sometimes a child's hospital stay may be extended because of unfavorable home conditions. At times surgery may be performed solely to make the child socially acceptable. Also, in many instances, genetic counseling is extremely important.

The impact of a malformed child may have deleterious effects on normal siblings unless they are helped to adapt to the situation. This may be accomplished by including them as active members of the family team in caring for the defective child. In taking on certain kinds of responsibility, they may eventually emerge as stronger and more secure individuals.

Despite all efforts, the problem of rehabilitation of the defective child is sometimes too great for the physician and family, and the question of institutionalizing the child arises. The decision depends on answers to the following: (1) Would the child function better and be happier in a sheltered environment; and (2) will his continued living at home result in grave emotional damage to the other siblings. If the answers are clear-cut, the decision is simple; it is in the in-between situations that difficulty arises.

An important component of the comprehensive approach to children with birth defects is an educational program on what is being done for them. Society must still go a long way in accepting these individuals.

Medical Arts and Letters

Robert Mayer, M.D. (1814–1878)

and Mechanical Equivalent of Heat

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EVERY HALF-NAKED SAVAGE or uninitiated Boy Scout, who has ignited a fire by rubbing two pieces of wood together, knows empirically that mechanical energy can be converted into heat. It remained for a general practitioner of medicine in Germany in the nineteenth century to calculate the mechanical equivalent of heat in a scientific manner, to relate the problem to matters then of concern to physicists, and to derive from his observations the law of conservation of energy.

This simple small town German doctor was (Julius) Robert Mayer (Fig. 1), born at Heilbronn in Württemberg, the third son of an apothecary. He studied medicine from 1832 to 1838 at Tübingen and earned his M.D. degree with a thesis on santonin. His education never included a course at the university level in physics or mathematics. As Lenard[1] puts it:

> Mayer's peculiar cast of mind remained uninjured by previous training . . . His original freedom of mind to follow his own line of thought had never been interfered with, and books had not been used for examination purposes, but simply as sources of facts.

How does the scientific establishment react when an important discovery is made by someone outside the conventional professional lines of its discipline, by some one not of the in-group? One recalls the problems Louis Pasteur had as a chemist who made discoveries which were important for medicine. However, what actually happens is not really a conspiracy; it merely seems that way. The discoverer is not really the protagonist of a Kafkaesque plot. First of all, he has difficulty getting his initial publication printed; the editor simply disregards it. When the observation and theory are finally published, the sniping begins. The establishment closes ranks, not in an organized scheme but as a spontaneous reaction of professionally trained men in many different places. The amateur who enters the lists will be told in one way or another that his methodology is inadequate, his inferences unwarranted, his theories naïve. Besides, he will be told that everything he has said has been anticipated by or is at least implicit in X's work

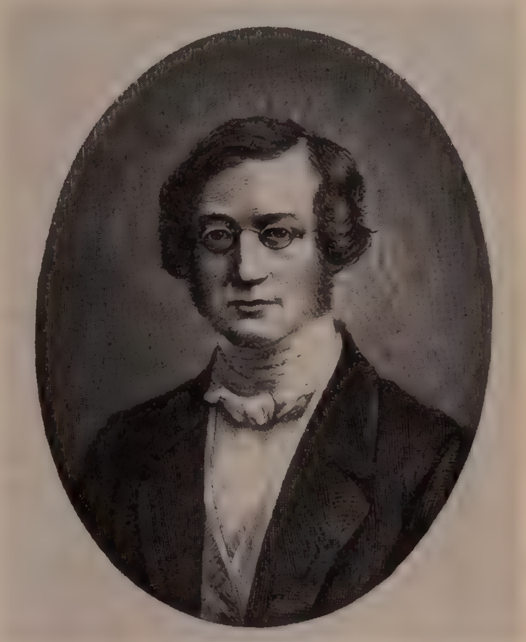

FIGURE 1. Julius Robert Mayer, M.D. (1814–1878) from a contemporary engraving.

and much better expressed. In any event, whatever claim he has to priority is ridiculous. Of course, X is a member of the establishment in good standing who has been working on similar or related lines but so far has failed to come up with the answer. X becomes the fair-haired boy of the in-group and is promoted. The establishment hopes the alien thorn will get sick, go mad, die, or else quietly go back where he came from. If he does, the establishment will be very polite. They will say,

> Poor old Y . . . very enthusiastic . . . talented amateur . . . no telling what he might have come up with if he had decent training . . . pity he's so isolated there in East Cupcake . . .

However, if Y, the discoverer, chooses to battle (himself against the world), the campaign becomes vicious. Articles appear attacking him. His effort to rebut them fails because he cannot get his paper on the program at a scientific meeting. However, Y has his adherents. An occasional article appears mentioning his work favorably. After a decade or so a "safe" member of the establishment alludes in passing to his work in a monograph. Slowly the truth prevails. The establishment does a volte-face without the least embarrassment. We learn that they accepted Y's work in principle all the time; what they objected to was his methodology, his unsophisticated experiments, and (sotto voce) his prickly personality. After twenty years Y is given the medal of honor of a foreign society. His theory is accepted and appears in textbooks. Students even speak of Y's formula or Y's law. The establishment develops a new vocabulary and new concepts to assimilate and teach Y's work. He is made a member of his national scientific society and awarded a degree honoris causa. By this time Y is old, tired of fighting. Seeing that his battle is won and wishing some degree of recognition before he dies, he accepts graciously. Above all, he does not tell them what he really thinks of them. Twenty years after Y's death, the original paper which he had trouble publishing, the one he was told was neither important nor very original, is reprinted and cited by historians of science as a "classic."

Does this sound like a scenario? Isn't it a role tailor-made for Paul Muni? Yes. But the above nightmare is more or less what happened to Robert Mayer.

One gathers that Mayer's record at medical school was undistinguished. In addition, he was arrested and jailed on one occasion for participating in a student club, the Questphalia. The charge was not one of political agitation but for appearing in an unsuitable costume at a museum ball. Some hint of Mayer's stubborn character is gained when we learn that he went on a six-day hunger strike rather than peach on his fellow club members. After receiving his degree, Mayer visited hospitals in Munich, Vienna, and Paris. Opportunities for medical practice did not open readily for him; he had neither family connections nor access to patronage. Late in 1839 he decided to accept the post of ship's doctor on a Dutch merchant vessel traveling from Rotterdam to Surabaya, Batavia, with a cargo of 100,000 bricks and a crew of 28 sailors. The *Java* left Rotterdam in February, 1840, and returned twelve months later with a cargo of sugar and coffee. For Mayer this routine trading mission was decisive; in later years he said "causes and effects seemed quite suddenly to enter into hitherto unknown combination."

The dramatic event which precipitated these flashes of insight occurred when he had to perform a venesection at Surabaya on one of the sailors who had come down with fever. Even as late as 1840, the era of Schleiden and Schwann and their cell theory, orthodox medicine still treated fevers by bleeding. One can rest assured that Mayer was not drawing blood for chemical analysis, for culture, or for any of the countless tests performed daily a century later. None of these tests was known to the medical world of his day. He was giving the same treatment that a boy first learns about when he reads Robin Hood. At Surabaya, Mayer made a curious observation, one which set his mind furiously to work. He noticed that the venous blood of the sailor was bright red, the same color as arterial blood, not the dark purplish color of venous blood at all. In 1840, hemoglobin was not known; there was no notion of oxyhemoglobin, reduced hemoglobin, or a respiratory pigment in blood. Yet from this isolated biologic observation Mayer, a plodding student and an average doctor, was able to deduce a fundamental law of physics, the law of conservation of energy, also known as the first law of thermodynamics.

Theories and experiments on heat before Mayer

The Russian polymath Mikhail Lomonosov (1711–1765) is usually credited with being the first scientist to discard the notion that heat (caloric) is a substance. Lomonosov was a latter-day atomist who believed that the small particles which constituted matter were responsible for its properties. He conjectured that when matter is heated, the oscillatory and gyratory motions of its particles become accelerated. However, it was not until 1798 that Count Rumford performed his experiment on the heat generated by boring a cannon. He found that sufficient heat was produced to raise some 18 pounds of water to the boiling point in a bit less than three hours; he concluded that "heat is a form of mechanical motion." This dealt a death blow to the "caloric" theory even as the experiments of Dalton and Lavoisier had disposed of "phlogiston," another hypothetic substance invented to account for a physical property of matter. In 1799 Humphrey Davy arranged a clockwork mechanism which rubbed two blocks of ice together in a vacuum at 32 F. He found that some of the ice was melted by mechanical friction and concluded that heat was "a peculiar motion, probably a vibration of the corpuscles of bodies." Less than a decade later Thomas Young studied the heat given off by red-hot bodies and concluded that radiant heat was a wave vibration similar to light.

There matters rested until the work of Sadi Carnot. In 1824 this brilliant young French scientist published his *Réflexions sur la puissance motrice du feu* in which he came to the incorrect conclusion that no heat was lost or converted to mechanical energy during the operation of a steam engine. However, between 1830 and 1832, shortly before his untimely death from cholera, he was able to take more precise measurements and reversed his earlier position, for he found that some heat was converted into mechanical energy. He adopted the view that heat and mechanical energy were equivalent and interconvertible, both being the result of motion of the particles of bodies. Although Clapeyron published Sadi Carnot's revised ideas in 1834, there was some confusion about their import. Although William Thomson, later Lord Kelvin, published an article in 1851 reconciling the work of Carnot with the conclusions reached by Rumford, Davy, Mayer, and Joule, the issues were not clarified until Sadi Carnot's *Notes Inédites* were published in 1872, three decades after Mayer's contribution, too long post factum to exert any influence on the historical sequence of developing ideas in thermodynamics.

Mayer's contributions

It was in the frame of this intellectual background that Mayer with his limited scientific training began to meditate on theories of heat. Observing the difference in the color of venous blood in the tropics, he developed the idea that body heat was conserved in proportion to the external temperature. He based this line of reasoning on Lavoisier's textbook of physiology which he had taken with him. The French chemist had advanced the idea that animal heat was the result of combustion within the body and that the bright red blood in arteries was changed to the dark blood in veins by giving off oxygen and taking up carbon dioxide. Mayer inferred that less combustion was needed in the tropics to maintain body heat, hence less oxygen was used, therefore, venous blood was brighter. He extended this idea to the mechanical energy of muscles. If muscular energy was derived from the same source, mechanical energy, chemical energy, and heat were all interconvertible. It was already known that when gases were expanded into a vacuum chamber they neither lost nor gained heat, but that when gases were expanded against an opposing pressure, thus performing mechanical work, they absorbed heat. Mayer recognized that the mechanical work produced came from the heat which had been absorbed and that the two were equivalent. From data already published concerning thermal changes accompanying the expansion of gases, he was able to calculate the quantity of heat equivalent to a given amount of mechanical energy. Thus, from an initial biologic observation, the adduction of known physical data, and the application of some simple formulas he was able to develop a physical law. "Motion," he wrote, "in many cases has no other effect than to produce heat, and thus the origin of heat has no other cause than motion."

On returning home to Heilbronn, a pleasant town on the Neckar, about halfway between Heidelberg and Stuttgart, Mayer started general medical practice and began to commit his ideas to writing. Within a few months he had completed a short article entitled "Über die quantitative und qualitative Bestimmung der Kräfte" and proudly sent it off to Poggendorf in Berlin, hoping that that distinguished editor would publish it in his *Annalen der Physik*. He never heard from Poggendorf. In fact, when that busy pundit died many years later in 1877, Mayer's original manuscript was found among Poggendorf's papers. This primary communication did not actually see the light of day until 1893 when Weyrauch[2] edited Mayer's *Kleinere Schriften und Briefe* for publication. It is a short report, rather densely written.

Nothing daunted, Mayer wrote another version of the same article, titling it "*Bemerkungen über die Kräfte der unbelebten Natur*,"[3] and sent it off to Justus Liebig, at Giessen, who published it in his *Annalen der Chemie und Pharmacie* in May, 1842. In this memorable article Mayer calculated the mechanical equivalent of heat in terms of falling bodies: The fall of a unit of weight from a height of 365 meters is equivalent to the heating of an equal weight of water from 0 to 1 C. Later, when he had more sensitive methods of measurement available, he corrected the figure to 425, then 427 meter-kilograms. Like his first article, the "Bemerkungen" is densely written, occasionally interlarded with such Latin aphorisms as "causa aequat effectum" and "exceptio confirmat regulum," none of which made its acceptance by a professional audience likely.

Before sending his article off to Liebig, Mayer obtained interviews with Norremberg, professor of physics at Tübingen, and Jolly, a physicist at Heidelberg. Both scientists believed that Mayer's ideas had value but suggested that something more than speculative induction was needed. Jolly suggested to Mayer that if his theory were correct, one could warm water merely by shaking it. In later years Ernst Mach[4] related that Mayer returned to Heilbronn, performed the suggested experiment, then hastened back to Jolly's laboratory, rushed in, and exclaimed "Es ist so! Est ist so!" It took Jolly some time to recognize what his uninvited, excited visitor was referring to.

However, Mayer had other matters to attend to. Of primary importance was his medical practice at Heilbronn and putting his personal life in order. In August, 1842, he married the daughter of a well-to-do local merchant. His practice grew; his fellow citizens liked him and asked him to join the committee formed to develop a local art museum. In May, 1843, his first child, a daughter, was born. In a letter dated July of that year he wrote to his friend Baur, "Things are going quite smoothly with me. . . " He seemed unconcerned that his short article had created scarcely a ripple on the surface of the scientific sea. However, the happy period of domesticity was merely the calm before an outrageous storm.

Mayer against the world

In August, 1843, James Prescott Joule presented an article before the British Association meeting in Cork titled "The Calorific Effects of Magneto-Electricity and the Mechanical Value of Heat." Working along completely different lines, Joule had developed a theory remarkably similar to Mayer's and had also calculated the mechanical equivalent of heat. Using four different methods, he calculated that it required 772 foot-pounds of work to raise the temperature of 1 pound of water 1 F. Using more refined methods, he later recalculated this figure to 778.16 foot-pounds per British thermal unit; in the centimeter-gram-second system this is known as Joule's equivalent and is given as 4.184×10^7 ergs per gram-degree centigrade.

There was no immediate controversy. Joule was the son of a wealthy brewer, university educated, and just beginning to make a name for himself. Having the proper credentials, his work met with ready acceptance in British scientific circles, for it was first-rate work in its own right. In the meantime Mayer was busy seeing patients at Heilbronn and enjoying a measure of happiness and comfort with his wife and growing family. In his spare time he was at work on his third article, a more elaborate expansion of the ideas already presented in condensed form, a fact which may have deceived the casual reader. In many ways Mayer's third article[5] is his opus magnum. *Die organische Bewegung in Zusammenhang mit dem Stoffwechsel* (Organic Movement in Its Relation to Change of Matter) stated the entire theory of conservation of energy in full, adducing many applications to living nature. Mayer went beyond stating that "heat is a force which can be transformed into mechanical effect." He enumerated, in a slightly different vocabulary, the five forms of energy which we know today: potential energy (energy of position), kinetic energy (energy of motion), heat, electromagnetic energy, and chemical energy. He arrived at the statement that in all physical and chemical processes the force, i.e., energy, is constant; only its form is changed. To support this law he provided numerous examples and applications. He summarized his view with the apothegm "Ex nihilo nihil fit. Nil fit ad nihilum." These classical tags were not merely a trick of style; they reflected self-conscious efforts at constructing generalized laws and axioms. For example, in *Die organische Bewegung* we find also

> Die Wirkung ist geleich der Ursache. Es gibt in Wahrheit nur eine einzige Kraft. In ewigem Wechsel kreist dieselbe in der todten, we in der lebenden Natur. Dort und hier kein Vorgang ohne Forveränderung der Kraft. (The effect equals the cause. There is in reality only one single force. This force moves both animate and inanimate nature in eternal flux. In one place or another no events transpire without this force changing its form.)

A by-product of Mayer's theory was the selection of a new word for his concept. The word Kraft was synonymous with force; it did not denote stored energy. Later in the 1840's Helmholtz continued to use the word Kraft, but, as Lenard[1] explains, a new term had to be devised:

> Since work is measured in terms of the product of the working force and the distance moved . . ., work is something other than force defined in Newton's sense; . . . it is therefore not permissible to use the word force in place of work.

The term Energie (energy), derived from Greek and already in the German vocabulary, was taken to apply to Mayer's newly formed concept of stored-up work.

> This shows us the great novelty of Mayer's achievement; the formation of a new concept required the introduction of a new word. The fact that the concept arrived before the word is a sign of the solidity of scientific investigation at that time . . .

Die organische Bewegung appeared in 1845, and the contest for priority began. In England, William Thomson backed Joule, emphasizing his experimental work. The scientific establishment in Germany did not back Mayer. There is some evidence that they tried to squelch him by ignoring him. In 1846 Mayer offered a report to the Academy of Sciences' meeting in Berlin, but for some unexplained reason it was not listed on the program, never printed, nor any report made on it. This spurned paper was merely the preliminary projection of a longer pamphlet which Mayer[6] had printed in 1848, *Beiträge zur Dynamik des Himmels*, in which he expanded the law of conservation of energy to astronomic phenomena. Having previously stated that the energy in the world is constant, Mayer now showed that the sum total of energy in the solar system was constant, a mere bagatelle with which the august Academy did not choose to concern itself. When Helmholtz published his own monograph, *Über die Erhaltung der Kraft*, in 1847, he cited Joule but did not refer to Mayer's work at all. Helmholtz was even more culpable; the Berlin Physical Society had on its program a section called "Fortschritte in Physik" (Recent Progress in Physics), a report on new publications; Helmholtz was the referee of this section. None of Mayer's work was ever mentioned in it by Helmholtz or his associates until 1850 and then only in passing, the citation reading, "The writings of Mayer and Donders are cited on account of their completeness. They contain compilations of the known facts. . ." There was no hint of what was a significant and original contribution, one that a German as patriotic as Helmholtz might justly be proud of. As late as 1866 Helmholtz allowed the Gesellschaft für Naturwissenschaft in Berlin to honor him as the "Father of the Law of Conservation of Energy."

He was able to keep a straight face during the proceedings.

However, more was in store for Mayer. In September, 1848, the *Journal des Débats*, published under the auspices of the Académie des Sciences in Paris, carried an elaborate discussion of Joule's work and its theoretic importance. No mention of Mayer! Recognizing what was in the wind, Mayer wrote to the Académie in October, raising the question of his priority. An exchange of letters ensued; the Académie adopted a neutral stance and Joule would not give way. Mayer's last letter stated his position firmly:

> Mr. Joule has made no discoveries regarding heat and energy without knowing of mine. The numerous services of this eminent physicist move me to the highest extreme. Nevertheless, I believe I am within my rights when I repeat that I was the first in 1842 to publish the law of the equivalence of heat and energy, as well as its numerical expression.

It is not a letter which is easy to answer, and there is no evidence that a reply was forthcoming.

The year 1848 was traumatic for Mayer on other fronts as well. Two of his children died. The political agitations which set Europe on fire did not spare Heilbronn. Mayer's elder brother Fritz joined the revolutionists; and in attempting to bring him back home, Mayer was caught and almost shot as a spy. Disturbed by domestic anxieties and disenchanted with the dealings of the scientific establishment, Mayer elected to try his cause in the public press. In May, 1849, he sent a brief article to the *Augsburger Allgemeine Zeitung*, a highly respected newspaper, in which he defended his priority rights against the claims of English and French scientists. The article was titled "Wichtige physikalische Erfindung" (Important Discovery in Physics). A few days later the same newspaper carried an article by a young physicist named Otto Seyffer who described Mayer's work as meaningless and filled with untenable assertions, and Seyffer denied that any real claim to priority existed. Despite several letters to Cotta, the publisher of the newspaper, Mayer was not allowed to rebut Seyffer. However, the latter had the effrontery to publish in one of his own articles a few months later the amazing statement, "The discovery of the so-called equivalence number between mechanical energy and heat I recognize as an established fact."

Some sturdy souls relish the heat of controversy; indeed, there are a few who delight in provoking it. Mayer was not one of these. By nature he was an unpretentious amiable man, ill-suited to take on the establishment in single-handed combat. The cumulative weight of domestic problems coupled with the stresses engendered by repeated failure to secure even a modicum of public recognition for what he believed was his just due combined to drive him mad. He developed insomnia, became restless and agitated, and finally on the night of May 28, 1850, clad only in his nightshirt, leaped out of the third-story window of his house to the street below. Both of his legs were fractured, and he lay in bed for weeks, mentally and physically ill. Gumpert[7] described the effect of this attempted suicide with insight:

> The complete public exposure of a great despair is a serious offense against middle-class customs. Mayer's merchant father-in-law must have been horrified. His wife, a pathetic but not very superior comrade, must have trembled constantly for fear the terrible thing would happen again. Mayer was more forsaken than ever. What could have helped him—mainly recognition of his achievement—was not given. He was touchingly, almost meekly thankful for every little word of encouragement. But the behavior of official science became still more cold and supercilious.

Mayer rallied from this first episode of manic-depressive psychosis. In 1851 he was able to write two more articles. *Bemerkungen über das mechanische Aequivalent der Wärme*[8] is a well-written restatement of his intellectual position. The short contribution dealing with cardiac physiology, *Über die Herzkraft*,[9] was his first effort to apply physical concepts to a matter of medical interest. Although these articles are not so important as his earlier contributions, they are notable for having a more lucid style, all the more remarkable in view of his recent illness. Unfortunately, the cycle of mania and depression soon returned; later that year Mayer had to be committed to a madhouse.

Actually, he was a patient in no less than three mental institutions in short order.

The state asylum at Winnenthal seems to have been the most memorable. Here Mayer was strapped into a strait chair for hours on end. When he protested and spoke of his claim to an important scientific discovery, the psychiatrist treated him as a paranoid megalomaniac and would shout at him in a loud voice, "You fool! You have tried to square the circle!" and similar therapeutically helpful remarks. Fortunately, Mayer was soon transferred at his family's request. He was released improved in 1852, but recurrence of symptoms required rehospitalization at Kennenburg in 1856, 1865, and 1871. When not psychotic, Mayer continued to practice medicine at Heilbronn, albeit at a reduced pace. Somehow a rumor started that Mayer had died in the asylum. Liebig, who bore him no animosity, mentioned it with regret in a public lecture at Munich. Others repeated it. But the last straw must have been Poggendorf. That painstaking editor duly recorded in the 1863 edition of his biographical dictionary of German scientists that Mayer had died "im Irrenhause" in 1858, not withstanding Mayer's publication[10] in 1862 of an article "Über das Fieber, ein iatromechanischer Versuch." It is not often that an editor can so easily satisfy his unfulfilled wishes.

Recognition

It was largely through the efforts of John Tyndall, F.R.S., Faraday's successor at the Royal Institution, that Mayer was finally given full recognition for his discovery. In a public lecture at the Exhibition of 1862 before a large audience including many distinguished scientists, Tyndall summarized advances in the physics of mechanics and energy over the previous half century, paying tribute to Mayer as an original thinker and pioneer. Even more important for the scientific world at large, Tyndall arranged for the English translation of Mayer's articles of the 1840's to be published in the *Philosophical Magazine* in 1862 to 1863, writing a leading article himself to introduce the series.[11] One good thing led to another. In 1863 the University of Tübingen awarded Mayer the degree of Doctor of Philosophy honoris causa. The King of Württemberg granted him a patent of nobility entitling him to be known as "von Mayer." The Académie des Sciences at Paris gave him the Poncelet prize in 1870, and, the greatest honor of all, the Copley medal was awarded him by the Royal Society in 1871. Mayer lived to hear Helmholtz address a congress of physicists at Innsbruck in 1869. When the Berlin savant mentioned the law of conservation of energy, he said, "It has been set forth in complete generality by Robert Mayer, who will speak later from this platform."

In the course of his address on this occasion Mayer uttered one of his better dicta. In trying to draw lines of demarcation between physics and metaphysics he said, "Figures are the boundary markers. In physics, numbers are everything; in physiology they are little; in metaphysics they are nothing." Mayer's last years were spent quietly in Heilbronn where he died in 1878.

Antistrophe

One must file a modest demurrer to one portion of the foregoing account. Mayer's original biologic observation seems to have gone unchallenged. The fact of the matter is that venous blood is dark purplish in color whether it is seen in the tropics or in the temperate zone. The hue is due to reduced hemoglobin and the absence of oxyhemoglobin. In profound anemia venous blood may be a somewhat paler purple, but it never has the bright red color of arterial blood regardless of heat and humidity. The fact that Mayer made his tinctorial observation on a sailor with fever does not alter the case; fever alone does not change the color of venous blood. It seems that the initial biologic observation from which Mayer constructed his theory of conservation was wrong. The legend is a canard.

How are we to account for Mayer's mistake? The simplest explanation is that instead of entering a vein he entered an artery, and his observation on color was correct. Mayer may not have been a great doctor, but one must credit him with knowing the difference between an artery and a vein. Not only is it somewhat difficult to incise an artery for blood-letting; but if Mayer had inadvertently entered one, he would have known it "bloody" soon. By the same token we can exclude the possibility of an arteriovenous aneurysm distal to the point of venesection; Mayer would have surely seen a pulsating mass in the sailor's forearm. We are told that the sailor had fever and the locale was Batavia; the nature of the fever is not otherwise described. It is conceivable that he had Plasmodium falciparum malaria, that variety of the disease known as black-water fever with its massive intravascular hemolysis accompanied by hemoglobinemia and hemoglobinuria. Even were this diagnosis correct, the venous blood would not be bright red; in hemolytic states, febrile or not, venous blood has a somewhat muddy purplish color.

Mayer knew nothing of blood pigments; they had not yet been discovered. Yet we at a later date do know the bright red color of oxyhemoglobin and the cherry-red color of carboxyhemoglobin. We may conjecture that the sailor had been stoking coal below decks, that the ship's furnace was imperfectly exhausted, and that in addition to fever he had a mild degree of carbon monoxide poisoning with sufficient circulating carboxyhemoglobin to change the color of his venous blood. This ingenious hypothesis falls when we find that the *Java* was a sailing vessel.

A possibility which can be neither affirmed nor denied is that the vessel used to collect the blood was not clean and contained an oxidizing agent. If so, Mayer should have noticed a difference in color between the blood as it flowed directly from the vein and as it lay in the basin. The most plausible explanation is that Mayer's only previous experience with venous blood had been indoors, in clinic rooms with small or narrow windows which provided poor illumination. The windows of most public buildings in northern Europe of the 1830's were not very large, nor does the wan sunlight of Bavaria and Württemberg have the same brilliance as in the South Seas. Mayer probably bled his sailor on deck in bright sunshine. He could well have been deceived regarding the color of blood, seeing it for the first time by reflected light from a blazing tropical sun.

Another point to be considered is that Mayer was not strong on visual observation. His mind may have been nimble at perceiving abstract relations between physical forces, but his sense of imagery was not well developed. When one reads his diary of the trip on the *Java*, printed as "Tagebuch der Reise nach Ostindien, 1840" in the *Kleinere Schriften*,[2] the paucity of visual imagery is striking. Mayer's record of the most significant year of his life occupies a mere 30 pages devoted chiefly to banal comments such as any traveler might make, the prevailing wind, the weather, the fittings of the ship, the rate of speed, the cuisine, minor ailments, and so on. The style is pedestrian and the story of the decisive phlebotomy is not even mentioned. The *Java* does not rate with the *Beagle* as the scene of a voyage of discovery. Mayer's diary is more revealing in what it does not say; the legend and its supporting documentation seem to be an example of serendipity in reverse.

Acknowledgment. The author acknowledges with thanks the superior wisdom of David A. Park, Professor of Physics, Williams College, Williamstown, Massachusetts, who suggested the topic and reviewed the manuscript.

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Howard Raymond Bancks, M.D., of Brooklyn and Staten Island, died on July 23 at the age of fifty-eight. Dr. Bancks graduated in 1936 from the University of Minnesota College of Medicine. He was an attending otolaryngologist at Lutheran Medical Center, Carson C. Peck Memorial Hospital, and Kings County Hospital Center, an associate attending otolaryngologist at Caledonian Hospital, and a consulting otolaryngologist at Methodist Hospital of Brooklyn. Dr. Bancks was a Diplomate of the American Board of Otolaryngology, a Fellow of the American College of Surgeons, and a member of the American Academy of Ophthalmology and Otolaryngology, the American Academy of Facial Plastic and Reconstructive Surgery, the Richmond County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter C. Freese, M.D., of Baldwin, died on June 30 at the age of sixty-five. Dr. Freese graduated in 1926 from the University of Buffalo School of Medicine. He was a consulting surgeon at Nassau, South Nassau Communities, and Mercy Hospitals and a consulting surgeon emeritus at Meadowbrook Hospital. Dr. Freese was a Fellow of the American College of Surgeons and a member of the Nassau Academy of Medicine, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Milton Seymour Goodfried, M.D., of New York City, died on May 11 at the age of sixty-five. Dr. Goodfried graduated in 1928 from Cornell University Medical College. He was an attending pediatrician at Sydenham Hospital. Dr. Goodfried was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

L. Whittington Gorham, M.D., of New York City, died on July 27 at the age of eighty-three. Dr. Gorham graduated in 1910 from Johns Hopkins University School of Medicine. He was a Diplomate of the American Board of Internal Medicine (Cardiovascular Diseases and Allergy) and a member of the American Clinical and Climatological Association, the American Society for Clinical Investigation, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Philip William Gorman, M.D., of Fort Covington, died on June 8 at the age of sixty-eight. Dr. Gorman graduated in 1930 from Syracuse University College of Medicine. He was an attending surgeon at the Alice Hyde Memorial Hospital (Malone). Dr. Gorman was a member of the Franklin County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Fred William Goundry, M.D., of Binghamton, died on July 30 at the age of seventy-one. Dr. Goundry graduated in 1920 from the University of Michigan School of Medicine. He was a senior attending physician at the Charles S. Wilson Memorial Hospital. Dr. Goundry was a member of the Binghamton Academy of Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Thomas John Goundry, M.D., of Rochester, died on June 27 at the age of seventy-four. Dr. Goundry graduated in 1917 from the University of Buffalo School of Medicine. He was a member of the Rochester Academy of Medicine, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Edward Hammett, M.D., of New York City, died on July 27 at the age of seventy-four. Dr. Hammett graduated in 1919 from Queens University Faculty of Medicine, Kingston, Ontario. He was a consulting surgeon at Coney Island, New York Polyclinic (where he had been professor of surgery from 1927 to 1959), and St. Clare's Hospitals. Dr. Hammett was a Fellow of the American College of Surgeons, a Fellow of the American College of Cardiology, and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alexander Klein, M.D., of Whitestone, died on July 16 at the age of sixty-eight. Dr. Klein received his medical degree from the University of Vienna in 1931. He was a member of the medical staff in general practice at Parsons Hospital. Dr. Klein was a member of the American Academy of General Practice, the American Geriatrics Society, the New York Cardiological Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Ralph Langer, M.D., of New York City, died on July 28 at the age of forty-nine. Dr. Langer graduated in 1947 from the University of Montreal Faculty of Medicine. He was a clinical instructor in dermatology at New York University Medical Center. Dr. Langer was a Diplomate of the American Board of Dermatology, Inc., and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Roland Leonard Maier, M.D., of New York City, died on July 22 at the age of sixty-six. Dr. Maier graduated in 1926 from Cornell University Medical College. He was director of surgery at Midtown Hospital, an attending surgeon at Flower and Fifth Avenue and Doctors Hospitals, a consulting surgeon at Bellevue Hospital and the Hospital for Special Surgery, and an associate professor of clinical surgery at New York Medical College. Dr. Maier was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the New York Academy of Medicine, the New York Surgical Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Israel Malbin, M.D., of New York City, died on May 4 at the age of seventy-four. Dr. Malbin received his medical degree from the University of Berlin in 1920. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Mildred Ernestine Maynard, M.D., of New York City, died on July 25 at the age of forty-seven. Dr. Maynard graduated in 1952 from Howard University College of Medicine. She was a member of the American Psychiatric Association.

Hyman Nattis, M.D., of Brooklyn, died on February 20 at the age of sixty-six. Dr. Nattis graduated in 1927 from New York Homeopathic Medical College and Flower Hospital. He was an adjunct physician in ear, nose, and throat at Jewish Hospital of Brooklyn.

Aaron Prigot, M.D., of Forest Hills, died on July 18 at the age of sixty-two. Dr. Prigot graduated in 1933 from Harvard University Medical School. He was a senior clinical assistant attending urologist at The Mount Sinai Hospital and an associate attending surgeon at Harlem Hospital Outpatient Department. Dr. Prigot was a Fellow of the American College of Surgeons and a member of the New York Academy of Medicine, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Eugene O. Rappaport, M.D., of Jamaica, died on July 22 at the age of fifty-six. Dr. Rappaport received his medical degree from the University of Lausanne in 1938. He was an assistant attending physician in gastroenterology at Queens Hospital Center and an associate attending physician at Jamaica Hospital. Dr. Rappaport was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Francis Gerald Riley, M.D., of Bellrose, died on August 3 at the age of eighty-three. Dr. Riley graduated in 1909 from the University of Vermont College of Medicine. Retired, he was a Diplomate of the American Board of Urology, a Fellow of the American College of Surgeons, and a member of the American Urological Association, the Medical Society of the County of Queens (president in 1928), the Medical Society of the State of New York, and the American Medical Association.

Matthew Rosenschein, M.D., of Pound Ridge, died on July 26 at the age of forty-six. Dr. Rosenschein graduated in 1947 from Columbia University College of Physicians and Surgeons. He was an associate attending physician in internal medicine at Northern Westchester Hospital (Mount Kisco). Dr. Rosenschein was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis Shalet, M.D., of Jamaica, died on April 10 at the age of eighty-eight. Dr. Shalet graduated in 1907 from University and Bellevue Hospital Medical College.

Charles Hendee Smith, M.D., of Princeton, New Jersey, formerly of New York City, died on July 26 at the age of ninety-two. Dr. Smith graduated in 1901 from Columbia University College of Physicians and Surgeons. He was an emeritus professor of pediatrics at New York University and had been a consulting pediatrician at Flushing Hospital and Dispensary, Nyack, United (Port Chester), and Lawrence Hospitals. Dr. Smith was a Licentiate of the American Board of Pediatrics, the American Academy of Pediatrics, the American Pediatric Society, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Harold Thomas, M.D., of Albany, died on December 13, 1967, at the age of eighty. Dr. Thomas graduated in 1915 from Harvard University Medical School. He was an attending radiologist at Albany Medical Center Hospital. Dr. Thomas was a Diplomate of the American Board of Radiology and a member of the Radiological Society of North America, Inc., the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

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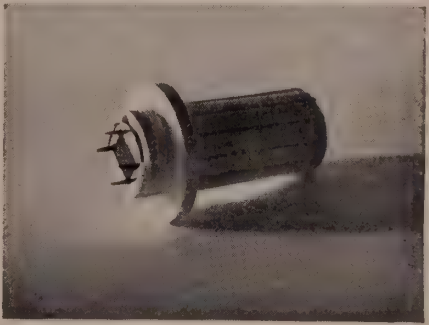

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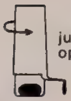

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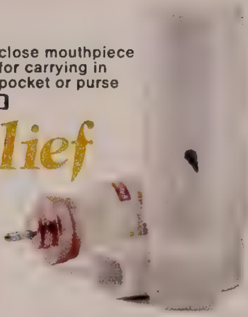

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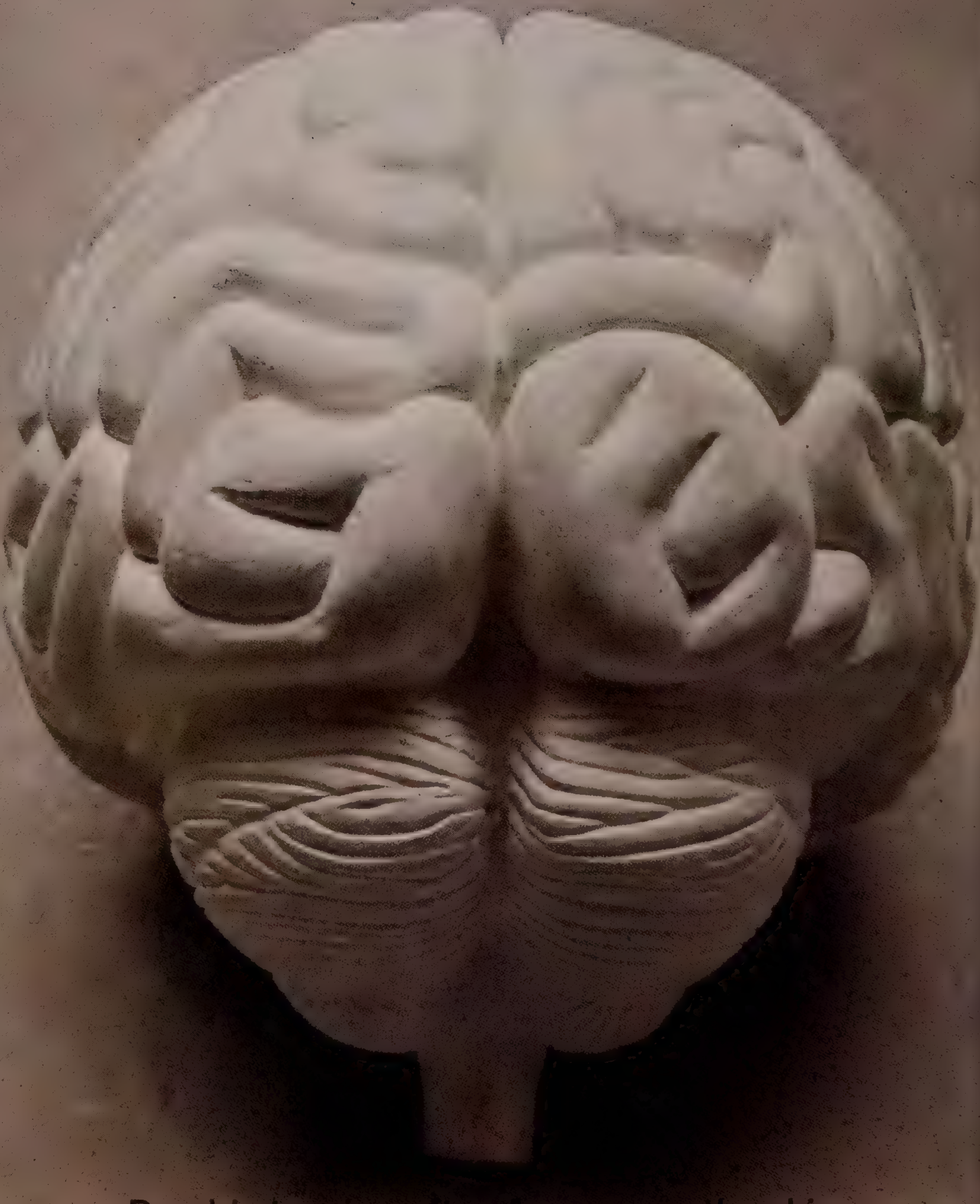

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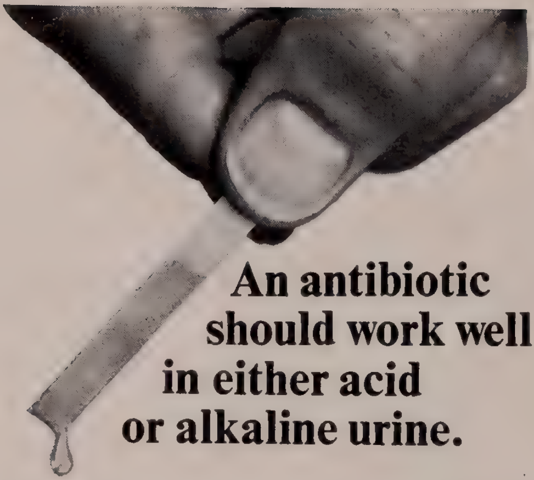

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Side Effects: Gastrointestinal system – anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. Skin – maculopapular and erythematous rashes; a rare case of exfoliative dermatitis has been reported. Photosensitivity; onycholysis and discoloration of the nails (rare). Kidney – rise in BUN, apparently dose-related. Transient increase in urinary output, sometimes accompanied by thirst (rare). Hypersensitivity reactions–urticaria, angioneurotic edema, anaphylaxis. Teeth – dental staining (yellow-brown) in children of mothers given this drug during the latter half of pregnancy, and in children given the drug during the neonatal period, infancy and early childhood. Enamel hypoplasia has been seen in a few children. If adverse reaction or idiosyncrasy occurs, discontinue medication and institute appropriate therapy. Demethylchlortetracycline may form a stable calcium complex in any bone-forming tissue with no serious harmful effects reported thus far in humans.

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'Pink Puffer' Most typically the patient with moderate to advanced emphysema, thin "anxious" appearance and characteristically overinflated chest. Greatly reduced ventilatory capacity, increased residual capacity. Marked dyspnea on slight or moderate exertion. Significant respiratory effort, dry unproductive cough.

'Blue Bloater' Most typically the patient with a long history of chronic bronchitis punctuated by acute inflammatory episodes. May be stocky or of average weight; may eventually become edematous. Elevated PCO_2, alveolar hypoventilation, cyanosis. Dyspnea on slight or moderate exertion. Frequent cough, often purulent or mucopurulent sputum.

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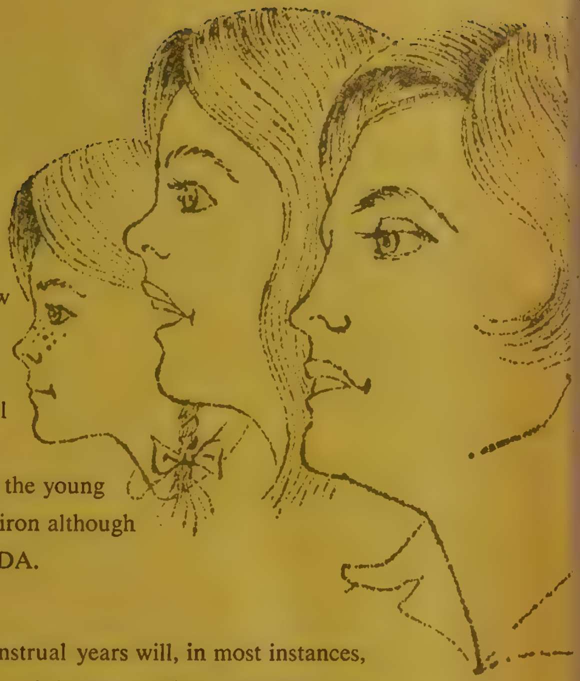
From menarche to menopause, negative iron balance can exist in otherwise normal women.[1-9]



In two-thirds of 114 "normally" menstruating, healthy college women studied[2], iron stores were precariously low or absent. Normal iron stores[3,7] in women range from 200 to 400 mg.—about half that of the normal male. Iron loss in menstrual blood varies widely among normal women[3-6]—ranging from 15 to 40 mg. An intake of the Recommended Dietary Allowance[8] of 2100 calories for the young adult female will, on the average, supply only 13 mg. of iron although the need may well be more[1,3,4,6] than 15 mg., the current RDA.

Supplementing the diet of women during menstrual years will, in most instances, prevent depletion of their iron stores, thus permitting normal hemoglobin formation and proper functioning of iron-dependent tissue enzymes. **One-A-Day® plus iron** provides 15 mg. of iron supplied as ferrous fumarate (46 mg.) with nine essential vitamins.

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Calcium Pantothenate	1 mg.
Iron (as Ferrous Fumarate 46 mg.)	15 mg.

References: 1. Finch, C. A.: Iron Balance in Man. Nutr. Rev. 23:129-131 May, 1965. 2. Scott, D. E., and Pritchard, J. A.: Iron Deficiency in Healthy Young College Women. Jour. Amer. Med. Assn. 199:897-900 Mar. 20, 1967. 3. A. M. A. Council on Foods and Nutrition: Iron Deficiency in the United States. Jour. Amer. Med. Assn. 203:119-124 February 5, 1968. 4. Herbert, V.: Iron and Iron Salts, Chap. 9, pp. 1394-1409. In Goodman, L. S., and Gilman, H. (eds.): The Pharmacological Basis of Therapeutics. 3rd edition. New York, Macmillan, 1965. 5. Hahnemann, B.M.: Iron Deficiency in Women. Med. Clin. N.A. 46:139-149 Jan., 1962. 6. Moore, C.V.: Iron and the Essential Trace Elements. Chap. 10. In Wohl, M.G., and Goodhart, R.S. (eds.): Modern Nutrition in Health and Disease. 3rd edition. Philadelphia, Lea & Febiger, 1964. 7. Pritchard, J.A., and Mason, R.A.: Iron Stores of Normal Adults and Replenishment with Oral Iron Therapy. Jour. Amer. Med. Assn. 190:897-901 Dec. 7, 1964. 8. Recommended Dietary Allowances. Sixth Revised Edition, 1964. A report of the Food and Nutrition Board, National Academy of Sciences, National Research Council, Publication 1146, Washington, D.C., 1964. 9. Beutler, E.: Tissue Effects of Iron Deficiency, pp. 256-272. In Iron Metabolism, Symposium. Gross, F. (ed.). Springer-Verlag, Berlin, 1964.

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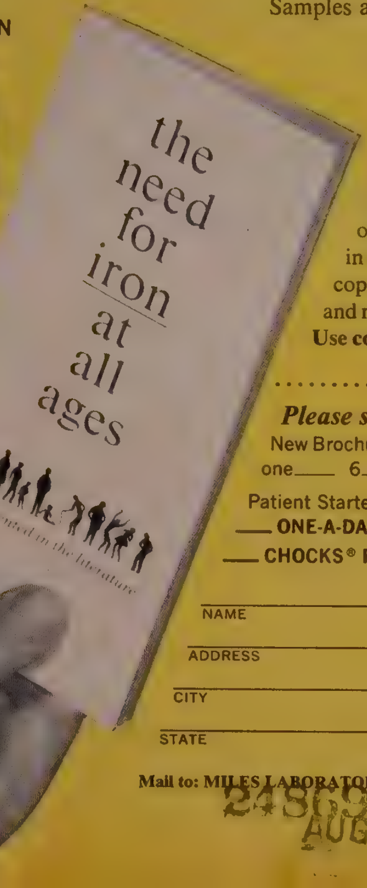
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Before prescribing, please consult complete product information, summary of which follows.

Indications: Indicated as adjunctive therapy to control emotional an somatic factors in gastrointestinal disorders.

Contraindications: Patients with glaucoma; prostatic hypertrophy an benign bladder neck obstruction; known hypersensitivity to chlordiaz epoxide hydrochloride and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcoho and other CNS depressants. As with all CNS-acting drugs, cautio patients against hazardous occupations requiring complete mental alert ness (*e.g.*, operating machinery, driving). Though physical and psycho logical dependence have rarely been reported on recommended doses use caution in administering Librium (chlordiazepoxide hydrochloride to known addiction-prone individuals or those who might increase dos age; withdrawal symptoms (including convulsions), following discon tinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women o childbearing age requires that its potential benefits be weighed agains its possible hazards. As with all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually a needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with either compound alone have been reported with Librax. When chlordiazepoxide hydrochloride is used alone, drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido — all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally with chlordiazepoxide hydrochloride, making periodic blood counts and liver-function tests advisable during protracted therapy. Adverse effects reported with Librax are typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

Dosage: Individualize for maximum beneficial effects. Usual maintenance dose is 1 or 2 capsules, 3 or 4 times a day, before meals and at bedtime. Geriatric patients—see Precautions.

How Supplied: Librax® Capsules, each containing 5 mg chlordiazepoxide hydrochloride (Librium®) and 2.5 mg clidinium bromide (Quarzan®) —bottles of 50 and 500.

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New York State Journal of Medicine

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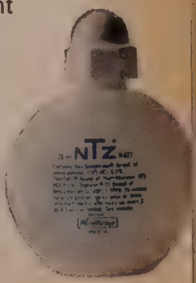

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ANEMIA

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Each 10 cc. vial provides as much iron as 2 pints of whole blood. And use of IMFERON rather than whole blood for iron replacement eliminates the potential dangers of hepatitis and whole blood sensitivity reactions. Whole blood, of course, should be used if clearly indicated.

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IN BRIEF: ACTION AND USES: A single dose of Imferon (iron dextran injection) will measurably begin to raise hemoglobin and a complete course of therapy will effectively rebuild iron reserves. The drug is indicated only for specifically-diagnosed cases of iron deficiency anemia and then only when oral administration of iron is ineffective or impractical. Such iron deficiency may include: patients in the last trimester of pregnancy; patients with gastrointestinal disease or those recovering from gastrointestinal surgery; patients with chronic bleeding with continual and extensive iron losses not rapidly replenishable with oral iron; patients intolerant of blood transfusion *as a source of iron;* infants with hypochromic anemia; patients who cannot be relied upon to take oral iron.

COMPOSITION: Imferon (iron dextran injection) is a well-tolerated solution of iron dextran complex providing an equivalent of 50 mg. in each cc. The solution contains 0.9% sodium chloride and has a pH of 5.2-6.0. The 10 cc. vial contains 0.5% phenol as a preservative.

ADMINISTRATION AND DOSAGE: Dosage, based upon body weight and Gm. Hb/100 cc. of blood, ranges from 0.5 cc. in infants to 5.0 cc. in adults, daily, every other day, or weekly. Initial test doses are advisable. The total iron requirement for the individual patient is readily obtainable from the dosage chart in the package insert. Deep intramuscular injection in the upper outer quadrant of the buttock, using a Z-track technique (with displacement of the skin laterally prior to injection), insures absorption and will help avoid staining of the skin. A 2-inch needle is recommended for the adult of average size.

SIDE EFFECTS: Local and systemic side effects are few. Staining of the skin may occur. Excessive dosage, beyond the calculated need, may cause hemosiderosis. Although allergic or anaphylactoid reactions are not common, occasional severe reactions have been observed, including three fatal reactions which may have been due to Imferon (iron dextran injection). Urticaria, arthralgia, lymphadenopathy, nausea, headache and fever have occasionally been reported.

PRECAUTIONS: If sensitivity to test doses is manifested, the drug should not be given. Imferon (iron dextran injection) must be administered by deep intramuscular injection only. Inject only in the upper outer quadrant of the buttock, not in the arm or other exposed area.

CONTRAINDICATIONS: Imferon (iron dextran injection) is contraindicated in patients sensitive to iron dextran complex. Since its use is intended for the treatment of iron deficiency anemia only it is contraindicated in other anemias.

CARCINOGENICITY POTENTIAL: Using relatively massive doses, Imferon (iron dextran injection) has been shown to produce sarcoma in rats, mice and rabbits and possibly in hamsters, but not in guinea pigs. The risk of carcinogenesis, if any in man, following recommended therapy with Imferon (iron dextran injection) appears to be extremely small.

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Medical News

Medical seminar cruise sponsored by Albany Medical College

The Albany Medical College will conduct its tenth medical seminar cruise January 6 through 23, 1969. The ports of call included in the seventeen-day cruise from New York aboard the Swedish American liner, *Gripsholm*, are: St. Croix, Martinique, St. Vincent, Barbados, Grenada, Trinidad, LaGuaira, Venezuela, Curacao, and Jamaica.

A comprehensive shipboard postgraduate program covering subjects in surgery, pediatrics, medicine, and obstetrics and gynecology will be presented by the faculty of Albany Medical College.

For further information write to: J. Clark Winslow, administrative assistant, Department of Postgraduate Medicine, Albany Medical College, Albany, New York 12208.

Two Glorney-Raisbeck fellowships offered

Two Glorney-Raisbeck Fellowships in the Medical Sciences for the academic year beginning July 1, 1969, will be awarded by the Committee on Medical Education of The New York Academy of Medicine for one year of research and/or study, in the United States or abroad, in any field of medicine or its allied sciences.

The fellowships which carry a stipend of $10,000 (first) and $7,500 (second) are open only to citizens of the United States who hold their M.D. degree and preferably those who have just completed or are in the last year of their residencies at the time of application and who are located in the New York metropolitan area. Applicants must have demonstrated potential talent for productivity in research and teaching and must have an institutional appointment which will enable him to carry out the objectives of this program of research and/or study.

The deadline for receipt of applications is November 1. Applicants will be required to appear before the awards committee for a personal interview. Announcement of the award will be made in late December.

For application forms write to: Office of Medical Education, The New York Academy of Medicine, 2 East 103rd Street, New York, New York 10029.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

New infant screening audiometer developed

A compact electronic screening instrument (Neo-meter), approximately the size of a flashlight and weighing only 10$^1/_2$ ounces, can detect any hearing difficulties of newborn infants within hours of birth.

Developed by Zenith Hearing Sales Corporation, this compact electronic screening audiometer was developed in response to the recognized need by otologists for a precision-built, portable instrument to screen children's hearing at the earliest possible age. Too often in the past, a child's hearing difficulty was not detected until he was enrolled in school. This instrument makes it possible for children to be screened for hearing problems while they are still in the hospital nursery.

Scholarships in family medicine available

The medical scholarship board of the Orleans County Medical Society is offering annual scholarships, with an award of up to $3,000, to participants in the family medicine program sponsored by the University of Rochester and Highland Hospital. These scholarships are open to trainees in the program at internship or residency level.

For further information write to: Eugene S. Farley, Jr., M.D., director, Department of Family Medicine, Highland Hospital, South Avenue at Bellevue Drive, Rochester, New York 14620.

Personalities

Appointed. David H. Ross, M.D., New York City, as executive director of the Hospital for Joint Diseases and Medical Center... T. Campbell Goodwin, M.D., and Mary Goodwin, M.D., both of Albany, as assistant commissioner and pediatric consultant, respectively, in the New York State Department of Mental Hygiene...As consultants to the Medical Consultant Panel for Motor Vehicle Drivers Licensing of the New York State Department of Health: Charles A. Bertrand, M.D., New York City, chairman, cardiovascular committee, Commission on Public Health and Education; of the Medical Society of the State of New York Marvin A. Block, M.D., Buffalo, chairman of committee on alcohol and drug dependence of

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Technical consultation in setting up a closed-circuit system; advance program information on the contents of each telecast; display units to help publicize programs; expense-paid seminars to improve utilization of medical television.

☐ NCME programs are brief and may be shown as often as desired; you can view the telecasts at times that are most convenient, without disrupting your normal schedule.

☐ Frequently NCME makes available published papers related to subjects presented on closed-circuit television.

A recent NCME hospital telecast presented Philip N. Sawyer, M.D., Professor of Surgery and Head of the Vascular Surgical Service at Downstate Medical Center, Brooklyn, N.Y., in a demonstration and evaluation of "Gas Endarterectomy."

In this program, Dr. Sawyer performs the operation on a patient with gross occlusion of the right iliac, femoral and popliteal arteries.

In Dr. Sawyer's view, gas endarterectomy has several advantages over mechanical methods: the operation can be completed faster, causes less damage to the arteries and offers a more successful outcome.

NCME is an independent network supported by Roche Laboratories to increase the use of closed-circuit TV for medical education under direct hospital and school control.

If your hospital or school does not participate in the biweekly NCME program, information on the cost-free service may be obtained by writing to
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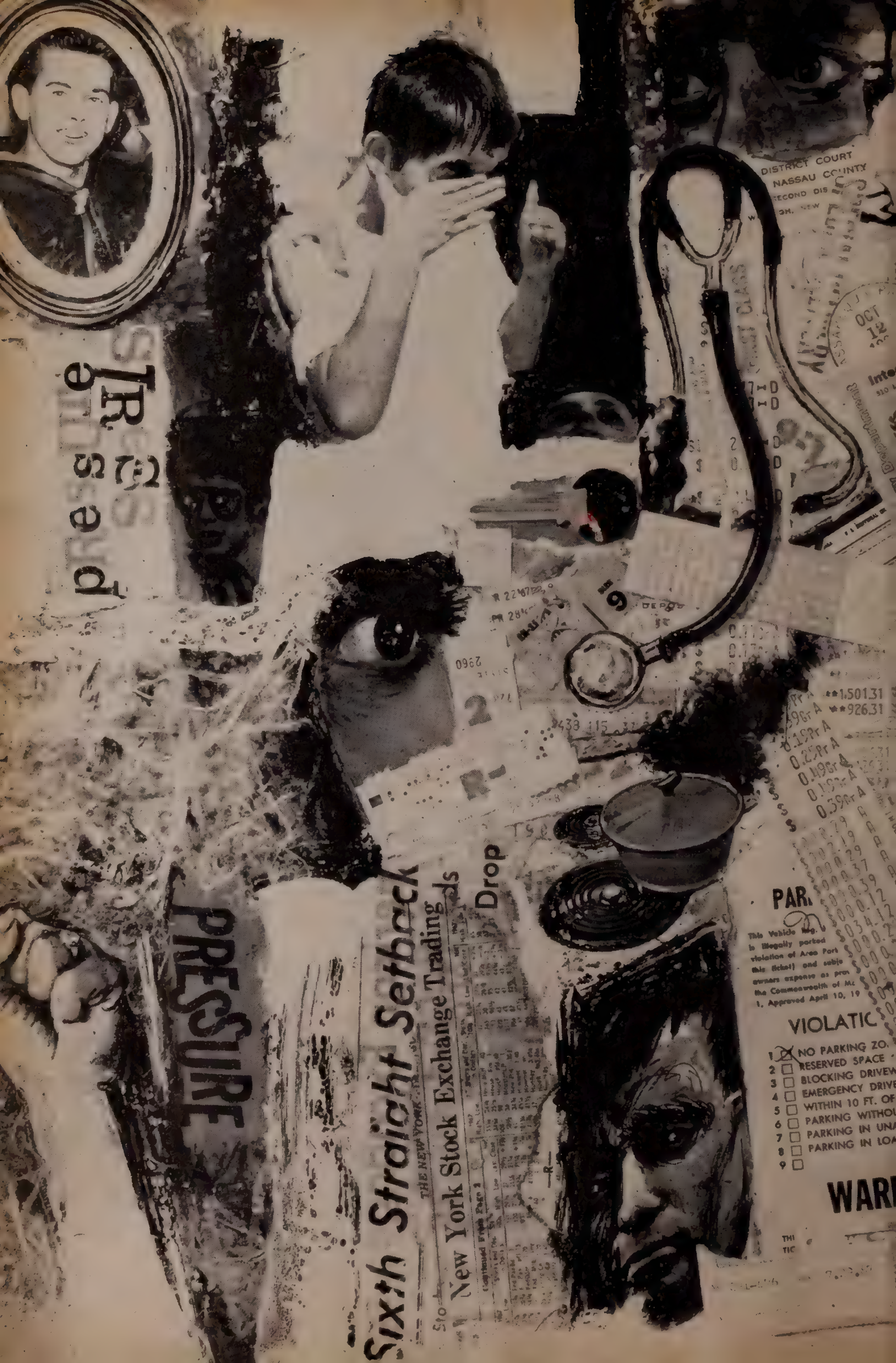

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WARI

When life's pressures build up blood pressure

in the hypertensive patient

Life's pressures and frustrations can often set the stage for a rise in blood pressure in the hypertensive patient. Emotional fluctuations of blood pressure may be especially intensified in the hard-driving individual who continuously pushes himself. Along with your advice to help the patient adjust to living with hypertension, you can also prescribe help in the form of Hydropres.

Hydropres, a combination of two proven antihypertensive agents, has a mild tranquilizing effect that lets the patient relax as it reduces his blood pressure. It alleviates symptoms associated with hypertension, such as headache and tachycardia, that frequently reflect the general tenseness of the patient.

It's worth noting that potassium loss with Hydropres at usual therapeutic doses is usually minimal, and a diet rich in potassium normally avoids serious depletion.

Another point to remember: When other antihypertensive drugs are used adjunctively they must be given at one-half their usual dosage simply because Hydropres potentiates the action of such agents. Hydropres is contraindicated in anuria and in patients known to be sensitive to hydrochlorothiazide or reserpine.

So, when life's pressures build up blood pressure, consider Hydropres to help your hypertensive patient feel more relaxed while under pressure.

HYDROPRES®

ANTIHYPERTENSIVE

HYDROPRES-25:
25 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

HYDROPRES-50:
50 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

helps your patient relax as it lowers his blood pressure

For additional prescribing information, please see following page.

helps your patient relax as it lowers his blood pressure

INDICATIONS: Mild to severe hypertension.

CONTRAINDICATIONS: Anuria; increasing azotemia and oliguria during treatment of severe progressive renal disease. Known sensitivity to hydrochlorothiazide or reserpine. Nursing mothers. Electroshock therapy; discontinue drug at least 7 days before initiating electroshock therapy.

WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls.

Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. The possibility of sensitivity reactions should be considered in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of child-bearing age, potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.

PRECAUTIONS AND SIDE EFFECTS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids or medication such as digitalis. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, paresthesias, purpura, rash, urticaria, photosensitivity or other hypersensitivity reactions may occur. Cutaneous vasculitis precipitated by thiazide diuretics has been reported in elderly patients on repeated and continuing exposure to several drugs. Scattered reports have associated thiazides with pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice. Whenever adverse reactions are moderate or severe, the dosage of thiazides should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, and pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS (including ocular) sensitization have been noted. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure. Since reserpine may increase gastric secretion and motility it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other gastrointestinal disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Anxiety, depression, or psychosis may develop. Pre-existing depression may be aggravated.

Before prescribing or administering, read product circular with package or available on request.

HYDROPRES

ANTIHYPERTENSIVE

HYDROPRES-25:
25 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

HYDROPRES-50:
50 mg. hydrochlorothiazide
0.125 mg. reserpine per tablet

MERCK SHARP & DOHME
Division of Merck & Co., Inc., West Point, Pa. 19486

where today's theory is tomorrow's therapy

continued from page 2476

the State Medical Society; Stuart Bondurant, M.D., Albany, chairman, Department of Medicine, Albany Medical College; Harold Brandaleone, M.D., New York City, chairman, committee on medical aspects of driver safety, Industrial Medical Association; Luke S. W. Chu, M.D., chief of physical medicine and rehabilitation for the State Rehabilitation Hospital, West Haverstraw; Frank H. Constantine, M.D., New York City, member of the medical advisory committee of the State Commission for the Blind; Irving Cramer, M.D., Utica, chairman, accident prevention committee of the State Medical Society; James I. Farrell, M.D., Utica, chairman, committee on diseases of the eye of the State Medical Society; Gordon Hoople, M.D., Syracuse, chairman emeritus of the committee on the hard of hearing and deaf of the State Medical Society; David G. Murray, M.D., Syracuse, chairman, Department of Orthopedic Surgery, Upstate Medical Center; and Gilbert S. Ross, M.D., Syracuse, professor and chairman, Department of Neurology Upstate Medical Center.

Medical Meetings

Albany Medical College schedules teaching days

The Department of Postgraduate Medicine of Albany Medical College is offering the following teaching day program, which is planned for the practicing physician: October 3, 8:45 A.M., "Infectious Diseases"; October 10, 8:45 A.M., "Pancreatitis"; October 17, 8:30 A.M., "Coronary Heart Disease: Present Status," cosponsored by the American College of Cardiology, (advance registration required); and October 24, 10:00 A.M., "Cancer of the Skin."

All sessions will be held in Huyck Auditorium, Albany Medical College. Faculty members will be drawn from many different medical schools, as well as Albany Medical College.

There is a registration fee of $20 for each meeting. The fee for the October 17 meeting is $20 for members of the American College of Cardiology and $30 for nonmembers. For further information write to: Department of Postgraduate Medicine, Albany Medical College, New Scotland Avenue, Albany, New York 12208.

Internists to meet in Niagara Falls

Specialists in internal medicine from upstate New York and Ontario, Canada, will hold a regional scientific meeting on October 9 at the Holiday Inn, Niagara Falls.

The meeting, sponsored by the American College of Physicians, under the direction of Paul A. Bunn, M.D., governor for the upstate area, helps the College's members to keep abreast of developments in the basic medical sciences and in clinical medicine.

For further information contact: Paul A. Bunn, M.D., 750 E. Adams, Street, Syracuse, New York.

Seminar on biomedical engineering

A series of three seminars on recent advances in biomedical engineering, a new discipline concerned with the application of engineering knowledge and technics to medical problems, will be sponsored by the School of Engineering of The City College of the City University of New York.

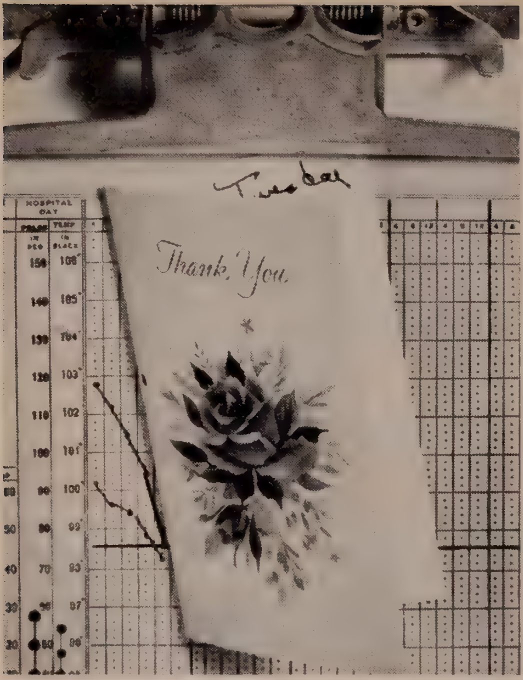
Directed especially at physicians, hospital executives, technicians, nurses, and engineers, the seminars will be held November 21, and December 5 and 12.

The program features the following topics and speakers:

—November 21, 4:00 P.M., "Use of Infra-red Technics in Medical Diagnosis," R. Bowling Barnes, president, Barnes Engineering Company.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

continued on page 2482



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continued from page 2481

—December 5, 3:00 P.M., "Use of Computers in Medicine," Robert S. Ledley, president, National Biomedical Research Foundation.

—December 12, 3:00 P.M., "Engineering Analysis of the Human Spine," Professor Gerner A. Olsen, City College's School of Engineering; and "Correction of Spinal Curvatures by Rib Resection," Darius Flinchum, M.D., Georgia Baptist Hospital, Atlanta, Georgia.

There will also be an exhibit of medical paintings by Frank Netter, M.D., a physician artist who was graduated from the City College in 1927.

For further information write to: Professor Gerner A. Olsen, School of Engineering, Room 154, Steinman Hall, 140th Street and Convent Avenue, New York, New York 10031.

Myelomeningocele topic of meeting

The Department of Neurosurgery of the Albert Einstein College of Medicine, Yeshiva University, is sponsoring a one-day workshop course in Myelomeningocele to be held on Monday, December 16, from 9:30 A.M. to 4:30 P.M. at the Albert Einstein College of Medicine, The Bronx.

For further information contact: Kenneth Shulman, M.D., Department of Neurosurgery, Albert Einstein College of Medicine, Bronx, New York 10461.

American Psychosomatic Society to meet

The program committee of the twenty-sixth annual meeting of the American Psychosomatic Society, under the chairmanship of Thomas H. Holmes, M.D., is soliciting abstracts of original articles for presentation at its meeting in Cincinnati, Ohio, March 28 through 30, 1969. Abstracts are to be limited to 500 words and 12 copies are to be submitted, of which only two copies should indicate full identification of authors and where the work was performed. This procedure has been instituted to insure the impartial selection of abstracts. The closing date for submitting abstracts is November 15.

Abstracts of the articles accepted will be printed and circulated to the members of the Society, as is customary, prior to the meeting and will be available at a minimal price at the meeting.

For further information contact: Thomas H. Holmes, M.D., 265 Nassau Road, Roosevelt, New York 11575.

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Are your patients confused by ad claims?
by shapes and sizes? by strange-sounding ingredients?
When they need fast
relief from pain, you
can reassure them that
aspirin is still the
strongest analgesic they
can buy without your
prescription. And
Bayer is 100% aspirin.
No wonder Bayer works wonders.

Films Reviewed

*These films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Electromyographic Assessment of Pharyngeal Muscle Activity in Laryngectomized Patients: Technics and Preliminary Findings. Sound, color, 16 mm., fourteen and a half minutes.

This film depicts through live action and animation the equipment used, the special electrodes and electrode placement technics devised, and the muscle activity patterns obtained in an electromyographic study of deep neck muscle activity in laryngectomized subjects as they swallow and produce alaryngeal phonation. This training film is designed for use by research personnel contemplating similar physiologic measures as well as by others interested in the nature and application of electromyography.

Source and producer: Speech Research Laboratory, V.A. Hospital, 42nd Avenue and Clement Street, San Francisco, California 94121.

The World of Three. Sound, 16 mm., twenty-eight minutes.

The film shows the world and life of a three-year-old boy seen through his eyes. There is no analysis of what he does or why, just a record of the child's own view of life hemmed in by adults. This film is for college age level, adults, parent-teacher groups, and psychology students.

Source and producer: McGraw-Hill Book Co., Inc., McGraw-Hill Building, 330 West 42nd Street, New York, New York 10036.

The Sound of a Word. Sound, color, 16 mm., twenty-five minutes.

The film is an entertaining and educational film that brings to light the role that parents play in aiding or hindering the development of normal speech in their children. Many parents do not realize that the development of their child's speech habits depends greatly on the home atmosphere and the attitudes and behavior of the parents.

Source and producer: University of Utah, Educational Media Center, 207 Milton Bennion Hall, Salt Lake City, Utah 84112.

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* Film evaluations provided by the Committee on Audio-Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman*; Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

Preludin is indicated only as an anorexigenic agent in the treatment of obesity. It may be used in simple obesity and in obesity complicated by diabetes, moderate hypertension (see Precautions), or pregnancy (see Warning).
Contraindications: Severe coronary artery disease, hyperthyroidism, severe hypertension, nervous instability, and agitated prepsychotic states. Do not use with other CNS stimulants, including MAO inhibitors.
Warning: Do not use during the first trimester of pregnancy unless potential benefits outweigh possible risks. There have been clinical reports of congenital malformation, but causal relationship has not been proved. Animal teratogenic studies have been inconclusive.
Precautions: Use with caution in moderate hypertension and cardiac decompensation. Cases involving abuse of or dependence on phenmetrazine hydrochloride have been reported. In general, these cases were characterized by excessive consumption of the drug for its central stimulant effect, and have resulted in a psychotic illness manifested by restlessness, mood or behavior changes, hallucinations or delusions. Do not exceed recommended dosage.
Adverse Reactions: Dryness or unpleasant taste in the mouth, urticaria, overstimulation, insomnia, urinary frequency or nocturia, dizziness, nausea, or headache.
Dosage: One 25 mg. tablet b.i.d. or t.i.d. Or one 75 mg. Endurets tablet a day, taken by midmorning.
Availability: Pink, square, scored tablets of 25 mg. for b.i.d. or t.i.d. administration, in bottles of 100 and 1000.
Pink, round Endurets® prolonged-action tablets of 75 mg. for once-a-day administration, in bottles of 100 and 1000.
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Boehringer Ingelheim G.m.b.H.
(B)R3-46-560-B

For complete details, please see full prescribing information.

Preludin®
phenmetrazine
hydrochloride

Geigy Pharmaceuticals
Division of
Geigy Chemical Corporation
Ardsley, New York 10502

"that's enough"

...because she's taking Preludin® phenmetrazine hydrochloride
It often puts a natural curb on appetite.
Frequently promotes a sense of well-being.

Geigy

Preludin® phenmetrazine hydrochloride **Endurets®** prolonged-action tablets

For Brief Summary of Prescribing Information, please see adjoining column.

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ORGANIZED 1807

Medical Society of the State of New York

FEBRUARY 9 through 13, 1969

The Americana, New York City

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A once-popular treatment for back pains was to have the seventh son of a seventh son stand or walk on the patient's back.

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Each tablet contains:
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'B.W. & Co.' narcotic products are Class "B", and as such are available on oral prescription, where State law permits.

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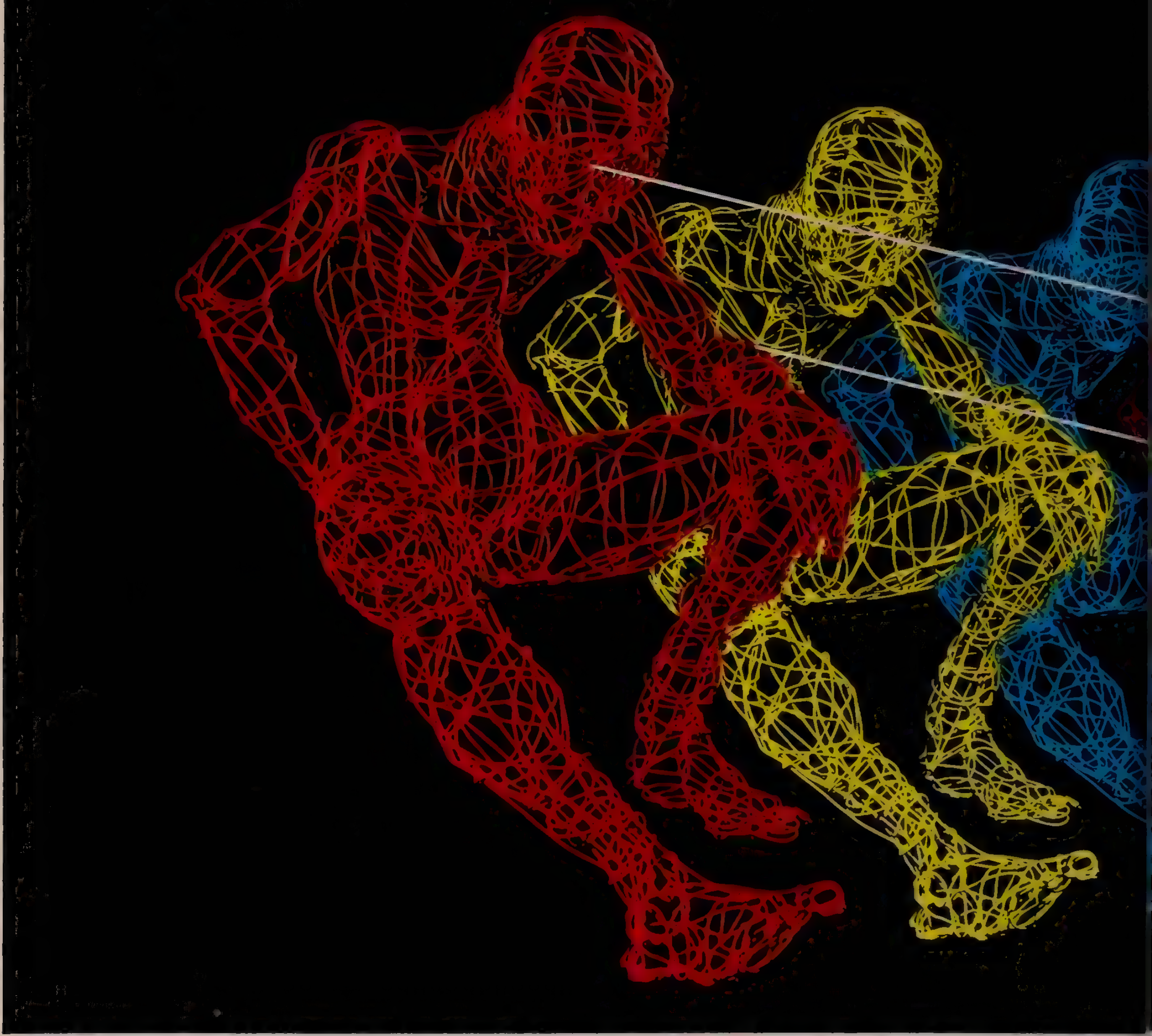
a comprehensive hematinic



Description: Each Pulvule® contains—

Special Liver-Stomach Concentrate, Lilly (containing Intrinsic Factor)	150	mg.
Cobalamin Concentrate, N.F., equivalent to Cobalamin	7.5	mcg.
(The total vitamin B_{12} activity in the Special Liver-Stomach Concentrate, Lilly, and the Cobalamin Concentrate, N.F., is 15 micrograms.)		
Iron, Elemental (as Ferrous Fumarate)	110	mg.
Ascorbic Acid (Vitamin C)	75	mg.
Folic Acid	1	mg.

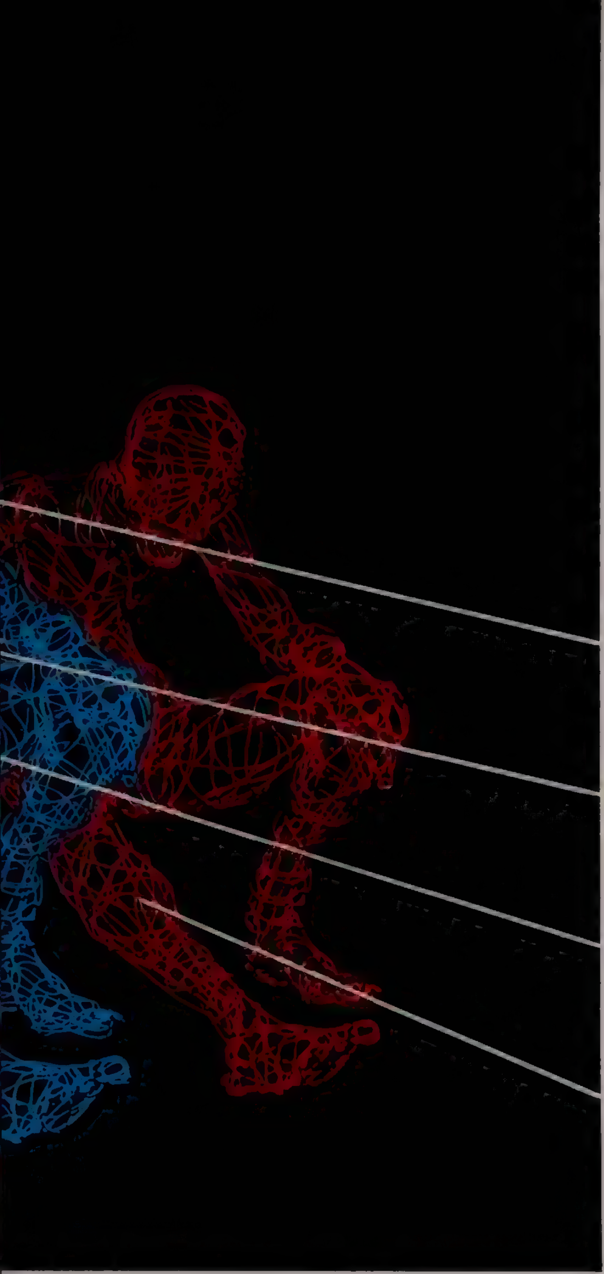
Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinics, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

Precautions: Anemia is a manifestation that requires appropriate investigation to determine its cause or causes.

In pernicious anemia, the use of folic acid without adequate vitamin B_{12} therapy may result in hematologic remission but neurological progression. Adequate doses of vitamin B_{12} (parenteral, or oral with potent intrinsic factor as in Trinsicon® [hematinic concentrate with intrinsic factor, Lilly]) usually prevent, halt, or improve the neurological changes.

As with all preparations containing intrinsic factor, resistance may develop in some cases of pernicious anemia to the potentiation of absorption of physiological doses of vitamin B_{12}. If resistance occurs, parenteral therapy, or oral therapy with so-called massive doses of vitamin B_{12}, may be necessary. No single regimen fits all cases, and the status of the patient observed in follow-up is the final criterion for adequacy of therapy. Periodic clinical and laboratory



studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

In extremely rare instances, skin rash suggesting allergy has followed oral administration of liver-stomach material. Instances of apparent allergic sensitization have also been reported after oral administration of folic acid.

Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

How Supplied: Pulvules Trinsicon® (hematinic concentrate with intrinsic factor, Lilly), in bottles of 60 and 500. [032568]

You can treat combined deficiencies with

Trinsicon®

—the multifactor hematinic

Vitamin B_{12} plus intrinsic factor (15 mcg. B_{12} activity)—helps provide adequate levels of this important vitamin.

Folic acid (1 mg.)—treats nutritional macrocytic anemias and/or malabsorption syndromes.

Ascorbic acid (75 mg.)—augments the conversion of folic acid to its active form and helps iron absorption.

Iron (110 mg.)—treats hypochromic anemia.

Additional information
available to physicians
upon request.
Eli Lilly and Company,
Indianapolis, Indiana 46206.

801668

Lilly

Books Received

*The following books were received during the month of July, 1968.**

Today's Health Guide. Edited by W. W. Bauer, M.D. Revised edition. Quarto of 624 pages, illustrated. Chicago, American Medical Association, 1968. Cloth, $5.00.

Management of the Infertile Couple. By Maxwell Roland, M.D. Quarto of 234 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $10.50.

Radioactive Nuclides in Medicine and Biology. By Solomon Silver, M.D. Third edition. Quarto of 539 pages, illustrated. Philadelphia, Lea & Febiger, 1968. Cloth, $12.50.

The Gynecology of Childhood and Adolescence. By John W. Huffman, M.D. Quarto of 574 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $19.50.

Surgical Pathology of Gynecologic Disease. By Cary M. Dougherty, M.D. Quarto of 690 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $35.

The Principles and Practice of Medicine. Edited by A. McGehee Harvey, M.D., Leighton E. Cluff, M.D., Richard J. Johns, M.D., Albert H. Owens, Jr., M.D., David Rabinowitz, M.D., and Richard S. Ross, M.D. Seventeenth edition. Quarto of 1,472 pages, illustrated. New York, Appleton-Century-Crofts, 1968. Cloth, $22.50.

Textbook of Psychiatry for Medical Practice. By Charles K. Hofling, M.D. Second edition. Octavo of 630 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1968. Cloth, $10.

Progress in Gastroenterology. Volume I. Edited by George B. Jerzy Glass, M.D. Quarto of 520 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $29.50.

Anatomy for Surgeons: Volume 1, The Head and Neck. By W. Henry Hollinshead, Ph.D. Second edition. Quarto of 619 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $20.

Medical Sociology. By David Mechanic. Octavo of 504 pages. New York, The Free Press, 1968. Cloth, $9.95.

Plastic Surgery. Edited by William C. Grabb, M.D., and James W. Smith, M.D. Octavo of 890 pages, illustrated. Boston, Little, Brown and Company, 1968. Paper, $11.50. Cloth, $18.

Hodgkin's Disease. Compiled and Edited by David W. Molander, M.D., and George T. Pack, M.D. Quarto of 212 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $15.

Bone. By Franklin C. McLean, M.D., and Marshall R. Urist, M.D. Third edition revised and enlarged. Octavo of 314 pages, illustrated. Chicago, The University of Chicago Press, 1968. Cloth, $8.50.

The Lung and its Disorders in the Newborn Infant. By Mary Ellen Avery, M.D. Second edition. **Major Problems in Clinical Pediatrics—Volume I.** Octavo of 285 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $9.50.

The Neonate with Congenital Heart Disease. By Richard D. Rowe, M.B., and Ali Mehrizi, M.D. **Major Problems in Clinical Pediatrics—Volume V.** Octavo of 445 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $12.50.

Current Psychiatric Therapies. Volume 8, 1968. Edited by Jules H. Masserman, M.D. Octavo of 258 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $13.75.

Science and Psychoanalysis. Volume XII. Animal and Human. Edited by Jules H. Masserman, M.D. Octavo of 277 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $12.75.

Science and Psychoanalysis. Volume XIII. The Dynamics of Dissent. Edited by Jules H. Masserman, M.D. Octavo of 176 pages. New York, Grune & Stratton, 1968. Cloth, $8.00.

Proprioceptive Neuromuscular Facilitation. By Margaret Knott, B.S., and Dorothy E. Voss, B.Ed. Second edition. Quarto of 225 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $9.50.

The Negligent Doctor. By Charles Kramer.

continued on page 2493

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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Help clear up that miserable stuffed-up feeling with Dimetapp. Each hard-working Extentab brings welcome relief from the stuffiness, drip and congestion of upper respiratory conditions for up to 10-12 hours. Yet, patients seldom experience drowsiness or overstimulation. The key to success is the Dimetapp formula: Dimetane (brompheniramine maleate)—along with phenylephrine and phenylpropanolamine, two time-tested decongestants. They get the job done . . . in a hurry.

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Contraindications: Hypersensitivity to antihistamines. Not recommended for use during pregnancy.
Precautions: Until patient’s response has been determined, he should be cautioned against engaging in operations requiring alertness. Administer with care to patients with cardiac or peripheral vascular diseases or hypertension.
Side Effects: Hypersensitivity reactions including skin rashes, urticaria, hypotension and thrombocytopenia, have been reported on rare occasions. Drowsiness, lassitude, nausea, giddiness, dryness of the mouth, mydriasis, increased irritability or excitement may be encountered.
Dosage: 1 Extentab morning and evening.
Supplied: Bottles of 100 and 500.

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in sinusitis, colds, U.R.I.

Dimetapp® Extentabs®

(Dimetane® [brompheniramine maleate], 12 mg.;
phenylephrine HCl, 15 mg.; phenylpropanolamine HCl, 15 mg.)

up to 10-12 hours clear
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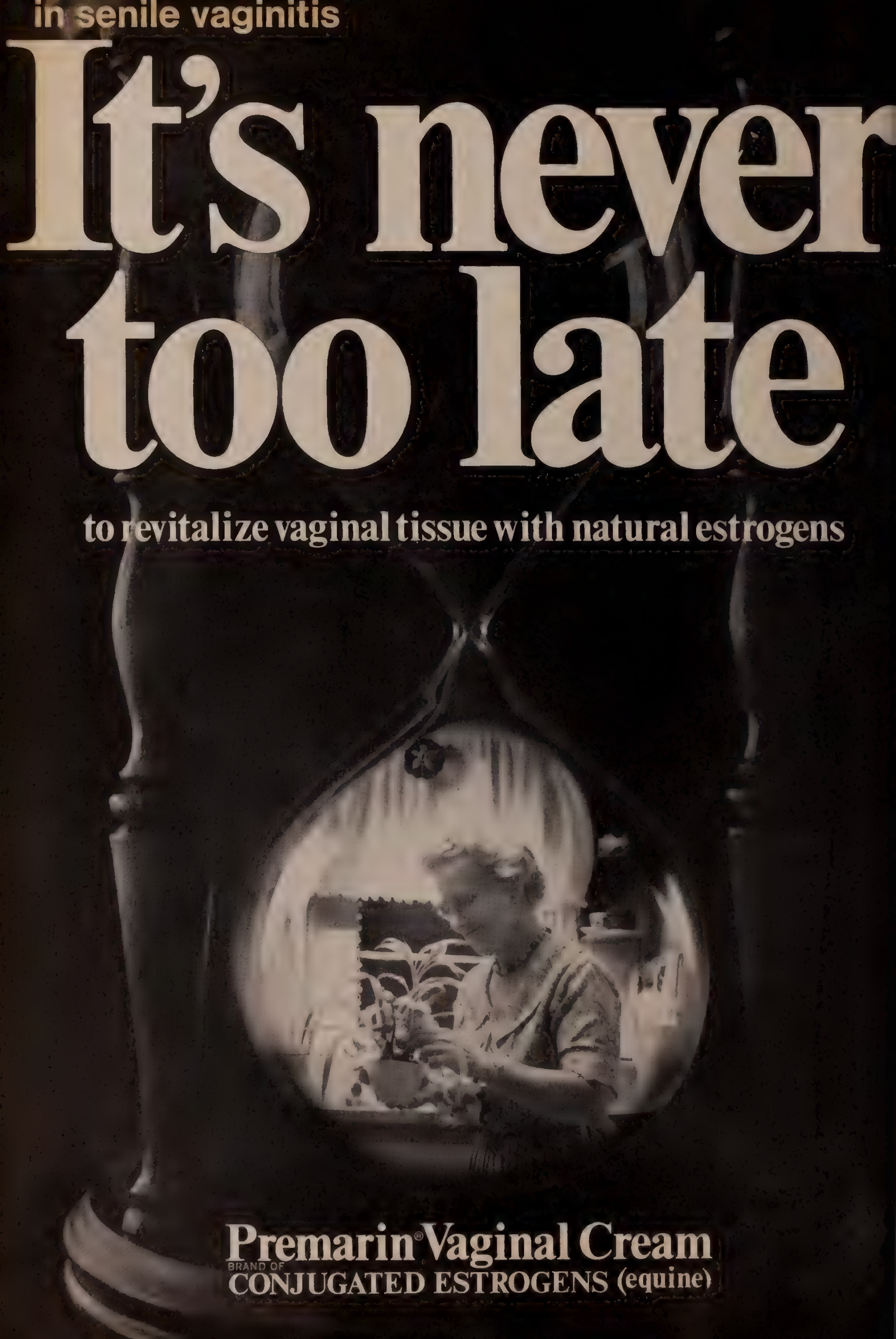

in senile vaginitis

It's never too late

to revitalize vaginal tissue with natural estrogens

Premarin® Vaginal Cream
BRAND OF
CONJUGATED ESTROGENS (equine)

It's never too late

It's never too late to help revitalize friable vaginal tissue with natural estrogens in topical form. By effectively restoring tissue estrogens at the local level, PREMARIN (conjugated estrogens—equine) Vaginal Cream can help rebuild the vaginal mucosa, reverse atrophic lesions, and restore the texture and vascularity to a healthier, more normal state. Just one daily application (2 to 4 Gm.) of PREMARIN (conjugated estrogens—equine) Vaginal Cream, topically or inserted nightly, will usually bring about a specific response, accompanied by symptomatic relief, early in therapy.

When applied before and after vaginal surgery during the postmenopause (usually for 10 days pre- and postoperatively), the local tissue-building action of PREMARIN (conjugated estrogens—equine) Vaginal Cream as a supportive measure also helps promote healing, increase resistance to infection, and facilitate recovery.

PREMARIN (conjugated estrogens—equine) Vaginal Cream—Each gram contains 0.625 mg. of estrogens in their naturally occurring, water-soluble conjugated form, in a nonliquefying base. (Also contains spermaceti, cetyl alcohol, white wax, glyceryl monostearate, propylene glycol monostearate, methyl stearate, phenylmercuric acetate, sodium lauryl sulfate, glycerin, liquid petrolatum, and certified color.)

Also Available: PREMARIN H-C Vaginal Cream (Provides the additional benefits of antipruritic, anti-inflammatory action, for more rapid symptomatic relief—useful in initial stages of therapy and in vulvovaginitis.) Each gram contains 0.625 mg. conjugated estrogens—equine (Premarin), with 1.0 mg. hydrocortisone (present as acetate), in a nonliquefying base. (Also contains citric acid, sodium citrate, glycerin, spermaceti, cetyl alcohol, white wax, glyceryl monostearate, propylene glycol monostearate, methyl stearate, phenylmercuric acetate, sodium lauryl sulfate, liquid petrolatum, and certified color.)

Caution: Use of either preparation in atrophic lesions of the vulva does not preclude the necessity for careful diagnostic measures to eliminate the possibility of neoplasia.

Side Effects: In use of either preparation, hyperestrogenic effects, such as withdrawal bleeding or breast tenderness, are rare occurrences and indicate overdosage. Vaginal discharge, due to mucus hypersecretion, may also be noted. When PREMARIN H-C Vaginal Cream is used in the concentrations recommended, absorption of hydrocortisone is negligible, and therefore systemic side effects may not be expected to occur.

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Octavo of 250 pages. New York, Crown Publishers, Inc., 1968. Cloth, $5.95.

Cure for Cancer: A National Goal. By Solomon Garb, M.D. Octavo of 309 pages, illustrated. New York, Springer Publishing Company, Inc., 1968. Cloth, $6.75.

The Overt Homosexual. By Charles W. Socarides, M.D. Octavo of 245 pages. New York, Grune & Stratton, 1968. Cloth, $7.75.

The Drug Scene. By Donald B. Louria, M.D. Octavo of 214 pages. New York, McGraw-Hill Book Company, 1968. Cloth, $5.95.

The Country Doctor and the Specialist. By Fred Lyman Adair, M.D. Quarto of 215 pages, illustrated. Maitland, Fla., Adair Award Fund, 1968. Paper.

Macromolecules of Living Systems. By Herbert S. Rhinesmith and Luigi A. Cioffi. Octavo of 164 pages, illustrated. New York, Reinhold Book Corporation, 1968. Paper, $4.75.

Determinants of the Nurse-Patient Relationship. By Gertrud Ujhely. Octavo of 271 pages. New York, Springer Publishing Company, Inc., 1968. Paper, $3.75.

Electrocardiographic Notebook. By M. Irene Ferrer, M.D. Third edition. Duodecimo of 141 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Paper, $3.45.

The Medical Clinics of North America. Mayo Clinic Number. July, 1968. Neurologic Disorders. Robert E. Siekert, M.D., Guest Editor. Octavo. Philadelphia, W. B. Saunders Company, 1968. Published Bi-Monthly (six numbers a year). Cloth, $21. per year.

Books Reviewed

Atlas of Urologic Surgery. By Philip R. Roen, M.D. Quarto of 394 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $23.50.

This book is an attempt to illustrate and explain the most commonly performed operations in urologic surgery, with pen and ink drawings on one side of the book and accompanying text on the companion page. Dr. Roen is Director of Urology at St. Barnabas Hospital and assistant professor of urology at

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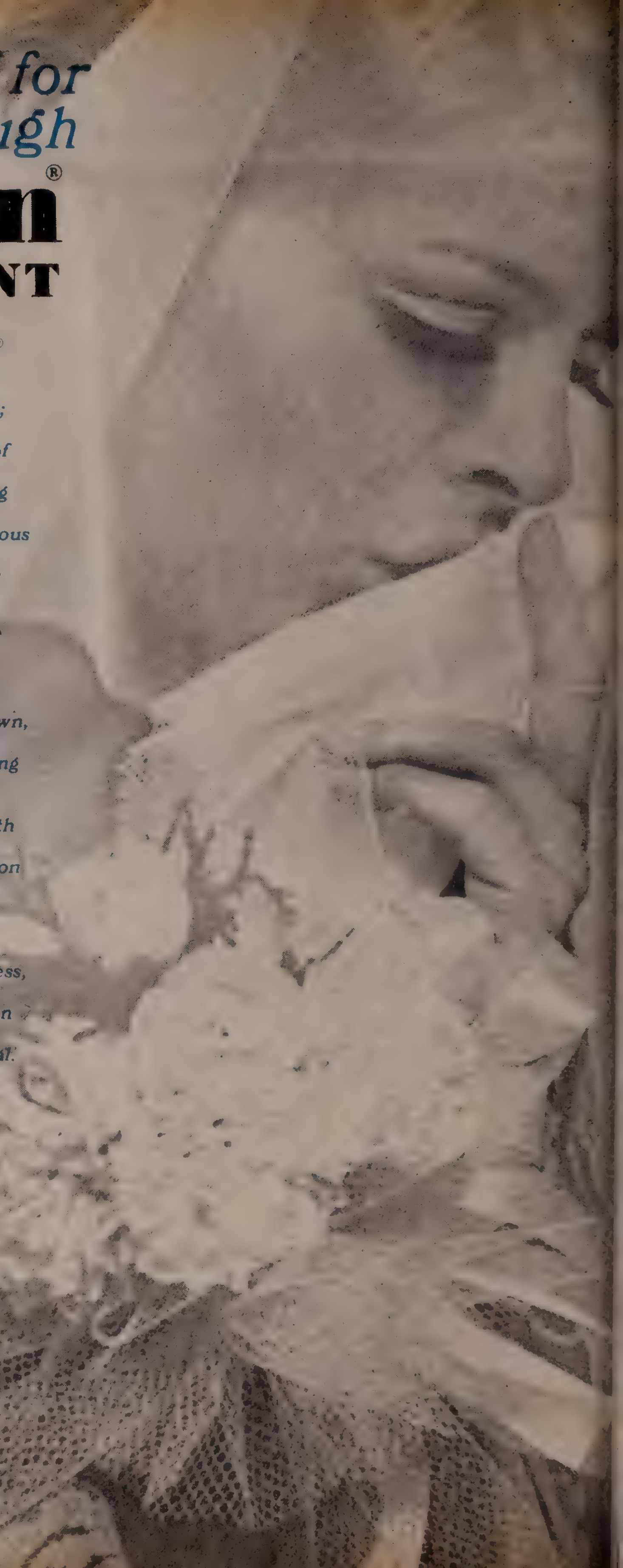

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New York Medical College. The author, who has had twenty-five years of experience in urology, gives descriptions of operations in general use with which he is familiar.

As an example, anastomosis of ureter to bladder is illustrated by a fish-mouth type of anastomosis. In many teaching institutions this type has been supplanted by more physiologic technics such as the elliptical anastomosis with or without a tunnel technic.

It is far from this reviewer's objective to detract from the work of an author who has labored diligently to present such an extensive volume, but it is his impression that other points of view should be mentioned in a text for students or it should be pointed out that other technics exist.

Other technical details that are questionable are the use of oxidized gauze for prostatectomy; no mention is made of the use of catheters for identification of ureter during diverticulectomy; or dispensing with splinting catheter during uretero-ureteral anastomosis.

The text then represents the author's view of operative urologic surgery that he has found useful in his practice. It can be recommended to urologic residents and surgeons for ready review of this subject.

The illustrations by Charles Stern are excellent and clearly demonstrate the salient steps of the operative procedures.—SIDNEY R. WEINBERG, M.D.

Cervical Spondylosis and Other Disorders of the Cervical Spine. Edited by Lord Brain, D.M., and Marcia Wilkinson, D.M. Octavo of 232 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $10.

As would be expected from such distinguished authors, this is an exceptionally informative monograph. It is thin and small (practically pocket size) but it is profusely illustrated, replete with charts and innumerable photographs. With true British precision it marches methodically through anatomy, pathology, symptomatology, radiology, and diagnosis (200 pages) before venturing into treatment (medical and surgical) and prognosis (25 pages).

A number of different therapy programs are outlined, each specific for a separate diagnosis directed to the etiology (discogenic, traumatic, degenerative), site (vertebra, cord, or nerve root), severity (intermittent, persistent, recurrent), stage (acute or chronic), and neurologic complications. Succinctly, there is no "conventional" or "routine" treatment, and this implication is obviously also true for similar disabilities in other segments of the spine.

Although it will appeal particularly to orthopedists, physiatrists, neurologists, and neurosurgeons, the complications of "spondylosis and other disorders of the cervical spine" are so prevalent, the book is recommended for all physicians.—MILTON B. SPIEGEL, M.D.

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Cancer Chemotherapy: Basic and Clinical Applications. The Fifteenth Hahnemann Symposium. Edited by Isadore Brodsky, M.D., and S. Benham Kahn, M.D. Consulting Editor John H. Moyer, III, M.D. Octavo of 348 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $18.50.

This Hahnemann symposium provides authoritative coverage of solid tumors, chemotherapy of hematologic malignancy, bone marrow protection during cancer chemotherapy, as well as regional technics in chemotherapy. This book is written primarily for the practicing physician who is told mainly to do no harm and to separate research from clinical treatment. The employment of curative, arrestive, and palliative therapy is to be distinguished. He must also select his various consultants for their use of judgment in the same areas. He should bear in mind that available information does not support the dogma of radical mastectomy. On the positive side, the "curative" results in leukemia and choriocarcinoma of the female are hopeful.—BERNARD SELIGMAN, M.D.

Functional Gastrointestinal Disease. By Eddy D. Palmer, M.D. Octavo of 126 pages. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $7.25.

The author, a well-known gastroenterologist, succeeded in emphasizing the importance of treating a patient as a whole and not just a disease. Both the functional as well as the organic aspects of a disease to be taken into consideration by the clinician or gastroenterologist is well described.

Some clinicians or gastroenterologists may not be in full agreement with the author's idea of dietary and drug management in cases such as peptic ulcer and ulcerative colitis. However, the author obviously is aiming to impress the necessity of comprehensive evaluation of the patient from the psychologic as well as the organic points of view and treat accordingly.

The book is well recommended to all internists and gastroenterologists.—JAMES TESLER, M.D.

Principles of Nuclear Medicine. Edited by Henry N. Wagner, Jr., M.D. Quarto of 896 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $29.70.

The editor, who is professor of radiology and radiologic science at Johns Hopkins University, also has written 11 of the 21 chapters, often with colleagues at Hopkins or in other centers. Ten chapters have been written by other outstanding authorities—American, British, or Italian. Thus we have a fine survey of present methods in the use of radioisotopes in diagnostic and therapeutic applications to every field of medicine. Chapters on the diagnostic process, basic physics of nuclear medicine, and the radiopharmaceutical are of special value to men in practice, as are the nine chapters on applications in various organ systems. This is a book essential for all those who use radioisotopes and invaluable to the practitioner who wishes to brush up on any aspect of the use of radioisotopes in medicine. Since this field is rapidly evolving, the half life of even an authoritative text is relatively short but this is a book to which everyone who has radioisotopes used on his patients, for diagnosis or treatment, must have easy access.—WILLIAM DOCK, M.D.

Doctors of the Old West. A Pictorial History of Medicine on the Frontier. By Robert F. Karolevitz. Quarto of 192 pages, illustrated. Seattle, Superior Publishing Company, 1967. Cloth, $12.95.

From the beginning of recorded history medical men have played a prominent role in the lives of their contemporaries. A very fascinating tale is the story of the men and women who brought medicine to the old west. This book is a pictorial history of the frontier. It is a backward glance at the saddlebag practitioners from the prairies to the Pacific.

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It is a most fascinating story in pictures of the era of transition from ancient practices to modern technics.—ALAN A. KANE, M.D.

Hysterosalpingography. By Alvin M. Siegler, M.D. Quarto of 406 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1967. Cloth, $21.

The author has had extensive experience in the use of radiologic technics in the diagnosis of his findings and stresses the importance of hysterosalpingography in gynecology.

The text is divided into two sections. The first part records the historical development, indications, advantages, methods, and the dangers of hysterosalpingography. The second section covers the clinical aspects. The author emphasizes that "it is the only non-operative diagnostic method that enables the simultaneous observation of both the uterine cavity and the lumina of the tubes."

Some subjects covered include intrauterine adhesions, uterine and tubal fistulas, diverticulosis of the fallopian tube. Asymptomatic hydrosalpinx and latent genital tuberculosis yield to diagnosis by this methodology. Tubal patency is readily established.

There is a profusion of illustrations, some 543, which are clearly reproduced. The correlation between the clinical aspects and the radiologic findings is carefully presented.

This is an excellent text for both the gynecologist and radiologist.—JOHN M. TORTORA, M.D.

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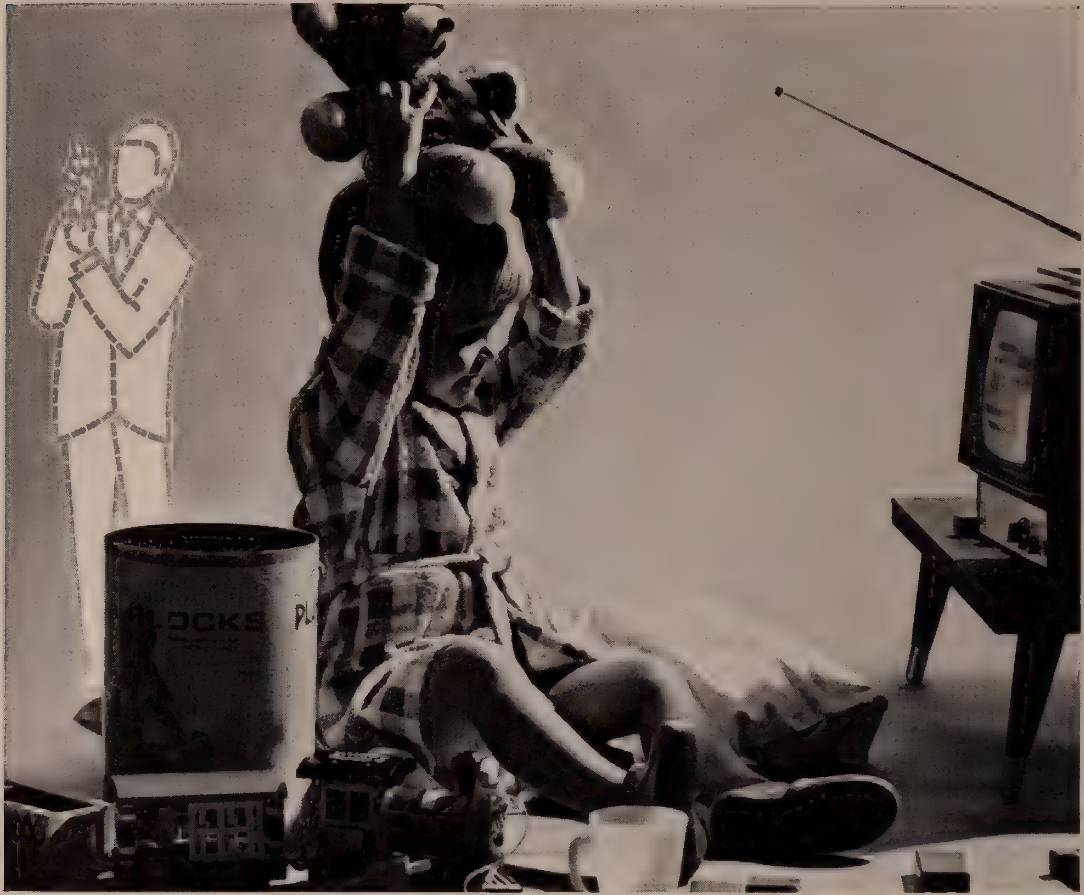

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Editorials

The more things change the less they change

SEXUAL MORALITY*

It is a remarkable thing that the subject of sexual morality, which is closer than most others to the happiness of domestic life, should have been the most neglected of all the subjects of teaching. When Herbert Spencer asked and answered the question, "What Knowledge is of Most Worth?" he presented, as no teacher had ever done before, the preeminent importance of a knowledge of the laws of health as the supreme safeguard of the happiness of the individual. But tardily have educators proceeded to apply the great principles which he laid down. It is to the credit of the medical profession that this question of sexual morality is now just beginning to receive the attention which its importance merits. Neglected by the Church, posing as the guardian of public and individual morality; with studied care ignored by the school, from which the child should receive the instruction which best fits him for happiness and usefulness; and, saddest of all, avoided with prudish cowardice by the parent, whose obligation it is to point out the path by which the child should walk—this question of sexual morality has been left for elucidation to the lewd companions, the gamins of the street, and the habitues of the brothel. It is to be hoped that the attention now being given to this subject may increase in power and in results, to the end that the neglect which it has suffered may be atoned for.

This movement which is spreading so rapidly had its beginning in the study of venereal diseases and their direful consequences; and the injuries inflicted by these diseases upon the innocent have aroused the sympathies of students of this class of maladies. The committees of medical societies and the societies for sanitary and moral prophylaxis, which are engaged upon these questions, have before them a work and results even of greater importance than that of the organizations for the elimination of tuberculosis.

There is no need for hysterical revivals. The matter has been taken up by medical bodies and societies under medical guidance. The simple truth is all that is needed. That will make us free—free from the ignorance which has lain at the root of sexual sins. The physiology of the sexual organs should be *taught*, not vaguely and covertly hinted at. The fallacy of sexual necessity, promulgated by the sexual sinner, should be replaced by the knowledge that the exercise of the sexual organs is not necessary for health. The prevalence and the direful results of venereal diseases should be known, and especially their consequences to the innocent. And, finally, the meaning of *normal marriage* should be made clear to all young men and women. Marriage can be founded neither upon sexual feeling nor platonic affection: it must combine mental and animal harmony in the divine passion of love.

The teaching of the truths which are necessary for the happiness and usefulness of the child should begin at home. The greatest responsibility rests upon the parent. This instruction should be continued in the school; and the Church, and other organizations for moral instruction can well afford to devote some attention to the teaching of these most helpful truths. Education, not legislation, is the solution of this great problem. Violations of the health of the body are moral sins, in which no remedy is so effective as the simple knowledge of the truth.

Seduction and promiscuous sexual intercourse were not only not frowned upon, but were matters of parlor conversation as recently as the time of Addison and the *Spectator*. Drunkenness did not exclude a man from polite society as recently as the Civil War period. Tight lacing and piercing the ears for the purpose of hanging jewels upon them, have only within the memory of the young, become unpopular among cultivated people. It is surely not too much to hope that public opinion will soon place its stamp of disapproval upon the inequality of sexual privilege now prevalent, and demand from the man the same measure of virtue as it does from the woman.

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*Editorial from THE NEW YORK STATE JOURNAL OF MEDICINE, volume 6, number 4, April, 1906, page 176, James Peter Warbasse, M.D., editor.

This editorial, written sixty-two years ago by an early editor of the JOURNAL, shows clearly that the fundamentals of age old problems change little.

Dr. Warbasse pointed out in 1906 that the true perspective on sexual morality is to be obtained only by the active interest and working together of the indispensable triad of home and parents, church, and school. If one of these supports gives way the structure becomes unstable and functions little or none at all.

We seem at the close of the twentieth century to be in a period of moral laxity similar, in some respects, to that of the early eighteenth century England as cited by Dr. Warbasse.

The need now is to add to our speed and sophistication a sensible sanctity. Not the sugar-coated sanctity of the nineteenth century but a realistic return to the eternal truths of the Decalogue. Without this our families, churches, and schools are at sea in a leaky boat without chart or compass.

Care in animal care—further information

In an editorial in the August 1, 1968, issue of the JOURNAL we described and praised the program of the American Association for Accreditation of Laboratory Animal Care.

We have available now a listing of the first 99 facilities to be approved. These include four universities, 23 medical schools, four dental schools, five combined medical and dental schools, two veterinary schools, one school of pharmacy, one school of public health, 16 government facilities, nine hospitals, four private research laboratories, 27 pharmaceutical manufacturers, and three laboratory animal breeders.

The laboratories in New York State that have been approved are as follows: Albany Medical College of Union University, Animal Research Facilities, Albany; Avon Products, Inc., Biological Research Laboratory, Suffern; The Bronx-Lebanon Hospital Center, The Bronx; Brookhaven National Laboratory, Biology Department, Upton; Brookhaven National Laboratory, Medical Department Veterinary Service, Upton; Carworth-Laboratory Cages, Inc., New City and Stone Ridge, New York, and Portage, Michigan; Columbia University, College of Pharmacy of the City of New York; Columbia University College of Physicians and Surgeons, Institute of Comparative Medicine, New York City; Cornell University Medical College, New York City; Montefiore Hospital and Medical Center, Laboratory Division, The Bronx; The Mount Sinai Hospital, Animal Research Facility, New York City; New York University Medical Center, Berg Institute, New York City; State University of New York at Buffalo, Animal Care Unit; State University of New York, Downstate Medical Center, Laboratory Animal Care Sections, Brooklyn; University of Rochester School of Medicine and Dentistry, Rochester; Sloan-Kettering Institute for Cancer Research, Animal Facilities, New York City; Sterling-Winthrop Research Institute, Division of Sterling Drug, Inc., Rensselaer; and Strasenburgh Laboratories, Department of Toxicology, Rochester.

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Warnings — Watch for the earliest manifestations of thrombotic disorders (thrombophlebitis, cerebrovascular disorders, pulmonary embolism, retinal thrombosis); if present or suspected discontinue the drug immediately.

British studies reported in April 1968[1,2] estimate there is a seven- to tenfold increase in mortality and morbidity due to thromboembolic diseases in women taking oral contraceptives. In these controlled retrospective studies, involving 36 reported deaths and 58 hospitalizations due to "idiopathic" thromboembolism, statistical evaluation indicated that the differences observed between users and non-users were highly significant. The conclusions reached in the studies are summarized in the table below:

Comparison of Mortality and Hospitalization Rates Due to Thromboembolic Disease in Users and Non-Users of Oral Contraceptives in Britain.

Category	Mortality Rates		Hospitalization Rates (Morbidity)
	Age 20-34	Age 35-44	Age 20-44
Users of Oral Contraceptives	1.5/100,000	3.9/100,000	47/100,000
Non-Users	0.2/100,000	0.5/100,000	5/100,000

No comparable studies are yet available in the United States. The British data, especially as they indicate the magnitude of the increased risk to the individual patient, cannot be applied directly to women in other countries in which the incidences of spontaneously occurring thromboembolic disease may differ.

Discontinue medication pending examination if there is sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine. Withdraw medication if papilledema or retinal vascular lesions are found.

Since the safety of Ovulen in pregnancy has not been demonstrated, it is recommended that pregnancy be ruled out for any patient who has missed two consecutive periods before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule the possibility of pregnancy should be considered at the first missed period.

A small fraction of the hormone agents in oral contraceptives has been identified in the milk of mothers receiving these drugs. The long-range effect to the nursing infant cannot be determined at this time.

Precautions — Pretreatment physical examination should include special reference to the breasts and pelvic organs, and a Papanicolaou smear.

Endocrine and possibly liver function tests may be affected by Ovulen. Therefore, it is recommended that such tests if abnormal be repeated after the drug has been withdrawn for two months.

Pre-existing uterine fibromyomas may increase in size under the influence of progestogen-estrogen preparations.

Because these agents may cause some degree of fluid retention, conditions which might be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation.

In breakthrough bleeding, and all irregular vaginal bleeding, consider nonfunctional causes. Adequate diagnostic measures are indicated in undiagnosed vaginal bleeding.

Carefully observe patients with a history of psychic depression and discontinue the drug if severe depression recurs.

Any possible influence of prolonged Ovulen therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study.

A decrease in glucose tolerance has occurred in a significant percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be observed carefully while receiving Ovulen.

Because of the effects of estrogens on epiphyseal closure Ovulen should be used judiciously in young patients in whom bone growth is not complete.

The age of the patient constitutes no absolute limiting factor, although Ovulen therapy may mask the onset of the climacteric.

The pathologist should be informed of Ovulen therapy when relevant specimens are submitted.

Adverse Reactions — A statistically significant association has been shown between use of oral contraceptives and the following serious adverse reactions: thrombophlebitis, pulmonary embolism.

Although available evidence is suggestive of an association, such a relationship has been neither confirmed nor refuted for the following serious adverse reactions: cerebrovascular accidents, neuro-ocular lesions, e.g., retinal thrombosis and optic neuritis.

The following adverse reactions are known to occur in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea during and after treatment, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), change in weight, changes in cervical erosion and cervical secretions, suppression of lactation when given immediately post partum, cholestatic jaundice, migraine, allergic rash, rise in blood pressure in susceptible individuals, mental depression.

Although the following adverse reactions have been reported in users of oral contraceptives, an association has been neither confirmed nor refuted: anovulation post treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme and nodosum, hemorrhagic eruption, itching.

The following laboratory results may be altered by oral contraceptives: hepatic function: increased sulfobromophthalein and other tests; coagulation tests: increase in prothrombin, Factors VII, VIII, IX and X; thyroid function: increase in PBI and butanol extractable protein bound iodine, and decrease in T^3 values; metyrapone test; pregnanediol determination.

References: 1. Inman, W. H. W., and Vessey, M. P.: Brit. Med. J. 2:193-199 (April 27) 1968. 2. Vessey, M. P., and Doll, R.: Brit. Med. J. 2:199-205 (April 27) 1968.

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Scientific Articles

SYMPOSIUM

PROCEEDINGS

Third Annual New York
Congress for Mental Health

The New York State Association for Mental Health, Inc.
The Medical Society of the State of New York
Council, New York State District Branches,
American Psychiatric Association

Forces Affecting the Family Today

Constructive and Destructive

Moderator
ROBERT T. PORTER, M.D., New York City
Associate Attending Psychiatrist, Department of Child Psychiatry, The Mount Sinai Hospital

Sponsoring Committee
C. DOUGLAS DARLING, M.D., Chairman, Board of Directors and Past President, New York State Association for Mental Health, Albany, New York
MATTHEW BRODY, M.D., Chairman, Committee on Mental Hygiene, Medical Society of the State of New York, New York City
ALEXANDER LEVINE, M.D., Chairman, Council, New York State District Branches, American Psychiatric Association, New York City
CLAUDE D. PRICE, Executive, Director New York State Association for Mental Health, and Secretary-Coordinator of Annual Congress for Mental Health, Albany, New York

This symposium was presented at the Statler-Hilton Hotel, New York City, on October 7, 1967.

Introductory Remarks

C. DOUGLAS DARLING, M.D.
Ithaca, New York

On behalf of the sponsoring committee and the three sponsoring agencies, I welcome you. We are focusing on the family and those forces, both constructive and destructive, which impinge on it. As we discuss the historical, legal, sociologic, and religious aspects of the family, let us be both serious and thoughtful.

CLAUDE D. PRICE
Albany, New York

As in the past, the authors prepared their reports in advance, and those were circulated to the other participants and to the audience. This gives the discussants and the audience more opportunity to respond. In this dialogue framework we also find creative thinking, suggestions, and solutions.

Governor Rockefeller in his message to our first Congress stated that those in State government awaited the results of our deliberations. He also expressed hope that these sessions would become an annual tradition. That hope, indeed, has become a reality. Your deliberations are read in countries throughout the world.

The theme for next year's Congress which will be held on October 5, 1968, at the Hotel Commodore in New York City has been selected. It will feature a dialogue between the Reverend William Sloane Coffin, Jr., Yale University Chaplain, and Bertram S. Brown, M.D., Deputy Director of the National Institute of Mental Health. The fourth annual New York Congress for Mental Health will endeavor to explore the dynamics of "Alienation and Revolt: Rebels Without a Cause?"

This meeting promises to be most exciting, and we sincerely hope that you will be able to attend.

Phylogenesis of Sexual Morality

Psychiatric Exegesis on Onan and Samson

MATTHEW BRODY, M.D.
Brooklyn, New York

Attending Neuropsychiatrist, Brooklyn Jewish Hospital, and Consultant, Brooklyn State Hospital

The catastrophe that befell Onan is described in Chapter 38 of Genesis. His name became associated with opprobrium and has given the word, onanism, the meaning of "self-pollution, masturbation" in most dictionaries, literary works, and in associations of patients suffering from masturbatory guilt feelings. To avoid this sin, the pious Jew will avoid touching his genital—the married man only in connection with urination, and the unmarried man, never.[1]

Genesis 38: 1–26

> And it came to pass at that time, that Judah went down from his brethren, and turned in to a certain Adullamite, whose name was Hirah.
>
> 2 And Judah saw there a daughter of a certain Canaanite, whose name was Shuah; and he took her, and went in unto her.
>
> 3 And she conceived, and bare a son; and he called his name Er.
>
> 4 And she conceived again, and bare a son; and she called his name Onan.
>
> 5 And she yet again conceived, and bare a son; and called his name Shelah: and he was at Chezib, when she bare him.
>
> 6 And Judah took a wife for Er his firstborn, whose name was Tamar.
>
> 7 And Er, Judah's firstborn, was wicked in the sight of the Lord; and the Lord slew him.
>
> 8 And Judah said unto Onan, Go in unto thy brother's wife, and marry her, and raise up seed to thy brother.
>
> 9 And Onan knew that the seed should not be his; and it came to pass, when he went in unto his brother's wife, that he spilled it on the ground, lest that he should give seed to his brother.

10 And the thing which he did displeased the Lord: wherefore he slew him also.

11 Then said Judah to Tamar his daughter-in-law, Remain a widow at thy father's house, till Shelah my son be grown: for he said, Lest peradventure he die also, as his brethren did. And Tamar went and dwelt in her father's house.

12 And in process of time the daughter of Shuah Judah's wife died; and Judah was comforted, and went up unto his sheepshearers to Timnath, he and his friend Hirah the Adullamite.

13 And it was told Tamar, saying, Behold, thy father-in-law goeth up to Timnath to shear his sheep.

14 And she put her widow's garments off from her, and covered her with a veil, and wrapped herself, and sat in an open place, which is by the way to Timnath; for she saw that Shelah was grown, and she was not given unto him to wife.

15 When Judah saw her, he thought her to be a *harlot** ("zonah"); because she had covered her face.

16 And he turned unto her by the way, and said, Go to, I pray thee, let me come in unto thee; (for he knew not that she was his daughter-in-law:) and she said, What wilt thou give me, that thou mayest come in unto me?

17 And he said, I will send thee a kid from the flock. And she said, Wilt thou give me a pledge, till thou send it?

18 And he said, What pledge shall I give thee? And she said, Thy signet, and thy bracelets, and thy staff that is in thine hand. And he gave it her, and came in unto her, and she conceived by him.

19 And she arose, and went away, and laid by her veil from her, and put on the garments of her widowhood.

20 And Judah sent the kid by the hand of his friend the Adullamite, to receive his pledge from the woman's hand: but he found her not.

21 Then he asked the men of that place, saying, Where is the **harlot** ("kedesha"), that was openly by the wayside? And they said, There was no **harlot** in this place.

22 And he returned to Judah, and said, I cannot find her; and also the men of the place said, that there was no **harlot** in this place.

23 And Judah said, Let her take it to her, lest we be shamed: behold, I sent this kid, and thou hast not found her.

24 And it came to pass about three months after, that it was told Judah, saying, Tamar thy daughter-in-law hath played the *harlot;* and also, behold, she is with child by *whoredom.* And Judah said, Bring her forth, and let her be burnt.

25 When she was brought forth she sent to her father-in-law, saying, By the man, whose these are, am I with child: and she said, Discern, I pray thee, whose are these, the signet, the bracelets, and staff.

26 And Judah acknowledged them and said, She hath been more righteous than I; because that I gave her not to Shelah my son. And he knew her again no more.

Heathen ritual in Hebrew practice

Perusal of the text, however, reveals that Onan's sin was not masturbation but coitus interruptus, euphemistically described by the rabbis as "threshing within and winnowing without" (Rashi) in his refusal to obey the levirate obligation to impregnate his dead brother's widow so as to perpetuate Er's name (Deuteronomy **25:** 5–8). However, this omission is not punishable by death. As a matter of fact, the Deuteronomic levirate command would seem to contradict the prohibition against incest (Leviticus **20:** 21). To confuse the matter further, the text relates that the Lord "slew him (Onan) also," implying, as Rashi suggests, that Er had been guilty of the same mortal offense. Rashi is hard put to explain why Er would not impregnate his wife.

Tamar is six times called a harlot. In the Masoretic text two nouns are used for "harlot" which offer no difficulty to one versed in the Hebrew language as they are synonomous, namely, kedesha and zonah. To one like the writer, whose study of the language stopped in adolescence, whose Hebrew vocabulary never included a word for "whore," and who never heard about Onan (passages such as that were skipped), the two words are startling. Kedesha, derived from "sacred" or "holy one," would seem a most peculiar appellation for a whore. In the text, when Judah mistakes Tamar for a harlot, he uses the word "zonah." Epstein[2] is mistaken when he states that Judah mistook his daughter-in-law for a kedesha, as this is not borne out in the Hebrew text. When referred to by his Adullamite friends, the term that they use for harlot is kedesha (mentioned three times in Genesis **38**). However, when Tamar is pregnant all say that she whored ("zunsah") and became pregnant by harlotry ("lznunim").

The rabbis were hard put to explain why Judah should have initially condemned Tamar to death. Whoring was not punishable by death unless it was by the daughter of a priest (Leviticus **21:** 9). The rabbis postulated that Tamar must have been the daughter of a priest, albeit not a Hebrew one, and therefore her "whoring" merited death. The logic is hard to follow.

---

* Bold faced and italicized words are the author's. **Harlot** (bold face) stems from the Hebrew "kedesha"; *Harlot* (italicized) stems from the Hebrew "zonah."

There is another peculiarity in the text. Tamar concealed herself as a whore by putting on a veil. However, among ancient people the veil was the symbol of purity. Under the Assyrian Code it is ruled that wives, daughters, and widows, when going out in public, must be veiled, but unmarried sacred prostitutes, harlots, and maidservants must not be veiled under threat of penalty.[3]

In his daily work the psychiatrist is used to contradictions, illogicalness, and non sequiturs, and his efforts are bent to undo them. Certain psychiatric technics are not available to us in the study of literature. The author of the biblical text is not around, and he cannot be asked to relate his associations or dreams. It is useful in this connection, perhaps, to try to use some of the skills learned in the treatment room.

The Onan text interrupts the saga of Joseph. Another interruption in the Joseph story is the rape of Dinah (Genesis **34**). The justification which Simeon and Levi give for their behavior is, "Should he deal with our sister as with a harlot (zonah)?" (Genesis **34:** 31). Since Shechem wanted to marry Dinah, this so-called justification is hard to follow; but again the problem of whoring seems to be of the essence.

In our search for more internal evidence, Rashi gives us a clue. He makes the seemingly irrelevant point, of which much will be made later, that if Judah went up to Timnah, and Samson descended to Timnah (Judges **14**) then Timnah was situated on the slope of a mountain.

Reading Samson to see if any clues can be found there, the manifest content of the story is confusing in that Samson, a Nazirite, violates all of the vows of the Nazirite in that he drank wine, whored, and touched carrion (the lion). He does not shave his hair; this is done for him by his enemies.

By this time we are left with a feeling that the redactors of the Masoretic text faithfully included some ancient traditions which, from the name given God and place names, originated in the Southern Kingdom and was from a "J" source, that these ancient tales were no longer consciously understood yet were preserved, and that with the passage of time these tales were insidiously changed by the same mental process involved in secondary elaboration by a patient who unconsciously alters the illogical contents of the dream before he relates them.

In a passage not referring either to Onan or Samson, Epstein offers us a plausible explanation for the seeming discrepancies mentioned. He points out that ritual defloration of virgins, halalah, was known among the ancient Jews. The term "halalah" has come to mean "desecrate" although it originally meant "to perforate." If we now reread the texts of Onan, Dinah, and Samson, bearing in mind the ancient heathen practice of halalah, an insight can be obtained into the meaning of the ancient tales told.

If we can presume that Tamar was betrothed to Judah's youngest son, Shelah, the original story must have been that Er and Onan were guilty of a heathen practice of deflorating Tamar by means of coitus interruptus. Their crime, then, was idolatry, a practice that included sacrifice of children and semen. We can elaborate now on the point Rashi makes that Judah went up to Timnah as implying that Judah and his family were valley dwellers, and that his sons observed the heathen rituals of their neighbors. Their mortal sin consisted of their being idolatrous quislings. It will be noted that the text makes a point of the fact that Judah did not withdraw.

From the Samson saga one can presume that the original function of the Nazirite was to bury the dead and deflorate the virgins by coitus interruptus under the influence of wine. The virgin then became a kedesha (sanctified), otherwise she was a zonah. I would also guess that the ritual was performed on the Sabbath, otherwise what is the meaning of the prohibition, "Thou shalt not (halel) desecrate ("perforate") the Sabbath?" Samson, then, set himself up as a Nazirite proposing to perform the heathen ritual for the heathens but scoffing at their idolatry by not withdrawing.

If this is difficult to follow, there is a local tradition that when Sir Francis Drake plundered a Spanish Caribbean town, it was his custom to fornicate and defecate in the sacristy of the cathedral. If true, one can understand the fury of the devout Spaniards and the glee of the English antipapists. So it could have been with Samson. It would explain why the Philistines attacked him only after he had been with a woman and not before. The heathen desecration occurred only if coitus was not interrupted. At that time the Philistines with their iron chariots had dominion over the valleys, and Samson was a non-Philistine-conforming hill dweller.

If we may summarize, it would seem that the idolatrous practice of ritual defloration of the bride was performed by the relatives of the groom, probably by the best men or by a special priest, a Nazirite, who would perform coitus interruptus under the influence of alcohol. If performed by the relatives, it was performed by two men. The strange sacrifices of the two sons of Eli and the two sons of Aaron may have been part of this practice. Under the heathen code, punishment for not withdrawing was blindness (symbolic castration) for the man and burning for the woman. At this point it might be mentioned that the place near Timnah where Tamar met Judah was the "Gates of the Eyes" which sounds like a heathen temple. The translation "sat in an open place" of the King James Bible is not literal and follows an interpretation of Rashi. Dinah's rape now can be understood as the reactions of brothers against the man and his people for failure to observe halalah.

Change in Hebrew practice

We can postulate that in a sort of reaction formation, the later Hebrew Nazirite foreswore wine, women, and corpses, and the heathen wedding ceremony was also reversed in many details. A great value was now placed on virginity. The priest could marry only a virgin. Instead of ritual defloration of the woman at the wedding, the boy was circumcized in infancy. In the ring ceremony the groom takes a female symbol, the ring, and places it on the male symbol, the finger of the bride, and in the Hebrew tradition, says "with this ring I **sanctify** you." In the Hebrew ritual the groom then breaks the glass. According to tradition this is to commemorate the destruction of the temple, but the affect displayed by the onlookers refutes this; there is happiness and glee. It would seem that with the breaking of the glass the groom symbolically asserts his right to the first night. The best man has a subsidiary role. He certainly should not plow with the groom's heifer (Judges **14:** 18).

We now have an explanation for the term "token intercourse," that puzzled Freud.[4] In this valuable article Freud points out how widespread the custom of ritual defloration of the woman was by persons other than the groom in primitive societies. His insight into the psychologic motivations for this practice is, like all of his findings, extremely illuminating.

I should like to point out the survival value that the taboo of virginity had on primitive tribes. It kept predatory males away from immature females and hence had a survival value for the species. What kept the males away was a paranoid-phobic conviction that defloration of the virgin would produce genital damage and/or death to the deflorator. This was indeed a reverse rape fantasy in that the imagined injury or death occurred to the male and not to the female. I believe that behind it was a primitive type of identification that was biologically oriented.

If one were to tape-record the cries of a captured starling and then broadcast it where other starlings are resting, the other starlings would flee as if they were in danger. It is obvious that the cries of the captured starling would have no survival value as far as that starling was concerned (a predator would not care less), but it would have a survival value as far as other members of the species were concerned.

In the evolution of man a special biologic problem had to be solved, and that had to do with the size of the newborn infant's head. Were human females to conceive at the same relative age as other mammals, they would become pregnant at age five or six. Such child pregnancies would have resulted in the eradication of the species because of the large size of the infant's head. Man was able to accomplish the hypertrophy of his forebrain by the concomitant deferment of adolescence. Thus biologic and psychosexual latency enabled homo sapiens to become sapient. The Cro-

Magnon man, according to some anthropologists, had a larger cranial vault than modern man. By a strange coincidence, the first Cro-Magnon species found was not a man but a young female, who died in childbirth with her unborn child within her.

Development of sexual morality

If we regard the Bible as a source book for the history of the development of the religion and mores of an ancient people, we can now postulate that originally sexual morality was based on a paranoid-phobic fear of defloration of the female, with a reverse rape fantasy, in which the primitive fear of injury in defloration was based in the male rather than in the female. Here we have a supposition that is better than nothing, but it had a survival value for the race. In such a situation, cloistering of the female was the duty of the master to protect the males, much as one would leash a ferocious dog. Man could deny his fear of women by reducing her to the status of chattel.

In the Mosaic reformation, religious and moral principles replaced primitive taboos. The female must not be violated because it is wrong; and not only were the females relatively emancipated, but the males also were freed of paranoid-phobic fears. Although the reformation was to take place over forty years, it actually took much longer because there is evidence that halalah was practiced in the first temple. With the continuation of moral reformation by the prophets, the sexes were separated in the second temple, and halalah was forgotten. The reformation was so effective that when Antiochus IV (Epiphanes) attempted to force Hellenism on Judea, all humiliations were accepted until circumcision was forbidden and lex prima noctis was imposed. These the Jews could not accept, and the successful Maccabean revolt began.

Primitive taboos are never really forgotten. We see their persistence in the symptoms of our patients and perhaps in the symptoms of disturbed societies. It is quite possible that fear of genital harm and fear of pregnancy are powerful factors still in maintaining morality. During recent years, the discovery of the pill and the premature concept that venereal disease is no longer a threat have resulted in a new turmoil in our adolescents and in our culture, the meaning and outcome of which are not altogether clear. At the same time the product of the human brain, the atom bomb with its potential for destruction of life on this planet, again has provoked the ancient threat that man has grown too big in his head to be able to survive.

I can testify that the promiscuous young girls and postpartum women, whom I see in my practice, teach me that beneath their manifest need to please the male they have a poorly repressed hostility toward all men whom they envy and wish to castrate.

We are now in a period in which history is repeating itself in that new discoveries arising out of the hypertrophy of man's forebrain, the bomb, the pill, and antibiotics, are producing situations that we are not equipped to handle. What we need is a new philosophy, a new set of mores; perhaps what we need most is a new Moses to lead us through the wilderness.

Summary

My point is that a psychiatric exegesis of the Bible suggests that there were rites among pre-Mosaic Hebrews connected with ritual defloration of virgins that were common to primitive rites all over the world. An examination of these rites suggests that they had a survival value for the species, and that morality stems in part from instincts. The Mosaic and later Prophetic reformations substituted a moral code for a paranoid-phobic basis for behavior which freed these people of the primitive rites and substituted object-relationship for identification.

The crisis is coming again in our midst in the loss of fear of venereal disease and the fear of premature conception. The loss of these two fears, because of the pill and antibiotics, has resulted in a generation and time that needs new values, new moralities, perhaps a new Moses to cope with these problems.

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Legal Aspects

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THERE ARE VERY FEW SETTINGS in which the forces that affect families are more dramatically demonstrated than in the Family Court of New York City. This court sees as one of its major responsibilities the task of strengthening the family life in the community. As described by Makeover[1]:

> A study of the Family Court of New York City can provide only a glimpse into an institution which deals with so many of the frustrations, sorrows, acts of violence, and tragedies of a large city's life. The court is viewed by those who come before it in many different ways—some with fear, others with contempt, hostility and defiance, many with hopelessness, and others with hope. Disturbed families, often unable to control their own destinies, stand on the other side of the bench from judges who are literally swamped by the sea of almost infinite troubles that washes into the court.

This is a commentary on the historical development of a specialized term of this court, its Mental Health Services, and the families it serves.

The term referred to is the City-Wide Family Offenses Term, Family Court, State of New York, City of New York.

History of family cases in the magistrate's courts

When the New York City's Magistrate's court system was established in 1895, all family disputes, including those involving support, were heard in the surroundings and atmosphere of the district or police courts then in existence. It was not until 1910 that the first Family Court was established by statute. Physically separate and apart from the other courts but set up as a part of the Magistrate's court system, its basis of jurisdiction remained criminal, and its main purpose was to protect the public purse in support cases in which the individual might otherwise become a public charge. It was a crime to be found guilty of nonsupport.

The Family Court remained as a special court of the New York City Magistrate's court system until 1933 when a major and significant change occurred. At that time the Family Court was combined with the already existing Children's Court. Its jurisdiction was changed from criminal to noncriminal, and the Domestic Relations Court was established.

As it was constituted, this court had jurisdiction in the City of New York to hear and determine all proceedings to compel the support of a wife, children, and other poor relatives to whom there was legal responsibility. With the establishment of Domestic Relations Court, the Magistrate's court system lost all jurisdiction over support cases but still retained jurisdiction over the numerous cases involving disputes between husbands and wives and other relatives in controversies other than support. Such problems as the abusive alcoholic husband, the sober but abusive spouse, the disorderly brother or sister, the mentally disturbed relative showing symptoms of antisocial behavior, the relative who is a sex deviant, the wayward minor boy, and other behavior involving acts of delinquency remained the responsibility of the Magistrate's court. These cases constituted a sizeable proportion of the daily workload of the district courts which treated the family cases in the same fashion as offenders accused of gambling, pickpocketing, stealing, robbery, peddling, homosexuality, and the usual miscellaneous run of problems that flowed through the Magistrate's courts.

The inadequacy of processing all cases in the same formalized and legal manner without any true effort at social diagnosis and treatment, except in the isolated instances in which probation investigations and supervision were extended, later resulted in the development of an adjustment service for family disputes in the district courts. In general, adjustment work performed by probation officers assigned to district courts consisted of brief interviews with both disputing parties, when an attempt at conciliation seemed feasible, without an official hearing before the judge. The cases were chosen by the judge or probation officer, or both, on a review of the court's daily calendar and usually involved marital or family situations or neighborhood quarrels.

On the whole, the quality of the adjustment service was uneven and inadequate. Each probation officer developed his own technics and procedures, and the standard of performance varied greatly. Interviews were conducted in an atmosphere and setting which provided little privacy, were superficial, and of doubtful content and quality. Furthermore, no written records were kept of any of the work. Despite its inadequacies this adjustment activity was of some assistance, but it failed to meet the full need. After a long period of trial the adjustment service was suspended until a proper study of the problem could be made for re-establishing service on a more adequate and efficient level.

In the latter part of 1945, as a result of a careful survey, it was found that the district courts issued more than 10,000 summonses each year in cases involving family disputes, of which less than 300 families were serviced by the probation bureau. It was apparent that far more could be and should be attempted in such cases if courts were to be of any real value to individuals, their famlies, and the community. It was equally obvious that an understanding of the real nature of diverse and complicated family problems, enlisting the cooperation of appropriate public and private agencies on an effective scale, and rendering more meaningful service could not be accomplished separately in each of the district courts, even if the probation staff were greatly augmented. Furthermore, it was to be doubted that routine court processing could be sufficiently basic in approach or that services could be made available to those in need of them unless the area of family problems became the province of a special court geared solely to this type of work. To accomplish this goal Home Term was established in Manhattan in 1946 as an experimental project, preparatory to developing a similar service for other boroughs.[2]

Home term court

Home Term provided a centralized sociolegal facility for the study and treatment of family cases with emphasis on the offender and his family rather than on the specific offense which brought him before the court. Although as a court it necessarily had to concern itself with delinquent behavior, Home Term recognized that the individual rather than the delinquency required and merited the greater study. Its main objective was to effect lasting adjustments of family difficulties by applying the technics and principles of the social sciences in an authoritative setting. With or without the aid of a formal court hearing, it aimed essentially toward keeping families united and reaching a practical and realistic solution of their problems. Unlike the district courts which tended toward a narrower, legalistic ajudication of specific acts, Home Term considered the offense in relation to the total personality and life situation of individuals, as well as the physical, medical, and social needs of their families. It attempted to apply this knowledge toward developing a treatment program designed to promote healthier personalities and more satisfactory family relationships.

The philosophy of Home Term was based on a presumption in favor of keeping the family united and intact; but when study showed this was not in the best interests of the family group, other steps were taken. Imprisonment was resorted to when the family required immediate protection from continued violent and intolerable abuse although it was realized that commitment offered no solution to any of the family's underlying difficulties. Situations also arose infrequently, however, when it was advisable to discourage family separation, but this was done only after comprehensive case study and evaluation of the whole family unit in relation to the physical, mental, emotional assets and handicaps of its members, as well their social and economic independence.

As a court, Home Term constituted a marked departure from legal formalism, although when a case warranted it, there was the formal adherence to the practices and rules of procedure that characterized a criminal court. For the majority of cases, however, it offered a flexible, informal, and socialized procedure with emphasis on the family's general welfare rather than rigid interpretation of the law. Its informal, private hearings in a court conference chamber, protected from the curious public and free of the austerity and ceremony of the Criminal Court, were designed to gain confidence and establish a friendly atmosphere of concern and interest.

However, in most cases Home Term attempted to render service on a precourt level. Court appearances, at which persons were encouraged to voice their personal grievances in each other's presence, frequently tended only to aggravate an already tense situation. Helping people to resolve the immediate issue which brought them into court, thereby making court hearings unnecessary, was the initial aim of the intake activity. This was only the first step which was followed by continued efforts to help the individual and family with their personal and environmental needs. The support and assistance of all available community facilities were enlisted to achieve this goal.

Many of the clients appearing at Home Term were maladjusted and emotionally disturbed persons, visibly in need of psychiatric study before there could be a satisfactory understanding of their problems. In such cases, with the consent of the clients, the intake interviewer referred the family to the court psychiatrist whose office was in the court building. All of the intake information was available to the psychiatrist who subsequently presented his findings on both parties to the judge in conference with the intake interviewer. Bellevue commitment was resorted to when a preliminary observation by the court psychiatrist revealed the desirability of such action and if there was a sufficient basis for a legal complaint so that the court could accept jurisdiction. At times a complainant rather than the defendant was found sufficiently disturbed to warrant Bellevue study. In such instances in which the facts warranted reversal of position between complainant and defendant, a complaint was drawn against the person who initiated the original court action.

The need for increased psychiatric facilities grew very quickly, and the original court psychiatrist served as the nucleus for development of a formal psychiatric clinic that was interdisciplinary in nature. This clinic was actively functioning by 1954. Initially, the court's psychiatric service was limited in the main to diagnostic studies of visibly disturbed clients and those who presented histories of emotional and mental disturbances. The psychiatric unit also served as a consultant to the judges and probation officers in any situation in which the opinion of clinic personnel might have proved helpful. Any treatment other than Bellevue commitment, which constituted an extension of the diagnostic study already initiated, was not obtainable at the beginning at Home Term but had to be sought outside of the court. It became apparent during the latter period of Home Term's existence that to be truly effective the court clinic would also have to render treatment services. This was attempted on an extremely limited basis because of the small size of the staff.

At its inception Home Term was an experimental project, no similar court being in existence as far as was known. The experimental phase was passed through in the first two years of the court's existence. In 1951, Home Term became a city-wide court. With procedures that remained flexible and subject to modification, the court continued to grow and refine its technics.

However, Home Term's power and jurisdiction were limited. Families were still confronted with a bewildering assortment of courts, each of which had jurisdiction over one manifestation of the family's problems. Clearly there was a pressing need for the relocation of those problems into a single court.

A major step in this direction was taken at a general election held November 7, 1961. The people of the State of New York approved the bill for the reorganization of the court system in the State of New York. One of the most important changes effected by the court reorganization was the creation of the Family Court of the State of New York. For the first time New York had a court which could deal with nearly all legal manifestations of problems arising from family or domestic relationships.

With the exceptions of habeas corpus proceedings for the custody of minors and actions affecting marital status, both of which remained in the Supreme Court, and the cases involving minors sixteen years of age and over which remain in the Criminal Court, all family and children's cases were now heard in the Family Court. The new Family Court, as we know it in New York, is the result of a combination of three areas of the law which had separated Juvenile courts, Domestic Relations courts, and Home Term court.

Home Term, with its psychiatric clinic, probation department, and its focus on helping families to create or maintain a stable family relationship became the core for the city-wide Family Offenses Term, a specialized court in the new Family Court system in New York City. With more formal power and a wider area of jurisdiction* than the old Home Term Court, Family Offenses Term started functioning in September of 1962.[3]

Family offenses term

Using the concept of "intake" developed in Home Term, an intake unit was established in Family Offenses Term. Staffed by the Probation Department, this unit's task is to sort out cases that are outside the court's jurisdiction or are amenable to some other solution short of intervention by the court. This helps to assure that only those cases which must go to court do go, thereby giving the judge as much time as possible to deal with cases before him. Furthermore, by seeing the parties before formal charges are made, intake has an opportunity to help on an informal basis before positions become hardened.

If a case does go to court, the range of dispositions in Family Offenses Term are as follows:[3,4]

Dispositions. If the allegations of the petition are not established, or if the court concludes that its aid is not required, the court will enter an order dismissing the petition. If both such conditions are met, the court may enter an order (1) suspending judgment, (2) placing the respondent on probation, or (3) making an order of protection.

Suspended judgment. Rules of court define the permissible terms and conditions of a suspended judgment. The maximum duration of any term or condition of a suspended judgment is six months.

The petitioner and/or the respondent may be required to (1) stay away from the home, the other spouse, or the child; (2) permit a parent to visit the child at stated periods; (3) abstain from offensive conduct against the child, against the other parent or other members of the same family or household, or against any person to whom custody of the child is awarded; (4) give proper attention to the care of the home; (5) refrain from acts of commission or omission that tend to make the home not a proper place for the child; (6) notify the court or probation service immediately of any change of residence or employment; or (7) cooperate in seeking and accepting medical and/or psychiatric diagnosis and treatment, including family casework or child guidance for himself, his family, or child.

The court may set a time or times at which the petitioner, respondent, probation service, and any agency providing service to the family shall report to the court as to whether the terms and conditions of the suspended judgment are being complied with. The court may at any time revise, modify, or enlarge the terms and conditions of the suspended judgment previously imposed.

Probation. Rules of court define the permissible terms and conditions of probation. The maximum duration of any term or condition of probation is one year.

In addition to complying with any of the terms or conditions of a suspended judgment, the respondent-probationer may be required to (1) report to the probation office regularly at intervals specified by the probation officer; (2) permit the probation officer to visit the home or elsewhere; (3) permit the probation officer to make inquiry concerning any member of the immediate family, of an official agency, or other community resource having contact with members of the family; or (4) submit financial records as may be required concerning income and indebtedness.

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* Family Offenses Term, of the Family Court of the State of New York, in the City of New York, has exclusive original jurisdiction over any proceedings concerning acts which constitute disorderly conduct or an assault between spouses or between parent and child or between members of the same family or household.[3]

The court may set a time or times at which the petitioner, respondent, probation service, and any agency providing service to the family shall report to the court as to whether the terms and conditions of the order of probation are being complied with. The court may at any time revise, modify, or enlarge the terms and conditions of the order of probation previously imposed.

Order of protection. An order of protection may set forth reasonable conditions of behavior to be observed for a period not in excess of one year by the petitioner or respondent or both, or, if before the court, any other member of the family or household. Such an order may require such person to (1) stay away from the home, the other spouse, or the child; (2) permit a parent to visit the child at stated periods; (3) abstain from offensive conduct against the child or against the other parent or against any person to whom custody of the child is awarded; (4) give proper attention to the care of the home; or (5) refrain from acts of commission or omission that tend to make the home not a proper place for the child.

If a respondent is brought before the court for failure to obey any lawful order issued in a family offense proceeding and if, after hearing, the court is satisfied by competent proof that the respondent has willfully failed to obey such an order, the court may commit the respondent to jail for a term not to exceed six months.

MENTAL HEALTH SERVICES. The Psychiatric Clinic of Home Term Court, now part of a new court system, is called Mental Health Services, Family Offenses Term. It is the major adult and family psychiatric service of the Family Courts in New York City. With the support of the administrative judge of the Family Courts in New York City, the Hon. Florence M. Kelley, the clinic began to integrate itself into the new court.

Staffed by a dedicated interdisciplinary group of 18 professional people, this clinic, consisting of two units, the Adult Unit and the Alcoholism Unit, functions Monday through Friday from 9 A.M. to 9 P.M.

Housed in the same building as the court, it was not long before we became aware of the fact that an "orthodox psychiatric clinic" would be little more than a diagnostic grist mill and would not help the judges, probation officers, or the families. Psychiatric diagnoses which had little real meaning to the court and recommendations which could not be acted on because resources were not available or, when they were, they would not accept referrals from the court, had created a very negative attitude toward psychiatric services on the part of the judges and probation officers.

It became apparent that a much more holistic approach to the multiproblem family appearing in Family Court was necessary. It had to be an approach that would focus both on the psychologic disorder and the social disturbance in this group, one that involved a full understanding of the court and probation department, its problems, and its powers, and an attempt to render some meaningful service to disturbed families. To accomplish this the clinic's functions were broken down into three areas: (1) consultation (usually person to person) with the judge, probation officers, court officers, and outside agencies; (2) diagnosis; and (3) treatment.

Every member of our staff, regardless of discipline, became a consultant to the court, prepared to act in this capacity at any time. Because of the vital nature of the problems that face us, every member of the staff must have professional competence and the capacity and freedom to make independent decisions.

It was necessary to develop a treatment program because outside facilities for these families were lacking, and in many cases it is necessary to involve a family in a therapy program while the case is still active in court. Treatment technics are in a constant state of development, geared always to the needs of our particular patient population and the court. All forms of brief and long-term psychotherapy are utilized including conjoint and group therapy. Our alcoholism unit uses chemotherapy as an adjunct to its treatment program.

To carry out a successful treatment program in a court clinic, we demand therapists who are clinically experienced, task-oriented, and aware of the patient's needs. They must make use of the broad spectrum of psychotherapy in a flexible way to have success with these families.

A short evaluation (or emergency screening) procedure was established which helps the court to make determinations about psychiatric hospitalization, temporary separation, visitation, and custody on the same day as the family is before it. This procedure alone has reduced the number of people previously admitted to the hospital by the court by 80 per cent, avoiding much of the disruption and trauma connected with hospitalization. Conferences are held frequently in which the various professionals, who make individual decisions concerning patients and who share a common purpose, meet together to communicate and share knowledge from which plans are made and by which future decisions are influenced. These conferences often include judges and probation officers.

Our primary theme is that the course and outcome of a marriage are determined not merely by the personality difficulties of each partner but also by the way the two personalities interact.[5] This interaction is the court's primary concern and becomes ours.

THE FAMILIES. In 1966 approximately 15,000 families were seen in Family Offenses Term. About 25 per cent of these were referred to the clinic by the judges or probation officers.

Who are these families? What brings them to court? What service are they given?

The majority of the families are from the lower middle class socioeconomic level. However, with an increasing involvement of lawyers in the court, we are seeing a significant number of families from other strata of society.

The forces that bring these families to court may be legal, cultural, social, economic, medical, interpersonal, or emotional; specific forces involved may be technologic progress and woman's competitive role in the labor market, changing attitudes toward sex, increasing responsibility for rearing and educating children, the population explosion, and advances in birth control. Any one or all of these forces may have served to disrupt the family equilibrium and promote the acting out which brings these families to the attention of the court.

Although the charge brought before the court, usually by a wife, constitutes an assault or some form of disorderly conduct, this type of behavior frequently has been going on for some time. Suddenly there is the decision to bring the matter to court. Each wife's decision to bring her husband to court constitutes, in a sense, the definition of his offense. How and when she makes this decision is a focus for study. We have found that some force has disturbed the equilibrium in the relationship and precipitated the court action.

Some of the patterns of interaction that we have observed are as follows:[5,6] (1) The husband's passivity, indecisiveness, and sexual inadequacy interacts with the wife's aggressiveness, masculinity, frigidity, and masochism in such a way that there is an alternation of passive and aggressive roles to achieve a working equilibrium. A disruption in the alternation of roles destroys the equilibrium. (2) The wife, who has an emotional need to keep her husband drinking, protests the need for a sober husband. If something happens to promote sobriety in the husband, it interferes with the established pattern of interaction. (3) For years there has been a pattern of recurring assaults by the husband, which seemed to satisfy the masochistic needs of the wife, but never before has it come to the attention of the court. (4) There are times when the intervention of an adolescent child threatens to destroy the balance of a relationship. Periods of violent behavior by the husband serve to release him momentarily from his anxiety about his ineffectiveness as a man and at the same time satisfy his wife's masochistic needs and help her to deal with the guilt arising from her intense hostility toward her husband.

The following case presentations will demonstrate much of what has been referred to:

Case reports

CASE 1.* A white Protestant couple married for fourteen years with four children ranging in age from thirteen through one year, came to the attention of the Family Offenses Term Court. This was the first court involvement for this couple, and it occurred after a period of six months of separation.

The wife brought her husband to court charging him with (1) threatening her with a knife, (2) inadequate support, (3) practicing hypnotism on the family, (4) using narcotics, (5) being cold and unsympathetic, and (6) being more interested in his work than his children.

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* Family treated by Joseph Herson, M.D.

After a hearing the judge ordered a full probation investigation and referred the case to the clinic with the following questions: (1) Is this couple reconcilable? (2) Is psychiatric intervention indicated? (3) Should visitation with the children be limited for the husband?

On examination it was determined that both husband and wife came from middle class backgrounds and each had multiple siblings. Each stated that their parents got along well but, perhaps significantly, the husband always made a point of stating that his father ran things in his home, and he resented his wife being domineering and trying to take over in their house. The wife, thirty-seven years of age, was some ten years younger than her husband. She, too, looked anxious but appeared more eager to please and tried to make small talk during her psychologic evaluation. Her frequent tendency to laugh appeared forced. She spoke in a rather exacting way, pursing her lips to enunciate her words carefully. She reiterated the accusations mentioned earlier and added more details. She accused him of being argumentative, somewhat abusive with the children without good reason, and on one occasion accused him of trying to choke her. She admitted openly that the children were apparently having emotional problems and stated that one child, her nine-year-old daughter, frequently raked her face with her fingers until blood appeared. The oldest child was failing at school; the next to the youngest wet his bed. They were all described by her as being "high-strung." She believed that her hands were full in caring for the children.

As the interview went on, she began expressing a number of odd ideas, such as (1) the belief that her husband was laying out various pathways with bits of matches and broken pieces of glass, pointing in the direction of hidden things like toys, and so on; (2) the belief that the children were talking to each other in their sleep, this despite the fact that the children's rooms were separated by a floor; and (3) the belief that one of the children sleeping downstairs was communicating in his sleep with one of the other children sleeping upstairs.

The husband was a professor of English at a community college, supplementing his income by working as a night orderly at a nearby hospital. He stated that he chose that particular job because it provided him with free time to go over his school work. At the clinic it was evident that he contributed, too, to the marital difficulty. Although he assumed a façade of compliance, he was obviously indignant, with underlying anger over the implication that he might have contributed to the present family difficulties. He appeared sober and humorless, with little real appreciation of the seriousness of his wife's emotional disabilities. He appeared more intent on countering any contention the court might have that he was at fault in the present family situation. Although he verbalized a good deal of concern about the state of his children, little warmth was evident. He had to be helped to overcome the belief that the court was merely interested in establishing his guilt or innocence.

The wife was referred for psychologic testing to ascertain the depth of an apparent depression as well as the magnitude of her thinking disorder.

Numerous meetings were held with the following results although the case is by no means closed. The wife was referred for a period of hospitalization after which she reassumed care of the children in a much more satisfactory manner. The children have all been referred for therapy, and reports are that they are doing considerably better. The oldest boy, for example, has passed competitive examinations to get into a special science high school. Bedwetting has stopped with the other child, and the third no longer rakes her face. The father is seeing all the children and, although not accepting the continued separation, is working with the clinic and probation department recognizing that positive things are happening to his family nevertheless. Welfare is providing supplementary assistance to relieve the financial burden of the husband who has to maintain two households, one for his family and one for himself.

This case is an example of one type of home situation which has come to the attention of the Family Court. As can be seen, it illustrates complex factors influencing the family structure, the most important being the intrapsychic tensions of the parents, affecting their offspring in a decidedly negative way. Although physical violence was not a feature in this home situation, other factors were operative and had a profound effect on the children. Although the wife is the more disturbed member, the husband contributed his own negative influences. He needed an arena where he could not only verbalize his grievances but one in which help would be forthcoming. She needed help in a desperate way, and the court gave sanction to her unreasonable focus in wanting to live apart from her husband but, more importantly, diagnosed the condition and sent a rather profoundly emotionally disturbed woman for treatment.

CASE 2.* A mother brought her seventeen-year-old son to court after he threatened her with a golf club. During the initial court hearing the judge requested a short evaluation (emergency evaluation) of the boy and both parents. During this evaluation the mother described her son as shy, insecure, frustrated, violent, a "good boy," who hated his father but got along with her. The father called himself too strict and his wife too lenient. The boy was evaluated as a possible early paranoic-schizophrenic subject. The clinic recommended a full evaluation for the family.

The full evaluation revealed that the problems transcended the son and extended to the daughter, in-laws, and others. The parents both saw the shortcomings of the son in an exaggerated way and had ambivalent feelings toward him. The mother was diagnosed as a borderline undifferentiated schizophrenic subject, her son as schizoid with dependent and paranoid trends. Our evaluation of the family interaction led us to recommend a period of conjoint therapy for the parents. Individual therapy for the son was indicated, but he was not motivated, and no action was taken. We informed the court that hospitalization for the son was not indicated at this time but was a possibility in the future along with possible removal from the home.

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* Family treated by Paul W. Holtz, M.D., PH.D.

After four conjoint sessions, the husband and wife were placed in group therapy. The case remained active in court and has been adjourned several times until a court date is set at the request of the couple. Concerned about the boy's reaction to a court appearance and fearing that he might act out and quit school before the term is over, the parents read the boy's mail from court and attempt to change the court date. The clinic and court remain firm regarding the court date, and the husband and wife panic. The court orders continued treatment for the parents and treatment and probation services for the boy.

Frustrated and angry, the son has become more aggressive and was finally arrested. The clinic handles the situation by arranging a meeting between the son, the parents, the daughter and son-in-law, and the therapists. The unique aspect of this meeting is the openness of the parties with no paranoid manipulations. There is a defining of clear goals with a plan for the son to leave the home and to go to work along with school. All parties continue treatment.

The boy's treatment is largely supportive and coordinated with probation supervision. He becomes more active in school and socially, finds a job, and seeks career goals. Dramatic schizophrenic-like behavioral symptoms disappear without parental pressure, suggesting that they are interactive in origin. After eight months, school and work pressure lead to formal termination of his treatment, but he continues voluntary phone and in-person contacts.

Group involvement of parents is as follows. Initially they present a united front of "we have no problems, except for a son who . . . " Gradually a style of telling the other to keep his mouth shut emerges. An interest in the other couples leads to admitting shared common problems. Details of attitudes toward the son emerge. They are in terror of the spoiled tyrant they have created, yet they need to keep him in a dependent relationship and do not want to be free of him. They placate him for fear that upsetting him will lead to either violence or school failures and subsequent exaggerated shame. Meanwhile the father's blood pressure zooms, and he fears his son will kill him or vice versa. The father in particular is acting out entanglement with his own parents. On one level the son should be the ideal boy they demanded of him; on another he wants his son to act out the aggression, resentment, and negativism he felt in response to his own parents' stringent demands.

The son's behavior is his angry protest at the dependent restraints, the way his parents' grossly distorted perceptions do not allow him to emerge as an individual, and the way his mother subtly undermines any attempt at father-son closeness.

By the second year of group treatment this couple are challenging each other more frequently, and the husband is nipping his wife's interventions in the bud. His anger is now directed at her instead of the boy when her intercessions not only undercut the husband but are used by her to avoid too much intimacy with him and to punish him for demands. The wife painfully admits that she needs to suppress both her feelings and those of others and to keep things "nice" and not "raise a fuss." Now she is threatened and almost leaves.

What is most compelling is that after the son returns home—the product of another group decision and group airing of feeling—his symptoms do not reappear. Moreover, the parents elect to stay in group treatment for their own concerns.

When taken alone, the son looked like an incipient paranoic-schizophrenic subject who possibly should be hospitalized. A classic psychiatric approach attempted when he was thirteen failed. In this court he was the respondent, his mother the petitioner. However, the father was also evaluated.

An evaluation of the family interaction led to conjoint counseling of the parents and then referral to the couples group. Thus, they were induced to enter treatment although the son would not get involved at that time. Eight months later the son entered treatment which was carried on for about eight months. Validity of this approach was indicated by the parents staying in treatment even after the son discontinued his.

The consistency of the interaction approach was maintained in bringing the entire family for group discussions both when the son left home and when he returned.

Summary

In dealing with the forces that affect families today in a legal setting, I have attempted to show how, in an interactive manner, these forces have led to the development of a special court and clinic.

It is no easy task to develop the necessary bridge between a rapidly growing body of law and its administrative arms and the growing knowledge about human behavior. We tend to see the law as an instrument of social control that is remote from the changes taking place in the fabric of society and removed from our sphere of social interaction. Yet change is taking place. Some gains have been made, more are possible.

This report represents a commentary on a foundation on which further building is possible.

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Religious Aspects

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There is little question that the family today is in need of every assistance society can give it. The family as we have known it in the Judeo-Christian tradition of the West, characterized by a monogamous union to which children may be born, in which they may be nurtured, loved, socialized, given the essential operating base for a secure identity, and launched into the main stream with the necessary equipment for adult independence—the family which we once hopefully supposed performed these functions—is beset on every side by forces which weaken it and at times even threaten it with actual destruction.

This is not altogether new. Dr. Harry Emerson Fosdick's father, a high school principal in Buffalo, a good many years ago said to Dr. George Buttrick that "seventy-five per cent of parents today are liabilities." "Oh, that must be wrong," Dr. Buttrick protested. "It is," he answered, "I should have said eighty-five per cent." I suspect there has been no time in history when the family situation in general could be characterized as "successful" or even moderately so.

Religion in the family

I am grateful that it is not my assignment in this series to point to all the constructive and destructive factors tending to stabilize or destabilize the family but rather to treat of one element that historically has been assumed to be positive in its effects—the religious element. I should at once like to enter a disclaimer. I do not propose to contend for the position that religion is invariably helpful, and that it can be looked to as a general remedy for the ills which the family as an institution is presently suffering. It is all too obvious that religion can very well qualify under both of the opposing terms of our subject, "constructive" and "destructive." It must even be admitted that the same corpus of belief, the same set of religious constructs, and the same ecclesiastical forms in one family may be a stabilizing influence and in another a focus of conflict and irritation, even a stimulus to rebellion. There is, in other words, no such thing as a religion which in mustard plaster fashion may be applied from the outside to an unhappy person or unfortunate family situation with hope of help. Neither can anything called "religion" be injected as a specific into the life of a disoriented person or family with much expectation of relief even of symptoms, to say nothing of the pathologic condition. Families, even as persons, have varying needs and must be approached and dealt with from the point of view of their specific problems. A cartoon in the *Saturday Review* of July 22, 1967, perhaps is pertinent. The father, obviously some type of tycoon, is carving the roast as his aristocratic wife and their bespectacled, unshaven, and long-haired son look on. The caption reads, "If yours is such a free-soaring, untrammeled, irrepressible spirit, why do you still want to live here at home with me and Mumsey?" One cannot immediately assume that the reasons are exclusively economic. The forces that hold us together in families are many, various, and not susceptible of translation into shorthand formulas.

Having entered that caveat, let me hasten to say that in general I think it is true that the more clearly a person or family can see religion in terms of a process—hope, trust, love, and faith—rather than in terms of a proposition—dogma or rigid creedal statement—the more constructive and helpful its influence in the family. I am convinced of this although with some qualifications. Exceptions to this principle, for instance, would include persons whose psychologic needs require structure of a more or less rigid type. Here the fundamentalist, propositional kind of theology and religious moralism may well be more helpful in maintaining balance than can the less rigid forms of religious expression. To such persons religion as process may seem too threatening and frightening to be borne. All of us know persons whose meager ability to function in society is supported by the rigidities of conviction fostered in them by their adherence to some fundamentalist, sect-type church or religious group. Without such support, some of them might well become charges of the state, their families disrupted, and their productive lives interrupted if not terminated.

But to repeat, there is no way by which religion of any kind or form may be dispensed by prescription. It has never been susceptible of that kind of use and certainly is not so now, for the ferments of modernity have acted on religion as on every other element in our life and culture. The enormous potential, constructive and destructive, that has become available by way of nuclear fission and fusion, the extraordinary, if still unclear, implications of the biochemists' investigation of nucleic acids and their genetic keys, the race to the once mysterious moon, the amazing proliferation of the computer and the ambivalence of promise and threat it poses for people, to say nothing of the "magical" quality with which its operations are invested in the thought of many, such developments along with the marked trend toward a purely secular faith, if that is not a contradiction in terms, and a philosophy of materialism have had profound effects not clearly seen as yet. It is safe to say, however, that the religious character of the nation and its families is no longer the stable and predictable thing we once assumed it to be. It probably never was, but that is another matter.

The alterations that have taken place in prevailing family patterns in relation to religious orientation and practice are at this writing less clear than they may become. It is safe to say, however, that some of them must be listed on the negative or destructive side of the balance sheet. Every pastor, I am confident, has known of persons and families whose health and welfare have been adversely affected by the experience of disorientation or disillusion in religious matters. To be sure, it is sometimes difficult to discern with clarity where the disillusion is effect or cause; it may be both. The progression of events, however, is often suspicious. When persons who have held to a religious faith, which has given stability to their personal lives and provided a structure of belief within which they have organized a pattern of familial relations, confront a threat to faith and belief which they are not able or willing to withstand, an important support of the family evaporates. In at least a few instances in my experience, the sequence has moved on to the destruction of the family itself. I would not contend that the collapse of the religious supports was the only significant element in the picture, only that it had to be seen as an important aspect of a complex situation in which many countervailing factors and forces, bearing on each other, contributed to the total process of decline.

Essential religious elements

Having taken note of such ambiguities and seeming contradictions—the less intelligent expression of religious faith being in some cases the more "helpful," and the more enlightened the more threatening and unsettling—let me go on to say that I am firmly convinced that "high religion" of whatever particular tradition, Protestant, Catholic, or Hebrew, has important contributions to make to the stability of family life today quite as much as in the past. Let me list some of the elements in it which seem to me essential to the maintenance of a vital family life and structure.

GOD AS SOURCE AND CENTER. It has been my experience as a pastor, and most of my working years have been spent in the pastorate, whose responsibilities inevitably involved a counseling relationship with many families, that those couples who saw themselves as having an essential reference point outside themselves and who functioned, in other words, on the basis of a belief that whatever happened to their union was important in the total scheme of things and made a difference to the loving Father whose purposes they sought to serve worked harder than others to make their marriages last. They were better able to get beyond the narrow interests of self and more often succeeded in surmounting difficulties and misunderstandings than those whose outlook provided no such reference point. It would be absurd to contend that religious persons meet with no difficulties and find no obstacles on the road to a good adjustment, but I strenuously support the contention that on balance they make a better go of it and that a marriage and family based on the conviction that the Creator God is central to man's life and striving has a better chance of fulfillment than one which leaves the religious dimension entirely aside. A recognition of the creaturehood, the dependence, and fallibility of all men is a condition of maturity; and maturity, or a measure of it, is a condition of a constructive marriage. High religion, with its insistence on the centrality and sovereignty of a loving God, promotes and fosters this essential ingredient in marriage and family life. There are undoubtedly other elements that do it, too. I know of none more effective or more potent.

VALUE OF PERSON IN SIGHT OF GOD. The second element which the religious tradition contributes to the life of the family is a profound sense of the worth and value of the individual person in the sight of God. In so saying, I am not implying that religion abstracts the individual from his surroundings and in that state, stripped naked of his relationships, holds him up as an object to be esteemed and valued, or that a man can ever stand entirely alone before his Creator. The Christian and, I am convinced, the Jewish faith knows nothing of the individual who is not "person-in-society." The individual as solely responsible, as completely independent of his surroundings, and as an entity without ties is a concept unrelated to high religion. To be sure, every man must play a role as individual, and in his priority-rating scale that role inevitably stands high. Unless it does, and unless he learns to value and respect himself, he is not likely to achieve much in his other roles, specifically those of husband and father, or in that of a man of business, profession, practitioner in the art of politics, and the like. Just at this crucial point the religious man insists that God places high value on the uniqueness of the individual person, that each person has not only the right but also the obligation to respect himself and to develop himself to his full potential, and that the same kind and measure of respect is due his fellows both in the close circle of the family and in the wider circle of the world around. Jesus' injunction is of profound significance: a man is to love his neighbor as he loves himself! For until he has learned to respect and value himself, it will be impossible for him truly to respect another. Without such respect any family life worthy of the name is inconceivable.

This may be the most desperate need of our particular time in history. It has become commonplace to say that we live in a world increasingly and frighteningly depersonalized. The award-winning motion picture, "Blow Up," provides a remarkable symbol of this fact. In it life seems reduced to a lonely search for satisfactions in which persons have obviously become tools, and even a meaningless murder proves no more than an anxiety-producing subtheme. Most of the characters have no names; and at the last, if one is concerned about discovering meanings, he finds himself wrestling with the absurdity of a game of tennis without balls, the Freudian implications of which I leave to your own deduction. In such a world and with such concepts in forming the life of society, what sort of family life can we imagine to be possible?

FREEDOM AND CREATIVITY. The convictions that man is a child of God and consequently a partner in the continuing process of creation are common to the great religious traditions, and seem to me basic to the maintenance of the family as a viable institution. When the child is seen in this light, when the marriage partners are viewed as not only entitled but obligated to freedom and creativity in their relationships, and when the patterns of interaction are woven out of these assumptions, the atmosphere for constructive development of personality is present. Acceptance of one another, the encouragement of constructive differences, and the expression of individual tastes, preferences, concerns, and wishes are the natural results.

In this context and setting love becomes possible, the kind of love which is not one virtue among others but the basic attitude, motivation, or process out of which all other virtues grow.

In the high religion of which I speak, God is love. When He is seen as such and when, as consequence, the conditions of life are characterized by the acceptance which only love makes possible, men become free to be different, to be themselves, to be creative, and so to be members of a family. Apart from some measure of such freedom, the family cannot well live for long. With it, there is a framework in which healthy and natural family relationships can grow.

SECURITY. It is possible to make a fetish of this, but a sense of security, in measure, is as essential to the family as to the person. It need not, indeed ought not, be the security of the static and unchanging. It must be rather a security of purpose and goal, a security deriving from the sense of movement in the direction of the meaning and forces which underlie all human existence. Life, including family life, apart from some sense of movement and meaning is insupportable. The philosophy that adopts as its main premise the absence of meaning, considers despair the basic psychologic reality, and looks on the act of self destruction as the only possible act of ultimate freedom is the contradiction of all religious conviction and value. Its "no" is a no to every hope, and its "yes" is the reverse of an affirmation. It is the ultimate denial. Such a philosophy, contradictive of every religious value, cannot possibly support the family.

I said that it is possible to make a fetish of security. I am even ready to admit that in religious circles it is, probably more often than not. The sentimentalized "Safe in the arms of Jesus" type of security is nothing less than tragedy in a day when the world's need calls for sacrifice, imagination, and hard and bitter labor. But there is a security in "taking up a cross and following," a security on the move. I suspect it is the only kind that is real; and although it is rare, it still is found. When it is found, it can enable a family to be a family in spite of appalling adversities.

One of the roots of it sometimes is the sustaining strength of the religious community. I say this in the face of a bitter knowledge that the so-called "fellowship of believers" often falls woefully short of anything that ought to be expected on the basis of the word fellowship. Religious quarrels are notoriously bitter quarrels. The "family" of the church or synagogue often behaves tragically like the "family" seen in its worst light, not its best. When, however, it manages to embody something of the spirit it verbally espouses, as it sometimes does, it can be of inestimable value in cementing the family loyalites of its adherents. The sense of community as a sense of solidarity with others in which strengths are shared, weaknesses are minimized, goals are pursued together, and in which the misfortunes of one are met with the combined resources of the group makes an invaluable contribution to the maintenance of the families of the church or synagogue as well as of the individual family.

MEASURE OF SUPPORT. With some trepidation I advance one final suggestion. I think it undeniable that the family has historically received a significant measure of support from the system of values deriving from a positive religious faith and even from the value structure of the religious community. My hesitation, perhaps uncharacteristic of my profession, arises from a realization that this is a very difficult area in which to attempt precise definitions and one in which inordinate claims are out of place. Anyone knowledgeable about such matters is compelled to admit that the lines between letter and spirit, law and gospel, order and freedom are difficult to draw.

Not only is there very great difficulty in the maintenance of such balances, but the penalty for failure in the same can also be very great. Whenever, for instance, the emphasis in the religious community comes down hard on the side of the letter of the law, on order as opposed to freedom, on legal provision versus individual expression, the spontaneity and creativity so crucial to a fruitful family life are curbed if not eliminated. When, on the other hand, the emphasis is placed on the other end of the scale, and spirit and freedom, openness, and spontaneity are stressed to the exclusion of structure, the needed form is lacking, and the family may come undone in such circumstances. In the one case, rebellion against too rigid rules and strictures is the natural reaction; in the other, anarchy is built into the system prior to any opportunity for reaction. In either case, whatever support the family may have hoped for has collapsed or has never been there at all.

It is necessary to say also that the value systems of religious groups have far too frequently tended to accommodate themselves to prevailing prejudices, and the idealisms derived from vital faiths have too often been diluted into mere institutionalized expressions of contemporary cultural norms. All of us are familiar with congregations or with groups within congregations or denominations whose "religion," in its essentials, amounts to little more than a sanctification or glorification of the status quo, or of the nation, or of a ruling class. Any considerations that threaten to run counter to such main themes, even if they be unacknowledged themes, are quickly disposed of and cast aside. Under such conditions, support for vital and creative family life is not to be expected.

When, however, the religious group does succeed in maintaining the crucial balances of which we have been speaking, does hold with vigor to its faith in a Creator God adequate to the extraordinary universe we inhabit, does affirm, with relevant application to contemporary life, that there are truths one can hold to without fear of dislodgment and that beyond all relativities there is One whose being is whole, transcendent, and eternal, the family finds an invaluable support and a well nigh indestructible buttress to its life. I am confident that one who has grown up in such an atmosphere would not trade the experience for thrones or kingdoms.

Conclusion

I close with a word in recognition of the limitations inherent in this kind of presentation. Such considerations as I have here advanced cannot be held to be susceptible of "proof." Their implications are always too personal and often too private to make possible any final demonstration in the ordinary sense. I am fully aware, too, that the unconscious nature of human motivation in the areas we are dealing with raises legitimate doubt concerning nearly every possible conclusion. On the other hand, I do not think it proper to disregard conscious motivation and spoken testimony altogether. They have quite as much right to hearing and consideration as their more shadowed counterparts. Much of what they hold is impressive and substantial, and certainly should not be cancelled out at this stage by available evidence from the psychologic and psychiatric disciplines which probe beneath the surface. These disciplines have performed vital and valuable services in uncovering many of the hidden motivations, projections, rationalizations, and outright dissemblings that have crowded the religious picture for so long. But beyond them all there remains the extraordinary and mysterious fact that men continue to speak to the reality of the unseen in their lives, the activity of a Spirit greater than themselves. Many continue to testify that for them God is the Reality that colors and gives meaning to all other and lesser realities. They find it true, I should rather say we find it true, that that conviction sustains and holds them together in families, and that the family becomes for them a finite reflection of the infinite love and eternal purpose of the God they worship. The ways of that reflection, when they occur, are varied and diverse, sometimes strange, and always marvelous.

Sociologic Aspects

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THE THEME OF THIS REPORT is that therapists are themselves a significant force affecting the family today. They contribute to change not only in the personality of family members but also to changes in the family's basic social organization and kinship structure. Before it is possible to assess the conditions under which these changes constitute a constructive or a destructive influence on the family, it is necessary to make explicit the direction of change that is implicit in some therapeutic work with the family. Changes in the family's social structure are not always clearly recognized by therapists themselves.

For the purposes of this discussion I will highlight some of the points in a recently published study of *Kinship and Casework*[1] and consider the applications of the study to other populations. The study, sponsored by the Russel Sage Foundation and the Jewish Family Service of New York, was carried out at the Jewish Family Service. It examines the ways in which relationships with kin outside the nuclear family come up and are dealt with in casework treatment. The kin relationships of client families are studied in detail. The kinship values and experiences of the client family are compared with those of their caseworkers, and the significance of value differences for therapeutic practice considered. The families studied are Jewish families of Eastern European origin or descent, most of them holding occupations that are usually classified as lower or lower middle class. These families are married couples mainly with children still living in the home, currently residents of New York City, and clients of one of the four district offices of the Jewish Family Service. Since the study is available in published form, I will merely highlight and discuss some of its major findings. Data will be cited for illustrative purposes rather than presented in detail.

Data were obtained by a variety of procedures including interviews, genealogies, home observations, and questionnaires. Questionnaires were returned by 395 individuals from 210 families. Interviews were also carried out with caseworkers, and questionnaire data comparable to that on clients were obtained from the casework staff of the agency. In addition, data were obtained on clients of the agency's special Service to the Aged, making possible some life-cycle comparisons of kin relationships.

Casework intervention in relationship with kin

In many cases a definite goal of casework treatment was to help produce alterations in the family's current relationships with its kin. This type of intervention is something more than a consideration of the early life influence of parents and siblings on the client's personality development. It entails intervention in current social relationships. Caseworkers were asked in each case in a sample to described what, if any, kinds of intervention were hoped for or carried out for kin in the specific case in question. Caseworkers indicated that some form of intervention had taken place or was contemplated in relationship to kin in 46 per cent of the cases in the sample. Because intervention had not occurred or was not contemplated in current relationships with kin, these relationships were not necessarily considered insignificant for the client's problems. Often no intervention was planned because the client was "not motivated" or "lacked insight" or because these relationships were too difficult to handle. In a parallel sample in the agency's special Service for the Aged, caseworkers indicated that in 62 per cent of the cases there was or hopefully would be some kind of intervention in relationships to kin.

The direction of intervention with kin reveals certain regularities. Data from caseworkers on intervention were analyzed in terms of specific kin, that is, husband, father, mother, brothers, sisters, stepparents, and other relatives and similar kin for the wife.

Instances of intervention were classified as follows: (1) restriction, any form of intervention that explicitly entails reduction in current involvements with kin; (2) expansion, any form of intervention that explicitly involves increase in involvement with kin; and (3) redefinition, any form of intervention that is described in terms of psychologic redefinition of the relationships. Most intervention (47 per cent) involves "redefinition" of relationship with kin; "restriction" was explicitly mentioned in 40 per cent of the kin as compared with only 9 per cent of the kin with whom there was expansion. The much greater frequency of "restriction" than "expansion" is consistent with views expressed by caseworkers that healthful, desirable kin relations involve breaking the "extremity" of kin ties and replacing them with marital bonds.

In describing problems with kin, caseworkers used such phrases as "that woman can't let go," "utterly involved on every level with their parents," "over involvement with parents," and "the client has no guilt about over involvement because her needs are being fed."

Regularity was also revealed in the generation of kin with whom most frequent intervention occurred. "Restriction" was most frequent with members of the client's parental generation and much less frequent with kin in the client's own generation. There were few cases of "expansion," and it was almost nonexistent with members of the parental generation. The few cases in which "expansion" did occur were with those of the client's own generation. Thus ties to sibling generation kin were apparently not considered a cause of as many problems as those with the client's parental generation. All types of intervention were more frequent with female than with male kin.

More intervention occurred with the wife's than the husband's kin. The most frequent intervention was with the wife's mother and then the wife's sister. The relationship with the wife's mother is dealt with almost three times as frequently as that with the husband's mother. This is consistent with the views of some caseworkers and with data from the study indicating that the most extensive involvement with kin is with kin on the wife's side, and that both husband and wife readily accept strong ties with the wife's family whereas the wife often resents her husband's ties to his kin. Thus the implicit logic of intervening most frequently in ties with the wife's kin is to seek to alter the strongest ties of kinship.

Data on conflicts with kin, obtained from clients, reveal some interesting contrasts with the caseworkers' descriptions of intervention. Intervention is generally most frequent with the categories of kin with whom there is most interaction. However, intervention does not occur most frequently where clients perceive most conflict.

These forms of casework intervention imply support of the greater structural and functional independence of the nuclear family from its kin, leading to more independent action in authority, decision making, child rearing, and economic and financial arrangements. The norms the caseworkers implicitly or explicitly hold up as ideals to their clients indicate that it is healthy and normal for the nuclear family to function primarily as an independent unit. The right of kin outside the nuclear family to participate in nuclear family functions is minimized.

Casework intervention, therefore, involves altering the kinship values of clients. The goals in direction of intervention were remarkably similar whether the caseworker was dealing with regular clients or the aged. It might be expected that the perspective of the caseworker would shift when dealing with older clients, that the goal would be to help them realize some of their hopes for continued involvement with their adult children. But the reverse is true. Intervention, whether classified as "restriction" or "redefinition," most often involves helping the aged parents realize their childrens' rights to independence in their new family. The process of helping aged clients make this type of change may be somewhat different from helping younger clients become more independent of their parents, but the desired result is similar. Intervention of this sort with aged clients is described as helping them to become more "independent" of their children by helping them to expect less of their children and to "interfere" less in their children's household. Sometimes substitute interest of nonkin activities were sought, for example, Golden Age clubs, with the goal of making the client less "a source of pressure on his children." Thus whether the process is seen from the perspective of clients in the middle stages of life or from that of older clients of the generation of the clients' parents, the goals of therapeutic intervention in relationships with kin are similar.

Clients' conception of intervention in relation to kin were similar to those of caseworkers. The statement of one husband illustrates the perception that relations with kin are being changed in the course of their contacts with the agency.

> I'll tell you, my mother-in-law is a problem to us. I mean it's a situation which we can't help. . . It seems she has always been a problem, but we never realized it. We never looked at all these questions they asked at the Jewish Family Service as a problem. . . we began to realize that there are many things in a household, and two people who are married should live alone, and well, when there is a third person, things are just never the same, and we never realized it. I knew there was something to it, but we never really thought of it till this.

Caseworkers, supervisors, and clients, regardless of life-cycle stage, agree that therapeutic intervention involves changes in the family's relationship with kin. Although these changes may be described in psychologic terms and brought about through psychologic modifications that enable the individual to alter his kin relationship, research results reveal systematic regularities in the direction of this intervention from the perspective of a kinship system. Although caseworkers and supervisors had many significant hypotheses about kin relationships, the fact that systematic regularities exist in the direction of intervention was not evident prior to research. Most often intervention entails or aims to produce a realignment of kinship bonds, moving away from strong adult parent-child and sibling bonds toward strengthening ties within the family of marriage, particularly the marital bond.

Insofar as this general pattern holds true, the caseworker seeks to aid clients in moving toward the type of kinship structure that has been hypothesized as typical of the American middle class, in which independence of the nuclear family from kin is ideal. The effort to shift the kin relationships of clients also implies that the initial kin relationships diverge from those that have been considered representative of the middle classes in a western, industrial society. In view of the immigrant background of these clients and the cultural differences between clients and those in their parental generation, the question arises as to whether this intervention is part of a process of acculturation from eastern European Jewish traditions.

Because all kinship systems require role changes during the individual life-cycle, it is also possible that casework intervention is enabling those, who for some reason, have special problems, to make life cycle transitions in their kin relationships and to shift primary ties from their families of childhood to their families in marriage.

Contrasting kinship values of caseworkers and clients

Interviews with caseworkers and supervisors clearly reveal that implicit therapeutic assumptions exist about desirable forms of kinship structure. These include, for example, the notion that a healthy, mature individual will have the strength to set limits on interaction with kin. It is also assumed that it is most desirable for the nuclear family to reside alone, not in the same household with grandparents or other kin. The source of these therapeutic assumptions, however, is not entirely clear. The question arises as to whether these differences stem from the background, kinship experience, and kinship values of caseworkers, or from professional knowledge regarding kinship systems.

Data on the kinship values of caseworkers were obtained and contrasted with those of clients, indicating differences that are significant in understanding the process of intervention in relationships with kin. Caseworkers differ somewhat from clients in being younger and more often single, they have a higher percentage of females than found in the client group, and are of higher educational status; and although the large majority of caseworkers were Jewish, this is not true of all.

A series of statements about kinship values, developed on the basis of extensive interviewing with clients, was given to both caseworkers and clients in the context of a larger questionnaire on relationships with kin. Respondents were asked to indicate whether they agreed or disagreed with statements covering a large number of areas of kin relationships, including marriage, residence, social mobility, and obligations of interaction with kin, husband-wife versus parent-child. In most areas the values of caseworkers are consistently less kin-oriented than those of clients. A few of the value items will illustrate these findings.

One question related to whether children should reside at home until marriage, thus affording parents an opportunity to oversee the dating process. On this point caseworkers and clients differ greatly. To the statement, "Children should not leave home before they get married," 63 per cent of the clients agreed whereas only 3 per cent of the caseworkers agreed. Here and on most of the other items the differences were significant as measured by chi square. Interviews revealed that those clients who hold this view believed that there is a sanctity in the home, that parents must control their children's dating, and that a child who leaves home before marriage will reflect adversely on the quality of the home. As one client said, "I think parents should be around to see whom their children befriend and what type of associates they have, and I think it is a more wholesome thing generally for a single child to remain at home." Caseworkers emphatically do not agree with this view.

In views about residential proximity after marriage, caseworkers and clients again differed. To the statement, "It is usually nice for a young married couple to live near their parents," 40 per cent of the clients agreed and only 14 per cent of the caseworkers agreed. Similarly, there were differences in views about whether "It is good for a young mother to have her mother close by to help her learn how to take care of her baby." Forty-eight per cent of the clients agreed and only 21 per cent of the caseworkers.

In views about obligation toward parents, clients and caseworkers again differed. For example to the statement, "A family should be willing to sacrifice some of the things they want for their children in order to help support their aged parents," 74 per cent of the clients agreed whereas only 54 per cent of the caseworkers agreed.

On all of these items, data were also obtained on clients in the special Service to the Aged of the agency. The aged were consistently more kinship-oriented than the caseworkers and even more strongly so than other clients.

Thus, consistent differences exist between caseworkers and clients on values pertaining to kinship. Caseworkers and clients do not differ in their view about all aspects of kinship; both generally favor separate households after marriage, but they do have differences in many areas which are consistent in direction, with the clients being more kin-oriented than the caseworkers. When phrased in extreme terms, both clients and caseworkers, and even the aged, believed that the nuclear family should function as an independent unit in child rearing, and that combined households are not ideal. However, clients, and especially the aged, consistently gave more leeway than caseworkers for involvement with kin. In all the areas of the relationship examined, there were significant differences between caseworkers and clients. Clients are more likely to accord parents a right to oversee their children's dating through residence at home until marriage. Clients are more likely than caseworkers to see residential proximity to kin, short of combined household, as desirable. Clients are more likely to stress obligations to maintain interaction with kin. Despite the core of agreement about separate households and the importance of the marital bond, caseworkers and clients differ consistently in the degree that they stressed the parent-child as compared with the husband-wife bond. They also differ in their allowance for involvement of parents in affairs in the nuclear family.

These differences in views about kinship may come from a variety of sources including differences in individual background and in professional training. Regardless of the source, one can assume that to some degree there is a melding of individual and professional experience in the therapeutic relationship, so that the fact of the difference, from whatever source, will have implications in the treatment relationship.

In addition, data on actual relationships with kin indicate that caseworkers and clients differ not only in kinship values but also in the kinds of interaction they have with their kin. In a great many areas the caseworkers are less involved with their kin than are clients. Thus, in both values and actions caseworkers are less kin-oriented than their clients.

The direction of change in kin relationships that is sought in treatment—more frequent reduction than expansion of kin involvement—is thus consistent with the value and experience differences between caseworkers and their clients. Caseworkers, therefore, are in effect attempting to change client-kin relationships to accord more completely with their own kinship values and experience. These differences are between caseworkers as a group and clients as a group and do not necessarily arise in each specific caseworker and client combination. But the differences between the groups imply that in many instances value and experience differences are likely to arise between a particular caseworker and client.

A critical question is that of how implicit cultural assumptions enter into professional thinking. The finding that caseworkers and their clients differ in their experience and views about obligations toward kin poses questions of why restriction of kinship contact was so frequently sought in casework treatment.

Is this a product of an implicit cultural assumption, or is it based on objectively validated knowledge?

It is known that one form of kinship structure is preferable in given respects; for example, that it is more likely than another to reinforce desired forms of marital and parent-child relationships. Even if there is no proof that one form of kinship organization is better than another, it may still be reasonable to attempt to change relationships with relatives. It may be useful for caseworkers and other therapists to act as agents of one value position in society and to help clients move from the way of life of one subgroup to that of another. But it is important to be aware of implicit cultural assumptions. Otherwise it is especially hard to distinguish that which is culturally different from that which is pathologic. For example, a caseworker may evaluate a client's sense of obligation and ties to kin as a source of immaturity and dependency, when in fact these ties are common among the client's kin and hence do not have the pathologic significance that might be ascribed by those whose values are less kin-oriented.

Network of kin relationships of clients' families

The study revealed that involvement of client families with their kin is extensive in many areas, not only in values but also in actual practice. Kinship may be a source of many conflicts, but at the same time the ties of kinship offer many positive supports for the family. Kin may contribute in many important ways to the identity of the family and its members. Formal organizations of kin, family circles and cousins' clubs, offer a significant area of social involvement for the family. Client families turn to kin for many kinds of assistance; there is an underlying obligation of kin to help each other. Reciprocity strengthens kinship ties and binds kin together. Kin often offer support that might not be available through other channels, for example, in contributing secondhand clothing and furniture to the family and giving assistance during minor illnesses. Geographic proximity and the availability of communication which technology makes possible, for example, telephone and rapid transportation, offer kin an opportunity for participating actively with each other even in an urban environment. Kin may not only support, rather than hinder, occupational mobility, but also assist the individual in making the transition from the values and ways of life of one society to those of another. This was observed, for example, in relation to cousins' clubs in which through participating as a group, cousins helped each other move away from the values and styles of life of their parental generation.

Thus kin themselves are a significant influence in maintaining the family's kinship ties and also in altering them. In one case, for example, a woman was reprimanded by her cousin for not coming to the meetings of their cousins' club. The cousin told others that the woman "has an inferiority complex and that's why she doesn't come to meetings." Therefore, in understanding a family's relationships with its kin one needs to look not only at the family members themselves but also at the reactions of their kin.

Therefore, in evaluating the impact of kin on the family, it is important to assess the positive supports that kin may offer the family as well as the problems involvement with kin may produce. Among the clients of the Jewish Family Service, involvement with kin was generally far greater than would have been anticipated on the basis of sociologic theories that the extended kin network has lost its function in large urban, industrial settings. Extensive involvement with kin may in part be a reflection of the problems of these client families. At the same time, it may represent the ways of life of a subgroup within the larger society. The complexity of this distinction makes it particularly important for therapists to be aware of their own implicit assumptions about desirable forms of relationships with kin.

Application for other groups

The study of casework intervention in relationships with kin among Jewish families has general implications for other groups. A parallel may be found with lower-class Negro families. The Jewish families studied here differ in many ways from descriptions of the family among lower-class Negroes although ties to the wife's mother are strong in both instances. But the application of the findings of this study to the Negro and other kinds of families does not rest on similarity in kinship patterns; it rests on the fact that parallel issues about intervention and kinship structure arise in many instances.

The "matrifocal" character of the family among some lower-class Negroes has been documented and widely discussed recently. The matrifocal family among Negroes is also different from the middle-class ideal of an independent nuclear family of husband, wife, and children with limited involvement with kin. For example, in female-headed households containing a grandmother, her daughter, and her daughter's out-of-wedlock children, the contrast between the norms of other segments of society and the structure of the family is less subtle than the differences in values found between Jewish families and their caseworkers. But the necessity of distinguishing different kinship structure from pathologic kinship structure is parallel. Recent controversy over the Moynihan Report has brought out sharply contrasting evaluations of the matrifocal family. These range from the view that "at the heart of the deterioration of the fabric of Negro society is the deterioration of the Negro family," to the view that "the Negro has responded to his oppressive conditions by many powerful coping endeavors . . . one of the most significant forms of his adaptation has been the extended, female-based family."[2]

A further parallel exists in that the quality of the marital relationship is affected by the character of ties to kin. When the possibility exists for a young Negro wife to return to a maternal home in which it is expected that children "have the right to come home at any time," even after they have moved out, and to stay in the home without contributing to its maintenance because the mother "does not feel she can turn her children away," this undoubtedly influences the relationship between the wife and her husband, particularly if the husband's position in the home is weakened by lack of economic opportunity.[3] Again, kin outside the household contribute to maintaining the pattern by their reactions, as in one case in which a field worker observed marital problems related to a wife's infidelity and the fact that she was working while her husband could not find a job. "To make matters worse, his wife's sister counsels her that she does not have to stay home with him as long as he is out of work."[4] Again, kin support each other in maintaining the patterns of kin relationships, so that the effective unit of intervention may extend beyond the nuclear family, even apart from issues of the influence of economic factors on the family.

A further parallel is that a system with extensive involvement with kin may run counter to the values of those engaged in intervention, but it needs to be evaluated in terms of its positive as well as its negative features even when problems inhere in the existing relationships. In the case of the grandmother in the matrifocal Negro family, for example, who takes care of her daughter's illegitimate children, "A grandmother may provide a home for her daughters, their children, and sometimes their children's children, and yet receive very little in a material way from them; and although she may be resentful about being taken advantage of . . . one thing she does receive is a sense of human involvement, a sense that although life may have passed her by, she is not isolated from it."[3]

Those attempting family therapy with a matrifocal Negro family are confronted with issues similar to those found in the case of the Jewish family as to what the most effective unit of treatment may be. In the case of a child's behavior problem the family unit most influencing his behavior might well consist of grandmother, mother, and child, rather than father, mother, and child.

It is possible for a therapist, starting from his own assumptions about kinship structure, to assume that the balance of a family's organization is pathologic and, for example, to attempt to strengthen the nuclear family by helping the daughter to leave her mother's home and return to her husband. It might be true that a female-headed household and the lack of a father in the home to serve as a model contributed to the child's behavior problems. It could also be true that at the same time removing the child from the strength of the grandmother-headed household might cut the child off from valuable sources of support for which no substitute could be found.

The complexity of assessing the balance of healthy and pathologic relationships within a family makes it of particular importance for the therapist to be clearly aware of his own cultural assumptions about family and kinship structure, so that these may be separated from the evaluation of the family with which the therapist is working. In seeking to change one area of kin relationships, the therapist needs to be attuned to the ramifications of this change for other areas of kinship. Otherwise, in changing one area, which may be closely related to another, the therapist may undo vital supports for the particular changes that are sought in treatment. For example, in the case of the Jewish families, reduction of ties to members of a "cousins' club" may cut the family off from occupational and life style models and supports, which aid the family members in reducing their own psychologic dependence on their parents.

A further parallel from the study of Jewish families arises in that the values of one group within a larger society do not exist in isolation from those of others. Moreover, changes are occurring from sources other than therapeutic intervention. The Jewish Family Service caseworkers were less kin-oriented than their clients. However, the clients in their thirties and forties were less kin-oriented than those in the Service for the Aged, and it is likely that the clients were also less kin-oriented than their own parents. Thus, when caseworkers assist in helping clients to reduce their involvement with kin, they may be contributing to a process of acculturation and change of kinship values that is under way already. In the case of the Negro family it has been shown that conceptions of the good American family as one with a father-husband who is an adequate provider may be strongly held by the members of a female-headed household. These very ideals may in fact be used as an "aggressive weapon" for criticizing each other's performances:

> It is not at all uncommon for husbands or wives or children to try to hold others in the family to the norms of stable family life while they themselves engage in behaviors which violate these norms. The effect of such criticism in the end is to deepen commitment to the deviant sexual and parental norms of a slum subculture. Unless they are careful, social workers and other professionals exacerbate the tendency to use the norms of "American family life" as weapons by supporting these norms in situations in which they are in reality unsupportable, thus aggravating the sense of failing and being failed by others which is chronic for lower-class people.[5]

This is not to argue against change in family and kinship organization. It is often a necessary concommitant of individual as well as family therapy. But it is important for social scientists and mental health practitioners to gain increased understanding of implicit cultural assumptions about desirable forms of kin relationships, the ways in which these assumptions may be brought into treatment, and the kinds of change in kinship organization that are sought in treatment.

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Forces Affecting Family

Commentaries

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In reading Dr. Crother's remarks, I noticed that he referred to that well-known cleric, Dr. Buttrick. From another great admirer of Dr. Buttrick, I have some other commentaries on this distinguished person. Apparently, Dr. Buttrick always met with the members of his congregation on Sunday morning, and as he did so many of them made comments about the sermon. One of his greatest admirers, an elderly lady, remarked one Sunday morning as she shook his hand, "Your sermon was just like water to a drowning man." The following week her friend added this: "Your sermon today is even better than your next one." And a few weeks later she reassured him of his eminent mission by pumping his hand declaring, "After hearing your sermon this morning, Dr. Buttrick, I have no fear of death whatsoever."

With these thoughts in mind, let us plunge into the topic which absorbs us: "The Forces Affecting the Family Today: Constructive and Destructive." Put in this way, we are presented with a polarity which challenges us to keep a distinctive division. I would suggest that polarity exaggerates and oversimplifies, and oversimplification is seldom compatible with true understanding. It is reassuring that I read once again an article by an old friend of mine, Marvin Opler, in which he states, "While other political, social, and economic institutions have come and gone, the family has exhibited a hardiness, a resonance, and a capacity to change form, which suggests it future survival." Not that I had a deep, personal need for reassurance. After a quarter of a century's experience as a growing child in my parental family and another quarter as a minor parent in my own family, there exists for me, as I imagine there exists for you, a deep conviction of the certainty of the family as a unit as long as man exists on this earth. But with you and others I have become extraordinarily conscious of and perhaps overly sensitive to the family as the important social institution concerned with the preparation of children for adult life and for living in our modern culture and all cultures.

What is the source of our anxious preoccupation with this ancient institution, an institution which in itself is a source of so much pleasure, so much anguish, so much pride, so much shame, so much tenderness, and so much sadness? I do not believe that our awareness—our sensitive awareness—springs from those studies of the family which advise us that "the American family has largely lost its economic, social, religious, and educational functions in relation to the socialization of children." To be sure, these family functions disappear to a large extent as other social institutions assume responsibility in part.

Changing parental attitudes

Our preoccupation and concern is much more likely to have its source in the widespread change in values we hold as parents. The parental attitudes which typified our parents, on whom we model our role as parents, are challenged daily by the quick onrush of new information and conflict in the field of science and not least of all the psychologic sciences. We are uncertain of these new values, and our uncertainty makes the testing of their constructive and destructive potential most difficult. It was not so long ago, about the time many of us entered families, that parents generally regarded a host of infantile and childhood activities as bad or evil habits to be exterminated by one forcible means or another, or perhaps as nuisances to be accepted as penance for their sins. In this country our memory spans an era which has witnessed a vast change in the way most parents view such a childish problem as thumb sucking. Think for a moment of the very restrictive and punitive devices recommended and widely applied by your parents and grandparents to correct this so-called habit. Then think of your attitudes and the corrective approach to the same behavior as it appears in your children and grandchildren. A number of other so-called evil habits of little children might be recalled, such as various school problems, adolescent interest in sex, and so on in which there has resulted an enormous and widespread shift in parental attitudes in our country in the space of half a century. Today we question the source of such behavior. We wish to determine whether it is a general expression of development to be expected at a particular stage in growth, a perpetuation of an infantile or a childhood behavior due to delayed maturation, or the consequence of some defect arising in the frustrations met in the family.

This shift in parental attitudes toward the behavior of growing children had its beginning when psychoanalysts directed attention to the historical roots of many pathologic disorders in early family life. Their studies of individual development were followed by later examinations of the growth process in all its dimensions, physical, emotional, intellectual, and social. From these studies the American parent has sought eagerly for information. With the aid of our ever-expanding technology of communication, more and more parents have absorbed this knowledge and have adopted attitudes toward their responsibilities within the family, toward their children, and toward the vagaries that confront them in their growth. Their parental attitudes differ from those of their own parents or grandparents. The informed American parent is recognized by visiting anthropologists as different from other parents. They are to a large degree children centered and children responsible. Parenthood is no longer solely a duty and obligation; it is a career and a responsible one. Well performed, we believe it insures to all family members a greater sense of security and individual assurance of physical and emotional growth, thus leading to a greater opportunity for a full development of potential.

To be sure, once parents accept the concept that family transactions and other experiences of childhood have a bearing on the nature of the mature adult and see the affectional bond between parents and child as a major source of molding personality, the potential emerges for the unfolding of destructive parental attitudes. Parents may become overanxious, guilt-ridden, uncertain, and self conscious. When this happens, their capacity to offer a model for stable adult identification is lost. Children in families in which parents suffer in this way may be affected adversely. They may learn, too, to shun their responsibilities in life through rationalizations founded on the new family saga that the parents are solely to blame. Thus, these shifts in parental values carry with them a fuller potential for both constructive and destructive family processes. But so do all evolutionary moves, and we tend largely to place a positive evaluation on evolution.

Medical achievements

Medicine and the health sciences have changed the world of families. The enormous achievements of modern medicine and the other health sciences in the past century have been major constructive forces in family life. The conquest of infectious diseases alone, as I read in a report from the Metropolitan Life Insurance Company some years ago, makes it possible for more children to be brought to adulthood in the company of living parents than in the days when so many mothers and fathers died in their prime of one or another infection. It has been reported that there are more living parents for children today in spite of the increasing divorce rate. These accomplishments have pervaded the family value system in regard to health and its maintenance as well as in regard to personal achievement.

We, as a people, are the most avid preachers of the Holy Grail of science that the world has witnessed, as evidenced by both our great giving for health research through public and private sources as well as by our publications. But even more, we have evolved an enormous expectation of the health scientists through our belief that we have achieved the finding of the Grail. With this expectation, we are not satisfied if control or cure of an illness is achieved, we now expect that health will be restored and with it full potential for development. We believe that maintenance of health is not too little to demand.

These changes in expectation of the health scientist and the practitioner weigh heavily on many families, both the senior and junior members. The parental members in such families carry the burden of anxiety if one of the children is ill, as well as the weight of shame and guilt which so frequently accompanies illness. A greater burden is often placed on the ill members. Frequently families are less tolerant toward disabilities and demand that those concerned with them take extra action to achieve a full recovery. Family transactions that are important to the healthy development of such children often are distorted by a delusional sense of urgency toward an impossible cure or attainment. In this golden age parents expect their physicians to deliver the family of its deficit, or, equally mistakenly, many parents demand the sufferer to attain a level of functioning incompatible with the structure of the unfortunate child's body. The same inflated expectations are transmitted into the family demands on the educational system. Intellectual attainment has become the only goal in many families. Parents often forget that the important foundation of every culture results from the continuing, regular, and devoted efforts of the vast majority employed in decent but not intellectual activity.

To be sure, these grand expectations and hopeful attitudes protect the family group from the sadness and lack of self esteem that must occur when the limitations in one of its members are realized. But is that recognition unhealthy? I think not. Many parents have expressed to me personally and in writing, and I'm sure to my colleagues, their profound thanks and deep relief when finally they have obtained and accepted a forthright and clear expression of the potentials for social adaptation or achievement of an impaired family member. The reality finally has been faced. Family transactions then have the potential for balance that benefits all members. False aspirations are set aside; none are forced and none undercut.

The health sciences have brought a degree of protection for vast numbers of newborn infants who would never have survived the living conditions of previous generations. Today, many survive with a multiplicity of major and minor defects that would have been incompatible with existence in the past. We know the ranks of these children; they are the retarded, the palsied, the schizophrenic. Some have such minor impairment in the sensorimotor and perceptual apparatus, that the ordinary devices available to neurologists, psychologists, and psychiatrists are too unrefined to lead to their detection. We are aware now that the accumulation of a series of these minor defects lays the groundwork for perpetuating a lag in integrating experience, for evolving and understanding subjective reactions, and for controlling the related emotional expressions. These defects bring about that failure of integration of functions, actions, desires, and aspirations which seriously impairs later adaptation to our complex society. Thus while the modern health scientist will protect a family from grief over the loss of an infant born with serious impairment, he has also imposed on that family the tragedy of rearing a child with brain damage.

Yet health consciousness has its constructive aspects. From it comes greater sensitivity to impairment of function, whether it is social, intellectual, or physical, and from that greater sensitivity arises the potential for earlier detection and greater possibility for correction.

Here I depart from the forces brought to bear directly on the family by the health sciences. These forces never would have been released in their various potentials without the recognition of a knowing public, and that public required that education be made available through widespread communicative media, which disseminated information, as well as through voluntary associations and political organizations responsive to the expressed wishes of the many millions of family members who make up the public. Television, radio, and the press have kept our educated population of families informed and ready to help each other. The "media" have stimulated and expanded the awareness of responsibility of the family members toward each other, but they also bear considerable responsibility for the exaggerated expectation of health. These expectations arise from the exploitation of health news by certain elements in the media, the needs of officials with various governmental and philanthropic organizations to support their endeavors by overstatement of accomplishments, and even the unfortunate tendencies of health researchers to enhance their prestige by declarations of big breakthroughs.

Social influences

The potential for family satisfaction and growth is limited when the social community is constrictive. A constrictive social environment bears heavily on a considerable percentage of our population. Healthy family interchange demands living space, economic security, leisure, and insured education for both later vocational and avocational satisfaction. Social upheavals are the news of the day. They exist because of our failure to support needs and protect family life and because of the restrictions that have been allowed to develop in our American society. More and more families are seeking their goals in cities, and the populations of the cities mount. We are undergoing the most profound revolution in living that has confronted the families of the United States since the time they first made their way to the shore of North America. We are no longer an open country with a frontier just beyond the limits of vision. We have evolved the most complex, the most highly technical, and apparently the wealthiest culture that has ever existed if one judges the number of material goods available to all of our population; and with the closure of our frontiers, there is an increasing limitation of our opportunities, unless one is exceptionally equipped through the fortunes of genetic and economic inheritance or specialized education. The opportunity to achieve levels of satisfaction in power, prestige, and security comes less easily than in the past. Competition is increasing; personal freedoms are more limited; and the opportunities for healthy leisure in open spaces are disappearing.

Perhaps in response to the recession of easy opportunity and retreat to the open spaces, we as a people have reacted to retain our long American heritage of individual freedom by challenging every statutory and regulatory device that seems to constrict individual rights. This struggle to retain personal freedom has been dramatized in a series of decisions made by the Supreme Court: those decisions which pertain to civil rights, the rights for the accused in trials, the right for confined patients for treatment, and the regulatory decisions of the Department of Health, Education, and Welfare regarding the protection of rights of patients in relation to human experimentation.

It has been demonstrated in studies of animal populations that aggressive drives are exaggerated through crowding and increased competition for the needs of life. Heed must be paid to the knowledge of increasing aggressiveness that develops through crowding and restriction of living space. These stresses must be controlled through effective family planning and the planning which makes available immediate access to life spaces for our ongoing work and leisure. We must plan to make it possible for a family to train for life without the drudgery of full-time work and develop the capacity to use and find pleasure without compulsive guilt. We must help families now in the major function of raising healthy children by bringing to them the way to plan the family and give each child the attention needed by both parents.

In recent years psychiatrists have been approached frequently to apply their knowledge of personality to many problems of families and their children. In the past, much was made of the restricting influences of rigid moral codes which have led to inhibiting traits for healthy assertion as well as the pathologic expression of the sexual drives. Too many have failed to appreciate that psychiatry is equally concerned with the development of that portion of personality commonly referred to as conscience or superego. One of the major functions of family life is the series of transactions which establishes in the growing child and adolescent important aspects of personality known popularly as conscience and ideals. Parents lay down those substrata in personality for the development of conscience and an idealistic viewpoint of life. Their efforts are supported by those institutions of society concerned with protecting the personal and private rights of individuals and in reiterating that peculiarly human achievement of idealistic regard for our fellow men to postpone or deny selfish indulgence. In our society with its wide-spread wealth, its increasing assurance against insecurity and physical and material need, many of the old virtues look meaningless to our children. There is less purpose in continual work, thrift, competitive drive, and material achievement. There are crying wishes for a restatement of purpose from our young people. Many of our younger family members are seeking for restatement of the essential values of life and purpose.

Learned Hand, the eminent jurist, is credited with saying, "A society which sets out to guarantee full freedom for all will find itself enslaved by savages." Most of our families endeavor to instill the old internal controls and ideas. Many parents are puzzled and uncertain about the changing liberties and attitudes toward sex, aggressiveness, and dependency. Our parents need more help than the caretakers of our society, those in the professions represented, in interpreting these changes for the family. They need assistance in asserting those values and those morals which we identify as socially adaptive. But let us keep in mind that times of social conflict are those in which the moral order regenerates as its rotten timbers decay, even if we agree with Eisely's statement, "Never before in history has it been literally possible to be born in one age and die in another." And even if we agree that forces bearing on the family today are greater in number, stronger, and more pervasive than in the past, it would be in error to decide now whether or not they are solely constructive or destructive. Rather, it seems that in this country, perhaps more than in others and earlier than in others, we are caught once more in a dynamic upheaval which will lead to evolutionary shift in living, in which the majority of families will once more make a major contribution in protecting and aiding their members to pursue the confrontations of a new life in the future.

Conclusion

In conclusion, let me remind you of another function of the family and that is the installation in the children of a sense of the ridiculous and a sense of humor. I recollect one parent's earnest efforts to improve the children's vocabulary by ending each mealtime in a Socratic mode by asking each child to define this or that word. This father's efforts ground to a halt when he requested his son to define elocution. He received the following response: "Elocution is a form of execution practiced mostly in the United States."

Reactor's Comments

Robert Root, Ph.D.,* *Syracuse, New York.* I am glad for the references to humor because there is a certain sense of the ridiculous in my being up here on short notice. I'm certainly not going to try to talk as a journalist although I may have something to say about mass media. My doctorate is not in medicine or psychology but in the humanities; my undergraduate work was in science, social and physical. I was then a newspaper reporter which gave me a cynical edge that may turn up even in relation to psychiatry. But, in my brief reaction, I am going to talk primarily as a parent, because I sat here listening to talk about parents.

I've appreciated some of Dr. Kolb's remarks on the subject. As the Quakers would say, this one "speaks to my conditions." Dr. Kolb stated, "We parents may become overanxious, guilt-ridden, uncertain, and self-conscious." I think all of us know what those feelings are. My children range from twenty-six to eighteen years of age—and after I've talked here a couple of minutes I think they are going to demand equal time—but I am going to try to keep from being too personal.

We talked about the condition of man today, and particularly of young people, in the family and out of the family. If we wanted to claim to be good soothsayers, I suppose we could go back to what we said in the 1940's about the effect of the then current psychology of war, of TV, and of other things and say, "I told you so." You can look at the young today and say, "Well, they turned out the way the pessimists in the 1930's said they would." But this is a pretty unscientific view. In most of our talking in the area of family, we are not very scientific in spite of our scientific nomenclature. I find that when people begin talking about families they are pretty weak in actual research. In our effort to figure out where we stand today, we don't really know.

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We get over into a philosophic area here. One of the basic questions that still faces us is, "What is the nature of man?" If we're going to assess Freud and his successors, we have to decide whether we accept the Freudian interpretation of man or some other.

This morning things were said about "original sin." I don't believe in original sin myself, although I do believe there is a strong tendency in the human animal to do things that some people would call sin and that I am quite prepared to call sin. On the other hand, I don't really believe in "original good" either. I think our tendency over the last fifty years has been to assume that if we could only work out certain neuroses and get to the "natural" state of man, everything would be all right. I've never quite figured out how this release of the id was going to create a better world. We have to reinterpret the id, I suppose, if that is the goal. So I raise, skeptically, a question about whether original good will emerge from our tampering with the human animal.

To speak personally as a father for a moment, the really difficult thing for me in going through the business of rearing children was to decide the line between permissiveness and discipline. My children grew up during the period of great emphasis on permissive philosophy, and this wide enthusiasm is one of the things I consider unscientific. Maybe there were good studies of all this in the 1920's and 1930's, but I think that a lot of people who talked about permissiveness were doing only a kind of horseback theorizing. Nevertheless I accepted a lot of this theory. Lest you think I'm some kind of reactionary, I will point out that our family really was child centered. This is not entirely an American phenomenon, either. Montessori, for example, is not an American name, but my boy, twenty plus years ago, was in a Montessori school in Switzerland, and we think he's turned out pretty well. But the thing which has increasingly interested me is this business of "setting limits." One of the things Dr. Kolb said, which interested me, was not to overemphasize that side of psychotherapy which speaks of freedom to do things but to emphasize also the development of conscience.

Let me make one other point before I raise the question of values. We who have talked of sin in religious terms have too often thought in terms of drinking, gambling, or sexual sin. For some decades, the thing in church has been to emphasize the problem of corporate sin or social sin, whereas we are concerned about preventing in our children a sense of guilt about some of the traditional Puritan types of sin. But suppose we are interested in developing in our children some social conscience on the race issue or war, for example, and they don't do anything really useful about such problems, are they supposed to have a sense of guilt as a result of this sin about which we have tried to inculcate sensitivity? I am not aware of such guilt developing in my family; but if we let children develop without pushing values on them, this is one of the problems we face. We obviously do have to set values. Too many of us are tempted to interpret theories of psychotherapy in terms of "we must avoid guilt at all cost!"

How can we avoid setting values unless by saying that there are no values? Yet if we stress values and there is any failure to meet these values, doesn't guilt automatically result? It may not be a serious neurotic or psychotic type of guilt, but certainly guilt.

I was interested in Mrs. Metcalf's reference to the problem of the affluent society, those permissive parents who have let their children grow up expecting the second or third car that they can spin around in. How do we deal with this? Well, we can say that the trouble is with our "middle-class values." Middle-class values have become something to kick around lately. For example, the intellectual tosses around middle-class values, but I notice intellectuals are the first to tell you where you can get a very good dinner, which is certainly middle class. There are many things in middle-class society that all of us, regardless of our status, feel good about. We should consider what middle-class values we want to preserve and then which of these values we want to pass on to our children.

My own thinking has been moving to what Dr. Kolb indicated, namely, that we must develop feelings of conscience. I'm quite taken by some of the ideas of integrity therapy emphasizing the role of the superego, because they seem to speak about what has come out of my experience in child rearing. My present feeling is less permissive than it was ten years ago.

As the younger generation becomes more rebellious, I am more inclined to say that from years of experience and of considering moral values, I have reached certain conclusions which are worth passing on. I suppose I'm still enough under the influence that I would hope my family members would receive values democratically, through family councils, discussions, and so on. Still, I feel more than I used to that Daddy occasionally has to press these values fairly firmly, more firmly perhaps than I did in the past.

Whereupon you can say, "Well, look how your kids would turn out." This is why this whole business is unscientific; because if you knew my children and you thought that they had turned out terribly, you might say, "If you did it the way you are now talking about, they would've turned out a whole lot worse!" I would disagree.

Nevertheless, it is from such pragmatic and empirical assessments we have to make our judgments.

A final word about mass media which will be very brief. Dr. Kolb made a couple of references to mass media which I think are pertinent in this area. He points out that the mass media are very important in transmitting information in the mental health and retardation areas. This is certainly true. They are also instrumental, however, through perhaps no fault of their own, in transmitting a good deal of misinformation. An example might be a scientific study about a new drug which is going to solve certain things. This story is put out in good faith and gets a lot of play, and many people, hoping to get this drug, rush to their doctors or psychiatrists. Then other tests prove that the drug wasn't any good after all. But do the scientist or public relations people of the university, where the discovery was made, call in the press and say, "we're sorry?" No, you probably never get a follow-up in the media, and people go on for years thinking that this wondrous drug was, in fact, working.

The second comment Dr. Kolb made concerned the tendency to exploit health news. The media must certainly be blamed for this in some instances. I was gratified that he also blamed the sources. The only solution I see for that particular problem is for greater professionalism, and I would say this professionalism should be on both sides, medical and press.

This might mean expanding the definition of professionalism on the medical and psychologic side to include understanding of media interests and needs and the necessity for communicating with the public. The tradition of medicine, up until quite recently, has been very negative about talking with the common people. Some of the problems of the American Medical Association, specifically, related to an inadequate understanding of public relations a decade or so ago.

On the other hand, a good deal of unprofessional conduct certainly remains in the media. One of the things that keeps us going in journalism schools is the hope that we will train more people to do a better job in the media, so that five to ten years from now the reporting and display of news will be on a more responsible level than they are now.

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S. SENIOR SACK, M.D., Editor

Clinical Implications of Transplantation Immunology*

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THE RAPID DEVELOPMENT and the remarkable effectiveness of surgical procedures, recently perfected in relation to organ transplantation, have accentuated the deficiencies in our ability to cope selectively with the immunologic events which threaten the viability of the organ transplanted. Agreement is general that the chief obstacle to transplant survival is the immunologic response provoked by the antigens possessed by the donor of the organ which are not shared by the recipient. The induction of the immune response to another individual's tissues is thus a function of the genetic and, therefore, the antigenic differences between donor and recipient. This has been illustrated repeatedly in laboratory rodents and in human subjects. The point is most clearly made in the uniform acceptance of kidneys exchanged between genetically identical uniovular twins in the absence of any immunosuppressive therapy. It is further illustrated, when the first step away from this genetic identity is taken, by the much higher incidence of transplant survival when the kidney is exchanged between parent and offspring as compared to the significantly poorer results when unrelated donors are used.

Experimental phase

This experience led to the development of the whole field of "tissue typing" or "histocompatibility testing" to attempt selection of a donor and recipient with the least possible antigenic differences. Using a variety of in vivo and in vitro technics, it has been possible to select a more histocompatible donor from a panel of less histocompatible donors, with respect to the prospective recipient of the organ. Although these tests have proved useful in excluding gross tissue incompatibilities, a residue of antigenic differences remains which may elude detection. This residue reflects the inherent individuality of each member of outbred human populations.

What means then are available to neutralize the immune response evoked and tip the scales in favor of acceptance of the transplant? The earliest and still the most effective means utilized is prolonged therapy with immunosuppressive agents as exemplified by 6-mercaptopurine in various combinations with steroid analogs. These drugs are generally effective in suppressing the immune response to the transplanted organ. Their disadvantage stems from the universal immunosuppression produced which may result in severe impairment of the normal host defenses against his own indigenous bacterial, fungal, and viral flora. There exists, therefore, the hazard of succumbing to overwhelming sepsis in the face of a normally functioning kidney homograft.

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This untoward complication of drug therapy has redirected attention to other more selective immunosuppressive measures which have as their basis the specificity of the host's immune response to a particular individual's tissues. This type of approach is based on the reality that efforts to ameliorate or abolish an immune response, possessed of this degree of specificity, will be improved immeasurably by identification of the antigens that induce it and the antibodies that mediate it. With such specific information available there are immunologic maneuvers now capable of ameliorating the rejection process. The main goal anticipated by this approach is the production of adult tolerance by pretreatment of the prospective recipients with highly purified transplantation antigens of the donor of the transplant.

Fortunately, the experimental background for this was initiated some years ago, and the dividends arising from early painstaking efforts to identify and characterize the transplantation antigens are now coming to fruition. The purification of transplantation antigens starting with whole cells and moving successively to cell extracts, to microsomal fractions, and thence to endoplasmic reticulum has resulted in a cumulative experience which has substantiated the original premise. This work has reached a new and promising level of applicability with the recent solubilization of transplantation antigens.

This goal conditioned the thrust of experimental efforts until most recently, namely, discrimination in the selection of combinations of most histocompatible donor and recipient plus the prospect of pretreatment of the recipient with donor transplantation antigens to result in a type of adult tolerance which would further favor retention of the transplant. The abatement of the immune response hopefully achieved in this fashion could then allow a substantial reduction in the amount and duration of immunosuppressive therapy and thereby circumvent the threat of overwhelming sepsis. This prospect remains a realistic and most promising one, as current experimental efforts which demonstrate its effectiveness would suggest.

The newest and most promising addition to this armamentarium is an immunologic one, ALS (antilymphocyte serum). This exciting development in the quest for agents to control immunologic reactions has been advocated recently for transplant rejection therapy by Woodruff and by Medawar and their colleagues on the basis of their demonstrations of its potent activity in laboratory animals. Lymphocytes from one species of animal (man) injected into another species (horse) will produce antilymphocyte serum which can then produce immunosuppression when given to the man from whom the lymphocytes were obtained. The preponderance of immunosuppressive activity resides in the IgG fraction of the gamma globulins although this fraction is contaminated with other antigenic proteins. As with the development of antipneumococcal serum, similar difficulties are being encountered in the preparation of a pure reagent from an appropriate species of animal with predictable potency which will induce the least deleterious side-effects: anaphylactic and serum sickness reactions, hemolysis, and protein deposits in glomeruli.

In prolongation of organ transplants in the laboratory animal, ALS appears at least comparable to and on occasion more potent than the immunosuppressive drugs it replaces. Moreover, ALS has the unique advantage that delayed hypersensitivity and homograft reactions, mediated by small lymphocytes, are selectively depressed without extensive effects on serum antibody production. The exact mode of action of ALS is unknown, but its effects are those which neutralize the usual functions of the circulating small lymphocyte. Whether this event results from "blindfolding" the lymphocyte or from a process akin to the action of phytohemagglutinin termed "sterile activation" by Levey and Medawar, remains to be clarified.

The recent addition of ALS to the usual immunosuppressive regimen, 6-mercaptopurine with steroids, employed by Starzl in his series of human renal transplant recipients, has resulted in a 90 per cent increase in the survival rate of renal homografts at the end of one year.

An insight into the particular function of graft-sensitized small lymphocytes that ALS might suppress is emphasized by the finding in human subjects that deoxyribonuclease-treated leukocyte extracts obtained from homograft-sensitized donors transfer to normal individuals the capacity to accelerate (immune) rejection of skin used to sensitize the donor. Viewed another way, anti-A transfer factor, elaborated by B following exposure to A's skin, endows the indifferent individual C with the machinery to respond as if he had met A's skin on an earlier occasion. The capacity of transfer factor to confer on normal recipients the immunologic "memories" of the donor with respect to delayed hypersensitivity to bacterial (tuberculin, streptococcal, diphtherial) and fungal (coccidioidal) antigens has been summarized elsewhere. In this system it is important to realize that whatever altered, delayed reactivity is conferred on the nonsensitive recipient reveals the mechanism employed by the sensitive donor whenever he is confronted with the appropriate antigen.

Transfer factor

Subsequent findings have characterized transfer factor as a dialyzable, nonantigenic, nonantibody moiety of less than 10,000 mol. wt. By exclusion it was shown that the only biochemical candidates in the dialysate that may qualify for this type of biologic activity are polynucleotide and/or polypeptide chains. We have, therefore, come to view this highly purified preparation of transfer factor as an informational micromolecule which transmits to the recipient the delayed type of immunologic memories of the donor for prolonged periods. Our observations on the dialyzable nature of transfer factor, its low molecular weight, and its polynucleotide-polypeptide composition have since been repeatedly confirmed in specific detail by other investigators.

When one compares the specificity of skin homograft rejection in human subjects achieved following active sensitization with that achieved by transfer factor, the latter is more highly individually specific; transfer factor causes accelerated rejection only of the skin grafts against which it is directed and not of unrelated control skin grafts. The reasons for this observation became clear with the subsequent finding that human transplantation antigens prepared from leukocyte fractions are not dialyzable and remain within the cellophane sac. The dialysate containing transfer factor has been shown incapable of inducing active sensitization to subsequent skin grafts obtained from the leukocyte donor. This finding clearly separates the materials in leukocytes which actively sensitize to skin homografts from the nonantigenic material, transfer factor, which transfers such sensitivity. This circumstance also provides an explanation for the long duration of transferred sensitivity even when intact leukocytes or leukocyte extracts were used as vehicles of transfer factor. Although the cellular vehicle of transfer is rejected, transfer factor is not.

It has been shown that blood leukocyte extracts used to prepare transfer factor result only in the transfer of delayed hypersensitivity and are incapable of transferring the capacity for serum antibody formation. This finding taken in conjunction with the transfer of skin homograft rejection by blood leukocyte extracts suggests that this result in man can occur via a mechanism of delayed hypersensitivity alone without necessarily invoking the assistance of serum antibody.

In relation to the role of serum antibody and homograft rejection, however, it is important to recall the potent damage that Dixon has shown to result from circulating antigen-antibody complexes interacting with vessels and glomeruli of otherwise normal kidneys. An important extension of this principle to the tissue damage encountered by renal transplants has been the detection by Lerner and Dixon of antiglomerular basement membrane antibody in the blood after, but not before, removal of the transplanted kidney. This finding raises the interesting question: Is serum antibody made to foreign antigens in the glomerular basement membrane directly, or do sensitive lymphocytes bearing transfer factor interact with kidney target cells to liberate antigens which then induce a deleterious serum antibody response?

In relation to the action of ALS discussed previously, it is possible that the ALS may inactivate among the total lymphocyte population the particular few cells which bear transfer factor directed against that specific donor's antigens and thereby may intercept their interaction with the target cells in the kidney. This interpretation, if correct, suggests that an antibody to neutralize transfer factor might offer a more selective approach to this problem. Although purified transfer factor is not antigenic in rabbits or man, there are chemical means available to convert small molecules into immunogens should this become desirable.

In considering the immunologic character of homograft rejection it is important to acknowledge that the factors resulting in rejection will vary tremendously with the organ and its anatomic location in the new host. All tissues of an individual contain transplantation antigens and can induce homograft immunity (accelerated rejection) to any other tissue or organ from the same donor. The intensity of this response will be determined by the quantities of antigen available, the organization and function of the organ transplanted, and the nature of its vascular and lymphatic connections to the host. Thus it is not surprising that the immunologic principles evolved in studying the behavior of skin homografts do not always apply to kidney homografts. The skin graft may be likened to an intradermal injection of antigen, the graft itself being dependent for nourishment on a delicate network of small capillaries and lymphatics and thereby extremely vulnerable to immunologic as well as other types of adversity in its new residence. The renal transplant, however, is attached to the host by large arterial and venous anastomoses and may be viewed as the source of a continuous intravenous injection of antigen. The intravenous route is known to favor desensitization of delayed hypersensitive states and to favor prolongation of survival of skin homografts. Moreover, the glomeruli by nature of their plasma clearance function are apt to be exposed to heavy concentrations of circulating macromolecules such as antibodies and antigen-antibody complexes.

It is likely that a balance of forces such as these in addition to purely immunologic phenomena contribute to the more favorable reception of the kidney compared with that accorded skin grafts. The additional circumstance of the transplant recipient's uremia, which is known to function as nature's immunosuppressive device, also favors acceptance rather than rejection of the renal transplant. With the extension of the scope of transplantation to include liver, lungs, and most recently heart, it is likely that many of the basic immunologic principles can be extrapolated to guide the practical management of the rejection crises. However, it is inevitable that the unique structure, function, and locale of these organs will require specific amendments to the over-all regimen.

The principles we have considered come under the heading of transplantation immunology; however, they are at the very core of understanding and effectively dealing with a much broader area which encompasses autoimmune disease, tumor immunology, and diverse host-parasite relationships. In the current climate fostering applicability of research efforts to the bedside, it is noteworthy, particularly in the area of organ transplantation, that each new advance made in the laboratory is awaited with anticipation and finds immediate and extensive clinical application. Thus painstaking laboratory efforts that at first glance may seem exotic or obscure today become the commonplace clinical measures of tomorrow.

Question and answer period

VOICE: In the transfer of delayed hypersensitivity or accelerated homograft rejection, do you inject transfer factor subcutaneously or intravenously?

DR. LAWRENCE: The usual route of injection of transfer factor has been subcutaneous or intradermal. We have also found the intramuscular route effective in this regard, but we have never tried the intravenous route.

VOICE: What kind of an entity is transfer factor?

DR. LAWRENCE: The biochemical identity of transfer factor has not been established conclusively as yet. However, it has been characterized as a dialyzable, nonantigenic, nonantibody moiety of less than 10,000 mol. wt. which resists enzymatic digestion by deoxyribonuclease, ribonuclease, and trypsin. By exclusion it has been shown that the only biochemical candidates in the dialysate that may qualify for this type of biologic activity are polynucleotide and or polypeptide chains. The suggestion that transfer factor is an informational micromolecule is fostered by the very prompt (six to eighteen hours) acquisition of systemic delayed hypersensitivity following injection of minute amounts of material, which may then persist for one to two years. This interpretation is bolstered, and the possibility that transfer factor is a self-replicating entity is suggested by the finding that serial transfer of delayed hypersensitivity from individual A to individual B to individual C has been possible.

MURRAY DWORETZKY, M.D.: I think you implied that tissue typing for transplantation of organs might be perfected to a degree comparable to the current practice of blood grouping or blood typing for transfusion.

DR. LAWRENCE: That is correct. Most renal transplantation units currently use a variety of tissue typing technics: leukocyte agglutination, mixed leukocyte culture, and various leukocyte cytotoxicity tests. Several teams in this country and abroad are evaluating the predictability of such tests in both prospective and retrospective studies as measured by the survival and functional behavior of the renal transplant. The technics employed show a great deal of promise and exclude markedly divergent histocompatible types, but this is not necessarily a guarantee of indefinite transplant survival in view of an irreducible minimum of antigenic differences between all but uniovular twins. The precision which is characteristic of blood typing for transfusion purposes has not yet been reached in tissue typing. The discriminatory perfection of tissue typing awaits the definition of human transplantation antigens and their characterization as "strong" or "weak" as has been accomplished in genetically defined inbred lines of mice.

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Cerebral Angiography in Supratentorial Epidural Hematoma

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IN THE EIGHTY-TWO years since Jacobson's[1] publication, there have been approximately 225 publications concerning epidural hematoma. One of the most important factors related to a favorable prognosis noted in these reports is the condition of the patients immediately prior to the removal of the clot. If there is to be a favorable outcome, the diagnosis should be established before signs of brainstem dysfunction appear. This can be done by cerebral angiography. The characteristic and variable features of arteriograms in patients with epidural hemorrhage therefore assume considerable importance, and for this reason a review of our experience was undertaken.

Data

Cerebral angiography was performed on 17 of 40 patients with epidural hematoma, ranging in age from two to sixty years, in the last six years, 1960 to 1965.

The hematomas were in the midline in 2 instances, frontal 2, parietal 1, and 12 in the temporal area. The interval between head trauma and cerebral angiography was within the first twenty-four hours in 8 cases, several days in 7, and over two weeks in 2 instances.

In each of the epidural hematomas at the vertex, there was a linear fracture crossing the midline. The origin of bleeding was venous. Angiography revealed extravasation of contrast material from superior sagittal sinus in one and from a lacerated parasagittal vein in the other. No operation was required for 1 patient whose neurologic deficit subsided within a period of one week. In both cases, on angiography, the lateral venous phase revealed depression of the superior sagittal sinus from the inner table of skull (Fig. 1A).

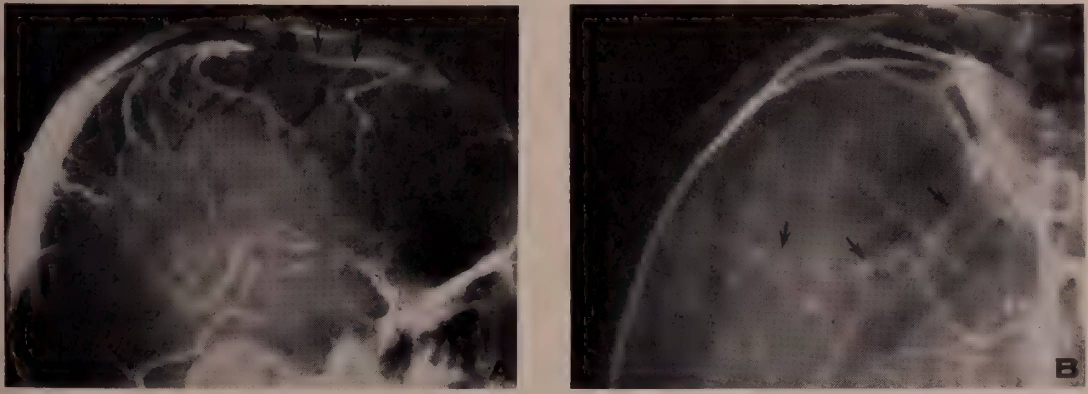

FIGURE 1. (A) Stripping (depression) of superior sagittal sinus. (B) Avascular area at frontal pole outlined by posteriorly displaced artery.

There were no specific features about the epidural hematomas in the frontoparietal region except that of a space-occupying mass. In anterior fossa, the lateral view disclosed an avascular area sharply outlined by the surrounding blood vessels (Fig. 1B). The anteroposterior view showed shift of the anterior cerebral artery in both cases of frontal epidural and shift of the internal cerebral vein in parietal epidural hematoma. A tangential view could have been helpful but was not performed because the diagnosis was not suspected.

In 12 cases of temporal epidural hematoma an avascular space between the brain and the inner table of skull was evident in 9 cases. A double shadow caused by the blood vessels anterior and posterior to the epidural collection could be seen in only 4 cases (Fig. 2). In 3 instances in which the avascular area was not noted, the hematoma was located subtemporally. In these areas, anterior and lateral views showed marked elevation of the middle cerebral group of vessels. No displacement of the pericallosal artery was observed in any of the subtemporal and 4 of the temporal epidural hematomas. Three of 5 cases which showed shift of the midline vessels had the appearance of chronic subdural hematoma, namely, a fairly uniform concave appearance. Displacement of the middle meningeal artery from the inner table of skull was found in 5 cases (Fig. 3A).

Extravasation of contrast medium from the posterior branches of the middle meningeal artery was seen in 1 case (parietal) (Fig. 3B); 3 of the temporal epidural hematomas showed extravasation of opaque substance from anterior branch of the middle meningeal artery.

Comment

The angiographic differentiation between acute and chronic subdural and extradural hematoma was described by Norman.[2] He concluded that the findings in extradural hematomas were fairly uniform and similar to those seen in the later stage of chronic subdural hematoma. However, the outline of an extradural hematoma is relatively irregular and "without the smooth concavity characteristic of the chronic subdural hematoma." Vaughan, in 1959,[3] demonstrated by angiography contrast medium escaping from a ruptured middle meningeal artery into the extradural space.

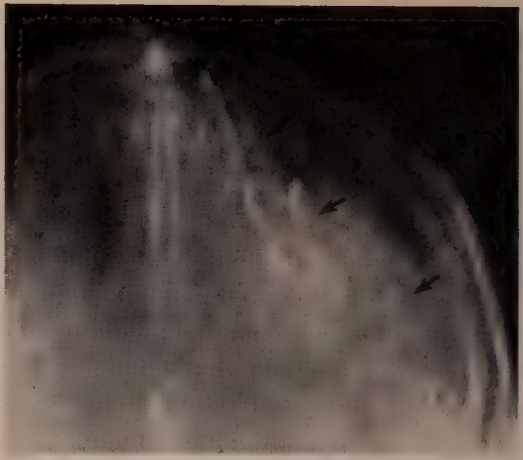

FIGURE 2. Double-shadow appearance of extradural hematoma.

The angiographic findings in epidural hematoma depend on the location of the hematoma and the associated brain injury.

In midline epidural hematoma, depression of superior sagittal sinus from the inner table of the skull, in lateral view, with or without extravasation of the contrast medium, is pathognomonic. The depression of superior sagittal sinus is localized. This ought to be differentiated from an apparent depression of superior sagittal sinus throughout its entire course when the head is tilted. Much emphasis has been placed on epidural hematoma occurring when a linear fracture crosses the middle meningeal artery groove in the skull. It must also be kept in mind that a simple linear fracture crossing the vertex may also cause an epidural hematoma because of laceration of superior sagittal sinus or adjacent blood vessels.

Epidural hematomas in the frontal and parieto-occipital regions are difficult to differentiate from other expanding lesions in these areas. As Whittaker[4] has pointed out, the lateral view is essential for the diagnosis of epidural hematoma in these locations. When epidural hematoma is in the parieto-occipital area, the vessel displacement in the lateral view is similar to that of an intracerebral lesion.

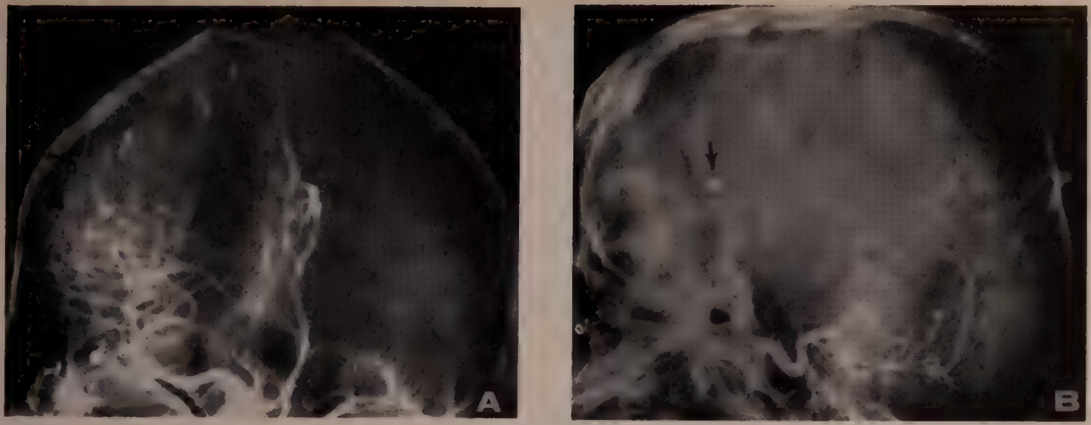

FIGURE 3. (A) Inward displacement of middle meningeal artery. (B) Extravasation of contrast material from posterior branch of middle meningeal artery.

In epidural hematoma of the middle fossa, the anterior posterior view is most important for demonstrating the lesion. In this view usually an "avascular area can be seen"; this is caused by displacement of the branches of the middle cerebral artery from the inner table of skull. If this lentiform-shaped bare area has a double shadow appearance or is accompanied by the displacement of the middle meningeal artery from the inner table of skull, the presence of an epidural hematoma is certain. Selective injection of the external carotid artery may aid in the demonstration of the medial displacement of the middle meningeal artery. It is very difficult to differentiate between an intratemporal space-occupying lesion and subtemporal epidural hematoma. In both conditions, upward displacement of the middle cerebral group can be seen. It has been mentioned that draping of the temporal branch of the middle cerebral artery and elevation of the anterior choroidal artery and basilar vein of Rosenthal, which usually are associated with intratemporal lesion, may be helpful to differentiate these two abnormal conditions.[5] The presence or absence of a shift of anterior cerebral artery does not help in the diagnosis of temporal epidural hematoma. Only 5 of our 12 cases in this region show shift of the midline vessels. In subtemporal epidural hematoma there is usually no shift of the midline structure, since the major displacement of the brain is upward. All 3 of the subtemporal epidural hematomas showed no shift of the pericallosal artery. As Cronquist and Kohler[6] indicated, the displacement of the midline vessels does not correspond to the size of the hematoma.

It has been mentioned that extravasation of contrast medium may be simulated by a false traumatic aneurysm or the shunting. Therefore it is important to demonstrate the associated mass lesion to diagnose an epidural hematoma.

Summary

The angiographic findings of 17 cases of epidural hematoma have been reviewed. These findings depend on the location of the clot and the associated brain injury.

Displacement of the middle meningeal artery from the inner table of the skull, extravasation of the contrast medium with associated mass lesion, and depression of the superior sagittal sinus, if present, appear to be pathognomonic angiographic findings of epidural hematoma.

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Simple Finger Exerciser

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Return of good finger function is an important goal after upper-extremity injuries. Even though the major injury may have been above the hand, significant late disabling effects may appear in the hand. These can be caused by unnoticed, untreated initial trauma or as a result of the immobilization. The basis of the disability is primarily located in the soft tissues of the hand. The principal structures involved are the intrinsic musculature, tendons in their sheaths, and nerve. The condition can often be seen after a Colles' fracture. The poor function of the hand or fingers may persist long after the fracture has healed. In this presentation the major concern is the post-traumatic tenosynovitis and edema in the hand, rather than the effects of a neuropathy, either manifested as a direct somatic projection or masked by a secondary autonomic dystrophy.

The response of the still swollen post-traumatic hand to various forms of parenteral anti-inflammatory medication is spotty to poor. The response of such a hand to purely passive modalities of physiotherapy runs from almost moderate to spotty. The most favorable result, granted willing participation by the patient, is obtained through active, graduated use of the hand.

By tradition, squeezing a rubber ball is the favored hand exercise regimen. Since it demands movement of the finger flexors en masse, it can be criticized because it does not favor the unique prehensile and manipulative abilities of the fingers. The rubber ball maneuvers tend toward an isometric form of exercise. In an isometric exercise there is an increase in muscular tension with little decrease in muscular length. For good finger function the exercise aim should be toward the isotonic. In this the muscular energy is converted into movement rather than to the maintenance of posture with tension. In the fine activity which is the major function of the hand there is little doubt that the bulk of the activity falls into the isotonic division.

Although normal daily living requires a great deal of isotonic activity from the fingers, it is difficult to organize periods of graduated activity to accomplish this without some type of apparatus. Not everyone has access to a typewriter or leanings toward a musical instrument. And further, it is better therapy for some patients if the treatment regimen does not resemble any work pattern.

Method

The method to be described has the advantage of being easily available and inexpensive, but most of all it is mostly in the isotonic mode. It has the disadvantage of requiring a bit of time and patience at the outset by both the physician and patient. The apparatus, truly minimal, consists of two ping pong balls. These are held in the affected hand so that they do not fall of their own accord. The exercise consists of alternately revolving one ball around the other as shown in Figures 1 to 5. If, at first, difficulty is experienced in keeping the balls in the hand, the unaffected hand is used to keep them from falling as the rotation is pursued (Fig. 6). In the second method, the work of the exercising hand is eased by removing one set of stresses. The fingers have to manipulate to perform the rotation but do not have the work of preventing the balls from popping out of the hand. When dexterity has improved, the second hand can be withdrawn. It will soon be found that one particular rotation is easier, for instance, clockwise for the right

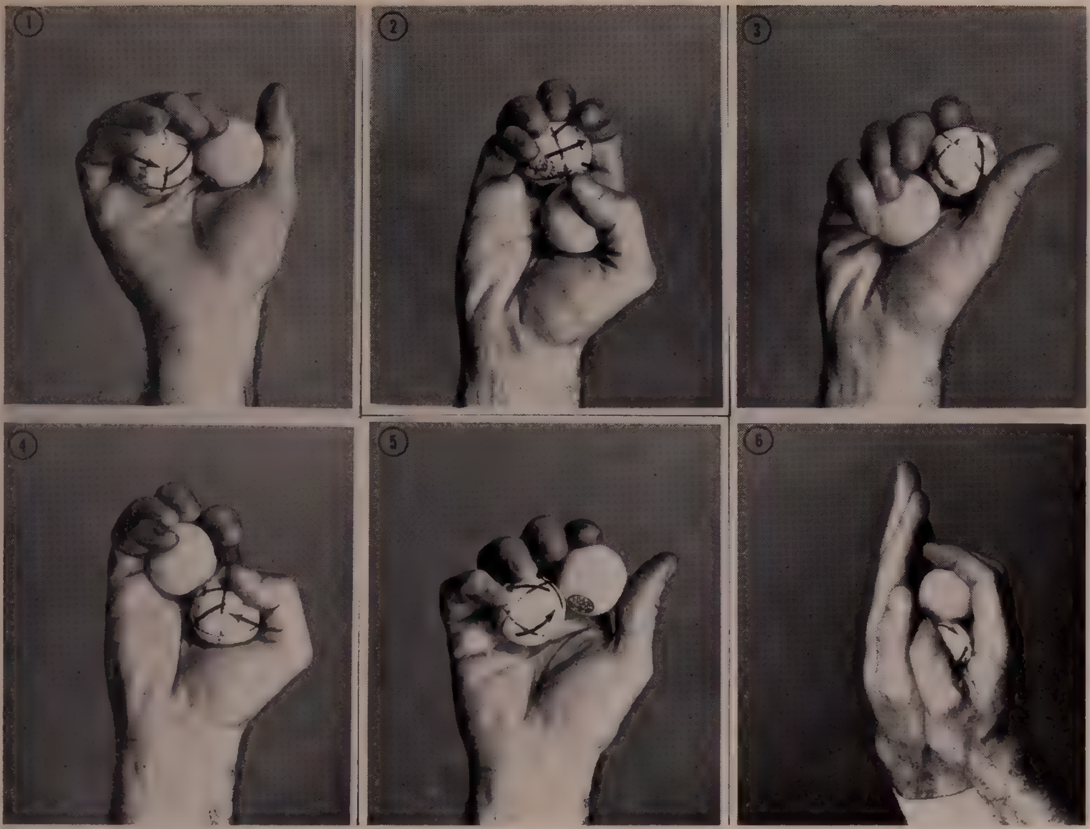

FIGURE (1 to 5). Ball manipulation. Note path taken either by plain or marked ball. (6) Two-handed manipulation.

hand and counterclockwise for the left hand. With increase in practice time, both rotations, even with palms down, can be accomplished without a slip.

Doing the exercise with heavier objects, such as steel balls of the same size, is easier in one respect. The weight of the balls makes it more difficult for them to pop out of the grasp. However, this weight may too easily fatigue fingers that are already disabled. It is interesting to note that the constant manipulation of iron or steel balls antedated Captain Queeg of *The Caine Mutiny*.[1] There was a professional bodyguard class in China, Bow-Pao, that followed this practice.[2] This was done to improve strength and suppleness of the hand.

Conclusion

Either from the illustrations or from a direct trial, it can be seen that maneuvers of rotation require not only flexion and extension but also abduction and adduction motions of all the fingers plus opposition of the thumb. The combined motions, which require both intrinsic and extrinsic muscular tendon participation, will materially aid in the rehabilitation for post-traumatic disability in the hand.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Intestinal Malabsorption

Progress in Diagnosis and Treatment*

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As IN ALL areas of medicine, a review of our understanding of intestinal malabsorption is in order from time to time. Over the past decade considerable progress has been made in analyzing the defects responsible for poor absorption of nutrients. Although a few new syndromes have been described, such progress has, in the main, been in the application of therapeutic measures. Since it usually follows that development of adequate treatment stimulates diagnostic alertness, therapeutic progress can be expected to lead to more cases being suspected. This in turn places more emphasis on laboratory procedures which will confirm the diagnosis of malabsorption and even more importantly unravel the underlying cause.

The diagnosis of intestinal malabsorption should be suspected not only when the patient presents symptoms of diarrhea but also when an individual has been chronically underweight or has undergone recent weight loss. Patients may also have complaints of muscle cramping or even tetany, while others may present symptoms of bleeding or easy bruising. Still other patients complain of vague fatigue and "irritable colon."

Diagnostic procedures

Most hospital laboratories are now equipped to carry out most of the appropriate analyses for the study of malabsorption. The following is a list of malabsorption tests, with a few comments in an attempt to improve the interpretation of certain procedures.

1. Serum calcium, cholesterol, total protein, and albumin
2. D-xylose absorption
3. Serum carotene, loading test
4. X-ray examination
5. Vitamin B_{12} absorption
6. Stool examination; quantitative determination of fecal fat
7. Prothrombin time, response to vitamin K
8. Lactose tolerance
9. Glucose tolerance
10. Intestinal biopsy
11. Gastric analysis
12. Therapeutic trial of gluten-free diet
13. Iodine-131-tagged fat

SERUM CALCIUM, CHOLESTEROL, TOTAL PROTEIN, AND ALBUMIN. The simple determination of serum cholesterol, calcium, and total protein and albumin may provide clues to the existence of malabsorption. The occurrence of a low serum cholesterol in patients with malabsorption is frequent.[1] Hypocalcemia usually bespeaks severe malabsorption if other reasons for calcium de-

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ficiency, such as renal disease and hypoparathyroidism, can be eliminated. A deficiency in protein and albumin suggests that there may be poor absorption of nitrogenous materials or excessive loss of protein in the intestinal tract, such as occurs in protein-losing enteropathy.[2]

D-XYLOSE ABSORPTION. Following the standard load with 25 Gm. of d-xylose orally, the five-hour urinary excretion of d-xylose in the normal person usually exceeds 5 Gm. This procedure is easily carried out in a cooperative patient and is reliable, unless there is renal disease which will produce a falsely low value consistent with malabsorption. If such is suspected, a blood test indicating level of d-xylose may be carried out.

SERUM CAROTENE. Another simple and usually reliable screening test for malabsorption is serum carotene. Normal values in most laboratories are 100 micrograms per 100 ml. or more, and levels below 50 micrograms are usually suggestive of either a poor carotene intake or malabsorption. If a low serum carotene is reported and there is still doubt about the diagnosis of malabsorption, this can be resolved in most individuals by the loading test. This is done by giving 20,000 units of beta carotene in oil orally for four days and repeating the serum level test.[3] Failure to show a rise in the serum carotene, when the patient is eating well plus receiving the beta-carotene supplement, indicates poor intestinal absorption.

X-RAY EXAMINATION. In patients with diarrhea both barium enema and upper gastrointestinal x-ray examinations are important. In suspected malabsorption, however, it is crucial to have small-bowel films taken to recognize such conditions as jejunal diverticuli, postoperative blind pouch, a dilated afferent loop following a Billroth II gastrectomy, or excessive bypass of the jejunum after surgical gastrojejunostomy. Clumping of the barium in the small intestine is highly suspicious of the existence of sprue syndromes.[4] Other x-ray film findings which are helpful are calcifications in the pancreas or loss of calcium from the bones.

VITAMIN B_{12} ABSORPTION. Abnormal function of the distal ileum can usually be confirmed by a test of vitamin B_{12} absorption using the Schilling technic. Failure of B_{12} absorption to return to normal, when intrinsic factor is given with the cobalt-57-labeled vitamin, confirms the diagnosis of intestinal malabsorption.[5]

STOOL EXAMINATION. The examination of the stool for fat is helpful, if carefully and reliably done. The qualitative examination, however, may be in error because of failure to give the patient an adequate fat content in his diet or because of dilution by water in the stool. Quantitative determination of fecal fat is more reliable provided the intake of fat is known and preferably is in the range of from 75 to 100 Gm. daily.

PROTHROMBIN TIME. If the prothrombin time is prolonged the simple procedure of giving a fat-soluble form of vitamin K orally and finding that this fails to improve the prothrombin time, whereas subsequent intramuscular injection of vitamin K does improve it, is a clue to malabsorption.

LACTOSE AND GLUCOSE TOLERANCES. In searching for lactase deficiency, the lactose tolerance test, using either 50 or 100 Gm. of lactose with subsequent blood glucose determinations at thirty-minute intervals over the next two hours, is a very helpful screening test.[6] With either dose of lactose, the normal person will show a blood glucose rise of 20 mg. per 100 ml. or more. In patients with lactase deficiency, there will be not only a flat curve of blood glucose but frequently cramps, diarrhea, and moderately severe discomfort in the abdomen will occur within two to three hours of the ingestion of the sugar. A flat-curve lactose tolerance test should always be followed by a glucose-galactose tolerance test containing 25 Gm. of each in a mixture, using the same blood glucose determinations. These monosaccharides are the ones present in lactose and do not require lactase enzyme activity. They, therefore, can be absorbed normally by the patient with pure lactase deficiency. Failure to obtain a normal glucose response to the glucose-galactose test indicates that mucosal block for the absorption of monosaccharides exists or very poor emptying of gastric juice is occurring.

INTESTINAL BIOPSY. The availability of reliable instruments as well as development of rapid technics for inserting the peroral intestinal biopsy tube into the proximal jejunum has led to increased use of this diagnostic procedure.[7] Correctly mounted bits of intestinal mucosa may be the most conclusive evidence one can obtain for the diagnosis of sprue syndromes. In addition, in vitro determinations of enzymes, such as lactase, maltase, and sucrase, can be carried out on such specimens.

GASTRIC ANALYSIS. The use of gastric analysis may be helpful to distinguish between the occasional patient with Zollinger-Ellison syndrome (gastrin-secreting pancreatic tumor) and certain patients with short-bowel syndrome who have hypersecretion of gastric acid.[8-10]

I^{131}-TAGGED FAT. The use of I^{131}-tagged fat compounds, olein and triolein, has unfortunately not been found to be reliable, since most preparations of the tagged material have been contaminated with free I^{131}.[11]

GLUTEN-FREE DIET. Frequently the most useful procedure will be the therapeutic trial of a gluten-free diet for suspected sprue or celiac disease (gluten enteropathy). In some patients symptomatic relief will follow a lactose-free diet, and in others a trial of pancreatic extract will reveal the presence of pancreatic deficiency.

Advances in therapy

Although the exact lesion responsible for gluten enteropathy continues to escape detection, a gluten-free diet yields frequent dramatic results in such patients. Improvement in steatorrhea and in intestinal symptoms may be seen as early as one week after the beginning of therapy but may require from four to six weeks. Surprisingly, a repeat intestinal biopsy in patients treated for sprue does not show a rapid return to normal in the appearance of the mucosa.[12] Tests of intestinal absorption, however, will show an early return to or near normal.

Tropical sprue, like gluten enteropathy, likewise escapes identification of the exact cause. Tetracycline and folic acid are of proved assistance, and combined therapy with these may be desirable.[13] Tropical sprue can usually be differentiated from nontropical sprue by a trial of gluten-free diet and, more important, a history of having lived in the tropics.

Lactase deficiency as revealed by the history of milk intolerance has been found in a high percentage of the Negro population both in this country and in Africa.[14,15] It also appears to be frequent among Oriental and Greek Cypriot people.[16] Deficiency of this enzyme is also found with increased incidence in other conditions, such as nontropical sprue, ulcerative colitis, regional enteritis, and spastic colon syndromes and is occasionally revealed for the first time following gastrectomy.[17] The obvious treatment for lactase deficiency is to avoid lactose in the diet, but this is sometimes more difficult to attain than is realized. The presence of lactose in prepared foods obtained in grocery stores is often not understood, and occasional ingestion of these materials plus such foods as ice cream or cheese, which by themselves may be tolerable, may result in episodic diarrhea. No histologic changes are ordinarily seen in patients with pure lactase deficiency, but for those who have this deficiency in association with sprue, the lactase enzyme activity frequently returns to normal after the use of a gluten-free diet.[18]

Understanding of the blind-loop syndrome such as occurs with jejunal diverticuli, surgical anastomoses, and gastrojejunostomies has recently been markedly improved by the realization that malabsorption is associated with bacterial production of enzymes which destroy bile acids.[19] Deconjugation of bile acids by these enzymes or the production of secondary bile acids deprive the intestinal milieu of a substance essential for the passage of lipids across the mucosal barrier. The use of intermittent courses of broad-spectrum antibiotics results in almost complete relief in such individuals.[20] In some patients, however, it may be wiser to attempt correction of the blind loop. Thus far it has not been possible to prepare commercially pure conjugated bile salts, which would serve to replace those destroyed by the bacteria.

In patients with massive resection of bowel following vascular accidents, trauma, or strangulation, malabsorption is related to several factors in addition to the loss of absorbing surface. Such patients often have excessive secretion of gastric acid, perhaps due to the loss of inhibiting substances from the small bowel, and in addition, when the distal ileum is removed, the patients lose bile salts which ordinarily are reabsorbed from the distal ileum and recycled through the liver and bile.[21] This loss of bile salts yields a lowering of serum cholesterol, since this compound is used in making new bile salts. If the loss is severe enough, there may be a deficiency of bile salts which are required for the passage of fatty acids and monoglycerides across the mucosa. In such situations it may be desirable to use bicarbonate or antacids to overcome the excessive acid, and if the steatorrhea is severe the use of medium chain triglyceride preparations may be of great value. This material does not require bile salts or pancreatic secretion for its absorption and yet is metabolized and used as an efficient source of energy.[22]

Patients with pancreatic insufficiency, following pancreatitis or pancreatic resection, will respond to pancreatic extract therapy, but enhancement of the effect of the extract is realized when the pH of the jejunum is raised by the administration of bicarbonate.[23] The combined use of pancreatic extract and bicarbonate is, therefore, the procedure of choice for patients with steatorrhea caused by pancreatic insufficiency. If these agents fail to improve the nutrition of the person with pancreatic deficiency, medium chain triglyceride feedings will provide a concentrated source of calories.

An additional use of medium chain triglyceride is in patients with malabsorption due to obstructive jaundice or to primary biliary cirrhosis where there is a relative lack of bile salts. In such individuals, who are often given cholestyramine resin therapy in an attempt to relieve their itching, the employment of medium chain triglycerides may compensate for the aggravation of the bile acid deficiency which occurs with this resin.[22]

Another condition which has recently become amenable to therapy is Whipple's disease (intestinal lipodystrophy). Following the diagnosis made by intestinal or lymph node biopsy, treatment of what appears to be bacterial infection of the lamina propria of the intestinal wall is effective. Such agents as tetracycline or ampicillin appear to produce marked improvement in these patients.[24]

Intestinal parasitosis, such as giardiasis, may occasionally be responsible for malabsorption, and appropriate therapy for the parasitosis is effective in restoring normal absorption.

A number of other causes of intestinal malabsorption exist, but they are usually rare and are not as commonly responsive to therapy. These range from beta-lipoproteinemia to diabetes mellitis with "diabetogenic diarrhea." It is hoped that subsequent reviews will be able to point out advances in the treatment of these syndromes.

An adequate history of the patient and particularly a suspicion of malabsorptive disease should reveal increasing numbers of cases. In a high percentage of such patients, appropriate therapy will yield relief from the symptoms, even if it does not cure the underlying lesion. If this is effected, a surprising improvement in the productivity and efficiency of the individual can often be observed.

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Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
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Beekman-Downtown Hospital
New York City
November 28, 1967

Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by WILLIAM J. EISENMENGER, M.D.

Rapid Progression of Hepatic and Renal Failure in Chronic Alcoholism

Case history

SUNG-NAI CHO, M.D.: A thirty-eight-year-old white male bartender was admitted to Beekman-Downtown Hospital with weakness of one month's duration and icterus for eight days.

During the previous twenty years the patient had taken about one pint of whiskey daily. He denied any symptoms until several weeks before admission when he noticed mild discomfort in the upper part of the abdomen, a weight gain of 10 pounds, and increasing weakness. Eight days before admission he observed light-color stools and mild fatty food intolerance. Five days before admission his family and friends noticed a yellowish discoloration of his skin and sclerae. He denied anorexia, nausea, vomiting, or dark urine. The past history was not remarkable; he had had appendectomy at age ten and gave a history of allergy to penicillin. The patient's father died of diabetes.

Physical examination on admission showed a blood pressure of 138/80, pulse 128, respirations 22 per minute, and temperature 101 F. The patient was well-nourished, conscious, and markedly icteric. There were a few small vascular spiders over the anterior cervical region. There was no unusual odor to the breath. The heart and lungs were not remarkable except for occasional late inspiratory rales at both lung bases. The abdomen was moderately distended with mild local tenderness in the epigastrium and enlargement of the liver to 4 fingerbreadths below the right costal margin. There was an old healed scar from appendectomy.

The initial urinalysis showed a specific gravity of 1.009, 1 plus test result for albumin, and a positive test result for bile. The hemoglobin was 12.7 Gm. per 100 ml. and hematocrit 38; the white blood cell count was 16,000 per cubic millimeter with 61 per cent segmented forms, 22 per cent nonsegmented forms, 12 per cent lymphocytes, 1 per cent monocytes, and 4 per cent eosinophils. The serologic test for syphilis was nonreactive.

The fasting blood sugar was 116 mg., the blood urea nitrogen 21 mg., the direct bilirubin 61 mg., the total bilirubin 64 mg., and the total protein 6.2 Gm. (albumin 3.1 and globulin 3.1) per 100 ml. The thymol turbidity was 0.7 units (normal 0 to 2 units); the cephalin flocculation test was 2 plus (normal 0 to 1 plus). The alkaline phosphatase was 17.5 units (normal 0 to 4 units) and the acid phosphatase 1.6 units (normal 0 to 4 units). The initial SGOT (serum glutamic oxaloacetic transaminase) was 230 units, the SGPT (serum glutamic pyruvic transaminase) 89 units, and the LDH (serum lactic acid dehydrogenase) 570 units. The serum ammonia was below 75 micrograms per 100 ml. The carbon dioxide-combining power was 32.5 mEq., the serum potassium 2.6 mEq., the serum

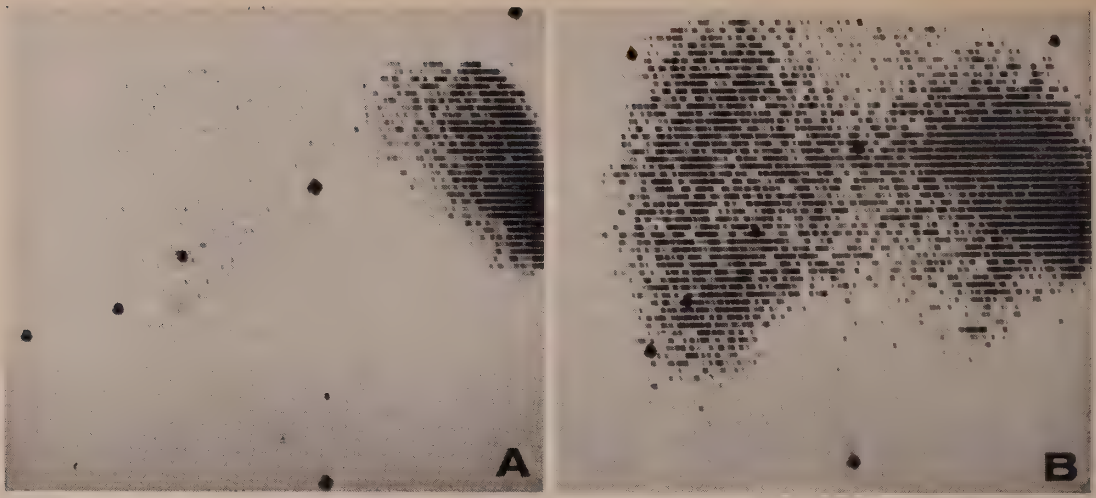

FIGURE 1. Liver scans using (A) radioactive gold showing diminished liver uptake consistent with cirrhosis, and (B) radioactive iodine rose bengal showing "salt-and-pepper" pattern suggestive of cirrhosis.

sodium 128 mEq., and the chlorides 81 mEq. per liter. The twenty-four hour urinary excretion of urobilinogen was 5.2 mg. (normal 0 to 4).

X-ray examinations revealed a normal chest with elevation of the right leaflet of the diaphragm and a questionable pneumonic infiltration at the posterior base of the right lung. Follow-up chest x-ray film four days later showed no change. The x-ray film of the abdomen revealed no abnormalities. The radio-isotope liver scan, using radioactive gold, demonstrated poor uptake of the isotope in the liver; the liver shadow appeared to be enlarged with a good uptake of isotope in the spleen, consistent with advanced liver cirrhosis (Fig. 1A). A second scan using radioactive iodine rose bengal showed an increased pickup of isotope in the liver with a "salt-and-pepper" pattern further suggestive of cirrhosis (Fig. 1B). Again the spleen was well-defined. There was no spillage of rose bengal into the intestinal tract, suggesting an element of biliary obstruction. The impression from this examination was advanced cirrhosis with hepatocellular disease.

During the first five days in the hospital, the patient's temperature fluctuated between 100 and 101 F. but thereafter remained within normal limits. His abdomen continued to be distended with a palpable fluid wave, and he developed pitting edema in both legs. At times small amounts of bright red blood were noted in the stools which generally were clay-colored. During the first week repeat total serum bilirubin was 70 mg. per 100 ml. (direct 70 mg.); thymol turbidity was 0.6 units and cephalin flocculation 3 plus; repeat alkaline phosphatase was 12 units, the SGOT was 390, SGPT 82, and the serum amylase 100 units (normal 50 to 180); and the serum lipase was 0. The hemoglobin and hematocrit essentially remained unchanged; but the white blood cell count rose during the first week to 40,000 per cubic millimeter with 70 per cent segmented, 16 per cent nonsegmented, 7 per cent lymphocytes, 5 per cent monocytes, and 2 per cent eosinophils.

During the second week in the hospital, the patient developed generalized pruritus, pain in the lower right side of the chest and back, and diarrhea with slightly brownish and occasionally bloody loose stools. There were scattered rales at the base of the right lung and progressive abdominal distention. By the ninth hospital day the patient was noticeably weaker and developed epistaxis, melena, and hematuria. The prothrombin time was 26.1 seconds (control 13.3 seconds); bleeding time was one minute and the clotting time four minutes and thirty-six seconds. Stool examinations showed negative results for ova and parasites; stool culture grew out Klebsiella species and alpha hemolytic streptococcus. Treatment consisted of parenteral vitamin K, additional multivitamins, tetracycline (Achromycin), and cephalothin. The urine contained 2 plus albumin, from 10 to 15 white blood cells, and from 10 to 30 red blood cells per high-powered field. The total bilirubin was 85.8 mg. per 100 ml. (direct 85.8); thymol turbidity was 0.7 units and cephalin flocculation test 3 plus; and the SGOT was 220, the SGPT 89, and the LDH 750 units. The white blood cell count remained elevated at 50,000 with 49 per cent segmented, 42 per cent nonsegmented, 3 per cent lymphocytes, 4 per cent monocytes, and 2 per cent eosinophils. Occasional target cells were visible on the smear. The blood urea nitrogen rose to 160 mg. per 100 ml. The patient was transferred to the intensive care unit where previous medications were continued together with neomycin and prednisone 20 mg. three times a day. Repeat x-ray films of the chest and abdomen showed only the elevated right diaphragm with atelectatic plaques at the base of the right lung.

During the latter half of the second week in the hospital, the patient's course was one of progressive deterioration. The blood urea nitrogen rose to 244 mg. per 100 ml., the creatinine to 11.7 mg.; the carbon dioxide content fell to 11.8 mEq., with serum potassium 3.9 mEq., sodium 115 mEq., and chlorides 66 mEq. per liter. The white blood cell count rose to 78,300 with 72 per cent polymorphonuclear leukocytes, 23 bands, 9 lymphocytes, and 1 monocyte; the hemoglobin dropped to 10.8 Gm. per 100 ml. The prothrombin time increased to 36.1 seconds (control 13.9 seconds) in spite of persistent parenteral vitamin K therapy, and the patient continued to bleed from the nose, rectum, and urinary tract. The SGOT remained at 280, the SGPT 38, and the LDH 590 units. The thymol turbidity was 1.2 units and the cephalin flocculation test 3 plus.

Terminally the urobilinogen twenty-four-hour excretion was 1 mg. (normal 0 to 4 mg.); the blood urea nitrogen dropped to 185 mg. per 100 ml. The carbon dioxide content was 5.5 mEq., the serum potassium 6.2 mEq., the sodium 115 mEq., and the chlorides 83 mEq. per liter. The total cholesterol was 158 mg. The patient became noisy, poorly cooperative, and mentally confused. The stools were foul smelling, loose, and blood streaked. On the final hospital day the total bilirubin was 75.4 mg. per 100 ml. (direct 75.4 mg.); the thymol turbidity was 0.7 units and the cephalin flocculation test 3 plus. The white blood cell count rose to 110,800 with 60 per cent polymorphonuclear leukocytes, 26 bands, 7 per cent lymphocytes, and 5 per cent monocytes. The patient went into circulatory collapse on the afternoon of the fifteenth hospital day and could not be resuscitated.

Discussion

William Eisenmenger, M.D.*: Certainly this case brings up many very interesting points. The clinical high lights of this protocol show us that this thirty-eight-year-old bartender had a fairly heavy alcohol intake for twenty years, and his illness was catastrophic leading to death in about five weeks time. It began with severe weakness which was followed quickly by severe liver disease, severe renal insufficiency, mental confusion, vascular collapse, and death. This combination of liver and kidney failure appears to fall into the category of the so-called hepatorenal syndrome, a very broad term which covers many concepts and etiologies. Was this injury to the liver and kidneys caused by a single toxic agent, such as carbon tetrachloride, or a single infectious agent, such as leptospirosis? Was it the result of some disease beginning outside the liver and kidneys, such as severe pancreatitis, acute gangrenous cholecystitis, pyelophlebitis, or obstructive cholangitis with liver abscess? Or was it all caused by intrinsic liver disease, such as viral hepatitis, chronic hepatitis with postnecrotic cirrhosis, a hepatoma, or an acute fatty liver due to the toxicity of alcohol alone?

Let us consider briefly some of these possibilities. There is no history of exposure to carbon tetrachloride by inhalation or ingestion, but one should keep in mind that most carbon tetrachloride poisonings occur in adults who suffer from alcoholism. The accidental ingestion of carbon tetrachloride can occur more readily in an intoxicated person when he happens to reach for the wrong bottle and drinks a mouthful or more. Even though he spits out most of it, a very small amount of carbon tetrachloride in a person with alcoholism can cause severe liver damage. However, the onset of illness in this patient was more gradual than one would expect with this poison.

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Leptospirosis seems unlikely. There was no apparent exposure to the infective agent, no severe febrile symptoms, myalgias, nor prostration.

This patient had pain in the upper part of the abdomen prior to the development of jaundice, and in an alcoholic addict that symptom would certainly bring up the question of pancreatitis, with or without peptic ulcer disease. Pancreatitis only occasionally causes obstructive jaundice which is usually not severe; but whenever such jaundice is marked, the associated pancreatitis is severe, with persisting symptoms and signs and confirmatory laboratory findings. We do not have any of these features in this clinical story.

The presence of pain would suggest the possibility of cholecystitis and cholelithiasis. Sometimes a gangrenous process in the gallbladder with an associated septic cholangitis will have remarkably little to do with localizing symptoms and physical signs. However, in this case we found little evidence of a septic process early in the course. Admittedly abdominal sepsis, resulting from appendicitis, or perforated ulcer, or other cause, can produce relatively minor symptoms in alcoholic addicts and can go on to cause a pyelophlebitis and sometimes liver abscess. But again we do not have enough evidence to suggest these things, in spite of the leukocytosis noted later on. The liver scans ruled out any sizeable mass in the liver, such as a liver abscess. We must keep in mind, generally, that the elevated bilirubin level associated with a very low urine urobilinogen reflects an extrahepatic obstruction. Carcinoma of the pancreas, a major offender in this type of jaundice, would be unlikely in this age group, as would carcinoma of the gallbladder and of the bile ducts. The possibility of a common duct obstruction due to gallstones likewise might be considered. All these causes of obstructive jaundice could cause cholangitis which, in turn, if it persists long enough, could lead to liver destruction of severe degree, but in this case the course was too rapid for common duct obstruction. This patient developed severe injury to the liver within just a few weeks time, as reflected by the markedly elevated level of jaundice and by the prolonged prothrombin time.

Let us return to a consideration of intrinsic liver disease. No matter how one looks at it, this could be viral hepatitis with associated massive necrosis. Certain of the early clinical features of viral hepatitis are lacking, such as nausea, vomiting, and anorexia. Considering the patient's chronic alcoholism, one might have some questions about certain features in the history. For instance, he denied dark urine which is hard to understand, especially when the urine gave a positive reaction for bile. On admission his serum bilirubin was 64 mg. per 100 ml. which is extremely high and would not have risen to that level in just a few days, unless there was an associated hemolysis. We have no reason to implicate hemolysis in this case. Therefore, the serum bilirubin must have been rising over a period of weeks. This patient's spider angiomata would also favor long-standing liver disease rather than viral hepatitis. Although most spider angiomata are associated with chronic liver disease, they can develop quickly in the presence of severe acute hepatitis. The presence of ascites likewise suggests chronic liver disease, but again in severe viral hepatitis, especially in fatal cases, ascites is found not infrequently. During the early stage of a viral hepatitis, the transaminase levels can be very high; the levels which we found in the patient at the time of admission could represent the decrease one sees in the later stages of this disease. Usually in hepatitis, one sees leukopenia or a normal white blood cell count; however, late in a fulminating hepatitis, a marked leukocytosis is often present, although not usually to the extreme degree seen in this case. Thus we can not rule out viral hepatitis, but there are certainly enough reasons to doubt it, including the atypical onset, the large liver, the normal thymol turbidity, the 2 plus cephalin flocculation, and the marked leukocytosis.

Could this patient have had a postnecrotic cirrhosis that might have been completely quiescent for many years, until something aggravated it, such as a febrile illness, operation, or possibly excessive alcohol intake? We may be dealing with a postnecrotic cirrhosis and a superimposed active hepatitis. We might consider this combination more strongly if he had a lower serum albumin and high gamma globulin, but the absence of such changes does not give us definite information. The enlarged liver does not favor a diagnosis of postnecrotic cirrhosis, since in that condition the liver tends to be small. Before discarding the idea entirely, however, we might consider one of the major complications of postnecrotic cirrhosis, that is, the development of a hepatoma.[1] A high percentage of patients with these symptoms go on to develop hepatoma which may suddenly cause severe progression of symptoms, especially with hemorrhage. However, again, the liver scan showing normal findings largely rules out hepatoma.

We return again to the only information we have about this man's background. He was a bartender who drank more than a pint of whiskey a day for twenty years. We should know if his alcohol intake had been more or less steady until a few months before admission to the hospital, at which time it might have increased. Was his tolerance for alcohol suddenly diminished in his final months? Was he drinking up to the time of this hospital admission, or did he stop a few weeks before? He said that he had no anorexia, but one wonders if he really ate any significant amounts of food during these years. If he had a fair appetite, did this gradually decrease to the point where he hardly ate anything during the preceding month or two? If he was drinking a pint of whiskey a day at the age of eighteen or twenty, by age thirty-eight his intake had probably increased to a quart a day, the usual level one sees with this type of acute alcoholic liver damage. The answers to these questions would be valuable, but probably he was not in sufficiently good condition to give these details when he came into the hospital. At any rate we are left with an impressive history of alcoholism as the probable sole source of his caloric intake.

Now we can assume that he had a fatty liver for many years, as a result of his drinking. It has been shown by experimental studies that fatty infiltration will be present once the quantity of alcohol intake gets into the range of even a pint a day.[2] However, a fatty liver alone would not account for his terminal illness. A fatty liver could have remained completely asymptomatic with remarkably good function until the onset of a type of acute hepatic failure that occurs in some chronic alcoholic patients. The label "alcoholic hepatitis" is an appropriate one for that condition, since in many ways the condition is very like hepatitis. It is precipitated usually by a recent increase in the ingestion of alcohol or by a gastrointestinal upset which could precipitate vomiting or diarrhea. Usually anorexia, nausea, and vomiting occur at the onset of the acute alcoholic hepatitis. Fever of varying degrees is usually present. Jaundice, when it occurs, often appears suddenly and increases to high levels. The liver is usually enlarged and tender, often without associated splenomegaly; although the liver in the advanced stages of severe viral hepatitis is usually not enlarged. In alcoholic hepatitis leukocytosis is almost always present and can go up to extremely high levels. I have seen white cell counts of 50,000 and 60,000, but I have never seen one over 100,000, as in this case. Frequently when a leukocytosis of 25,000 or 30,000 is present and steroids are given, the count can increase greatly.

At the time of the patient's admission to the hospital, the findings certainly indicated an extremely ominous outlook. Levels of serum bilirubin above 10 or 15 mg. per 100 ml. in this situation are associated with a high mortality rate, and this patient's levels were in the range of from 70 to 80 mg. Also leukocytosis has been associated with increased fatalities, and the fatal cases usually show a white cell count of 20,000 or more. Also the rising prothrombin level reflected severely deficient hepatic function unresponsive to vitamin K. This patient had virtually no chance of survival, but all hope disappeared when it became clear that he was developing renal symptoms.

Renal disease in most patients with the so-called hepatorenal syndrome is considered secondary to the liver disease, and in this patient we see renal dysfunction following severe hepatic damage. For a patient with such severe liver disease an initial blood urea nitrogen of 21 mg. per 100 ml. probably represents a high elevation because many such patients can have a blood urea nitrogen of 3 or 4 mg. per 100 ml. In the presence of high levels of serum bilirubin, one usually finds bile nephrosis, with bile casts in the lower nephrons and degenerative and sometimes necrotizing lesions in the tubular epithelium, especially adjacent to areas where bile casts are found. Whether or not these changes contribute to renal insufficiency is not clear because such cases are usually very complicated. The milder forms of bile necrosis certainly do not seem to contribute significantly to renal insufficiency. This patient, in addition, had just begun to develop ascites and had gained 10 pounds in the week or so before admission. This together with the marked hyponatremia suggests a diminished effective peripheral blood volume and a reduction in renal blood flow that could add significantly to renal insufficiency. That is the patient's problem as I see it.

John T. Flynn, M.D.: If a patient with a history of alcoholism actually drank carbon tetrachloride, would it directly damage the kidneys as well as the liver, if he had swallowed only a small amount?

Dr. Eisenmenger: I would think the renal disease in this patient is really secondary to that of the liver. If he had carbon tetrachloride injury, it was the liver that was primarily damaged, and the renal insufficiency was secondary to that. The slow progress of the renal insufficiency suggests that he did not have the acute renal damage that one would see with exposure to carbon tetrachloride.

Lewis Bronstein, M.D.: Many times the physician does not obtain a history of an acute exposure to carbon tetrachloride. The patient has been cleaning some clothing in the closet at home for several days but has forgotten the event, so we still have not ruled out such an exposure, because of the history that we have been given. The liver scan shows an enlarged spleen which would suggest that this patient had had pre-existing liver disease, perhaps a long-standing cirrhosis. So exposure to small amounts of carbon tetrachloride might have set off the active terminal hepatitis.

Dr. Flynn: Would you still expect to see a dark urine as a result of bilirubin excretion, if the kidneys are badly damaged?

Dr. Eisenmenger: Sometimes when a patient has severe kidney disease and jaundice, the urine is not as dark as you would expect. I do not know of any studies of bilirubin clearance, but one would anticipate from the clinical observations that the diseased kidneys simply do not clear bilirubin normally. But with the high bilirubin levels noted in this patient, I would have expected the urine to be dark no matter how severely the kidneys were damaged.

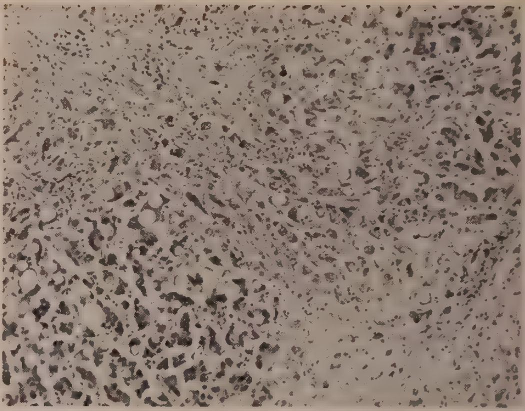

FIGURE 2. Section showing early cirrhosis with active inflammation and necrosis.

Paula Seiler, M.D.: Is alcoholic hepatitis a clinical or pathologic diagnosis?

Dr. Eisenmenger: It is really a clinical diagnosis. In the chronic alcoholic patient who suddenly increases his alcohol intake, a process may develop that in many ways clinically resembles viral hepatitis.

Seymour Fink, M.D.: In the mild form is this what you refer to as Zieve's syndrome?

Dr. Eisenmenger: Zieve's syndrome falls into the same general category, but intravascular hemolysis also occurs in that condition.[3]

Albert Segenreich, M.D.: How do you distinguish alcoholic hepatitis from cirrhosis?

Dr. Eisenmenger: First, some of these patients do not have cirrhosis. Second, many patients with ordinary Laennec's cirrhosis do not have an active process like this going on. They do not have fever, or leukocytosis, or acute and persistent symptoms, once they get over the immediate period of acute alcoholism.

Dr. Fink: What confuses me is that the serum bilirubin was almost all direct. Why did the patient not have more indirect bilirubin in the serum if the difficulty was primarily caused by severe hepatic damage? When the amount of in-

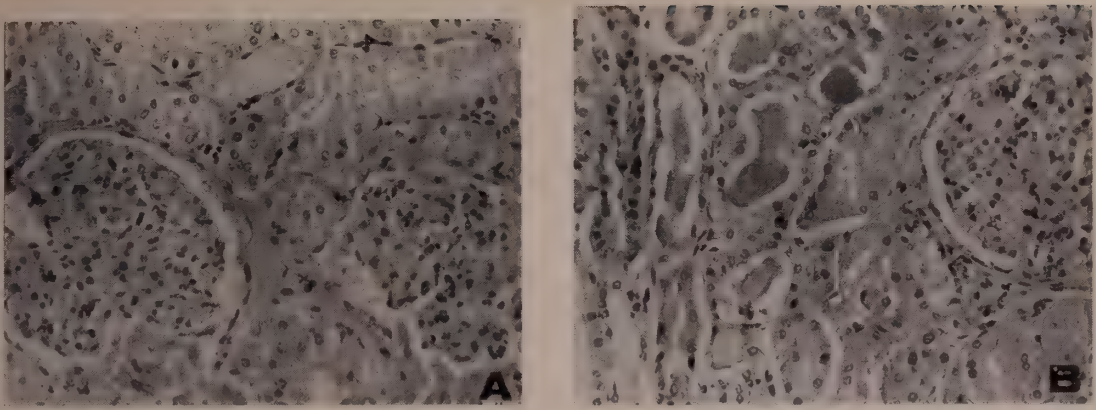

FIGURE 3. (A) Glomerulitis showing basement membrane thickening and exudative changes (× 185). (B) Bile precipitates in renal tubules and bile nephrosis (× 185).

direct serum bilirubin is very small, I could see how it might be overlooked chemically, but it should not have been so small a fraction of the total bilirubin in this case.

Dr. Eisenmenger: I think the course was too rapid and too fulminant to be accounted for simply by obstruction. In biliary obstruction the liver manages to survive a long time, unless there is some other superimposed difficulty such as severe septic cholangitis. This high direct bilirubin is the sort of reported blood chemical test you would like to see repeated, using several different methods.

Clinical diagnoses

1. *Cirrhosis of liver, with hepatic failure secondary to severe alcoholism*
2. *Hepatorenal syndrome*
3. *Pneumonia, lower lobe of right lung*

Dr. Eisenmenger's diagnoses

1. *Acute alcoholic hepatitis, with hepatic failure*
2. *Renal failure secondary to hepatic failure*
3. *Probable underlying Laennec's cirrhosis*

Pathologic report

Charles M. Karpas, M.D.: The liver was markedly enlarged weighing 2,190 Gm. Its consistency was soft but not of the mushy type one usually sees in acute yellow atrophy. There were distinct, small but not prominent nodules of uniform size suggesting a Laennec's cirrhosis. On histologic examination diffuse and marked hepatic cell damage was evident characterized by a balloon type of degeneration, scattered fatty changes, and a piecemeal type of necrosis (Fig. 2). The extent of necrosis was not as prominent as one would expect to see in carbon tetrachloride poisoning. Mallory hyaline bodies were surrounded by a large number of polymorphonuclear leukocytes which extended into the septae or the lobules. Only a minimal amount of regeneration of hepatocytes, bile duct proliferation, or plugging of the ductules and canaliculi were identified. The portal areas appeared stellate and contained inflammatory cell infiltrates. This combination of diffuse degeneration, focal necrosis, and irregular, although slight, portal fibrosis represents the picture of acute alcoholic hepatitis, sometimes referred to as progressive alcoholic cirrhosis, chronic toxic hepatitis, or florid cirrhosis.[4]

There was generalized ascites and bilateral pleural effusions. The kidneys were enlarged, the right weighing 230 Gm. and the left weighing 220 Gm. Microscopic examination of many glomeruli showed thickening of the capillary basement membranes and proliferation of the epithelial and endothelial cellular elements (Fig. 3A). These changes are consistent with an entity known as glomerulonephritis associated with cirrhosis. In the past this has been called hepatic glomerular sclerosis, but since we find it with acute hepatitis and other liver diseases, the term hepatic glomerulonephritis seems to be the most

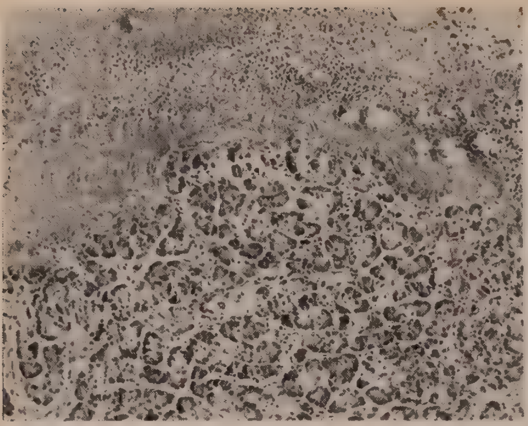

FIGURE 4. Microscopic section showing acute fibropurulent pancreatitis.

fitting term.[5] I should point out that clinical findings such as hematuria and oliguria are usually not observed. In this case there was also inspissation of bile pigment within the tubules, but it is impossible to determine whether or not this so-called bile nephrosis played any part in the functional renal changes (Fig. 3B). We found the pancreas to be unusually firm; microscopically there were focal areas of necrosis and distinct polymorphonuclear leukocyte infiltration (Fig. 4). The combination of uremia, acute pancreatitis, and the alcoholic hepatitis all contributed to a leukemoid reaction, which the bone marrow reflected by its marked hyperplasia. There was acute and chronic esophagitis with gastrointestinal hemorrhage and a great deal of blood within the intestinal lumen. The lungs showed acute congestion which was only a reflection of the generalized anasarca.

Dr. Eisenmenger: This was relatively early cirrhosis. If the patient had survived the phase of acute hepatitis, he might have made an excellent recovery with a remarkably good liver.

Dr. Karpas: There is a fine line between cirrhosis which is irreversible and that which is not. This depends on the amount of regeneration which has taken place and the type of regeneration, whether typical or atypical.

Bernard Kabakow, M.D.: Dr. Eisenmenger, what do you think of total blood exchange transfusion? Might it have helped this patient?

Dr. Eisenmenger: Total blood exchange transfusion sometimes can be very helpful to tide the patient over a short illness, but here the period of acute illness was much too long and the hepatic function too far deteriorated. Furthermore, the additional problem of renal insufficiency made this a formidable combination. In this case I do not think a series of exchange transfusions would have made any difference.

I would like to comment on steroid therapy which has a place in this disease, but this patient's condition was too far gone when you first saw him. This is about the only kind of alcoholic liver disease that responds very well to steroids. For instance, a patient with a milder stage of alcoholic hepatitis may have fever, a large liver, and symptoms which gradually worsen over many weeks. In this situation one can initiate a remarkable response promptly with the use of steroids, with a drop in temperature and an immediate turn of the clinical course toward improvement. But one has to start with a patient who has a much lower bilirubin level and better residual liver function than your patient had.

Dr. Fink: Dr. Eisenmenger, do you think the poor renal function could have caused the very high bilirubin level?

Dr. Eisenmenger: Yes, certainly in part. You do not see bilirubin levels this high in the presence of good renal function. Even if you tie off the common duct, or if it is completely obstructed by a carcinoma of the pancreas, the serum bilirubin usually levels off somewhere between 15 and 30 mg. per 100 ml., if renal function is good. But if the kidneys are significantly diseased, they are not able to excrete the usual urinary fraction of bilirubin, and so the serum level may rise unusually high.

Hugo Paganelli, M.D.: I believe that some recent studies have shown that oliguria in hepatic failure is closely related to renal vascular constriction and to a decrease in functional plasma volume. If these factors are associated with a general systemic hypotension, the prognosis is worsened, and a renal response to plasma volume expanders is unlikely.[6]

Duk-jhe Shun, M.D.: Is there any correlation between the level of serum bilirubin and the degree of renal damage? Or would some kidney damage occur in this type of case no matter what the level of the elevated bilirubin?

Dr. Eisenmenger: There have been very few studies on the renal clearance of bilirubin. I am not aware that bilirubin, per se, will cause renal damage. We do not really understand the cause of the renal irritation in the hepatorenal syndrome. Of course with marked retention of bilirubin over long periods of time, we know that there can be damage to certain organs, such as the brain in kernicterus, which can occur even in adults.

Anatomic diagnoses

1. *Acute alcoholic hepatitis, with progressive hepatic failure, ascites, and pleural effusions*
2. *Probable early Laennec's cirrhosis*
3. *Hepatic glomerulonephritis with renal failure secondary to acute alcoholic hepatitis; bile nephrosis*
4. *Pancreatitis, acute, mild*
5. *Esophagitis, acute and chronic, with gastrointestinal hemorrhage*

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Use of heat and cold in treating sports injuries

Attention should be paid to the individual drawbacks of both heat and cold when making a choice of which to use in treating sports injuries, L. T. Wedlick has stated in a recent issue of *Medical Journal of Australia.*

Generally, heat can be used to ease pain and muscle spasm, to assist in the removal of hematomas and effusions, to hasten defensive mechanisms in inflammatory conditions, and to facilitate massage and movement. However, heat tends to increase hemorrhage, and therefore it is unwise to use it in the first thirty-six hours after an injury where bleeding is occurring. Heat will also often aggravate pain from severe neuritis, and locally applied heat tends to increase edema in tissues. Heat should never be applied locally where there is peripheral vascular deficiency, as in arteriosclerosis in small vessels and when there is incipient gangrene in diabetes.

Cold is called for as an immediate emergency measure in severe ligament sprains and when there is severe bleeding, hematoma, and edema. It should be continued for the first thirty-six hours, combined with elevation and a pressure bandage. Cold can also be used in treating acute tense bursitis and where there is a limitation of movement due to muscle spasm rather than adhesions. With a stiff joint limited by adhesions, however, treatment should be deep heat and mobilization. Cold should also be used for a fluid collection under tension, as in a distended subdeltoid bursa, since any form of heat will increase the tension and thus aggravate pain. In applying cold, a towel should be soaked in ice and water, applied, and changed frequently.

In applying heat, ultrasonic energy remains the method of choice. Infrared radiation can be used as a prelude to assist massage and movement and in the treatment of superficial muscle injury and late bruising. Where deeper heating is required, short-wave diathermy can be used. Microwave therapy is limited to treating localized conditions when deeper penetration than is possible with infrared radiation is desired.

Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

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Fulminating Hyperthermia During Anesthesia

FULMINATING HYPERTHERMIA developing in apparently healthy patients during anesthesia for noncritical operations has become a complication of increasing prevalence. Unless recognized early and treated promptly and vigorously, the mortality rate is very high. Stephen[1] reported on 12 patients, 10 of whom died directly as a result of this entity. Wilson *et al.*[2] reviewed 40 cases and found a 73 per cent mortality rate in an essentially healthy, young age group.

The following case report illustrates the usual sequence of events in a patient who survived.

Case report

A twenty-four-year-old man was admitted to the hospital for evaluation of a questionable mass in the right lower quadrant of the abdomen and occasional crampy pain in the lower part of the abdomen. His illness dated back to a vacation spent outside the United States four months before, when he developed vomiting and diarrhea after drinking tap water. The symptoms subsided five days later but reappeared within two weeks at which time a mass in the right lower part of the abdomen was palpable. Past history and system review were entirely unremarkable.

Physical examination revealed a well-developed, well-nourished young man in no apparent distress; temperature was 98 F., blood pressure 98/50 mm. Hg, and heart rate 84 per minute. There was minimal tenderness to deep palpation in the right lower quadrant of the abdomen. Bowel sounds were normal. Laboratory data were as follows: Hematocrit 43, hemoglobin 13.1 Gm. per 100 ml., and white blood cell count 9,300 with normal differential count. Barium enema examination and small-bowel x-ray film series showed irregularity of the cecum.

Stool examination showed negative results for ova and parasites.

The patient was scheduled for exploratory laparotomy and medicated preoperatively with pentobarbital (Nembutal) 100 mg. and atropine 0.4 mg. administered intramuscularly one hour prior to induction of anesthesia. On arrival in the operating room, his blood pressure was 100/60 mm. Hg, and his heart rate was 80 per minute. At 2:40 P.M., anesthesia was induced with 250 mg. of thiopental sodium (Pentothal). Following the intravenous injection of 80 mg. of succinylcholine and ventilation with 100 per cent oxygen by mask, a cuffed plastic endotracheal tube was inserted with ease. Anesthesia was maintained with nitrous oxide (2 L.)-oxygen (2 L.) and halothane. After the peritoneum was opened, an 0.2 per cent succinylcholine infusion was started, and respirations were controlled manually. Instead of the anticipated muscular relaxation, the abdomen appeared to become "tight." For

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this reason, at 3:05 P.M., the patient's temperature was taken nasally and found to be 98.3 F.; blood pressure was 120/70 and heart rate 100 per minute. The succinylcholine infusion was discontinued and the concentration of halothane increased. Nasal temperature was monitored continuously. At 3:15 P.M., his temperature was 100 F. and heart rate 120 per minute. At 3:25 P.M., the corrugated tubing between anesthesia machine and endotracheal tube as well as the canister containing the carbon dioxide absorber felt extremely hot, and the patient looked flushed. His temperature was now 103 F. An arterial blood sample was taken; all anesthetic agents were discontinued and 100 per cent oxygen administered; ice bags were applied to all available areas; iced saline was instilled into the abdominal cavity; and electrocardiographic monitoring was started. The blood gas values were as follows: pH 7.10, arterial oxygen pressure 230 mm. Hg, arterial carbon dioxide pressure 67 mm. Hg, and base deficit 10 mEq. and bicarbonate 16.5 mEq. per liter. Sodium bicarbonate, 44 mEq. per liter, was immediately injected intravenously. Despite the cooling efforts, the temperature continued to rise and reached 104.4 F. at 3:55 P.M. At this time, the electrocardiographic findings showed bigeminy at a rate of 160 per minute. At 4:00 P.M., the patient began to perspire, and the temperature started to decline. Ice bags were removed, and the irrigation of the abdominal cavity discontinued. Exploration of the abdomen, which did not reveal any disease, was terminated and the abdomen closed. Repeat blood gas studies at the end of surgery showed: pH 7.45, arterial oxygen pressure 430 mm. Hg, arterial carbon dioxide pressure 41 mm. Hg, and base excess 4 mEq. and bicarbonate 27.5 mEq. per liter. During the course of anesthesia, 2,000 ml. of 5 per cent dextrose in water and 1,000 ml. of lactated Ringer's solution had been infused. In the recovery room, the patient continued to perspire profusely. Rectal and nasal temperatures were recorded at 95 F. Blood pressure was 120/80 mm. Hg, but the heart rate remained at 160 per minute; electrocardiographic findings showed occasional premature ventricular contractions, and the urine output was scanty and bloody. The patient was awake and responded to questions. Hypothermia and oliguria persisted for several hours. Mannitol was administered and resulted in improved urine output.

Forty-eight hours postoperative, the patient was ambulatory, and blood gas and electrolyte data were within normal limits. The postoperative course was uneventful, except for proteinuria of one week's duration. The patient was readmitted four weeks later for a muscle biopsy which was reported to show normal findings. The mass in the abdomen was no longer palpable, and repeat x-ray film studies demonstrated no disease. The family history did not reveal any abnormal reactions to anesthesia.

Comment

The cause of this rapidly progressive, malignant hyperpyrexia is uncertain. It is unrelated to the ambient temperature and has been noted in air-conditioned operating rooms. Patients affected were predominantly children or young adults; most were anesthetized with halothane or methoxyflurane and received succinylcholine as a muscle relaxant.[1-5] However, the syndrome also has occurred in elderly patients,[6] during anesthesia administered with thiopental sodium or cyclopropane,[1,4] and without the use of succinylcholine.[1,3] When succinylcholine was employed, a high incidence of abnormal reactions was noted, such as increased fasciculations, bronchospasm, inadequate relaxation, or, as in this case, hypertonicity. A genetic factor has been suspected, since the complication developed twice in the same individuals[2,3] or in members of the same family.[7]

In general, the syndrome begins within the first hour of anesthesia and is characterized by rapidly increasing body temperature associated with tachycardia, tachypnea, hyperpnea, and respiratory as well as metabolic acidosis. Survival depends on prevention of fatal levels of temperature elevation and is successfully accomplished by three means of therapy: (1) rapid intensive cooling utilizing ice packs on all available surface areas (the hypothermia blanket does not cool fast enough), gastric lavage and/or enemata with iced solution, peritoneal or pleural irrigation with iced saline (if site of operation), and cooling of the intravenously administered fluid; (2) treatment of hypoxia by increasing the concentration of oxygen in the inspired mixture; and (3) reversal of acidosis by removal of retained carbon dioxide (manual hyperventilation and use of high flows of oxygen and fresh carbon dioxide absorber) and by intravenous injection of sodium bicarbonate.

Since the hyperthermia progresses with such great rapidity, early diagnosis, within the first few degrees of increased temperature, is essential. Whenever there is the the slightest suspicion, the patient's temperature must be recorded. No elaborate equipment is necessary; a thermometer in the mouth or nose suffices. However, when the anesthesiologist has no ready access to the patient, as in head or neck surgery and so forth, continuous temperature monitoring by means of a rectal or esophageal probe is recommended.

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Number one hundred eighty-two in a series of Clinical Anesthesia Conferences

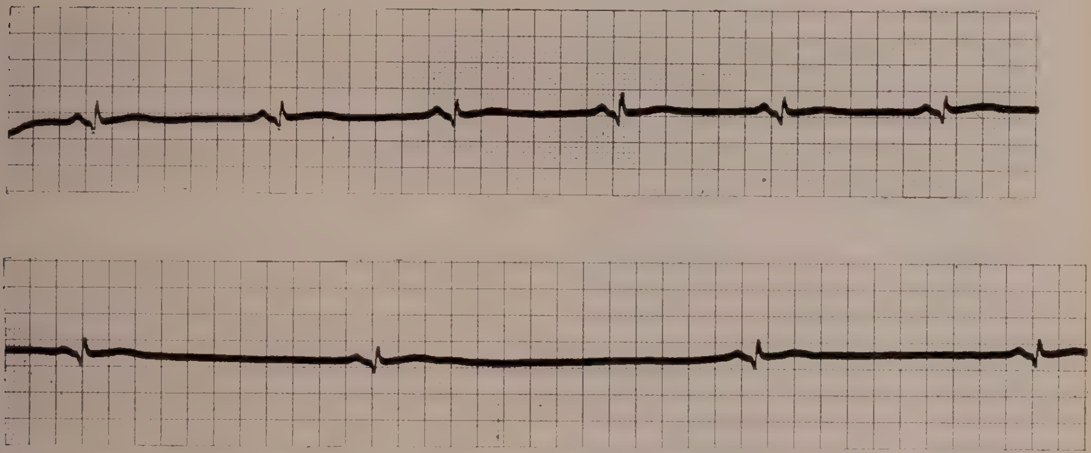
Announcement 1968 District Branch Meetings

Branch	*Date*	*Place*
FIRST	Sunday, February 11	The Americana, New York City
SECOND	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, November 10, 11, 12, 13, 14, 15, 16	Paradise Hotel, Nassau, Bahamas
THIRD AND FOURTH	Saturday, September 28	Holiday Inn, Lake George
FIFTH AND SIXTH	Friday, Saturday, Sunday, September 6, 7, 8	Sagamore Hotel, Lake George
SEVENTH AND EIGHTH	Thursday, Friday, Saturday, Sunday, September 25, 26, 27, 28	Dorado Beach Hotel San Juan, Puerto Rico
NINTH	Monday, February 12	The Americana, New York City

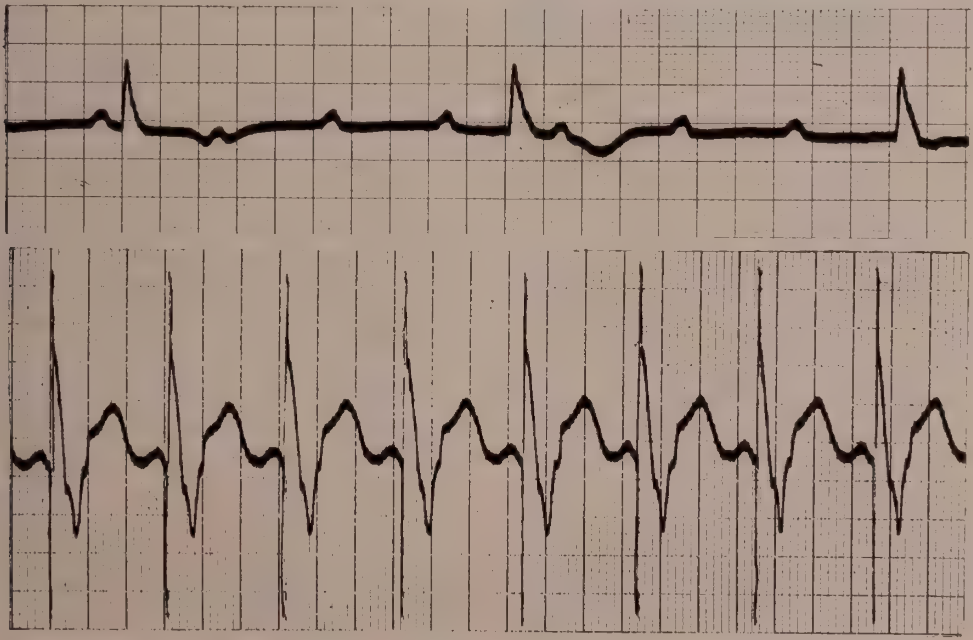
Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

Editors
IRA L. RUBIN, M.D.
Head, Department of Electrocardiography
JULIAN FRIEDEN, M.D.
Associate Head, Department of Electrocardiography



QUESTION 29. Two sets of continuous lead 3. Top strip is a routine tracing taken from a sixty-four-year-old man with a history of syncope. Lower tracing was taken during right carotid sinus massage.



QUESTION 30. Two strips of lead 2 taken from a fifty-two-year-old man with a history of syncope. Top tracing was taken on admission to the hospital; bottom tracing was obtained following therapy. What is the interpretation?

Electrocardiograms of Month

ELUCIDATION

QUESTION 29. The top strip reveals sinus bradycardia with a rate between 43 and 50 beats per minute. In the bottom strip, the rate slows to between 20 and 27 beats per minute due to carotid sinus compression. Slowing of the heart due to carotid sinus sensitivity may cause syncope. During massage of the carotid sinus, the patient should be supine, and the electrocardiogram should be monitored. Prolonged arrest of the heart may occur if carotid massage is continued. The carotid sinus should only be massaged and not compressed, as cerebral vascular accidents have been reported following compression. Only one side should be massaged at a time.

QUESTION 30. In the top strip, the ventricular rate is 30; the atrial rate is 90. The P waves and QRS complexes are totally unrelated, and the ventricular rate is regular. There is complete heart block. The bottom strip shows a rate of 100. The patient has had a transvenous atrial synchronous pacemaker inserted. This type pacemaker senses the electrical activity of the atrium and transmits an impulse to the ventricle. The electrocardiogram is characteristic, since each P wave is followed in 0.16 second by a pacemaker spike when the rate is less than 120 and greater than 60.

Medical scholarship program

A group of students entering medical school this fall will arrive there by way of the first scholarship program in the nation to help late starters in medicine.

The program, at Columbia University's School of General Studies, provides scholarships for college graduates who decide to enter the health field but lack the necessary undergraduate premedical preparation for admission to medical school. Now in its second year, the new program boasts of an unusually high rate of acceptance of its graduates into medical schools.

The students, half a dozen yearly, are part of the total current enrollment of 53 students in the School's premedical curriculum, taking courses to supplement their previous undergraduate training. Most of them complete their custom-designed course of study in one or two years. The total rate of medical school acceptance for the entire program has been as high as 70 per cent, compared with a national average of 50 per cent. Because these students are nonmatriculated, they do not qualify for Federal, state, or university scholarship aid. They are older than the average college student and often have family responsibilities. There is no other scholarship program for such students in the nation.

Among the scholarship recipients this semester are: a twenty-five-year-old Princeton graduate who had majored in English and spent two years in Nigeria in the Peace Corps working in a missionary hospital. There he became interested in public health on the international level; a twenty-one-year-old graduate of Rutgers University who had been carrying a heavy academic load at the School of General Studies while working nights as a technician to support himself and pay back student loans; a thirty-one-year-old father who earned $18 a week on a part-time job while studying at Columbia University after serving as a physicist, a Peace Corps surveyor in Tanzania, a news wire service correspondent in Africa, and a representative of the Committee of Responsibility in Vietnam helping injured children; and a young man who decided after graduating from Amherst College that he would make a career in medicine. He worked full time as a physical therapy aide at the Howard Rusk Institute of Physical Medicine and Rehabilitation while studying in Columbia University.

Medical Arts and Letters

Sir Henry Thompson, M.D. (1820–1904)

Victorian Virtues

WILLIAM B. OBER, M.D.
New York City

Director of Laboratories, Knickerbocker
Hospital; Associate Professor of Pathology,
New York Medical College

Among London's less well-known monuments is the bust of Sir Henry Thompson at the Golders Green crematorium, a fitting spot for the founder of the Cremation Society. Not too many physicians interested in social reform live to see their ideas accepted by society, successfully put into practice, and even enacted into law, but Thompson's career was a series of almost unbroken successes. Cope's* sympathetic biography presents him as *The Versatile Victorian*, an accurate description, since his interests were broad, and he embodied many of the virtues of the period as well as a few of its shortcomings. In many ways he was more typical of the Victorian era than any of Lytton Strachey's more *Eminent Victorians* (Fig. 1). The taxonomist of historic figures must often reject prominent figures in favor of someone more approaching the middle type of man when casting for a typical specimen.

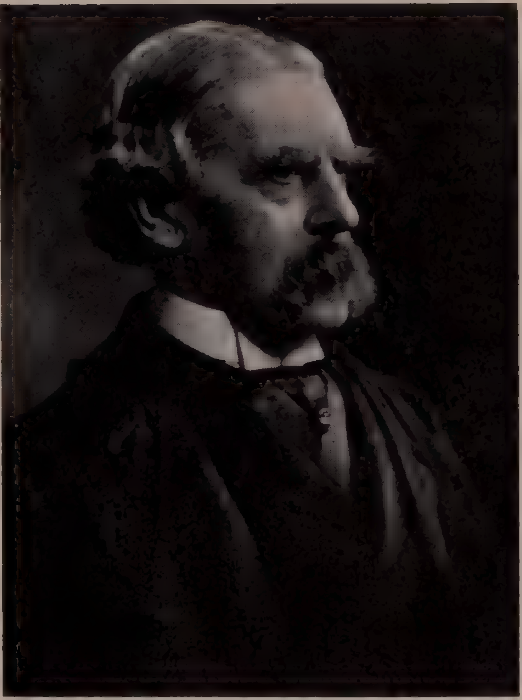


FIGURE 1. Photograph of Sir Henry Thompson in his eightieth year.

Early life and education

Thompson did not enter medical school until he was twenty-seven years old in a period when the majority of medical students entered while in their teens, only a few having had a university education. Thompson had set his heart on becoming a doctor since his school days, but his father had insisted on putting the boy to work in his own business, the wholesale merchandising of staples and such imports as tobacco and tea, with a view to his son's ultimately inheriting it. The twelve years young Thompson spent in trade were not a complete waste. Not only did he learn to be businesslike, but his energetic, inquisitive mind relieved the tedium of life as a young merchant in a small Suffolk town by intensive reading of history, biography, contemporary literature, natural history, and general science. He taught himself French, learned to play the flute, was active in choral societies, undertook experiments with electricity, and set up a home laboratory for daguerreotypy. He was the leading spirit of a local mutual improvement society. Through his grandfather, Samuel Medley, a well-known painter who had made a modest fortune on the stock exchange, he was exposed to the fine arts. Thompson began to do a little amateur sketching, and he became a regular visitor to art galleries in London on his business trips there.

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* Cope, Z.: The Versatile Victorian, London, Harvey and Blythe, 1951.

His home life cannot have been happy; as a dutiful Victorian son he accepted his father's verdict, but he longed to study medicine. His parents were both strict Sabbatarians, and many of the rigidities Thompson later displayed can be traced to his having grown up in such a household. However, he finally persuaded his father to sell the merchandising business and retire rather than leave it to him. At this juncture, Thompson was able to apprentice himself to a practitioner at Croydon for a few months and then enter University College Hospital as a student in the fall of 1847.

Older and more mature than his fellow students and having had over a decade's experience in the business world, Thompson applied his active mind to his studies systematically and assiduously. We read about none of the larks and pranks of the medical student's life; he took himself and his work very seriously. He won the gold medal for anatomy in 1849 and the gold medal in both medicine and surgery at the final examination in 1851 for his M.B. degree in medicine. For a few months after finishing medical school he returned to Croydon to practice in association with his old master, but he soon decided to practice in London and took the house at 16 Wimpole Street. Later that year he married Kate Loder, a distinguished concert pianist and daughter of a prominent musical family. Although Kate Loder was professor of harmony at the Royal Academy of Music and the leading female pianist of her day in England, she dutifully gave up public performances, the last being in 1854, as befitted the wife of a rising young Victorian surgeon. During the early years of their marriage when Thompson's income was slender, she did support their household by giving private lessons, a fact which Thompson does acknowledge in his personal memoirs but which even Cope believes he might have acknowledged more generously.

Professional successes

Thompson conceived the idea of entering the competition for the Jacksonian Prize awarded by the Royal College of Surgeons. The topic assigned for 1852 was urethral stricture. The honeymoon was cut short, and he returned to London to begin collating literary, anamnestic, and pathologic materials. He pursued the subject with almost single-minded attention for the entire year of 1852; system and industry were rewarded when it was announced in April, 1853, that he had won the prize. It was a mere £ 21 cash in hand, but the honor was great for a young man just starting in practice and proved to be the beginning of his successful work in urologic surgery. Later in 1853 he was admitted as a Fellow of the Royal College of Surgeons and appointed assistant surgeon to University College Hospital. Over the next few years he wrote several articles for *Lancet*, including a critique of teaching methods, and he also began work on a study of the enlarged prostate based on the large volume of patients with this condition seen at University College Hospital and at Marylebone Infirmary where he also had a staff appointment. His study of prostatic hypertrophy won him another Jacksonian Prize in 1860.

Thompson never missed an opportunity to increase his manipulative skills. In 1858 he visited Jean Civiale in Paris to learn the art of lithotrity which Civiale had developed. The French method involved crushing the stone in the bladder and leaving it to nature to wash away the fragments and detritus. This was the method Thompson first employed; but when Henry Jacob Bigelow of Boston devised the technic of crushing the stone in a single procedure and removing the fragments at the same time, Thompson improved the technic and devised instruments for it. In short order his firm but gentle touch and his meticulous attention to detail made him the master in this branch of surgery. He made frequent trips to the Continent both to relax from the tensions of his work and to keep in touch with latest developments. At the University College Hospital he was elevated to full surgeon in 1863, professor of clinical surgery in 1866, consulting surgeon and emeritus professor in 1874 when he decided to devote himself to his exceptionally lucrative practice, including nobility and minor royalty, as well as to spend more time with his ailing wife who had become paralyzed in 1871. In 1863 the family had moved to 35 Wimpole Street where the Thompsons lived for the rest of their lives.

At this time Thompson's reputation became international. In 1863 he was summoned to Brussels to remove a bladder calculus from King Leopold I, who was Queen Victoria's uncle. The operation was necessary to complete work begun by Civiale eighteen months previously. With due modesty Thompson explained his avoidance of infection by virtue of his having employed new instruments, not used before on any other patient. He stayed for several weeks at the royal palace at Laeken, and his letters home contain several amusing anecdotes and sketches. Thompson was less successful in the case of Napoleon III whom he treated in 1873 at Chiselhurst where Napoleon had come after losing his empire at Sedan. Thompson was able to remove most of a large calculus in two procedures five days apart. Unfortunately, a large fragment was left impacted at the bladder neck. A third session was scheduled for the seventh day, but before it could be done the Emperor collapsed and died. Postmortem examination showed advanced obstructive pyelonephritis and severe cardiac disease. The high risk of surgery of the lower urinary tract in uremic subjects was not so readily recognized at that period, and besides the Emperor was in great agony. Thompson's reputation did not suffer, but it was one of his few failures.

Literary and artistic accomplishments

Thompson's many scientific publications increased his fame. Both Jacksonian prize essays were published as monographs; the first went through four editions, the second through six. His *Clinical Lectures on Diseases of the Urinary Organs* went through eight editions between 1868 and 1888; it was translated into both French and German. Other articles on specific topics as well as a few more monographs increased the list. By the time Thompson had been in practice for two decades his industry and practical skill had carried him to the top of his profession. He confined his surgery to the lower urinary tract, avoiding the kidney area. His skill at transurethral manipulation was legendary, and in later years he developed technics for suprapubic surgery as well. About 1885 his interest in newer urologic methods waned, and it is unfortunate that he dismissed McGill's early attempts in 1887 to develop a cystoscope on the grounds it would yield no useful information. However, by then he was in his late sixties.

Thompson's mind was forever active as were his hands. He was a doer, and whatever he set his hand to he wanted to accomplish in a fashion and at a level of skill which merited public recognition. Thompson was a proficient amateur sketcher when he treated Alma-Tadema in 1869; however, he decided to take his fee in painting lessons. He soon became accomplished enough to have his paintings hung at the Royal Academy in most of the annual exhibitions from 1870 through 1885. He became friendly with Millais who painted his portrait in 1881; Thompson returned the compliment by painting one of Millais. For a number of years Thompson was a connoisseur of Nankin china, shrewdly availing himself of advice given him by his artist friends. Blue and white china was in great vogue; even Oscar Wilde decorated his rooms at Oxford with it. However, Thompson tired of it after a few years. He and Whistler collaborated on the illustrations for a catalogue of his collection, and he auctioned it at Christie's in 1880 at the top market price. Before Lady Thompson's illness many of their "at homes" were musicales. At one such gathering shortly before her illness, Brahms's *Ein Deutsches Requiem* was given its first performance in England, three years after it was written. Lady Thompson and Cipriani Potter played the accompaniment as a pianoforte duet.

About 1885 Thompson's interest in music and painting diminished, and he turned his hand to literature. He wrote two novels under the pseudonym of Pen Oliver, *Charley Kingston's Aunt* (1885) and *All But* (1888). They were based on incidents from the life of a medical student and presumably reflect much of Thompson's own experiences. Whether he was led to write novels because Thackeray had been a patient of his from 1854 to 1863 is debatable; the novels themselves reflect nothing of Thackeray's style. They merely conform to the standard for light fiction of the day. Although both Thompson's paintings and novels seem dated today, they were better than average. At any rate, he did not confine himself to surgery and was not shy about coming forward.

Thompson had other avocations. In 1886 he purchased an equatorial refracting telescope which he installed at his country place at Hurstside, not far from Hampton Court, where he had previously indulged in the hobby of fancy poultry breeding. He soon found it necessary to build a small observatory to house his equipment, as he added more and more elaborate instruments. By 1889 he had satisfied his curiosity about celestial bodies and presented his telescopes to the Royal Observatory at Greenwich. In 1897 he presented the Observatory with a fine photographic telescope which cost about £ 5,000. Thompson had been knighted in 1863 because of his professional services to King Leopold of Belgium, the Queen's uncle. In 1899 he was elevated to a baronetcy, partly as a reward for his generous donation and partly because he had served as medical adviser to the young Duke of Clarence, the elder son of the Prince of Wales (later Edward VII), as well as to other members of the royal family. Thompson's unpublished personal memoirs recount with relish his several visits as a house guest to the prince's ménage. Another of Thompson's interests was dietetics, partly because he was a widely traveled gourmet and partly because of an interest in nutrition. His book *Food and Feeding*, first published in 1880, went through 12 editions by 1910. He is remembered for "dindon à la Sir Henry Thompson" in which the turkey is stuffed with a rice pilaff to which truffles and pistachio nuts are added.

Social life

Thompson enjoyed the rather formal social entertainment typical of the Victorian era. Although such domestic pomp seems pretentious to mid-twentieth century taste, his "Octaves" became justly celebrated among London's fashionable diners-out. Within a certain segment of society an invitation to one of these dinner parties was a sign one had arrived or at least was on the way up. He began this type of dinner in 1872 after his wife's illness prevented her from assuming her expected role as hostess. The dinners were called Octaves because the party was for eight guests, all male, at eight o'clock, with a menu of eight dishes, and a carte of eight wines. Thompson selected his guests with care, mixing men prominent in diverse walks of life—politics, literature, the fine arts, and academic life—but always from within the establishment. From 1872 to 1904 he gave over 300 such dinners. The guests included such notables as the Prince of Wales (later Edward VII) and Prince George (later George V); Joseph Choate when he was American ambassador; George Buckle the historian; Alma-Tadema, Millais, and John Singer Sargent, all painters; Robert Browning, Conan Doyle, and Rider Haggard of literary fame; Field Marshal Lord Wolseley; Sir John Tenniel; and others. One wonders whether anyone was ever invited merely because Thompson wanted to dine with him. The menu of the 300th Octave has been preserved:

Huîtres
Consommé clair
Saumon de Severn Sauce verte
Venaison de la Forêt noire
(Rehrucken)
Petites timbales de volaille aux truffles
Jambon braisé au Bourgogne
Asperges d'Argenteuil
Bécassines rôties
Baba au rhum
Caviare

At this time of his life, poor Thompson had to forego much of the rich food he served his guests. From 1890 he restricted himself to "not taking at any meal more than one dish, besides a plate of good soup." Thompson prided himself on the care with which menus were planned and food prepared, yet we learn with surprise from Sir Robert Hutchison, the distinguished physician and nutritionist, who was a guest at an Octave that Sir Henry had "champagne served out of a jug; some of the effervescence had gone off, and it was not iced." Sir Robert describes his host: "He was courteous and dignified, but I should never describe him as genial;

indeed I thought him rather formidable. He was in many ways a typical Victorian." Indeed there seems to have been an obsessive-compulsive touch to the Octaves: eight guests, eight o'clock, eight courses, and eight wines. Can this odd rigidity be traced to a strict upbringing?

Personal characteristics

As one reads Cope's generally favorable biography, a few personal idiosyncracies emerge. His youthful business experience made him careful of money. Cope notes that "he always noted what he paid for anything, and if he sold it what price it fetched." A letter from the Continent to his wife notes that she used a sixpenny stamp when a fourpenny stamp would have served. Although generous to clergymen and fellow artists, Thompson prided himself on the magnitude of his fees, even going so far as to cite a good many of the higher ones in a memoir he wrote for publication, which mercifully it wasn't. A characteristic incident is noted when in 1893 he sold the rights of *Charley Kingston's Aunt* to Warne and Company, who published an inexpensive edition for railway reading. He did not declare this profit on his income tax return; and when the tax authorities inquired why he had failed to declare it, he countered with the statement that the expense and loss of his other publications more than offset the gain on the novel. When it came to his personal comfort, Thompson was quite generous; he always chose the best hotels and restaurants and the most comfortable mode of travel. At his death his estate was valued at £ 226,000.

In addition to being preoccupied with money, he was very fussy about his food. When he traveled abroad, he always took along a supply of a special type of bread. At home, his cook would have to receive orders each morning from both Sir Henry and Lady Thompson separately. The price he paid for such compulsive traits was frequent and severe migraine headaches. He suffered abominably from insomnia and during many of his later years had to take a hypnotic agent regularly for sleep.

As one might imagine, he was very sure of himself. According to his friend, Lady St. Helier, "...he was most intolerant of contradictions...would never admit that there could be any opposition...treating everybody who differed from him with scant courtesy." Self confidence is essential in a consultant, and the power of positive thinking is great, but Cope writes about his clinical judgment that "he seldom admits the possibility of doubt as to the correctness of his view, although consideration shows that he was sometimes wrong. This certitude had, however, the merit that it gave great confidence to the patient." Cope tactfully refrains from suggesting that some patients may have died as the result of a misplaced confidence.

Victorian fathers tended to be rather heavy-handed in their dealings with their wives and children; Thompson was no exception. On one occasion, when he was off on the Continent, he learned that some instructions he had left with his wife about some domestic details had been slightly modified. He wrote back, "I want literal attention to these wishes of mine; I always have a good reason for naming them." When his eldest daughter was married to a very eligible suitor, Thompson described it as a "terrible blow." Severe neuralgic pains developed for several months during the interval between the announcement of the engagement and the marriage. Regarding the latter ceremony, which was held at the Savoy Chapel, he wrote, "The Chapel was filled with friends, but it was with difficulty that I performed my part of the service. Lady Jeune who was present kindly took me home to my door in her victoria and comforted me much..." History does not record whether his daughter felt guilty at provoking a psychosomatic reaction of this order. Thompson's relations with his other daughter and son remain obscure; Cope furnishes no details about them, not even the nature of the second baronet's career.

Cremation movement

Thompson is justly remembered as one of the leaders in the cremation movement. In 1843 and again in 1849 Edwin Chadwick, the great sanitation and health reformer of the middle of the century, had drawn attention to the noxious effluvia from decomposing bodies buried in London churchyards and elsewhere, emphasizing the risk of spread of infectious disease. An Act of Parliament prohibiting intramural interment was passed; however, little else was done in England until 1874. The stage for the cremation movement had been set by investigations in Italy by Gorini and Polli from 1866 to 1872, but considerable impetus was furnished by the demonstration at the Great Exhibition at Vienna in 1873 by Professor Brunetti, a morbid anatomist from Padua, who showed a model furnace of his own design as well as some ashes of bodies he had cremated. Convinced of its value in sanitation, Sir Henry brought the subject to public notice in Britain in 1874 by an article in the *Contemporary Review* titled "Cremation: the Treatment of the Body after Death," which was soon published in book form. In it he advanced the basic arguments both in terms of public health and economics in favor of cremation, and he rebutted many possible objections. Shortly thereafter several influential persons met at Thompson's home and the Cremation Society of England was formed. Thompson was president of the society from its inception in 1874 until just before his death. Prominently associated with him were Sir Spencer Wells, Sir John Tenniel, Sir John Millais, and Anthony Trollope, a prominent civil servant in addition to being a novelist. The Society proposed to erect and operate a crematorium near London.

As is often the case with well-conceived reforms, the established order managed to create annoying opposition. Scarcely had the Society arranged to erect its crematorium in a large cemetery north of London when the Bishop of Rochester, within whose jurisdiction it lay, forbade it absolutely. Apparently he could not reconcile the Christian doctrine which attached importance to the resurrection of the physical body with the idea of corporeal reconstitution from the products of combustion. It would have been useless to argue with that primate that disposal of human remains was widespread in societies other than those within the Judaeo-Christian tradition; he would not have considered them "civilized." In 1878 the Cremation Society purchased an acre of freehold land at Woking and erected a crematorium there under the supervision of Professor Gorini, but the Home Office put a number of obstacles to its use. Despite lengthy official correspondence and a number of attempts to bring a test case, the Home Office succeeded in holding out until 1883 when Dr. William Price of Cardiff cremated the body of his dead child in defiance of the local coroner and was arrested and brought to trial before the Assizes. The decision by Justice Stephens in February, 1884, vindicated the right of people to cremate:

> I am of the opinion that a person who burns instead of buries a dead body does not commit a criminal act unless he does it in such a manner as to amount to a public nuisance at common law.

Justice Stephens also quoted from Lucan: "Tabesne cadavera solvat an rogus haud refert" (Whether decay or fire destroy corpses matters not).

The first cremation at Woking took place in 1885, and by the time of Sir Henry's last report, a book titled *Modern Cremation: Its History and Practice to the Present Date* (4th ed., 1901), a total of 1,824 bodies had been cremated in England from 1885 through 1900, the number for the last year being then a record of 301. By the middle of the twentieth century, some fifty years later, there were 160 crematoria in Great Britain and some 200,000 cremations annually, accounting for about one third of all deaths. The year 1902 was memorable for the cremation movement; in that year not only did Thompson along with others form the company which erected the crematorium at Golders Green, but the first Cremation Act (2 Edw. VII, c. 8) was also passed by Parliament, embodying many of the reforms which Sir Henry had suggested, particularly those relating to death certification. It proved unnecessary to revise this statute until 1952.

Two passages from Thompson's article of 1874 will serve to indicate the extremes of his style as well as the contrarieties of his character. The first passage is indicative of Thompson the practical man of applied science:

> The problem which Nature sets herself to work in disposing of dead animal matter is always one and the same. The order of the universe requires its performance; no other end is possible. The problem may be slowly worked, or quickly worked: the end is always one. . . The problem is: Given a dead body, to resolve it into carbonic acid, water, and

> ammonia, and the mineral elements, rapidly, safely, and not unpleasantly. The answer may be practically supplied in a properly constructed furnace.

The second passage shows Thompson as the florid Victorian writer, a painter of pictures in words as well as in line:

> Let us see what the process by burial is. So far as I dare! For could I paint in its true colours the ghastly picture of that which happens to the mortal remains of the dearest we have lost, the page would be too deeply stained for publication. I forbear, therefore, to trace the steps of the process which begins so soon and so painfully to manifest itself after that brief hour has passed when "she lay beautiful in death." Such loveliness as that I agree it might be treason to destroy, could its existence be perpetuated, and did not Nature so ruthlessly and so rapidly blight her own handiwork, in furtherance of her own grand purpose . . ."

Thompson's mind and diversity of interest remained active until the last. Shortly after 1900 at the age of eighty, he purchased a 6.5 horse power Daimler and hired a competent driver. One of his great pleasures was to be driven around the countryside. He kept careful notes on time and distance. In 1902 he even published a small book titled *The Motorcar, an Elementary Handbook on Its Nature and Management.* During the last two years of his life he wrote several letters to the *Times* emphasizing the need for caution and courtesy on the road, the importance of giving constant and undivided attention to the flow of traffic, and the advisability of being able to replace movable parts which fail when traveling. He even went so far as to predict that the advent of the motorcar would improve the sanitary condition of the streets and the health of motorists. It is regrettable that air pollution and motoring accidents should have conspired to make such an optimistic view false.

In 1902 Thompson published his views on religion in an article for the *Fortnightly* titled "The Unknown God." He had originally sent it to another journal and intended to publish it anonymously; but when the editor of that journal suggested it be titled "The Unknown God by an Unknown Man," he withdrew it and, acting on the advice of friends, published it under his own name. In it he said that he "did not think the authenticity of the ancient records of revealed religion had ever been substantiated," but he did believe that there was proof of the beneficent tendency exercised by "the Source of Infinite Energy," a philosophy held by many of his Victorian friends such as Tyndall, Huxley, and Herbert Spencer. It was a far cry from the nonconformism and Sabbatarianism of his youth. He died after a brief illness in the spring of 1904 and was cremated at Golders Green. Lady Thompson survived him by a few months.

70 CONVENT AVENUE
NEW YORK, NEW YORK 10027

Snake venom and anti-snake bite serum

It has recently been discovered that when snake venom is exposed to a certain dose of irradiation, it is converted to an anti-snake bite serum.

In view of this, the World Health Organization and the International Atomic Energy Agency have a cooperative program under way setting up simple irradiation units on snake farms in the Middle East and Africa.

Necrology

Alan Ramseur Anderson, M.D., of Freeport, died on August 16 at the age of seventy-three. Dr. Anderson graduated in 1923 from the University of Pennsylvania School of Medicine. He had been a consulting physician at South Nassau Communities Hospital (Oceanside) and an emeritus physician at Meadowbrook Hospital (Hempstead). Dr. Anderson was a Fellow of the American College of Physicians and a member of the New York Academy of Medicine, the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Mahlon Hicks Atkinson, M.D., of Catskill, died on August 9 at the age of seventy-three. Dr. Atkinson graduated in 1923 from Harvard University Medical School. He had been chief of surgery at Memorial Hospital of Greene County and for many years had served as coroner of Greene County. Dr. Atkinson was a Fellow of the American College of Surgeons and a member of the Greene County Medical Society (and a past president), the Medical Society of the State of New York, and the American Medical Association.

Pasquale Della Badia, M.D., of The Bronx, died on August 10 at the age of seventy-nine. Dr. Badia graduated in 1913 from Fordham University School of Medicine. He had been an affiliate associate attending surgeon at Morrisania City Hospital. Dr. Badia was a Fellow of the International College of Surgeons and a member of the American Gastro-Enterological Association, the American Geriatrics Society, the International Academy of Proctology, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ernest H. Bamberger, M.D., of New York City, died on May 8 at the age of seventy. Dr. Bamberger received his medical degree from the University of Wurzburg in 1922. He was a senior clinical assistant attending obstetrician and gynecologist (off service) at The Mount Sinai Hospital. Dr. Bamberger was a member of the American Psychiatric Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Joseph Blumenthal, M.D., of Brooklyn, died on July 8 at the age of seventy-six. Dr. Blumenthal graduated in 1913 from Long Island College Hospital. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Thomas Beckett Browning, M.D., of Scarsdale, died on August 19 at the age of forty-two. Dr. Browning graduated in 1950 from the University of Rochester School of Medicine and Dentistry. Since 1962 he had been medical director of the Mount Vernon Mental Hygiene Clinic. Dr. Browning was a member of the American Psychiatric Association and the Westchester Academy of Medicine.

Harry L. Clark, M.D., of Brooklyn, died on June 10 at the age of seventy-one. Dr. Clark graduated in 1922 from the University of Buffalo School of Medicine. He had been a consulting obstetrician and gynecologist at Coney Island Hospital, an attending obstetrician and gynecologist at Kings Highway Hospital, and an associate attending obstetrician and gynecologist emeritus at Maimonides Hospital of Brooklyn. Dr. Clark was a Diplomate of the American Board of Obstetrics and Gynecology, a Fellow of the American College of Obstetricians and Gynecologists, a Fellow of the International College of Surgeons, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Adolph Eisenbud, M.D., of Rockville Centre, died on August 19 at the age of eighty-three. Dr. Eisenbud graduated in 1914 from Long Island College Hospital. Retired, he was a Diplomate of the American Board of Psychiatry and Neurology and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Abraham Leon Garbat, M.D., of New York City, died on August 12 at the age of eighty-three. Dr. Garbat graduated in 1906 from Cornell University Medical College. He had been a consulting physician at Lenox Hill Hospital (where he formerly had served as director of medicine) and clinical professor of medicine at New York University School of Medicine. In 1919 he was awarded the Cartwright Prize in Medicine by Columbia University for research work on typhoid carriers. Dr. Garbat was a Diplomate of the American Board of Internal Medicine and a member of the American Gastro-Enterological Association, the American Association of Immunologists, the American Association of Pathologists and Bacteriologists, the New York Academy of Medicine, the New York

Pathological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Bertram Melvin Gesner, M.D., of New York City, died on August 21 at the age of thirty-seven. Dr. Gesner graduated in 1957 from New York University School of Medicine. He was an assistant attending physician at Bellevue Hospital, an assistant attending physician in medicine at University Hospital, and an assistant professor of medicine at the New York University School of Medicine and director of its Student Health Service. Dr. Gesner was a Diplomate of the American Board of Internal Medicine and a member of the American Rheumatism Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Julius Gottesman, M.D., of New York City, died on August 18 at the age of seventy-seven. Dr. Gottesman graduated in 1915 from Columbia University College of Physicians and Surgeons. He had been a medical consulting surgeon at the Hospital for Joint Diseases and an emeritus surgeon at Montefiore Hospital. Dr. Gottesman was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Frank Paul Kane, M.D., of Binghamton, died on August 9 at the age of seventy-two. Dr. Kane graduated in 1934 from the University of Pennsylvania School of Medicine. He was a senior attending surgeon at Our Lady of Lourdes Memorial Hospital. Dr. Kane was a member of the Binghamton Academy of Medicine, the Broome County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Stephen Kiss, M.D., of Woodhaven, died on August 15 at the age of seventy-two. Dr. Kiss received his medical degree from the University of Budapest in 1919. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Michael Gerald Lynch, M.D., of Webster, died on July 15 at the age of sixty-nine. Dr. Lynch graduated in 1921 from Queens University Faculty of Medicine, Kingston, Ontario. He was an honorary attending physician in general practice at Park Avenue Hospital (Rochester). Dr. Lynch was a member of the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Eugene Ernest Marcovicci, M.D., of New York City, died on August 10 at the age of eighty-two. Dr. Marcovicci received his medical degree from the University of Vienna in 1907. He was a Fellow of the American College of Physicians and a member of the American Geriatrics Society, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur H. Martin, M.D., of Mineola, died on July 26 at the age of eighty-six. Dr. Martin graduated in 1906 from Cornell University Medical College. He was a member of the Otsego County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Salvatore Joseph Piazza, M.D., of Ransomville, died on August 4 at the age of sixty-two. Dr. Piazza graduated in 1948 from the University of Buffalo School of Medicine. He was a member of the American Academy of General Practice, the Niagara County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Julius Pomerantz, M.D., of Spring Valley, died on August 24 at the age of sixty-six. Dr. Pomerantz graduated in 1925 from Long Island College Hospital. He was an attending physician at Good Samaritan Hospital (Suffern). Dr. Pomerantz was a Fellow of the American College of Cardiology and a member of the Rockland County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Frederick Martin Rauch, M.D., of Mohegan Lake, died on July 3 at the age of sixty-seven. Dr. Rauch graduated in 1926 from Long Island College Hospital. He was an attending physician and chief of the medical staff at Peekskill Hospital and the physician for the Mohegan volunteer fire department. Dr. Rauch was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur Leonard Rozman, M.D., of Brooklyn, died on May 25 at the age of thirty-two. Dr. Rozman graduated in 1962 from State University of New York Downstate Medical Center College of Medicine. He was an assistant attending gastroenterologist at Jewish Hospital of Brooklyn. Dr. Rozman was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Edward G. Schweinberger, M.D., of Syracuse, died on July 14 at the age of seventy-two. Dr. Schweinberger graduated in 1926 from Syracuse University College of Medicine. He was a

Fellow of the American College of Surgeons and a member of the American Society of Plastic and Reconstructive Surgery, the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Franklin Watson, M.D., of Buffalo, died on April 14 at the age of thirty-eight. Dr. Watson graduated in 1955 from Johns Hopkins University School of Medicine. He was a Diplomate of the American Board of Internal Medicine.

Joseph Rosenfeld Wiseman, M.D., of Syracuse, died on July 14 at the age of eighty-six. Dr. Wiseman graduated in 1906 from Syracuse University College of Medicine. He was a professor emeritus at Syracuse University Medical College and had been a senior attending physician at St. Joseph's and Syracuse Memorial Hospitals, and a consulting physician at St. Mary's Hospital. Dr. Wiseman was a Diplomate of the American Board of Internal Medicine (Allergy), a Fellow of the American College of Physicians, a Fellow of the American College of Allergists, and a member of the American Academy of Allergy, the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter J. M. Wurtz, M.D., of Buffalo, died on July 15 at the age of eighty-five. Dr. Wurtz graduated in 1908 from the University of Buffalo School of Medicine. He had been a consulting otolaryngologist at the Edward J. Meyer Memorial, Children's, and St. Francis Hospitals, and health officer for the Town of Tonawanda (from 1910 to 1920). Dr. Wurtz was a Diplomate of the American Board of Otolaryngology and a member of the American Academy of Ophthalmology and Otolaryngology, the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Consistency in time of lung tests advocated

The time of day when patients with chronic lung disease are tested for lung function may be a factor in the results, suggesting that for the best evaluation of the patient's condition, the specific test should always be performed at comparable times of the day.

This is the conclusion reached on the basis of a study carried out in Lebanon and reported in a recent issue of the *American Review of Respiratory Disease*. The study was conducted by Farid J. D. Fuleihan, M.D., and Raja T. Abboud, M.D.

Eight persons with chronic irreversible airway obstruction were given a series of tests. All the patients were men, and they ranged in age from fifty-five to seventy-six years. They were tested for forced vital capacity, 1-second forced expiratory volume, total lung capacity, and residual volume. Expired oxygen and carbon dioxide were analyzed, and arterial oxygen tension, arterial carbon dioxide tension, and pH were measured. The patients were studied individually on different days at 8:00 A.M., 11:00 A.M., 2:00 P.M., and 4:30 P.M., times occurring during the usual working hours of pulmonary function laboratories.

There were no significant differences in forced vital capacity, 1-second forced expiratory volume, and residual volume between 8:00 A.M. and 4:30 P.M. in the patients studied, but definite improvement was noted in arterial oxygen tension, arterial carbon dioxide tension, and pH in the afternoon hours.

This, then, suggests that it may be misleading to assess pulmonary function on the basis of measurements performed at some arbitrary time of day. It seems more appropriate to perform these tests at comparable times of the day if a true evaluation of the progress of the disease or of the efficacy of drugs is to be made.

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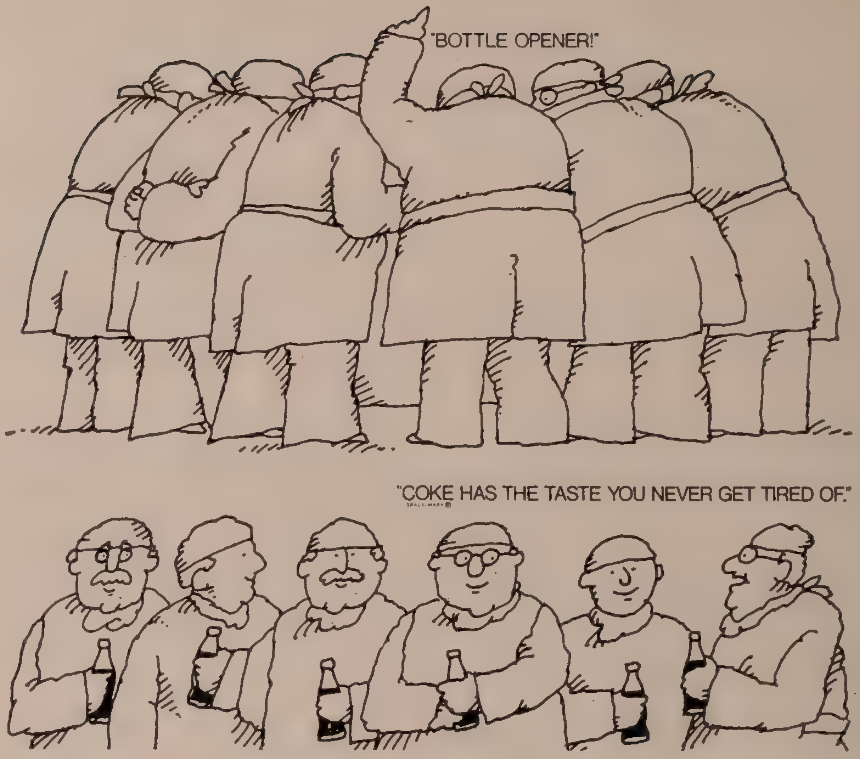
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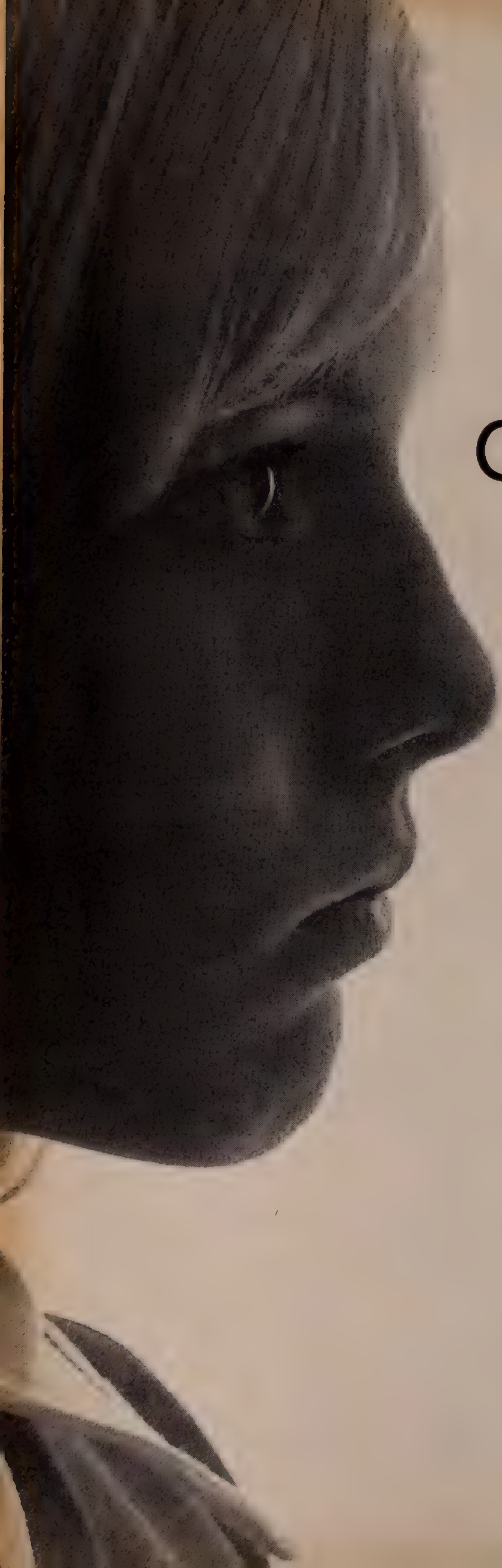

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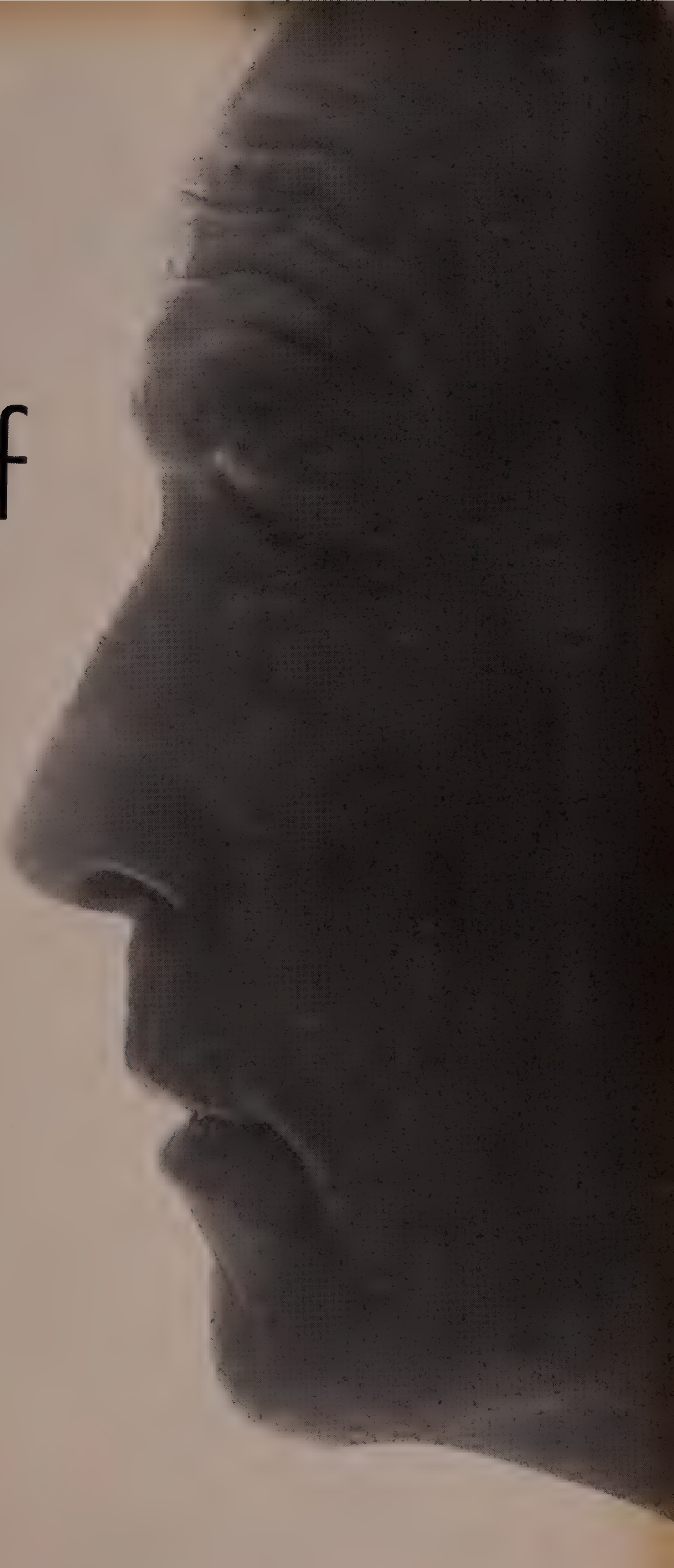

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New York State Journal of Medicine

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Recent Advances in Medicine and Surgery

2660 Current Status of Cardiac Surgery; Part I
Stanley Giannelli, Jr., M.D., E. Foster Conklin, M.D., Stephen M. Ayres, M.D., Robert Kozam, M.D., Joseph Bordiuk, M.D., and *John J. Gregory, M.D.*

Clinicopathologic Conference

2674 Progressive Azotemia, Hyponatremia, and Altered Intestinal Motility with Chronic Pulmonary Disease
Lenox Hill Hospital

Correlation Conferences in Radiology and Pathology

2685 Mass over Chest Wall
Upstate Medical Center

Clinical Anesthesia Conference

2688 Inadvertent Hypothermia During Anesthesia

continued on page 2592

tones down the
"explosive gut"

helps restore normal motility and tone

CANTIL®

(mepenzolate bromide)

Diarrhea and other symptoms of common G.I. disorders can often be curbed with Cantil (mepenzolate bromide), bringing welcome relief to the harassed patient. Relatively specific for the hyperactive colon, it helps reduce diarrhea, pain and spasm with minimal effect on other viscera. Cantil (mepenzolate bromide) is indicated whenever these symptoms are associated with irritable colon, gastroenteritis, diverticulitis, and mild to moderate ulcerative colitis.

It is an anticholinergic drug without narcotic properties. Side effects are usually mild.

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CONTRAINDICATIONS: Sensitivity to Cantil® (mepenzolate bromide), glaucoma, G.I. or G.U. obstruction, toxic megacolon. **WARNINGS:** Possibility of adverse reactions in advanced severe ulcerative colitis and atypical agitated reactions to phenobarbital in the elderly (Cantil with Phenobarbital). **PRECAUTIONS:** Cantil is of adjunctive use only; treatment of the underlying condition is indicated, be it organic or functional. Observe caution in conditions known to be incompatible with atropine-like drugs, e.g., open-angle glaucoma or prostatic hypertrophy. **ADVERSE EFFECTS:** Dry mouth; blurred vision; constipation; nausea; vomiting; bloating; dizziness; urinary retention. All are anticholinergic effects and usually tolerable. Habituation and idiosyncratic reactions to phenobarbital (Cantil with Phenobarbital) are possible, as is generalized rash. **DOSAGE:** One or two tablets three times a day and one or two at bedtime usually provide prompt relief. Cantil with Phenobarbital may be prescribed if sedation is required. **HOW SUPPLIED:** CANTIL (mepenzolate bromide)—25 mg. per scored tablet. Bottles of 100 and 250. CANTIL with PHENOBARBITAL—containing in each scored tablet 16 mg. phenobarbital (warning: may be habit forming) and 25 mg. mepenzolate bromide. Bottles of 100 and 250.

LAKESIDE LABORATORIES, INC., Milwaukee, Wisconsin 53201

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Joseph J. Fried, M.D., F.A.C.S.

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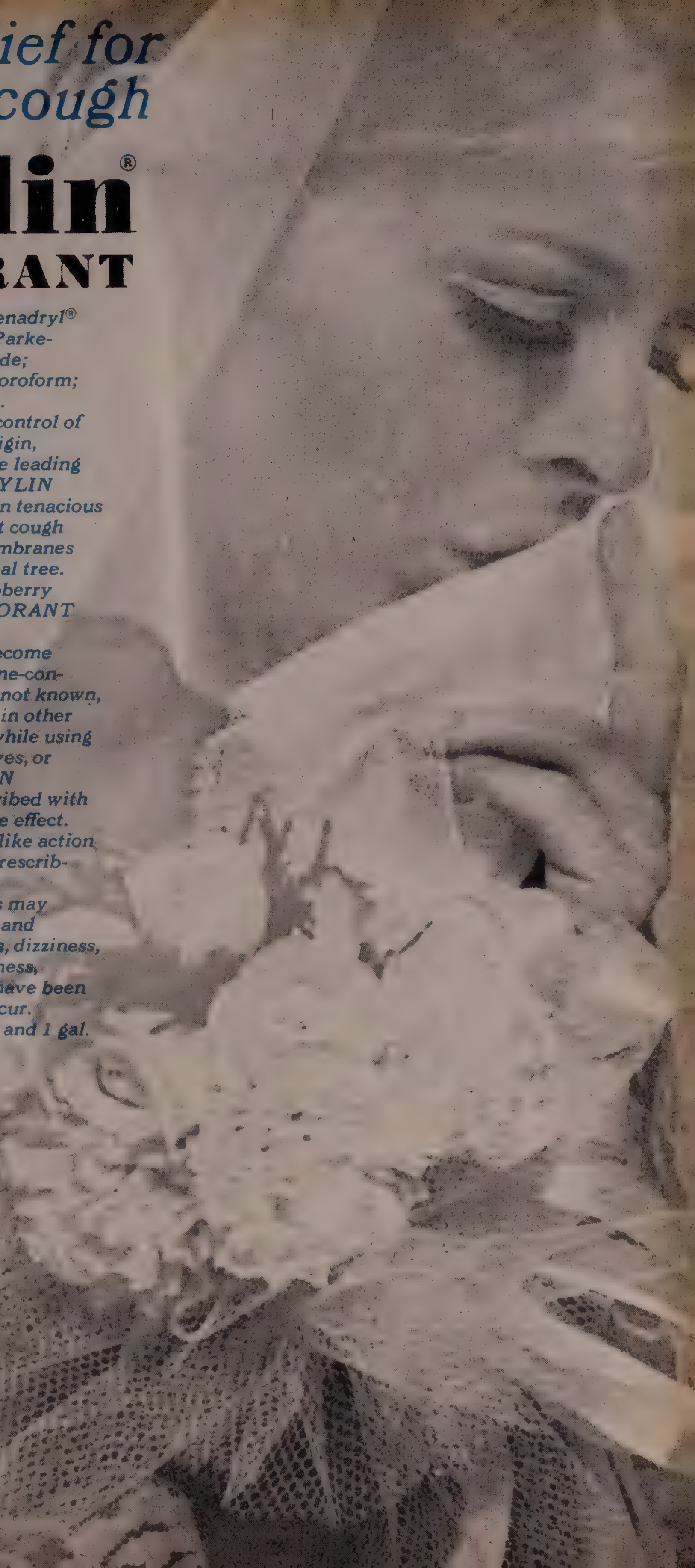

welcome relief for unwelcome cough

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Each fluidounce contains: 80 mg. Benadryl® (diphenhydramine hydrochloride, Parke-Davis); 12 grains ammonium chloride; 5 grains sodium citrate; 2 grains chloroform; 1/10 grain menthol; and 5% alcohol.
An antitussive and expectorant for control of coughs due to colds or of allergic origin, BENYLIN EXPECTORANT is the leading cough preparation of its kind. BENYLIN EXPECTORANT helps break down tenacious mucous secretions...tends to inhibit cough reflex...soothes irritated throat membranes ...reduces congestion in the bronchial tree. And its not-too-sweet, pleasant raspberry flavor makes BENYLIN EXPECTORANT easy to take.
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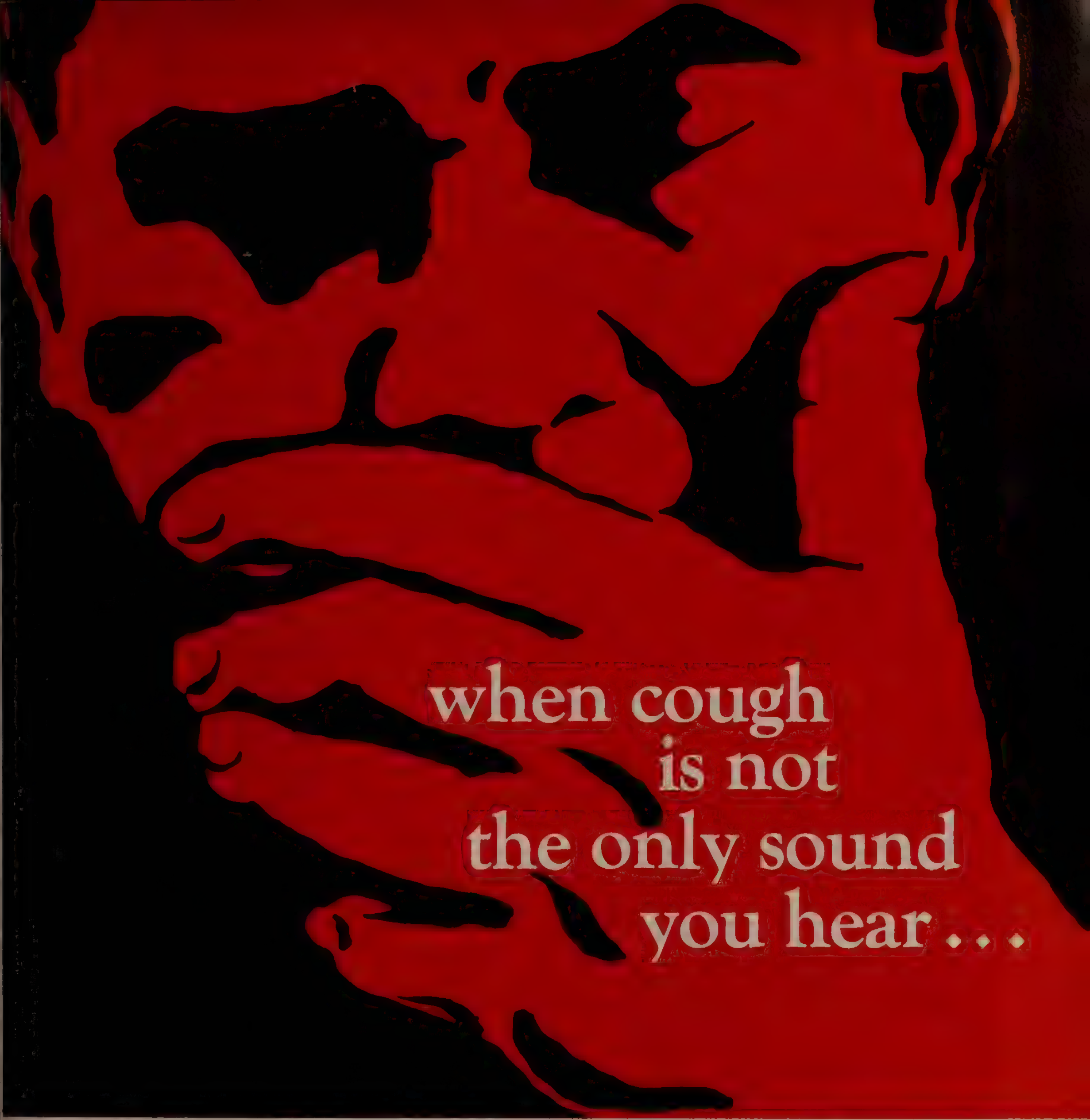

OMNI-TUSS® b.i.d.

. . . because OMNI-TUSS is indicated for cough associated with upper respiratory tract infections, bronchitis, bronchiectasis, bronchial asthma, emphysema, sinusitis and rhinitis, hay fever, or other allergic conditions. Any of these conditions may exhibit the general symptom syndrome—coughing, wheezing, bronchospasm, and tenacious mucus—which may benefit from the antitussive, bronchodilative, antihistaminic, and expectorant action of Omni-Tuss.

The therapeutic usefulness of Omni-Tuss is enhanced by a unique resin complex formulation providing the clinically desirable advantages of: (1) uniform drug availability throughout an extended period, (2) 8 to 12 hours of symptomatic control, (3) minimal dosage requirement, (4) minimal side effects.

Economical, efficient **b.i.d.** dosage—extremely well-tolerated by children, 6-12, and adults.

'Omni Tuss' Suspension: Each teaspoonful (5 cc.) contains 10 mg. codeine (Warning: May be habit-forming), 5 mg. phenyltoloxamine, 3 mg. chlorpheniramine, 25 mg. ephedrine, all as cation exchange resin complexes of sulfonated polystyrene, and 20 mg. guaiacol carbonate.

Available on prescription only. Class X exempt narcotic. Permissible on oral prescription.

Dosage: *Adults:* 1 teaspoonful (5 cc.) q12h.
Children (6-12 *years*)*:* ½ teaspoonful q12h.

Side Effects: Minimal, but when encountered may include jitteriness, nausea, drying of mouth, insomnia, constipation, which disappear upon adjustment of the dose or discontinuance of treatment.

Precautions and Contraindications: For complete detailed information, refer to package insert or official brochure.

Strasenburgh
Strasenburgh Laboratories Division
Wallace & Tiernan Inc., Rochester, N.Y.

Abstracts

Brown, C. D., Porter, I. H., and Gabay, J. J.: Chronic effects from radium-226 body burden on human chromosomes cultured in vitro, New York State J. Med. **68:** 2641 (Oct. 15) 1968.

Population groups exposed to ionizing radiation show resulting chromosome aberrations in peripheral leukocytes. The effects of chronic, low-level, internal radiation caused by ingestion or inhalation of radium-226 on chromosomes in cultured peripheral leukocytes were studied. Control and patient cultures were investigated. Abnormal chromosomes were mainly acentric and translocated. Dicentric and ring types were not found, serving to confirm minimal body burden since these are associated with relatively large radiation doses. Relatively low doses of gamma irradiation have been known to produce aberrations persistently for seventeen or eighteen years.

Toomey, J. M.: Respiratory distress in newborn infant, New York State J. Med. **68:** 2648 (Oct. 15) 1968.

Respiratory distress in newborn infants can be diagnosed accurately by evaluation and testing. The history should include maternal, familial, delivery, and neonatal information. A study should be made of the signs and symptoms: respiratory, deglutition, cardiovascular, associated anomalies, general appearance, and metabolic. Diagnostic procedures are physical examination, endoscopy, x-ray examination, and laboratory tests. Specific lesions can cause this condition: of the nose and nasopharynx, pharynx and oral cavity, larynx, neck, tracheobronchial tree, and lungs and thorax.

Ellenberg, M.: Treatment of diabetic neuropathy with diphenylhydantoin, New York State J. Med. **68:** 2653 (Oct. 15) 1968.

Diphenylhydantoin was used to treat painful diabetic peripheral neuropathy in 60 patients. Based on symptomatic relief of pain and paresthesia, excellent results were obtained in 68 per cent (41 patients) and fair response in another 17 per cent (10 patients). When successful, improvement was noted in from twenty-four to ninety-six hours (usually forty-eight), and relapse occurred in from forty-eight to seventy-two hours when the drug was discontinued prematurely. Although diphenylhydantoin is clearly not a cure nor the ideal drug for diabetic neuropathy, the high rate of subjective benefit in a frustrating condition appears to justify a therapeutic trial. There is no long-term commitment to the drug. However, there is risk of toxicity.

Shulman, K., and Ames, M. D.: Intensive treatment of fifty children born with myelomeningocele, New York State J. Med. **68:** 2656 (Oct. 15) 1968.

To demonstrate that an intensive program of treatment and prophylaxis of infants born with myelomeningocele by a group of specialists, if begun immediately after birth and continued on a regular basis, could decrease the mortality rate and length of hospitalization as well as enhance the quality of survival, 50 consecutive infants were studied. The primary neurosurgical approach was to close the myelomeningocele. Forty-one patients had hydrocephalus and were treated by the Holter V-J (ventriculojugular) shunt device. The survival rate over three years was 80 per cent.

Abstracts in Interlingua

Brown, C. D., Porter, I. H., e Gabay, J. J.: Effectos chronic manifeste in culturation in vitro de chromosomos human e attribuibile al exposition del corpore total a ^{226}Ra (*anglese*), New York State J. Med. **68:** 2641 (15 de octobre) 1968.

Gruppos del population qui es exponite a radiation ionisante manifesta aberrationes chromosomatic in le leucocytos peripheric. Esseva studiate le effectos exercite super le chromosomos de culturate leucocytos peripheric per le ingestion o inhalation de ^{226}Ra e le consequente interne radiation chronic e oligopotente. Le culturas studiate veniva ab patientes e ab subjectos de controlo. Le chromosomos anormal esseva principalmente acentric e translocate. Typos dicentric e annular non esseva trovate, lo que confirma que il se tractava de basse cargas pro le corpore (proque ille typos es associate con relativemente alte doses de irradiation). Il es cognoscite que relativemente basse doses de irradiation γ produce aberrationes

continued on page 2601

Is it depression?

He says "It's my stomach..." ...but his other symptoms:
functional somatic complaints, anxiety,
insomnia, anorexia, feelings of guilt
strongly suggest
an underlying depression.

---

when the diagnosis is depression

ELAVIL® HCl
(AMITRIPTYLINE HCl | MSD)

Indications: Mental depression and mild anxiety accompanying depression.

Contraindications: Glaucoma and predisposition to urinary retention. Not recommended in pregnancy.

Precautions and Side Effects: Drowsiness may occur within the first few days of therapy. Patients should be warned against driving a car or operating machinery or appliances requiring alert attention. When depression is accompanied by anxiety or agitation too severe to be controlled by ELAVIL HCl alone, a phenothiazine tranquilizer may be given concomitantly. Suicide is always a possibility in mental depression and may remain until significant remission occurs. Supervise patients closely in case they may require hospitalization or concomitant electroshock therapy. Untoward reactions have been reported after the combined use of antidepressant agents having varying modes of activity. Accordingly, consider possibility of potentiation in combined use of antidepressants. Monoamine oxidase inhibitor drugs may potentiate other drugs and such potentiation may even cause death; permit at least two weeks to elapse between administration of two agents; in such patients, initiate therapy with ELAVIL HCl cautiously with gradual increase in dosage required to obtain a satisfactory response. Caution patients about errors of judgment due to change in mood, and that the response to alcohol may be potentiated. May provoke mania or hypomania in manic-depressive patients.
Side effects include drowsiness; dizziness; nausea; excitement; hypotension; fine tremor; jitteriness; weakness; headache; heartburn; anorexia; increased perspiration; incoordination; allergic-type reactions manifested by skin rash, swelling of face and tongue, itching; numbness and tingling of limbs, including peripheral neuropathy; activation of schizophrenia which may require phenothiazine tranquilizer therapy; epileptiform seizures in chronic schizophrenics; temporary confusion, disturbed concentration or, rarely, transient visual hallucinations on high doses; evidence of anticholinergic activity, such as tachycardia, dryness of the mouth, blurring of vision, urinary retention, constipation; paralytic ileus; jaundice; agranulocytosis.
Careful observation of all patients is recommended. The antidepressant activity may be evident within 3 or 4 days or may take as long as 30 days to develop adequately, and lack of response sometimes occurs. Response to medication will vary according to severity as well as type of depression present. Elderly patients and adolescents can often be managed on lower dosage levels.

Supplied: Tablets ELAVIL HCl, containing 10 mg., 25 mg., and 50 mg. amitriptyline HCl, bottles of 100 and 1000; Injection ELAVIL HCl, in 10-cc. vials, containing per cc.: 10 mg. amitriptyline HCl, 44 mg. dextrose, 1.5 mg. methylparaben, and 0.2 mg. propylparaben.

For more detailed information, consult your Merck Sharp & Dohme representative or see the package circular.

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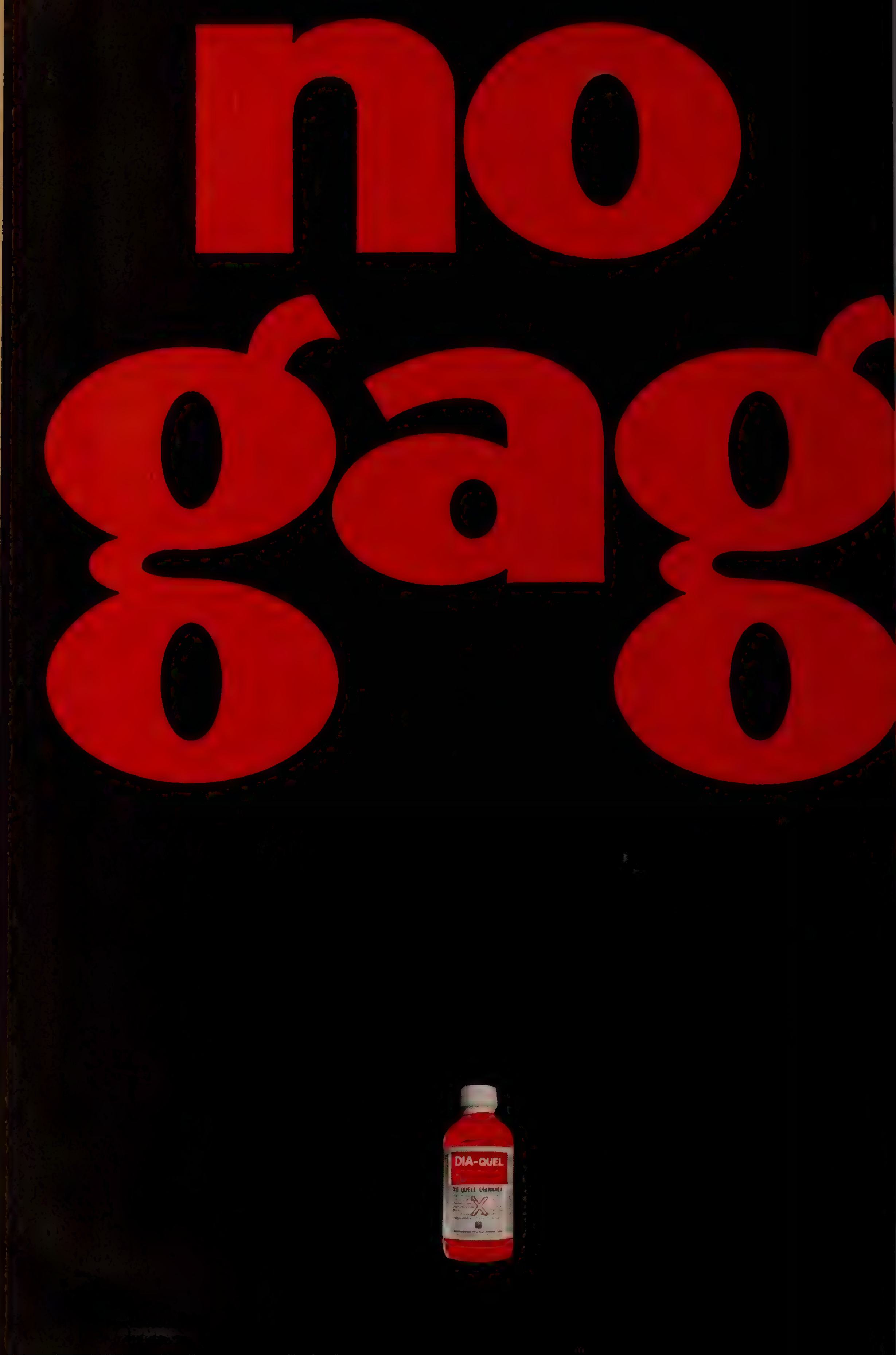
where today's theory is tomorrow's therapy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DIA-QUEL

!

DIA-QUEL actually tastes good

DIA-quel contains the only therapeutically active ingredient of paregoric—tincture of opium. This has been combined with homatropine methylbromide and pectin to make a sensible antidiarrheal formula.

By leaving out paregoric's outdated preservative—bitter-tasting camphor—we've produced an antidiarrheal that is good-tasting, as well as effective and prompt-acting in acute, nonspecific diarrheas and their accompanying "cramps." It is DIA-quel, a clear, red liquid with a pleasant cherry flavor.

Each teaspoonful (5 ml.) of DIA-quel Liquid contains:

Tincture of Opium... 0.03 ml.—Equivalent to 0.75 ml. of paregoric.
(Warning: May be habit forming)

To reduce hypermotility and frequency.

Homatropine Methylbromide... 0.15 mg.

A safe dose for mild spasmolysis to curb cramping and griping.

Pectin... 24. mg.

Demulcent, adsorbent. Helps form stools.
Alcohol 10% by volume.

In case you're curious, back in the 1700's paregoric was being used for diarrhea, but since the state of the pharmaceutical art was extremely primitive, fungus growth in the medication was a problem. Bitter-tasting camphor was added to prevent such growth and anise oil was added in an attempt to cover up the camphor taste. DIA-quel Liquid is a modern formulation that does not contain either of these outdated ingredients.

Caution: With use of DIA-quel Liquid observe the usual precautions associated with opium derivatives and anticholinergics.

Dosage: Usual adult dosage: 1 or 2 tablespoonfuls (15 or 30 ml.) t.i.d. or q.i.d. Usual children's dosage (Clark's rule): ½ to 2 teaspoonfuls (2.5 to 10 ml.) t.i.d. or q.i.d.

How Supplied: In 4 fl. oz. (118 ml.) band-sealed bottles.

OQJ20968

DIA-quel is a Federally exempt narcotic (Class X) preparation. Where state law permits, no prescription is necessary.

For a complimentary sample of DIA-quel, simply mail your request to us on a signed prescription blank.

DIA-QUEL LIQUID

IPC
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INTERNATIONAL PHARMACEUTICAL CORP.
Warrington, Pennsylvania 18976

This advertisement for TAO® (triacetyloleandomycin), published at the request of the Food and Drug Administration, replaces a recent one which the FDA regards as misleading.

The advertisement headlined "new evidence for TAO . . ." and emphasized that the drug is "for the frequently seen respiratory infection in the office and for a problem pathogen* in the hospital. *Staphylococcus aureus."

We emphasize that triacetyloleandomycin is to be used only for acute, severe bacterial infections where adequate sensitivity testing has demonstrated susceptibility to this drug and resistance to other less toxic agents. In view of the possible, but reversible, jaundice and hepatotoxicity of this drug, other less toxic agents should be used unless the organism is resistant to those agents, or in those cases where hypersensitivity precludes their use.

TAO is contraindicated in preexisting liver disease or dysfunction, and in individuals who have shown hypersensitivity to the drug.

The advertisement emphasized that no tooth staining has been reported after ten years of use of this antibiotic. The Food and Drug Administration regards this claim as an implied comparison suggesting that triacetyloleandomycin and tetracycline have a similar antibacterial spectrum of effectiveness, and that TAO has less toxic potential. Any such implication is not intended and, of course, would be invalid.

The advertisement referred to a research study in which patients were given triacetyloleandomycin prior to determining the susceptibility of the offending organism. Any suggestion that triacetyloleandomycin be used clinically without first determining susceptibility of the offending organism should be disregarded.

J. B. ROERIG DIVISION
CHAS. PFIZER & CO., INC.
235 EAST 42nd STREET
NEW YORK, N.Y. 10017

TAO®(triacetyloleandomycin)
Brief Summary

INDICATIONS: Include streptococci, staphylococci, pneumococci and gonococci. Recommended for acute, severe infections where adequate sensitivity testing has demonstrated susceptibility to this antibiotic and resistance to less toxic agents.

CONTRAINDICATIONS: Contraindicated in pre-existing liver disease or dysfunction, and in individuals hypersensitive to the drug.

PRECAUTIONS CAUTION: USE OF THIS DRUG MAY PRODUCE ALTERATIONS IN LIVER FUNCTION TESTS AND JAUNDICE. CLINICAL EXPERIENCE AVAILABLE THUS FAR INDICATES THAT THESE LIVER CHANGES WERE REVERSIBLE FOLLOWING DISCONTINUATION OF THE DRUG.

Not recommended for prophylaxis or in the treatment of infectious processes, which may require more than ten days continuous therapy. In view of the possible hepatotoxicity of this drug when therapy beyond ten days proves necessary, other less toxic agents should be used. If clinical judgment dictates continuation of therapy for longer periods, serial monitoring of liver profile is recommended, and the drug should be discontinued at the first evidence of any form of liver abnormality. When treating gonorrhea in which lesions of primary or secondary syphilis are suspected, proper diagnostic procedures, including dark-field examinations, should be followed. In other cases in which concomitant syphilis is suspected, monthly serological tests should be made for at least four months. When used in streptococcal infections, therapy should be continued for ten days to prevent the development of rheumatic fever or glomerulonephritis. The use of antibiotics may occasionally permit overgrowth of nonsusceptible organisms. A resistant infection or superinfection requires re-evaluation of the patient's therapy. In the event such occurs with this drug the medication should be discontinued, and specific antibacterial and supportive therapy instituted.

ADVERSE REACTIONS: Although reactions of an allergic nature are infrequent and seldom severe, those of the anaphylactoid type have occurred on rare occasions.

ROERIG Rx
J. B. ROERIG DIVISION
CHAS. PFIZER & CO., INC.
235 EAST 42nd STREET
NEW YORK, N.Y. 10017

continued from page 2596

de un persistentia potential de dece-septe o dece-octo annos.

Toomey, J. M.: Angustia respiratori in neonatos (*anglese*), New York State J. Med. **68:** 2648 (15 de octobre) 1968.

Angustia respiratori in neonatos pote esser accuratemente diagnosticate per evalutation e tests. Le anamnese debe concerner se con datos materne, familial, parturitional, e neonatal. Le signos e symptomas debe esser studiate, con attention prestate al respiration, deglutition, stato cardiovascular, anormalitates associate, aspectos general, e parametros metabolic. Le mesuras diagnostic es le examine physic, endoscopia, roentgenographia, e tests laboratorial. Lesiones specific pote esser le causa del condition. Tal lesiones pote trovar se in le naso, le nasopharynge, le pharynge, le cavitate oral, le larynge, le collo, le arbore tracheobronchial, le pulmones, e le thorace.

Ellenberg, M.: Tractamento de neuropathia diabetic con diphenylhydantoina (*anglese*), New York State J. Med. **68:** 2653 (15 de octobre) 1968.

Diphenylhydantoina esseva usate in le tractamento de 60 patientes con dolorose peripheric neuropathia diabetic. A base de symptomatic alleviamento de dolor e paresthesia, excellente resultatos esseva obtenite in 41 del patientes (68 pro cento) e bon resultatos in 10 alteres (17 pro cento). In le casos a successo, le melioration esseva manifeste intra ab vinti-quatro ad novanta-sex horas (usualmente quaranta-octo), e le recidiva occurreva intra ab quaranta-octo ad septanta-duo horas quando le medication esseva suspendite prematurmente. Ben que diphenylhydantoina es clarmente non un agente de curation e non mesmo le droga ideal pro le tractamento de neuropathia diabetic, le alte proportion de beneficios subjective in iste condition plen de problemas pro le medico pare justificar un essayo con illo. Le prime uso del droga non significa que illo debe esser usate a base perdurative. Del altere latere, le risco de toxicitate existe.

Shulman, K., e Ames, M. D.: Intense therapia in cinquanta juveniles nate con myelomeningoceles (*anglese*), New York State J. Med. **68:** 2656 (15 de octobre) 1968.

Pro demonstrar que un intense programma therapeutic e prophylactic in infantes nate con myelomeningoceles, si illo es instituite immediatemente post nato e es continuate a base regular con le participation de un gruppo de specialistas, pote resultar in un declino del mortalitate, un reduction del periodo de hospitalisation, e un promotion del qualitate de superviventia, cinquanta casos consecutive esseva studiate. Le primari mesura neurochirurgic esseva le clausura del myelomeningocele. Quaranta-un del patientes habeva hydrocephalos e esseva tractate per le methodo de Holter con shunting ventriculo-jugular. Le superviventia trienne esseva 80 pro cento.

Books Received

*The following books were received during the month of August, 1968.**

Cleft Palate: A Multidiscipline Approach. Edited by Richard B. Stark, M.D. Quarto of 339 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $16.

Antibiotic and Chemotherapy. By Lawrence P. Garrod, M.D., and Francis O'Grady, M.D. Second edition. Octavo of 475 pages, illustrated. Baltimore, The Williams and Wilkins Company, 1968. Cloth, $12.

A Ciba Foundation Symposium on Growth of the Nervous System. Edited by G. E. W. Wolstenholme and Maeve O'Connor. Octavo of 295 pages, illustrated. Boston, Little, Brown and Company, 1968. Cloth, $12.

A Ciba Foundation Symposium on Systemic Mycoses. Edited by G. E. W. Wolstenholme and Ruth Porter. Octavo of 287 pages, illustrated. Boston, Little, Brown and Company, 1968. Cloth, $12.

How to Live with Hypoglycemia. By Charles Weller, M.D., and Brian Richard Boylan. Octavo of 130 pages, illustrated. Garden City, N.Y., Doubleday & Company, Inc., 1968. Cloth, $4.50.

Modern Treatment. Volume 5, Number 2, March 1968. Treatment of Parkinson's Disease and Allied Disorders. Guest Editor Warren V. Huber, M.D. **Treatment of Acquired Hemorrhagic Disorders.** Guest Editor Oscar D. Ratnoff, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Published Bi-Monthly (six numbers a year). Paper, $16 per year.

Modern Treatment. Volume 5, Number 3, May 1968. Treatment of Gallbladder Disease. Guest Editor James B. Carey, Jr., M.D. **Treatment of Menopausal Problems.** Guest Editor Eugene J. Cohen, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Published Bi-Monthly (six numbers a year). Paper, $16 per year.

Evaluation of Results of Cardiac Surgery. Edited by Lewis Dexter, M.D., and Lars Werkö, M.D. **Report of a Symposium of the Fifth World Congress of Cardiology November 3, 1966, New Delhi, India.** Quarto of 112 pages, illustrated. New York, The American Heart Association, Inc., 1968. Paper, $4.00. (American Heart Association Monograph Number Twenty-two)

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

Medical Meetings

Antithrombotic therapy topic of lecture

Sol Sherry, M.D., professor and chairman of the Department of Medicine, Temple University School of Medicine, Philadelphia, Pennsylvania, is to be the guest speaker at the sixth annual Edwin P. Maynard, Jr., M.D., Lectureship in Medicine to be held on October 22, at 4:00 P.M., at the Brooklyn Hospital division of The Brooklyn-Cumberland Medical Center. The topic of the lecture will be "Recent Developments in Antithrombotic Therapy."

Recently honored by the American College of Physicians for his contributions to science and medicine, Dr. Sherry is chairman of the Committee on Thrombosis of the National Institutes of Health.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

continued on page 2622

on call...

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Cephalothin

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Indianapolis, Indiana 46206

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The Divorced Depressive: "Forty, Forgotten."

"Had a large wedding."
"Had a fine home and family."

TO-5757

..Forlorn”

“Had a divorce.”
“I'm a real loser,
and so are
the kids.”

The loss of marital compatibility results in nearly 500,000 U.S. divorces each year.

Depression characterized by untold guilt feelings, grief and loneliness may follow.

When you diagnose depression, Tofrānil may be indicated for relief.

As maintenance therapy during the active phase of depression, Tofrānil can often help prevent relapse.

The use of Tofrānil in patients receiving M.A.O.I.'s is contraindicated. In patients with cardiovascular disease, thyroid disorders, increased intraocular pressure; in those receiving anticholinergics (including antiparkinsonism agents), thyroid medication or antihypertensive adrenergic neuron-blocking agents; and in those in their first trimester of pregnancy—the special precautions listed in the Prescribing Information should be carefully observed.

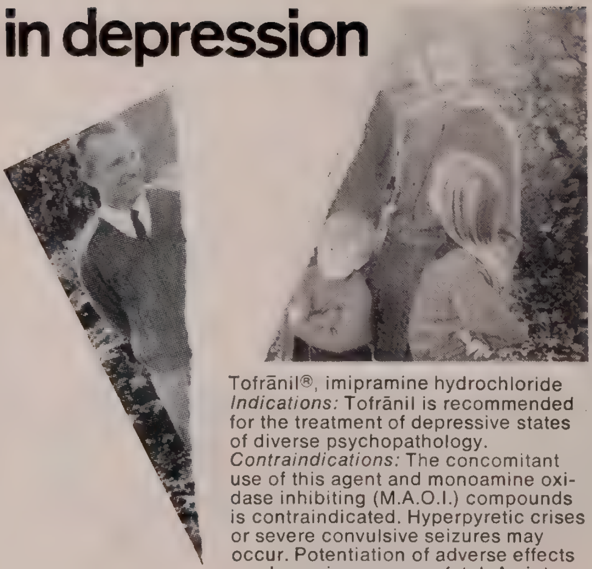
Toxic reactions severe enough to require discontinuation of Tofrānil are uncommon. However, for complete details, please refer to the complete Prescribing Information.

Turn page for brief summary of Prescribing Information.

in depression **Tofrānil®** imipramine hydrochloride

Geigy

in depression



Tofrānil® Geigy

imipramine
hydrochloride

Tofrānil®, imipramine hydrochloride
Indications: Tofrānil is recommended for the treatment of depressive states of diverse psychopathology.
Contraindications: The concomitant use of this agent and monoamine oxidase inhibiting (M.A.O.I.) compounds is contraindicated. Hyperpyretic crises or severe convulsive seizures may occur. Potentiation of adverse effects can be serious or even fatal. An interval of at least 7 days after M.A.O.I. therapy has been discontinued should be allowed before this drug may be substituted. Initial dosage should be low, increases should be gradual, and the patient's progress should be carefully observed.
Warning: Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician, the potential benefits outweigh the possible risks, it should not be used during the first trimester of pregnancy. Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.
Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy. Because of its anticholinergic effect, caution should be observed in prescribing the drug for patients with increased intraocular pressure.
In rare instances, transient cardiac arrhythmias have occurred in hyperthyroid patients and in patients receiving thyroid medication when this compound was added to the regimen. Imipramine may block the pharmacologic activity of guanethidine and other related adrenergic neuron-blocking agents.
The drug is not recommended at the present time in patients under 12 years of age.
Adverse Reactions: Dryness of the mouth, tachycardia, constipation, disturbances of accommodation, sweating, dizziness, weight gain, urinary frequency or retention, nausea and vomiting, peripheral neuritis, mild parkinson-like syndrome, tremors, rare cases of falling in elderly patients, confusional states (with such symptoms as hallucinations and disorientation), activation of psychosis in schizophrenics and agitation (including hypomanic and manic episodes) which may require dosage reduction and/or addition of a tranquilizer or temporary discontinuation of the drug, epileptiform seizures, orthostatic hypotension and substantial blood pressure fall in hypertensive patients, purpura, transient jaundice, bone marrow depression including agranulocytosis, sensitization and skin rash including photosensitization, eosinophilia, and mild withdrawal symptoms on sudden discontinuation after prolonged treatment with high doses. Occasional hormonal effects (impotence, decreased libido, and estrogenic effects) may be observed. Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those using anticholinergic agents (including antiparkinsonism drugs).
Outpatient Adult Dosage: Initially, 75 mg. daily, increased, if necessary, to 150 or 200 mg. Maintenance dosage may be lower, 50 to 150 mg. daily, if possible.
Geriatric and Adolescent Dosage: Initially, 30 or 40 mg. daily, which may be increased according to response and tolerance. It is usually unnecessary to exceed 100 mg. daily.
A lag in therapeutic response, lasting from a few days to a few weeks, should be expected. When dosage recommendations are already being followed, increasing the dosage does not normally shorten this latency period and may increase the incidence of adverse reactions.
Availability: Round tablets of 25 and 50 mg.; triangular tablets of 10 mg. for geriatric and adolescent use; and ampuls, each containing 25 mg. in 2 cc. for I.M. administration.
(B)R-46-850-C

For complete details, please refer to the full Prescribing Information.

Geigy
Geigy Pharmaceuticals
Division of Geigy Chemical Corporation
Ardsley, New York 10502

TC-5757

Medical News

Brith Milah School officially opened

The Brith Milah (ritual circumcision) School was officially opened on May 29, 1968, at The Mount Sinai Hospital. The goal of the new school is to provide the students with a broad background in the religious and medical aspects of ritual circumcision and to provide mohalim to the community who are trained both in Jewish law and in accordance with the highest scientific standards. The school is cosponsored by the Brith Milah Board of New York and The Mount Sinai Hospital and is supported, in part, by the Federation of Jewish Philanthropies of New York.

The course of instruction is two years, and a one-year internship is conducted twice a week at three-hour class sessions. Members of the faculty include physicians, rabbis, scientists, and mohalim. Courses given are anatomy, physiology, the pathology of healing, asepsis, microbiology, and blood circulation. There are clinical seminars and courses in psychology, ethics, and the legal aspects of circumcision as well as the religious laws of circumcision including Talmudic literature and Rabbinic Responsa. Instruction includes the technics of circumcision, contraindications, and possible complications such as bleeding and infection.

Personalities

Appointed. Christopher Terrence, M.D., Albany, as vice-chairman of the Narcotic Addiction Control Commission of the New York State Department of Health . . . Robert P. Whalen, M.D., Ravena, as second deputy commissioner of the New York State Department of Health . . . Arthur L. Arnold, M.D., formerly of Michigan, Illinois, as first assistant commissioner in charge of the regional office of the New York State Department of Mental Hygiene in Rochester . . . Daniel Martin, M.D., formerly of Miami, Florida, as chairman of surgery for the Catholic Medical Center of Brooklyn and Queens . . . James J. Culhane, M.D., formerly of Portland, Maine, as assistant director of Community Health Services (health education), Beekman-Downtown Hospital, New York City.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

painful night
leg cramps...
respond to specific
therapy with
QUINAMM™
(Quinine sulfate, 260 mg.,
Aminophylline, 195 mg.)

THE BETTMANN ARCHIVE

Just one tablet at bedtime • Prevents painful night leg cramps • Permits restful sleep

How many of your patients stamp their feet at night and lose sleep because of painful leg cramps? Unless prompted, they usually fail to report this distressing condition and suffer needlessly.

One tablet of QUINAMM at bedtime usually controls distressing night cramps and permits restful sleep with the initial dose.

Prescribing information—Composition: Each white, beveled, compressed tablet contains: Quinine sulfate, 260 mg., Aminophylline, 195 mg. **Indications:** For the prevention and treatment of nocturnal and recumbency leg muscle cramps, including those associated with arthritis, diabetes, varicose veins, thrombophlebitis, arteriosclerosis and static foot deformities. **Contraindications:** QUINAMM is contraindicated in pregnancy because of its quinine content. **Side Effects/Precautions:** Aminophylline may produce intestinal cramps in some instances, and quinine may produce symptoms of cinchonism, such as tinnitus, dizziness, and gastrointestinal disturbance. Discontinue use if ringing in the ears, deafness, skin rash, or visual disturbances occur. **Dosage:** One tablet upon retiring. Where necessary, dosage may be increased to one tablet following the evening meal and one tablet upon retiring. **Supplied:** Bottles of 100 and 500 tablets.

THE NATIONAL DRUG COMPANY
DIVISION OF RICHARDSON-MERRELL INC.
PHILADELPHIA, PENNSYLVANIA 19144

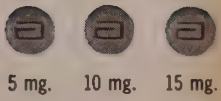
An anorectic will help her lose weight–but can she keep it off? You need more than a pill (even ours) to do that!

That's why Abbott offers you a pill plus a program.

The Product

For smooth appetite control plus mood elevation

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form



For patients who can't take plain amphetamine

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

The Program

Weight Control Booklet

Specifically written to help your patients understand why they are overweight, and what they can do about it. The booklet stresses the importance of *changing lifelong eating habits* and explains how this can be done, sensibly, comfortably—and permanently. There is, also, a comprehensive list of foods showing their caloric content.

the
secret
of
controlling
your weight

Food Diary

Designed to help the overweight patient follow your eating instructions. Space is provided for breakfast, lunch, supper, and even snacks. By writing down everything that's eaten each day, the patient is constantly reminded that she's trying to change her eating habits. And you are furnished with a written record of how well she's doing.

Picture Menu Booklet

A large (10″ x 10″) booklet which features appetizing lunch and dinner menus for every day of the week. The meals are depicted in full color and the correct portion size so that the dieter can see the amount of food that's recommended. Patients are pleasantly surprised to learn that each day's meals add up to only 1,000 calories.

801444

To
help you
control your
weight...

Please see Brief Summary on next page.

Ask Your Abbott Man For Free Supplies

Brief Summary

DESOXYN® Gradumet®
Methamphetamine Hydrochloride
in Long-Release Dose Form

DESBUTAL® 10 Gradumet
10 mg. Methamphetamine Hydrochloride,
60 mg. Sodium Pentobarbital

DESBUTAL 15 Gradumet
15 mg. Methamphetamine Hydrochloride,
90 mg. Sodium Pentobarbital

Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

ABBOTT

801444

Medical Schools

Albert Einstein College of Medicine

Appointed assistant dean for student affairs. Richard S. Ball, Ph.D., Dean of students at Cooper Union for the Advancement of Science and Art, New York City, has been appointed assistant dean for student affairs and assistant professor of psychiatry (psychology). This appointment was effective July 1.

New assistant dean. Labe C. Scheinberg, M.D., professor and co-chairman, Saul R. Korey Department of Neurology, has been appointed assistant dean at the College. Dr. Scheinberg will continue his present responsibilities for the clinical services and training programs within the Department of Neurology.

Columbia University College of Physicians and Surgeons

Gift received. A gift of $250,000 has been received from the Merck Company Foundation toward the establishment of an endowed professorship in the Department of Medicine in honor of Dickinson W. Richards, Jr., M.D. In 1956, Dr. Richards and his colleague, Andre Cournand, M.D., shared the Nobel Prize in medicine and physiology with Dr. Werner Forssmann of West Germany for their work in developing cardiac catheterization.

Cornell University Medical College

New clinical research building. The William Hale Harkness Medical Research Building was opened on September 9. Dr. James A. Perkins, president, Cornell University, and Mr. Kenneth Hannan, president, The Society of The New York Hospital, were the speakers. The new building houses two 130-seat lecture halls, designed to accommodate closed circuit television facilities connecting with operating and treatment rooms, and more than 200 laboratories. The College, founded in 1898, was one of the first medical schools in this country to admit women and one of the first to require an undergraduate degree for admission. The current enrollment is 355 men and women. There are 1,382 faculty members of whom nearly 400 are full time. There are 90,000 volumes and more than 1,300 journals in the library. The 1968 to 1969 research budget is $10 million.

Downstate Medical Center

Visiting scholar lecture. Harold Clurman, director and critic, will lecture on "The World of the Theatre" on Wednesday, October 30, at 4 P.M., first floor lecture hall, Basic Sciences

continued on page 2616

In peptic ulcer:

the antacid puzzle

solved by Mylanta®

aluminum and magnesium hydroxides *plus* simethicone

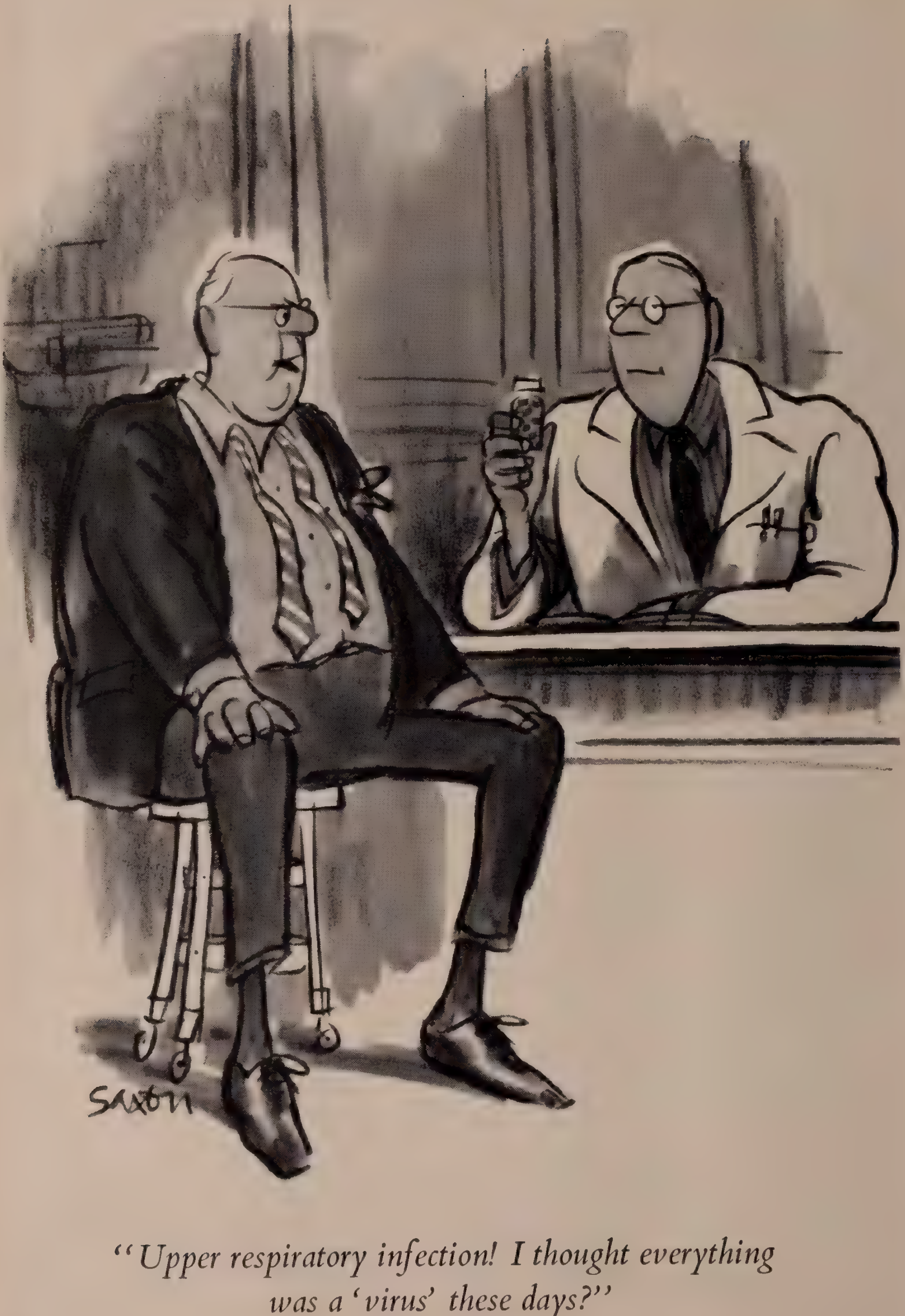
"will it ease the pain?"
Mylanta helps relieve ulcer pain with the two most widely prescribed antacids: aluminum and magnesium hydroxides.

will it help "my gassy stomach"?
Mylanta *also* contains simethicone: for concomitant relief of G.I. gas distress.

"will this one taste O.K.?"
The *prolonged* acceptance of Mylanta was recently confirmed in 87.5% of 104 patients—after a total of 20,459 documented days of therapy.* *Danhof, I. E.: Report on file.

Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. *Dosage:* One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

Stuart Division/Pasadena, Calif.
ATLAS CHEMICAL INDUSTRIES, INC.



"Upper respiratory infection! I thought everything was a 'virus' these days?"

Some U.R.I. patients are more miserable than others.

That's why we make Novahistine® in two different tablet formulations.

And let you control the dosage.

With Novahistine LP tablets and Novahistine Singlet™ tablets you have the range and flexibility of decongestant dosage that lets you prescribe for the needs of the individual patient.

Novahistine LP tablets are most useful for relief of nasal congestion in patients without pain or fever.

Novahistine Singlet tablets, which provide analgesic-antipyretic effect, as well as decongestant action, are indicated for upper respiratory infections accompanied by pain, aches and fever.

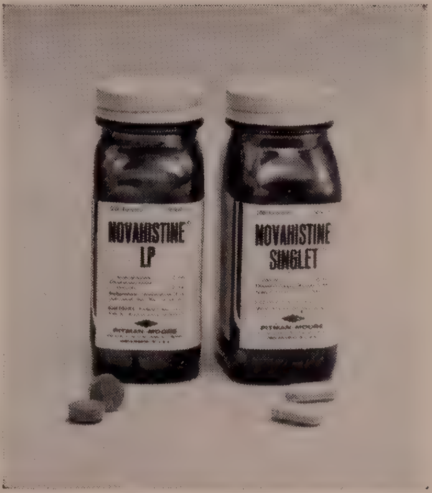
Whether you prescribe Novahistine LP or Novahistine Singlet, a total daily dose of 3 or 4 tablets will usually provide effective, continuous relief.

Use cautiously in patients with severe hypertension, diabetes mellitus, hyperthyroidism or urinary retention. Caution ambulatory patients that drowsiness may result.

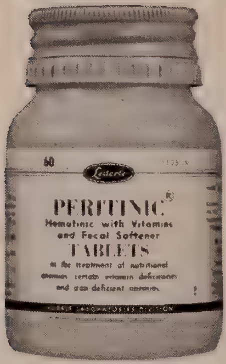
Each Novahistine LP tablet contains phenylephrine hydrochloride, 25 mg.; and chlorpheniramine maleate, 4 mg.

Each Novahistine Singlet tablet contains phenylephrine hydrochloride, 40 mg.; chlorpheniramine maleate, 8 mg.; and acetaminophen, 500 mg.

DOW **PITMAN-MOORE** DIVISION OF THE DOW CHEMICAL COMPANY, INDIANAPOLIS



anticostive* hematinic



PERITINIC®

Hematinic with Vitamins and Fecal Softener

A tablet-a-day provides:

● Elemental Iron (as Ferrous Fumarate)	100 mg
● Dioctyl Sodium Sulfosuccinate (to counteract constipating effect of iron)	100 mg
Vitamin B_1	7.5 mg
Vitamin B_2	7.5 mg
Vitamin B_6	7.5 mg
Vitamin B_{12}	50 mcgm
Vitamin C	200 mg
Niacinamide	30 mg
Folic Acid	0.05 mg
Pantothenic Acid	15 mg

Bottles of 60

*

anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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A Division of American Cyanamid Company
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In the complex picture of moderate to severe anxiety...

there is a new reason for prescribing Mellaril (Thioridazine HCl)

effectiveness in mixed anxiety-depression

Long recognized for its usefulness in the treatment of moderate to severe anxiety, Mellaril is now also known to be effective against mixed anxiety-depression.

Often the symptoms of anxiety states are difficult to sort out—even with the most careful probing. The patient may manifest symptoms of agitation, restlessness, insomnia, somatic complaints. But what of the depression that may be mixed in the total picture? It is reassuring to know that Mellaril may be prescribed—with strong possibilities of success—when there is anxiety alone or a mixture of anxiety and depression.

Before prescribing or administering, see Sandoz literature for full product information, including adverse reactions reported with phenothiazines. The following is a brief precautionary statement.

Contraindications: Severe central nervous system depression, comatose states from any cause, hypertensive or hypotensive heart disease of extreme degree.

Warnings: Administer cautiously to patients who have previously exhibited a hypersensitivity reaction (e.g., blood dyscrasias, jaundice) to phenothiazines. Phenothiazines are capable of potentiating central nervous system depressants (e.g., anesthetics, opiates, alcohol, etc.) as well as atropine and phosphorus insecticides. During pregnancy, administer only when necessary.

Precautions: There have been infrequent reports of leukopenia and/or agranulocytosis and convulsive seizures. In epileptic patients, anticonvulsant medication should also be maintained. Pigmentary retinopathy may be avoided by remaining within the recommended limits of dosage. Administer cautiously to patients participating in activities requiring complete mental alertness (e.g., driving). Orthostatic hypotension is more common in females than in males. Do not use epinephrine in treating drug-induced hypotension. Daily doses in excess of 300 mg. should be used only in severe neuropsychiatric conditions.

Adverse Reactions: *Central Nervous System*—Drowsiness, especially with large doses, early in treatment; infrequently, pseudoparkinsonism and other extrapyramidal symptoms; nocturnal confusion, hyperactivity, lethargy, psychotic reactions, restlessness, and headache. *Autonomic Nervous System*—Dryness of mouth, blurred vision, constipation, nausea, vomiting, diarrhea, nasal stuffiness, and pallor. *Endocrine System*—Galactorrhea, breast engorgement, amenorrhea, inhibition of ejaculation, and peripheral edema. *Skin*—Dermatitis and skin eruptions of the urticarial type, photosensitivity. *Cardiovascular System*—Changes in the terminal portion of the electrocardiogram have been observed in some patients receiving the phenothiazine tranquilizers, including Mellaril (thioridazine hydrochloride). While there is no evidence at present that these changes are in any way precursors of any significant disturbance of cardiac rhythm, several sudden and unexpected deaths apparently due to cardiac arrest have occurred in patients previously showing electrocardiographic changes. The use of periodic electrocardiograms has been proposed but would appear to be of questionable value as a predictive device. *Other*—A single case described as parotid swelling.

Mellaril®
(Thioridazine HCl)
25 mg. t.i.d.

for moderate to severe anxiety and mixed anxiety-depression

SANDOZ SANDOZ PHARMACEUTICALS, HANOVER, N. J. 68-169

continued from page 2610

Building, 450 Clarkson Avenue. On Thursday, October 31, at 3 P.M., there will be a discussion.

Recent appointments. Dr. Stojan Jeretin, assistant professor, Toshio Fugita, M.D., visiting assistant professor, and Grace E. Ghent, M.D., clinical instructor, *Anesthesiology;* Joseph W. Newman, M.D., clinical assistant professor, Fred Rosner, M.D., instructor, Sandor A. Friedman, M.D., Ernst Greif, M.D., Avir Kagan, M.D., Herman Rosen, M.D., and Martin L. Rubenberg, M.D., clinical instructors, *Medicine;* Michael H. Schuman, M.D., clinical instructor, *Neurology;* Charles H. Birnberg, M.D., professorial lecturer, William I. Ciaravino, M.D., Frederick Friedman, M.D., Hilmi I. Kodaman, M.D., Rudolfo Niccoli, M.D., Joseph A. Peluso, M.D., and Seymour A. Siegal, M.D., clinical instructors, *Obstetrics and Gynecology;* Ernest P. Porter, M.D., clinical instructor, *Ophthalmology;* Isaac Gay, B.Ch., instructor, *Otorhinolaryngology;* John E. Allen, M.D., clinical associate professor, Leatrice G. Borofsky, M.D., Walter Silver, M.D., and Frederick L. Tunick, M.D., clinical assistant professors; Robert Ehrlich, M.D., instructor; Carol E. Burnett, M.D., Hau C. Chen, M.D., and Phillip Steiner, M.D., clinical instructors, *Pediatrics;* John P. Kemph, M.D., professor, Samuel R. Lehrman, M.D., clinical associate professor, David N. Graubert, M.D., and Daniel Schwartz, M.D., assistant professors, and Metin Sevilya, M.D., and Harvey I. Sonnenblick, M.D., clinical instructors, *Psychiatry;* Chaliow Piyachon, M.D., instructor, and Samuel Krain, M.D., clinical instructor, *Radiology;* Samuel D. Lieberman, M.D., instructor, *Rehabilitation Medicine;* Reubin Seldin, D.D.S., senior lecturer, *Surgery.*

Recent promotions. Marilyn Aldeguer, M.D., instructor, *Anesthesiology;* Manning Feinleib, M.D., lecturer, *Environmental Medicine and Community Health;* James S. Lieberman, M.D., and John J. Rooney, M.D., assistant professors; Sidney Sbar, M.D., clinical assistant professor, and Stanley Sherbell, M.D., clinical instructor, *Medicine;* Michael S. Burnhill, M.D., assistant professor, Karl M. Neimand, M.D., and Stanley Tischler, M.D., clinical assistant professors; Udell L. Bernstein, M.D., Radoslav Javonovic, M.D., Leslie A. Walton, M.D., Charles E. Winkelstein, M.D., Allan J. White, M.D., and William J. Wortman, Jr., M.D., instructors; and Dominicana Pannocchia, M.D., clinical instructor, *Obstetrics and Gynecology;* Samuel Leone, M.D., and James Shea, M.D., clinical instructors, *Orthopedic Surgery;* Herbert Goldman, M.D., clinical assistant professor, *Otorhinolaryngology;* Michael Kenney, M.D., professor *Pathology;* Morris Steiner, M.D., professor, *Pediatrics;* Daniel Klein, M.D., clinical assistant professor, *Plastic Surgery;* Milton Gross, M.D., associate professor, Julius Buchwald, M.D., Alfred T. Corvin, M.D., Charles J. Rabiner, M.D., and Norman Sher, M.D., clinical assistant professors, *Psychiatry;* Lucy F. Squire, M.D., associate professor, Victor M. Herasme, M.D., David A. Inkeles, M.D., Robert M. Klein, M.D., Edwin S. Roth, M.D., Louis Schwartz, M.D., Morton Strober, M.D., Shimpei Tada, M.D., and Alexander V. Tallis, M.D., instructors, *Radiology;* Cyril J. Jones, M.D., clinical associate professor, *Surgery;* and Norman Zimmerman, M.D., clinical instructor, *Urology.*

Harvard professor lectures. Arthur T. Hertig, Shattuck Professor of Pathological Anatomy, Harvard Medical School, delivered the annual Robert A. Moore Lecture on October 14. "Light and Electron Microscopy of the Human Corpus Luteum" was the subject presented.

Joint position appointment. John P. Kemph, M.D., has been appointed professor of psychiatry, and director, Division of Child and Adolescent Psychiatry, Kings County Hospital Center. Under this appointment, Dr. Kemph heads a service responsible for the psychiatric care of children and adolescents throughout the entire Borough of Brooklyn.

New York Medical College

New director. Edward H. Mandel, M.D., has been appointed director of the Dermatology Section, Department of Medicine at the College and Flower and Fifth Avenue Hospitals. Dr. Mandel is a clinical professor of medicine and will serve as director of dermatology at Metropolitan and Bird S. Coler Hospitals, also.

New York University School of Medicine

Promotion. Bruce B. Grynbaum, M.D., has been promoted from associate professor to professor of clinical rehabilitation medicine. For the past eighteen years, Dr. Grynbaum has served as director of physical medicine and rehabilitation for the New York City Department of Hospitals, for Bellevue and Beekman-Downtown Hospitals. Leonard C. Harber, M.D., has been promoted from associate professor to professor of dermatology. Raymond M. Abrams, M.D., has been promoted from associate professor of clinical radiology to professor of clinical radiology.

Sixteenth annual lecture. John S. Struass, M.D., professor of dermatology, Boston University School of Medicine, will present the sixteenth Annual Sigmund Pollitzer Lecture on Tuesday, November 19 at 8:15 P.M., Alumni Hall Auditorium, 550 First Avenue, New York City. Dr. Strauss will discuss "The Hormonal Control of Sebaceous Gland Function in Man."

State University of Buffalo School of Medicine

Goodyear Chair appointee. John C. Dower, M.D., professor of community pediatrics since

continued on page 2621

Togetherness....

...can be rough when epidemics of nausea and vomiting strike a family. Emetrol offers prompt, safe relief. It is free from toxicity[1] or side effects[2,3] and will not mask symptoms of serious organic disorders.

1. Bradley, J. E., *et al.*: J. Pediat. *38*:41 (Jan.) 1951.
2. Bradley, J. E.: Mod. Med. *20*:71 (Oct. 15) 1952.
3. Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. *65*:311 (Feb.) 1953.

Emetrol®
phosphorated carbohydrate solution
emesis control

RORER
WILLIAM H. RORER, INC.
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NEW YORK STATE ACADEMY OF GENERAL PRACTICE

Twenty-First Annual Convention
May 18th thru 22nd, 1969

presents:

NEW HORIZONS IN MEDICINE

at:

The New York Hilton Hotel, New York City

Congress of Delegates..........May 18, 19, 1969
Scientific Assembly............May 20, 21, 22, 1969

A CONVENTION ESPECIALLY TAILORED
TO THE FAMILY PHYSICIAN

Do you have patients who try to hide fear behind bravado?

You see many depressed patients who hide their real anxieties behind a smoke screen of pretense. The more they try to conceal reality, the more entrenched the disturbances become. The role they assume is not adequate to suppress their inner turmoil. Unchecked, the turmoil finds expression in other symptoms.

They want your help and Aventyl HCl can help you. Whether depression is open or secretive, Aventyl HCl assists you in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

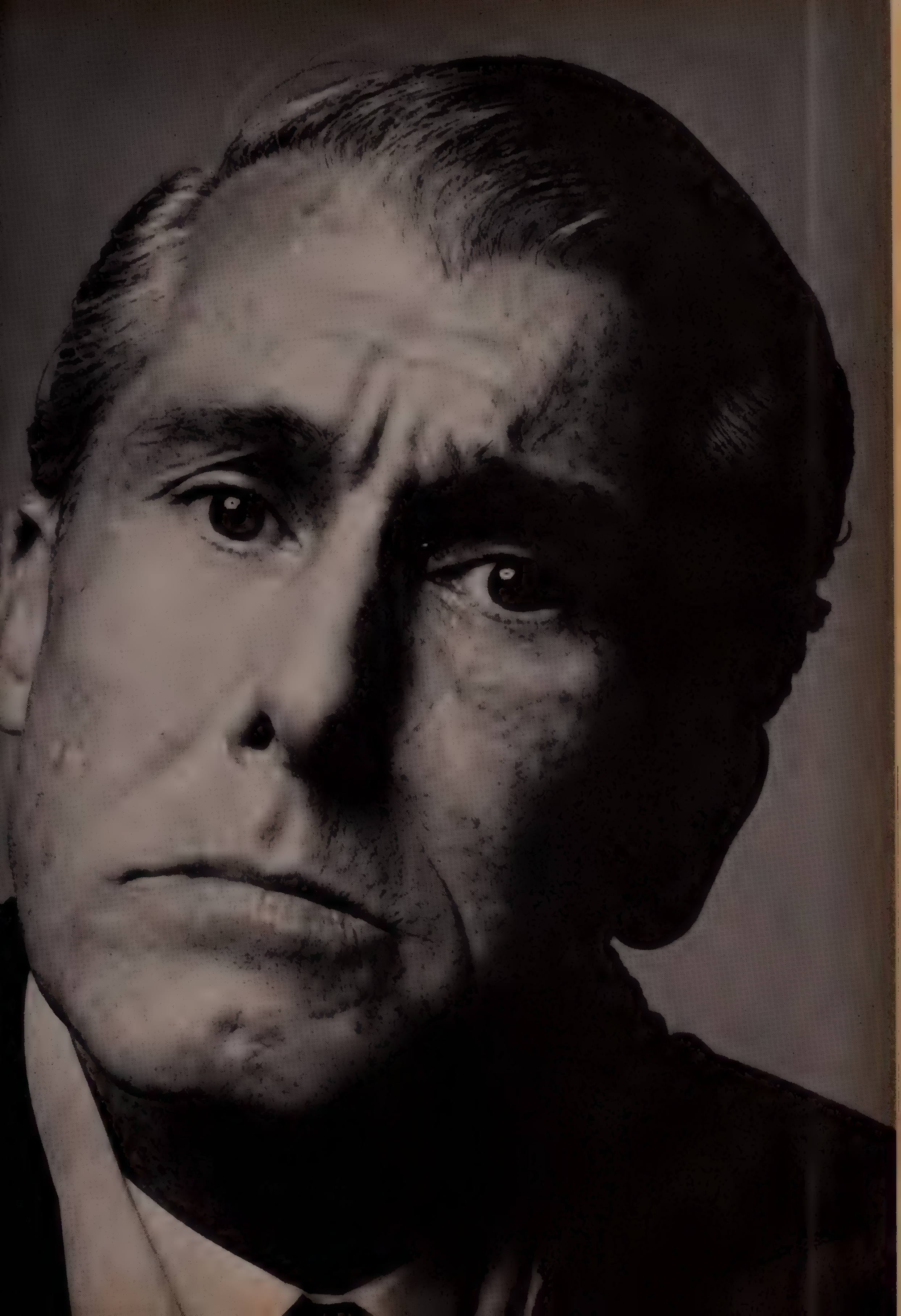
Lilly
Eli Lilly and Company
Indianapolis, Indiana 46206

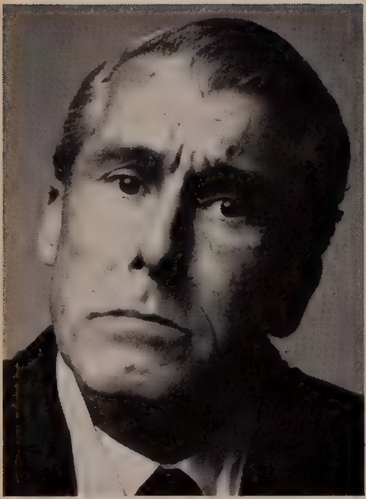
Helps remove the symptoms,
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

(See last page for prescribing information.)

600322





Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Patients receiving a tricyclic antidepressant (e.g., nortriptyline) may respond poorly to hypotensive agents such as guanethidine.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

Adults—20 to 100 mg. daily
- Pulvules: 25 mg.—1 Pulvule one to four times daily
  - 10 mg.—1 or 2 Pulvules one to four times daily
- Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily

Children—1 to 2 mg. per Kg. or 10 to 75 mg. daily
- Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
  - 10 mg.—Ages three to six, 1 Pulvule one to three times daily
  - Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
- Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
  - Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid Aventyl® HCl (nortriptyline hydrochloride, Lilly), 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules Aventyl HCl, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500. [081668]

Additional information available to physicians upon request. 800368

Lilly

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continued from page 2616

July, has been appointed as the first occupant of the Goodyear Chair. The Chair was endowed in 1965 by A. Conger Goodyear and designated the Chair for a "professor of pediatrics in charge of a program of maternal and child health or for a professorship in a related field." Dr. Dower is affiliated, also, with the Children's Hospital.

Community psychiatry program. Jack Zusman, M.D., an associate professor, Departments of Psychiatry and Preventive Medicine, will direct a program in community psychiatry. Dr. Zusman became a member of the faculty in July.

Honored. Ernest Witebsky, M.D., distinguished professor of microbiology and director, Center for Immunology, was awarded the Cross of Merit for exceptional service to the Netherlands Red Cross.

Conference participants. Ernest Witebsky, M.D., Felix Milgrom, M.D. (chairman), and James F. Mohn, M.D. (professor), recently attended the conference on recent advances in immunopathology and blood transfusion service in commemoration of the twenty-fifth anniversary of the Blood Transfusion Service of the Netherlands Red Cross. At the scientific sessions on recent advances in immunopathology and blood transfusion, Dr. Milgrom presented a paper on autoimmunity and Dr. Witebsky chaired a panel discussion on autoimmunity in mice and man.

Physician not liable for injuries during examination

A physician was recently held not liable for injuries suffered by a patient who alleged that she fell from the physician's examining table. The physician said that he had carefully removed the patient from the examining table to the floor to prevent her from falling. The trial court directed a verdict in favor of the physician.

The patient had fainted at work and had been taken to the physician's office. She claimed that while on the examining table she fainted again and fell to the floor, suffering painful head and back injuries, a chipped tooth, and a concussion. The physician's nurse, however, testified that when the patient began to writhe uncontrollably about the examining table, the nurse and the physician had carefully lowered her to the floor so that she would not fall.

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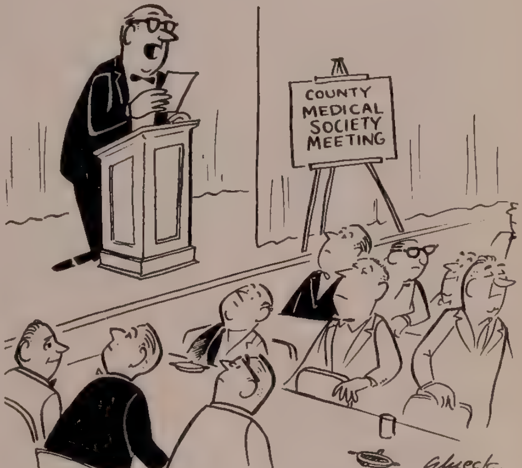

"Doctors Doman, Harrington, Schmit, Daugherty Bibler, Hoffman, Hyperman, Dix, Fox, and DeWerth, please call your offices . . . . Meeting might's well adjourn."

continued from page 2602

Endocrinology and obstetrics and gynecology topics of teaching days

The Department of Postgraduate Medicine of Albany Medical College is sponsoring the following teaching days program which will be held in Huyck Auditorium, Albany Medical College: October 31, 10:00 A.M., "Endocrinology—Catecholamines, Berotonin, and Kinins in Health and Disease," J. Richard Crout, M.D., University of Texas, Southwestern Medical School; and November 21, 10:00 A.M., "Physiologic Aspects of Labor," Manuel A. Friedman, M.D., The Chicago Medical School; "Vaginal Reconstructive Surgery," Anthony D'Esopo, M.D., Columbia-Presbyterian Medical Center, New York City; "Laparoscopy," Robert Neuwirth, M.D., Bronx-Lebanon Hospital; and "Gynecologic Surgery," John Lewis, M.D., Memorial Hospital for Cancer and Allied Diseases, New York City.

Tuition fee is $20. For further information contact: Department of Postgraduate Medicine, Albany Medical College, 47 New Scotland Avenue, Albany, New York 12208.

Plastics and the human body topic of symposium

A symposium on "Plastics and the Human Body" will bring together several of the nation's leading authorities on implants and prosthetics when the National Plastics Conference convenes at the Conrad Hilton Hotel in Chicago, November 12 through 15.

The conference, sponsored by the Society of the Plastics Industry, Inc., will feature the following topics and speakers: "Plastics in the Artificial Kidney," John F. Lontz, Ph.D., executive director, Jay Hughes Memorial Medical Research Foundation, Wilmington, Delaware; "Plastic Blood Vessels," Sigmund A. Wesolowski, M.D., director, LGH Laboratories, Mercy Hospital, Rockville Centre, New York; "Plastics for Assisting the Failing Heart," Adrian Kantrowitz, M.D., director, surgical services, Maimonides Hospital, Brooklyn, New York; "Plastic Hearts and Heart Valves," Willem J. Kolff, M.D., professor of surgery, division of artificial organs, University of Utah, Salt Lake City, Utah; and "Discussion on Cardiovascular Uses of Plastics," C. William Hall, M.D., assistant professor of surgery, College of Medicine, Baylor University, Houston, Texas.

There is no registration fee. For further information contact: The Society of the Plastics Industry, Inc., 250 Park Avenue, New York, New York 10017.

Metabolism and endocrines subject of seminars

The Department of Medicine of State University of New York Downstate Medical Center is sponsoring the visiting scientist seminars to be held November 12 and December 10, at 1:00 P.M., in the First Floor Lecture Hall, Basic Sciences Building, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn.

Topics and speakers are as follows: November 12, "Alkaline Phosphatase," Solomon Posen, M.D., associate professor of medicine, University of Sydney Medical School, Australia; and December 10, "Treatment of Hypercalcemia," Ralph S. Goldsmith, M.D., assistant professor of medicine, Harvard Medical School, Thorndike Memorial Laboratory, Boston, Massachusetts.

New York Medical College sponsors resident's day program

The fifth annual Resident's Day Program, sponsored by the Obstetrical and Gynecological Society and the Department of Obstetrics and Gynecology of New York Medical College will be held on November 23 at the College.

The program, intended primarily for residents and for those who have recently completed their training, will feature the following topics: Biopsy versus Conization Following Abnormal Cytology; The Influence of Therapy on Survival with Carcinoma of the Fundus; Isotopic Procedures in Metastatic Carcinoma; Endometrial Changes Resulting From Contraceptive Technics; Carbohydrate Metabolism in Infants of Diabetic Mothers; Follate Metabolism in the Newborn of Follate Deficient Mothers; and Sexuality in Gynecologic Practice. T. N. Evans, M.D., professor and chairman, Department of Obstetrics and Gynecology, Wayne State University, School of Medicine, will speak on "Hazards of Not Ovulating" and is also moderator of a panel discussion on "Relationship of Prenatal Events to Mental Retardation."

For registration and information contact: Richard D. Grimaldi, M.D., president, Obstetrical and Gynecological Society of the New York Medical College, 1249 Fifth Avenue, New York, New York 10029.

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Warning: In renal impairment, usual doses may lead to excessive accumulation and liver toxicity. Under such conditions, lower than usual doses are indicated and, if therapy is prolonged, serum level determinations may be advisable. Some patients may develop a photodynamic reaction to natural or artificial sunlight. Those with a history of photosensitivity reactions should avoid direct exposure to sunlight while under treatment. Discontinue drug at first evidence of skin discomfort.

Precautions: Use may result in overgrowth of nonsusceptible organisms. Constant observation is essential. If new infections appear, take appropriate measures. Use of tetracycline during teeth development may cause discoloration of teeth.

Side Effects: Gastrointestinal system –anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. Skin–maculopapular and erythematous rashes (a case of exfoliative dermatitis has been reported); photosensitivity reaction, onycholysis and discoloration of nails (rare). Kidney–rise in BUN, apparently dose-related. Hypersensitivity reactions–urticaria, angioneurotic edema, anaphylaxis. In young infants, bulging fontanels have been reported following full therapeutic dosage. This symptom has disappeared rapidly when drug is discontinued. Teeth–dental staining (yellow-brown) in children of mothers given tetracycline during the latter half of pregnancy, and in children given the drug during the neonatal period, infancy and early childhood. Enamel hypoplasia has been seen in a few children. Blood–anemia, thrombocytopenic purpura, neutropenia, eosinophilia. Liver–cholestasis (rare), usually at high dosage. Tetracycline may form a stable calcium complex in bone-forming tissue. If adverse reaction or idiosyncrasy occurs, discontinue medication and institute appropriate therapy.

Average Adult Daily Dosage: One Gm. per day, in 4 divided doses of 250 mg. each. Should be given 1 hour before or 2 hours after meals, since absorption is impaired by the concomitant administration of high calcium content drugs, foods and some dairy products. Treatment of streptococcal infections should continue for 10 days, even though symptoms have subsided.

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Month in Washington

President Johnson signed into law the Health Manpower Act of 1968 which extends for two years, until June 30, 1971, and expands the Federal programs of aid to medical and other allied health schools.

Other health legislation enacted into law establishes a National Eye Institute as part of the National Institutes of Health, requires Federal buildings to provide easy access to handicapped people, and authorizes standards to be set up to prevent gas lines from leaking and exploding.

President Johnson termed the health manpower law "a major measure in the battle for better health." It authorizes about $1.2 billion in Federal aid to medical and other health personnel schools for construction, expansion, and operating expenses over a two-year period. Congress followed most of the Administration's proposals in approving the legislation but limited the extension of the program to two years, instead of the four years requested.

Schools of pharmacy and veterinary medicine were made eligible for aid for the first time.

The following schools received authorization for funds under the new law:

1. Medical and other health professions—construction grants, $395 million; institutional support, $285 million; scholarships, $32.8 million; student loans, $70 million; for a total of $782.8 million.
2. Nursing—construction, $60 million; institutional support, $75 million; traineeships, $34 million; scholarships, $50 million; student loans, $41 million; for a total of $260 million.
3. Allied health (fiscal 1970 only)—construction, $10 million; institutional support, $20 million; traineeships, $5 million; new methods, $4.5 million; for a total of $39.5 million.
4. Public health—graduate training, $20.5 million; traineeships, $24 million; for a total of $44.5 million.
5. Health research construction, $50 million.

* * *

Both the Democratic and Republican 1968 national campaign platforms cited the importance of the role of private enterprise in developing government health programs. The Republican party placed greater emphasis on the private practice of medicine than did the Democratic party.

"While believing no American should be denied adequate medical treatment, we will be diligent in protecting the traditional patient-doctor relationship and the integrity of the medical practitioner," the Republican Party chairman said. The Republicans also pledged "to encourage the broadening of private health insurance plans," including extension of coverage to mental illness.

"Through a partnership of government and private enterprise, we must develop new coordinated approaches to stem the rise in medical costs without lowering the quality or availability of Medicare care," the Democratic Party chairman said. Without being specific, the Democrats indicated support for universal government health insurance or, at the least, wide expansion of Medicare, or Medicaid, or both. Boasting of "giant steps" taken in the past eight years "in assuring life and health for its citizens," their chairman said: "We Democrats are determined to take those final steps that are necessary to make certain that every American, regardless of economic status, shall live out his years without fear of the high costs of sickness."

The Democrats also said medical costs could be lowered by more out-of-hospital medical care, comprehensive group practice arrangements, increased availability of neighborhood health centers, and the greater use of subprofessional aides.

The Republicans said "inflation produced by the Johnson-Humphrey administration" was a major factor in the increases in health care costs.

American Medical Association spokesmen appeared before the platform committees of both parties at preconvention hearings. Donald E. Wood, M.D., Indianapolis, Indiana, chairman of the AMA's Council on Legislative Activities, testified at the Republican hearing; John R. Kernodle, M.D., Burlington, North Carolina, a member of the AMA Board of Trustees, appeared before the Democrats. Their statements were the same.

The AMA statement expressed hope that the next Federal administration, whether it be Democratic or Republican, "will provide men and women in medicine, and those engaged in the allied sciences, the opportunity to think and work in a free atmosphere to pursue their common goal of a better and more healthful life for everyone."

The AMA emphasized the desirability of health programs being partnerships among private enterprise and Federal, state, and local governments. The AMA pledged its support to cooperative programs for the study of mental illness, infant deaths, occupational health and safety, and education of physicians and allied health personnel.

Concerning health care costs, the AMA said:

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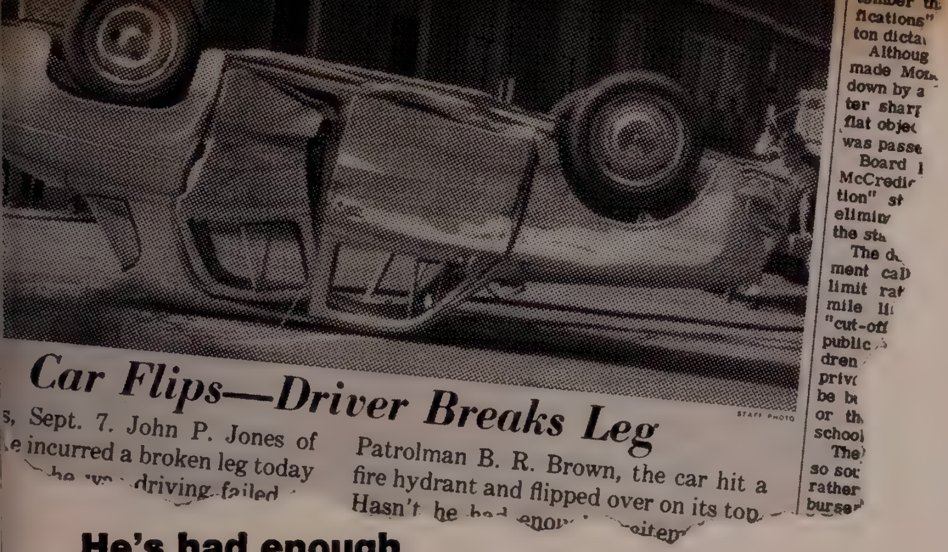
Prepared by the Washington, D.C., Office of the American Medical Association.



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Car Flips—Driver Breaks Leg

STAFF PHOTO

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driving failed

Patrolman B. R. Brown, the car hit a fire hydrant and flipped over on its top.
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continued from page 2628

"We believe that programs to increase the production of medical and other health personnel can be cooperatively and effectively undertaken. We are further firmly convinced that we can and must work toward better health care in the inflationary spiral and toward a productive use of tax dollars expended in the health area. New and old tax supported programs in the health field should be critically evaluated so that while the best health care is attained overlapping, waste, and unnecessary programming are avoided. In this regard, we recommend the establishment of a cabinet-level department of health, headed by a physician as secretary, with over-all responsibility for all Federal health programs, so that maximum effectiveness may be attained.

"We have always maintained that high quality medical care should be available for all Americans, including those who need assistance in meeting the costs of such care... . Firmly convinced that adequate health insurance coverage is the choice mechanism for the financing of quality health care costs, we suggest that the country embark on a program of tax credits for health insurance premiums. Under such a plan, all individuals and families would be encouraged to provide themselves with health care cost protection, with those in financial need receiving the greater amount of tax credit on a graduated basis."

* * *

The F.D.A (U.S. Food and Drug Administration), and the P.M.A. (Pharmaceutical Manufacturers Association) differed as to the significance of the findings of a study made by Georgetown University School of Medicine in which three brand-name drugs were compared with their generic versions.

Drugs tested were diphenylhydantoin, prescribed for treatment of epilepsy, chloramphenicol, and sulfisoxazole. The studies supported by the FDA showed:

1. Some generic drugs are absorbed more slowly by the body than the brand-name drugs.
2. At least one generic drug was absorbed faster by the body than the brand-name drug.
3. Absorption rates were governed by such factors as crystal size of the drug, hardness of tablets, and the types of drug capsules.

"Our findings raise serious doubts about the equality of different products of the same drug in the treatment of disease," said Christopher M. Martin, M.D., professor of medicine and pharmacology.

"The studies by Dr. Martin and his research team, showing how different versions of the same drug behave differently in man, provide further proof of the scientific fact that these differences can be significant in patients," C. Joseph Stetler, P.M.A. president, said. "Clearly, there is no evidence to indicate that all formulations of the same drug are equivalent. From all the evidence that has been developed to date, as Dr. Martin's studies point out, quite the opposite may be true."

On the other hand, F.D.A. Commissioner Herbert Ley, Jr., M.D., said his agency "has in no sense concluded that 'generic' drugs are less effective as a class than 'brand-name' products... . In my opinion, there are fewer than 2 dozen drugs where therapeutic differences among competing products may be a problem," he said. "Data from the Georgetown University study have been useful to the F.D.A., but it is completely unwarranted to reach any general conclusions about drug equivalency on the basis of these exploratory studies."

* * *

A fifty-nine-year-old retired air force officer, Maj. Gen. Theodore C. Bedwell, Jr., M.D., has been appointed to the newly established post of chief medical officer for the Medicare program. He will be liaison with the medical profession.

He most recently was director of staff, office of the deputy assistant secretary of defense (manpower—health and medical). A native of Texas, he was graduated from Baylor University Medical College. A holder of the distinguished service medal, Dr. Bedwell in 1962 received the American Medical Association's special aerospace medicine honor citation.

Hospitals today

It has been found in recent investigations that hospitals are no longer just for the acutely ill. Instead, they have become the center of a community's entire system of health and a source of a wide range of health services, of which outpatient care is an integral part.

In comparing hospital utilization in 1967 with 1965, it has been found that in this two-year period, the average length of a hospital stay has increased from 7.8 to 8.2 days. As a result of this longer stay, the number of admissions per bed in community hospitals declined slightly from 35.7 to 34.2 admissions. The average occupancy rate increased by 1.6 per cent, from 76 to 77.6 per cent.

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Tell your bronchial asthma, pulmonary emphysema and chronic bronchitis patients to take it three times a day. In most cases, that's about all you'll have to do. Because this one does more than just open up the airways.

The Ventilator Pill reduces constriction and stimulates respiratory secretions. Helps liquefy thick mucus plugs. Makes cough more productive.

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Adverse Reactions: Although serious allergic reactions are much less common with oral penicillin than with intramuscular forms, manifestations of penicillin allergy may occur.

Penicillin is a substance of low toxicity, but it possesses a significant index of sensitization. The following hypersensitivity reactions have been reported: skin rashes ranging from maculopapular eruptions to exfoliative dermatitis; urticaria; and reactions resembling serum sickness, including chills, fever, edema, arthralgia, and prostration. Severe and often fatal anaphylaxis has occurred (*see* Warnings). Hemolytic anemia, leukopenia, thrombocytopenia, and nephropathy are rarely observed side-effects and are usually associated with high parenteral dosage.

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Editorials

The national blood resource program

The National Blood Resource Program is a cooperative endeavor involving a number of institutes and divisions of the National Institutes of Health, and other Federal and non-Federal agencies concerned with the acquisition, processing, distribution, usage, or study of blood.

Major program goals are (1) to survey the Nation's blood resources and their utilization in terms of present and foreseeable needs; and (2) to meet a steadily accelerating demand for blood fractions without undue strains on these resources through improvements in technology that will make possible the more efficient production, storage, and distribution of blood products.

Some specific research and development goals of the program are: To devise efficient, highly automated methods for the mass production of plasma and cellular fractions of blood (red cells, white cells, platelets). To develop improved, high-yield technics for the large-scale fractionation of plasma to provide albumin, gamma globulin, blood clotting factors, and other medically important protein fractions. To investigate additives for prolonging the shelf life of whole blood and cellular fractions stored under standard conditions. To study the feasibility of a computerized national or regional daily shelf inventory system for blood and blood products to minimize losses due to outdating, forestall or meet local shortages, and to minimize problems arising from fluctuations in supply and demand.

In addition to the research to be carried out under contracts, the program also will provide support during 1968 for studies on improved freezing technics for cellular components of blood and for the clinical evaluation of the clot-dissolving agent urokinase.

Through the use of cryoprotective agents, such as glycerol, red cells can be frozen and stored indefinite periods of time. The advantages of red cell freezing are: (1) it enables collection and storage of common types of red cells during peak donation periods for use during slack donation periods; (2) it allows maintenance of supplies of rare red cell types; and (3) it makes possible the accumulation of a red-cell reserve for use in case of a national emergency.

There are no efficient methods for blood platelet storage at the present time. This component must be separated from whole blood and infused within six hours of donation. Since the need for platelets is increasing rapidly, a means of extending their shelf life must be sought. Freezing is one avenue that will continue to be explored with increasing emphasis in the near future, employing much of the knowledge already gained from previous work with red cells.

New contracts have been awarded for studies on the feasibility of a computer-based regional or national inventory system for whole blood, blood products, and blood donors.

In addition, seven existing contracts were extended for (1) the development of an integrated system for the mass production of blood fractions and (2) a series of studies to assess the effectiveness of adenine as a blood preservative and to verify the safety of adenine-treated blood for clinical use.

If feasible, an automated regional or national inventory system might make possible a more equitable distribution of the available blood supply and thus prevent local shortages due to unavoidable fluctuations in the blood supply and in clinical demands on it. Reduce losses of whole blood through outdating in storage by making possible redistribution of local surpluses. Provide a means of summoning potential blood donors during slack donation periods. Provide a means of locating rare-blood donors within a region. These then could be called on to donate only when a need for a rare blood type arose, thus eliminating most rare blood losses due to outdating. Provide means of screening and excluding donors who are probable carriers of infectious hepatitis. Make possible closer coordination of civilian and military blood programs.

The contractors will explore the advantages, disadvantages, and applicability of such an inventory system, employing both theoretical and practical approaches. Theoretical approaches, for example, might involve development of hypothetical and simulated models of the proposed system; whereas one practical approach might entail developing sample systems suitable for actual trials on a small scale.

The new contractors and their awards are: Community Blood Council, New York, New York, $357,386; Milwaukee Blood Center, Milwaukee, Wisconsin, $184,000; and Research Foundation, State University of New York, Buffalo, New York, $177,860.

An earlier research contract, to the American National Red Cross, Washington, D.C., was extended without additional funding for continued development of an integrated system for fractionating whole blood into a series of medically important cellular and protein components. These include: Red blood cells, used to restore the normal oxygen-carrying capacity of blood in patients with severe anemia and related red-cell deficiencies. Platelets, used to prevent or control hemorrhage in patients with leukemia. Albumin, a plasma protein fraction used to increase circulating plasma volume in the treatment of hemorrhage, severe burns, and shock. Clotting factor concentrates to prevent or control hemorrhage in patients with hemophilia or other inherited clotting factor deficiences.

The medical demand for blood fractions has increased rapidly during recent years and will probably rise still faster in the near future. In patients with disorders due to a deficiency of some specific blood component, the use of the specific blood fraction needed rather than the scattergun approach of transfusing whole blood or plasma not only produces better clinical results, but also carries less risk of adverse reactions. Moreover, the use of blood fractions, where applicable, allows more economical and efficient use of available blood resources by making it possible for 1 unit of blood to serve the needs of numerous patients.

In addition to developing procedures for the large-scale production of blood fractions of high purity, the Red Cross will study the feasibility of automating as many steps in the fractionation process as possible.

Still another important goal under this contract is continued development and testing of highly purified concentrates of antihemophilic factor (AHF). At present, in terms of availability and cost, there is no altogether suitable AHF preparation to meet the needs of hemophilic patients. An important result of this work could be an AHF concentrate that could be prepared in sufficiently large quantities at sufficiently low cost to permit its use as a routine, rather than an emergency procedure for preventing or controlling hemorrhage in hemophiliacs.

The remainder of the contract extensions support research on the chemical blood preservative adenine. Preliminary evidence has indicated that adenine can significantly extend, and perhaps double, the storage life of whole blood.

Presently, whole blood can be stored for no longer than twenty-one days at 4 C. before becoming unsafe for transfusion. The plasma from outdated blood can be saved for fractionation, but its cellular components must be discarded. The present annual loss of whole blood outdating is not known with certainty, but is believed to exceed 1,000,000 units. Much of this loss, now largely unavoidable, could be eliminated if adenine performs up to expectations and comes into widespread use.

The contract extensions, for studies to determine the effectiveness and safety of adenine and adenine-treated blood products for clinical use, were awarded to: Julian L. Ambrus, M.D., Ph.D., Health Research Inc., Buffalo, New York, $16,600; Charles W. Bishop, Ph.D., Buffalo General Hospital, Buffalo, New York, $36,000; Frank H. Gardner, M.D., Presbyterian Hospital, University of Pennsylvania, Philadelphia, Pennsylvania, $37,000; Richard E. Rosenfield, M.D., the Mount Sinai School of Medicine, New York, New York, $100,000; Grant R. Bartlett, Ph.D., Laboratory for Comparative Biochemistry, San Diego, California, $29,400; James T. Sgouris, Ph.D., Michigan Department of Health, Lansing, Michigan, $65,135; and John G. Gibson, II, M.D., Blood Research, Inc., Boston, Massachusetts, $17,710.

During 1968, the program will also support a cooperative clinical trial of urokinase, a clot-dissolving agent derived from human urine, in the treatment of pulmonary embolism. The study will involve about 15 institutions and 225 to 300 subjects, and will run for two years. Patients with pulmonary emboli will be studied intensively before, during, and after administration of urokinase to determine if the drug will speed recovery by destroying the clots in the lungs. If the results are promising against pulmonary embolism, urokinase probably will be clinically tested against coronary occlusion in future studies.

Other future projects of the program include: (1) automation of cellular component separation; (2) revision and development of large-scale protein fractionation technics; (3) clinical evaluation of additional blood components; and (4) development of new materials and designs for blood and component containers.

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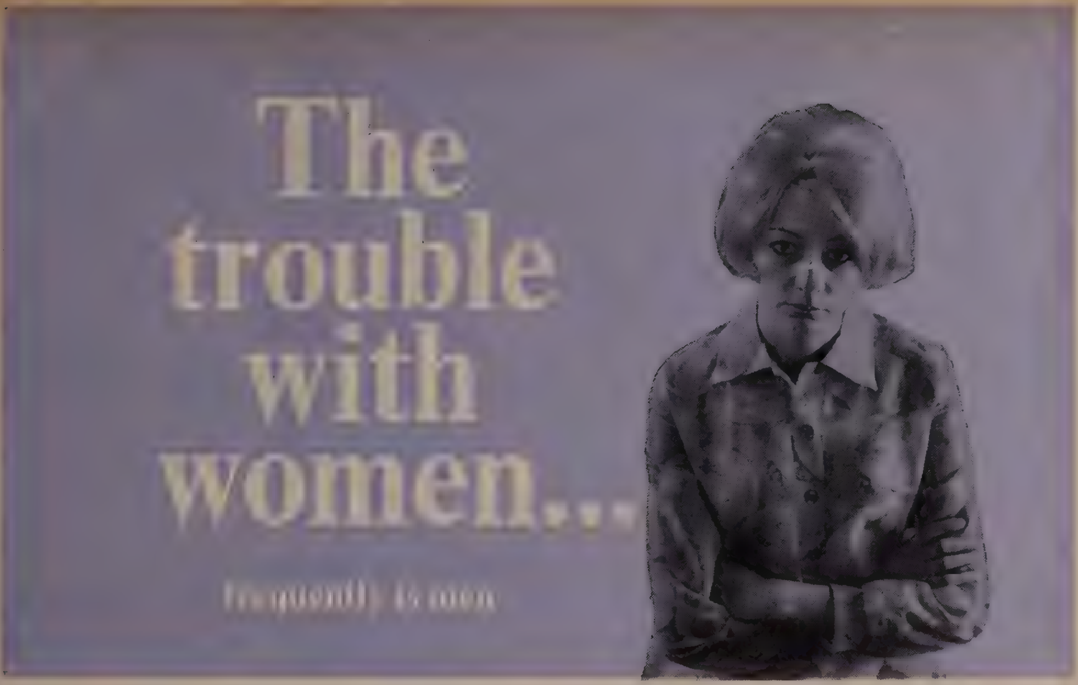

Flagyl® Cures Trichomonal Infection in Both

brand of metronidazole

Although *Trichomonas vaginalis* infection occurs in only 5 to10 per cent* of men, careful diagnosis will demonstrate the condition in about half of all husbands of infected women. Nine investigators* reported an average incidence of 50.8 per cent in exposed consorts.

Many clinicians have achieved a high degree of success in treating trichomonal vaginitis only after they have recognized the importance of sexual partners in perpetuating the infection. Crowley* has asserted, "it was not until we acted on this key premise that we were able to obtain positive and lasting results in our management of recurrent vaginal trichomoniasis."

Simple ten-day oral treatment with Flagyl virtually assures elimination of established trichomonal infection in men. In twenty-two of twenty-seven studies* data on the results of treating male patients revealed that all men treated with Flagyl were cured.

Indications: Flagyl is indicated in the treatment of trichomoniasis in both men and women.

Contraindications: Pregnancy; disease of the central nervous system; evidence or history of blood dyscrasia.

Precaution: Complete blood cell counts should be made before, during and after therapy, especially if a second course is necessary.

Side effects: Infrequent and minor side effects include nausea, metallic taste and furry tongue. Gastrointestinal disturbances, flushing and headache sometimes occur, especially with concomitant ingestion of alcohol. The taste of alcoholic beverages may be altered. Other effects, all reported in an incidence of less than 1 per cent, are diarrhea, dizziness, vaginal dryness and burning, dry mouth, rash, urticaria, gastritis, drowsiness, insomnia, pruritus, sore tongue, darkened urine, anorexia, vomiting, epigastric distress, dysuria, depression, vertigo, incoordination, ataxia, abdominal cramping, constipation, stomatitis, numbness or paresthesia of an extremity, joint pains, confusion, irritability, weakness, cystitis, pelvic pressure, dyspareunia, fever, polyuria, incontinence, decreased libido, nasal congestion, proctitis and pyuria. Elimination of trichomonads may aggravate candidiasis.

Dosage and Administration: *In women:* one 250-mg. oral tablet three times daily for ten days. A vaginal insert of 500 mg. is available for local therapy when desired. When used, one vaginal insert should be placed high in the vaginal vault each day for ten days; concurrently two oral tablets should be taken daily.

In men: When trichomonads are demonstrated, one 250-mg. oral tablet twice daily for ten days in conjunction with treatment of his female partner.

Dosage Forms: Oral tablets–250 mg.
Vaginal inserts–500 mg.

*Complete list of references on request.

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Chronic Effects from Radium-226 Body Burden on Human Chromosomes Cultured In Vitro*

POPULATION GROUPS *exposed to ionizing radiation show resulting chromosome aberrations in peripheral leukocytes. The effects of chronic, low-level, internal radiation caused by ingestion or inhalation of radium-226 on chromosomes in cultured peripheral leukocytes were studied. Control and patient cultures were investigated. Abnormal chromosomes were mainly acentric and translocated. Dicentric and ring types were not found, serving to confirm minimal body burden since these are associated with relatively large radiation doses. Relatively low doses of gamma irradiation have been known to produce aberrations persistently for seventeen or eighteen years.*

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RADIATION PRODUCES breaks in chromosomes. The resulting aberrations may be restored with no apparent morphologic change in the chromosomes, or the broken ends of adjacent chromosomes may join to produce chromosomes recognizably different in size and morphology from normal chromosomes.

The in vivo production of chromosome aberrations in peripheral leukocytes has been demonstrated in several population groups exposed to ionizing radiation. This includes diagnostic and therapeutic x-ray exposure,[1-3] therapeutic irradiation,[4-6] chronic occupational exposure,[7,8] radiation accidents,[9,10] thorotrast applications,[11] fallout,[12] and survivors of the bombing of Hiroshima and Nagasaki.[13,14]

We have investigated the effects of chronic, low-level, internal radiation caused by ingestion or inhalation of radium-226 on chromosomes in cultured peripheral leukocytes.

Case report

RADIATION HISTORY. A patient had received his Ra^{226} body burden between June, 1951, and June, 1952, by inhalation and ingestion, while working in a radium reprocessing plant. He had also been exposed to polonium-210 during that time. He has since continued working in radiochemistry but has not been involved in any further radium or polonium recovery work. His x-ray exposure history was normal and has been diagnostic in nature.

The Ra^{226} body burden was established by a series of expired breath radon measurements and whole-body counts from 1951 to 1967 (Tables I and II).

The maximum permissible Ra^{226} skeletal body burden for occupational workers is 0.1 microcuries.[15] The recommended radiation protection in the general population for skeletal concentration of Ra^{226} is 0.003 microcuries for

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Supported by Contract C-17033 from the Bureau of Maternal and Child Health, State of New York Department of Health.
* Supported in part by Contract SAph 76262 with the U.S. Public Health Service.

TABLE I. Expired breath radon measurements

Date	Location	Results (Per Cent Per Subject)
December, 1951	Fordham University	3.11
June, 1951	New York Operations Office, Atomic Energy Commission	0.60
February, 1953	New York Operations Office, Atomic Energy Commission	1.40, 0.60, 0.40, 0.60, 0.50, 0.40, 0.40
May, 1956	New York Operations Office, Atomic Energy Commission	0.23
July, 1959	Massachusetts Institute of Technology	0.14
August, 1963	University of Rochester	0.10
July, 1967	Massachusetts Institute of Technology	0.16
August, 1967	New York Operations Office, Atomic Energy Commission	0.20, 0.12

TABLE II. Results of whole-body counts

Date	Location	Burden (Microcuries Ra^{226})
July, 1959	Massachusetts Institute of Technology	0.014
October, 1960	New York University Medical Center	0.009
January, 1963	New York University Medical Center	0.009
July, 1963	University of Rochester School of Medicine	0.010
July, 1967	Massachusetts Institute of Technology	0.016
August, 1967	New York University Medical Center	0.010

individuals and 0.001 microcuries for an average population group.[16] At maximum permissible concentration, the average absorbed dose to the bone due to Ra^{226} and daughters in the body is 0.06 rad per week or an average dose to the bone of 0.56 rem per week equal to 29 rem per year.[17]

Table III indicates the probably average dose rate to the bone received by the subject since his exposure. The average cumulative dose to the bone since 1951 ranges from 171 to 353 rem.

MEDICAL HISTORY. The subject was forty-five years old. He had had a thyroglossal cyst removed in 1960. A clinical examination in December, 1965, had showed his blood pressure 210/120 mm. Hg for which he was being treated. He had no other abnormal symptoms or signs. He had during the cytogenetic studies, 1962 to 1967, consistently run a high normal leukocyte count of 10,000 per cubic millimeter with a normal distribution. A twelve-hour fasting serum (1966) had not been grossly lipemic. The cholesterol had been 289 mg. per 100 ml., and the triglyceride had been 8.9 mEq. per liter. Such values are frequently found in the patient's age group.[18] His children had been conceived after he received his body burden. His wife is healthy and has had no miscarriages. Their first son had been born in 1954 and died at two months. Complete transposition of the great vessels with an interventricular septum defect had been demonstrated at postmortem examination, but there had been no other congenital abnormalities. Their second son had been born in 1956 and had had an undescended right testicle. The third boy, born in 1957, has a functional systolic heart murmur and a herniated hydrocele. A daughter, born in 1959, is normal.

METHOD. Peripheral blood samples had been processed for chromosomes from buffy coat cells in 1962 and 1963.[19] An improved micromethod had been used for lymphocyte cultures from 1964 to 1967.[20] While the early method produced ample mitotic cells, it produced fewer well-spread metaphase cells than the micromethod. All samples of blood for the micromethod were drawn after a twelve-hour fasting period. Control cultures were done at the same time and under the same conditions as the test samples.

All chromosome preparations were stained with natural aceto-orcein and were photographed in phase 3 contract (100 per 1.30 neofluar) on 35-mm. plus X film using a Carl Zeiss photomicroscope. Projection prints were enlarged five times the primary film image of 400 diameters.

Results of cytogenetic analysis

Control cultures from 7 healthy people were assessed and found to be normal (Table IV).

The subject's chromosome counts showed an aneuploid spread which depressed the

TABLE III. Average dose rate to bone

Year	Body Burden (Microcuries Ra^{226})	Per Cent of MPC	Average Bone Dose Rate (Rem per Year)
1951 to 1952	0.31	310	90
1952 to 1956	0.04 to 0.14	40 to 140	12 to 41
1956 to 1967	0.01 to 0.03	10 to 30	3 to 9

percentage of 46 chromosome cells below the normal controls by 11 per cent (Tables IV and V). However, some of the 46 chromosome cells had an extra chromosome morphologically unlike the other chromosomes, while in other cells the extra chromosome, a mediocentric one, was morphologically similar to the C group. The frequency of all chromosomes is shown in Table V.

The analysis of cells with abnormal and/or extra nonmatching chromosomes in each culture is documented in accordance with the convention adopted at the Chicago Conference in 1966 (Table VI.)[21] In culture 4, 86 cells were counted of which 37 were karyotyped. Of these karyotyped cells, 19 with 46 chromosomes had an abnormal chromosome pattern. There were 12 without the Y chromosome, which contained an extra mediocentric or submetacentric chromosome, thus accounting for the 46 complement (Tables V and VI).

A few endoreduplicated cells were seen, two of which were assessed. The frequency of such cells increases with radiation dose[22]; these are rarely seen in routine diagnostic cytogenetics. Bell and Baker[23] observed that the frequency was a function of culture time following x-irradiation. Obe[24] found 8 (0.31 per cent) in 2,593 metaphase cells from normal males and females. Other aneuploid cells which showed an increase in frequency were hyperdiploid 47 and 65 chromosomes. The most common aneuploid cells had less than 45 chromosomes (5.6 per cent) and were sometimes found without a Y chromosome but with no other abnormality. Since these cells are present

TABLE IV. Control cultures

Control Cultures				Chromosome Frequency Distribution						Hours in Culture
Number	Sex	Age (Years)	Cells Counted	<45	45	46	47	47>	Per Cent (46)*	
1	F	22	55 (2)*	0	2	53	0	0	96.4	72
2	M	23	47 (2)*	0	1	45	1	0	95.7	72
3	M	47	56 (20)*	0	5	51	0	0	91.1	72
4	M	46	56 (10)*	1	3	51	1	0	91.1	72
5	M	46	48 (3)*	...	...	44	3	1	91.7	96
6	M	28	13 (1)*	1	0	12	0	0	92.3	72
TOTALS			347 (59)*	2	14	326	7	1	× = 93.05	

* Numbers in parentheses refer to number of cells karyotyped.

TABLE V. Analysis of subjects' chromosomes

Patient Cultures			Chromosome Frequency Distribution						Hours in Culture
Number	Date	Cells Counted	<45	45	46	47	47>	Per Cent (46)*	
1	May 18, 1962	16	0	1	13	2	0	81.2	72
2	July 14, 1962	14	3	0	7	2	2	50.0	72
3	May 13, 1963	45	2	3	37	3	0	82.2	72
4	August 30, 1963	86 (37)*	7	2	73	3	1	84.8	72
5	February 2, 1965	30 (12)*	4	2	17	6	1	56.6	72
6	April 7, 1965	84 (29)*	3	13	64	1	3	76.2	72
7	January 4, 1966	15 (2)*	2	1	12	0	0	80.0	72
8	January 4, 1966	55 (12)*	3	2	44	6	0	80.0	96
9	April 1, 1966	94 (55)*	3	3	87	1	0	92.5	72
10	October 7, 1966	56 (19)*	3	1	52	0	0	92.8	72
TOTALS		495 (166)*	30	28	406	24	7	× = 82.0	

* Numbers in parentheses refer to number of cells karyotyped.

TABLE VI. Analysis of cells with atypical chromosomes

Culture Number	Months After Exposure	Ploidy of Cell	Number of Cells	Chromosome Atypia in Karyotyped Cells
4	134	46	9	46, −XY−, C+?
4	134	46	1	46, XY, A−, C+
4	134	46	1	46, XY, E−, C+
4	134	46	1	46, XY, Aq+
4	134	46	1	Triradius
4	134	46	1	46, XY, A−, F−, t(Ap-Fq) Eq− (*)
4	134	46	1	46, XY−, C+
4	134	92	1	Endo 46 XY
4	134	46	1	46, XY, t(cq−?) (*)
4	134	45	1	45, XY−, ace
4	134	46	1	46, XY− (2 telocentrics)
4	134	45	1	45, XY−?
4	134	46	1	46, XY, C chromosome break with fragment E? G?
4	134	46	1	46, XY
5	152	55	1	55, XY, D+, E+, F+, Gt
5	152	47	1	47, XY, E+
5	152	46	1	46, XY−, (Eq−)
6	154	46	1	46, XY t(A/C)? C+
6	154	47	1	47, XY t(A/G)?
6	154	48	1	48, XY G+ (C+)
6	154	47	1	47, XY, C+
6	154	65	1	Hyperdiploid
6	154	80	1	Endo 40
8	163	47	6	47, XY, C+
9	166	46	1	46, XY−, C+
9	166	46	1	46, XY, ace
9	166	45	1	45, XY, ace
9	166	46	1	46, XY, E−, C?+
9	166	46	1	46, XY, ace

in higher numbers than in normal controls, they are suspect of being an induced chromosomal abnormality.

In culture 4, shown in Table VI, cell 46, XY, A−, F−, t (Ap − Fq) Eq− (*) has two abnormal chromosomes, one of which

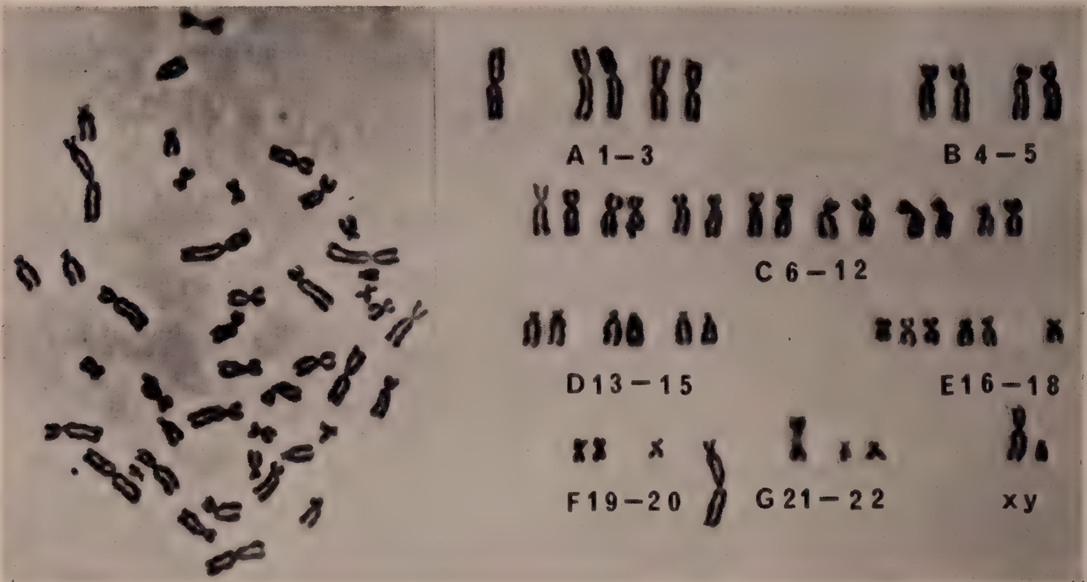

FIGURE 1. Reciprocal translocation in abnormal chromosome involving one of A and F homologues; another homologue is mediocentric chromsome thought to be E with partial deletion of long arms.

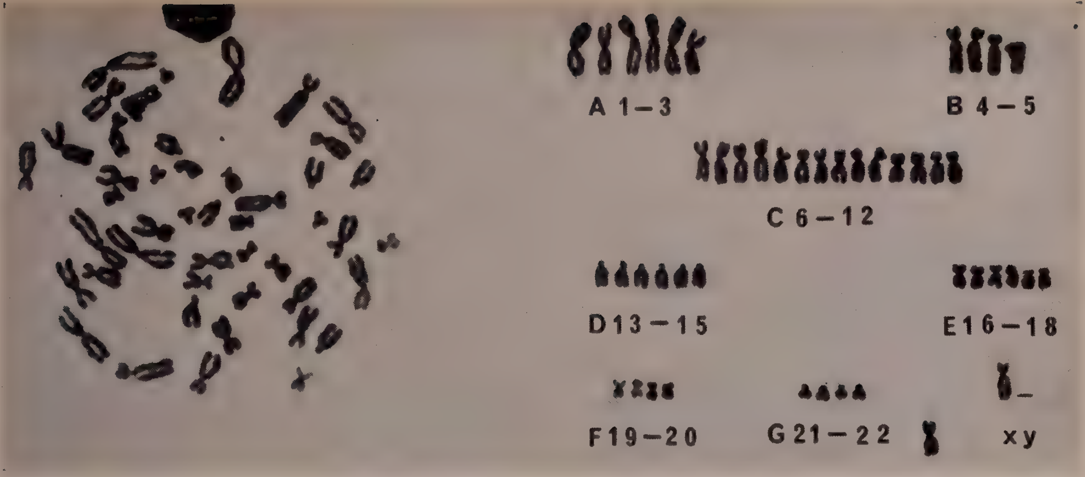

FIGURE 2. Extra chromosome in C6-12 group.

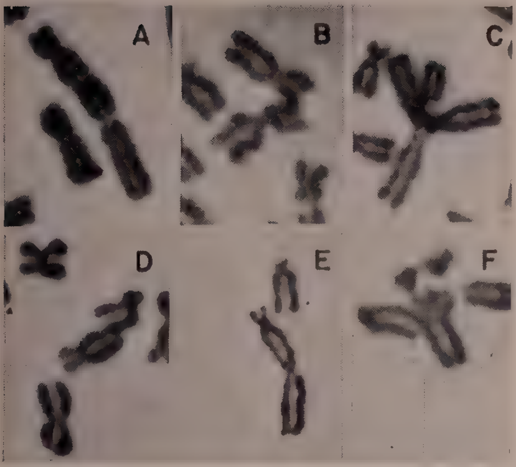

FIGURE 3. (A) Abnormal chromosome with secondary constrictions. (B, C, D, and E) Chromatic associations suggest stickiness. (F) Triradial-type configuration, result of breakage and translocation.

appears to be a reciprocal translocation involving one of the A and F homologues, and the other is a mediocentric chromosome thought to be an E with a partial deletion of the long arms as shown in Figure 1. As in many of the subject's cells, two of the G chromosomes are in close association. The commonest cell with 46 chromosomes has one member missing, and an extra chromosome which morphologically could be put into the C6-12 group is shown in Figure 2. Figure 3A shows an abnormal chromosome with secondary constrictions. This type is common after in vitro x-irradiation of lymphocytes.[25] Chromatic associations suggest stickiness (Fig. 3B, C, D, and E). A triradial-type configuration is the result of breakage and translocation (Fig. 3F).

TABLE VII. Total karyotypes with abnormal chromosomes

Culture Number	Total Cells Karyotyped	Number of Cells with Abnormal Chromosomes	Per Cent Abnormal
4 (134)*	37	7	18.9
5 (152)*	12	2	16.7
6 (154)*	29	3	10.3
9 (166)*	55	3	5.5

* Months after exposure.

Fifty-five cells were counted from culture 8, of which 12 were karyotyped, including the 6 aneuploid cells with 47 chromosomes (Tables V and VI). Each of these cells carried an extra C-type chromosome.

In culture 9, 55 karyotypes were analyzed (Tables V and VI). Five of these cells had an abnormal pattern. Three cells carried one acentric each (chromosome fragments). Of the other two, one was without a Y chromosome and had the extra C-type chromosome seen in previous cultures. The other cell lacked an E and had an extra C-type chromosome.

The analysis of culture 10 revealed no gross morphologic abnormalities of the chromosomes (Table V). The percentage of 46 XY cells was 92.8 per cent, only 1 per cent under the average of the control group. In January, 1967, two hundred months

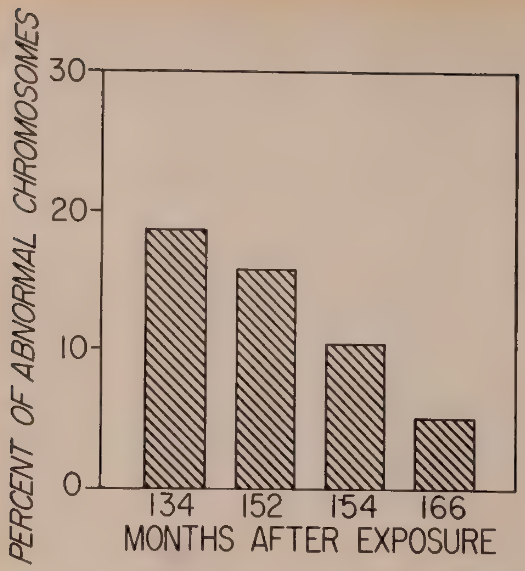

FIGURE 4. Percentage of abnormal chromosomes decreases with time after exposure.

after exposure, an additional culture was done and found to be of normal pattern.

The percentage of abnormal chromosomes, such as with fragments, deletions, translocation, and so on, is shown in Table VII and is seen to decrease with time, in months, after exposure (Fig. 4). These abnormalities are caused by exposure to ionizing radiation. They progressively decrease with time after exposure but are known to be detectable in significant number ten or more years after exposure.[8]

Comment

A world-wide arithmetical average for the environmental radium content of man has been calculated to be approximately 0.00003 microcuries,[26] and natural radioactivity contributes about 0.1 rad per year to each person.[27]

The atypia of the subject's cell line was chiefly pseudodiploid with an extra chromosome similar to the C group chromosomes. The abnormal chromosomes found were mainly acentric and translocated. Such types are consistently seen after exposure to ionizing radiation. Dicentric and ring types were not found. Since these are associated with relatively large doses, it serves to confirm the minimal body burden. The half-life of lymphocytes is approximately sixty-four days; therefore only chromosomal aberrations lasting beyond a one hundred twenty-day period imply damage to the hemopoietic tissue per se which would continue to produce aberrant forms. Relatively low doses of gamma irradiation have been known to produce these aberrations persistently for seventeen or eighteen years.[13]

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Did you know . . .

One out of every 10 people in the United States, or about 20 million, suffer from some sort of allergic disease.

Of these 20 million, about 15 million suffer from asthma or hay fever and 5 million from other allergic conditions. Almost 5 million of the 15 million asthma or hay fever sufferers are children.

Over $135 million is the annual cost to allergy victims for medicines. Almost 42 million individual purchases make up the $135 million for prescribed drugs.

Domestic shipments of antihistamines, used largely by allergy sufferers, by pharmaceutical firms, have an annual retail value of almost $50 million. This is only one kind of ethical drug used to treat allergies.

It is estimated that at least 1 million victims receive injection therapy for ragweed pollen hay fever each year, which, at a minimum cost of $100 a year, amounts to $100 million in cost to the patients.

Children under seventeen years of age lose over 36 million days from school and play and spend about 13 million days in bed a year because of allergic disorders.

Surveys among schoolchildren have shown prevalence rates of 1 in every 5 children having a major allergy, yet only 1 in 3 of these allergic children receives any medical attention.

Time lost from work by adults with allergic disorders amounts to some 25 million man days a year, at an annual cost to industry of more than $400 million.

Approximately 600,000 workers in the United States are victims of occupational dermatitis.

Of the U.S. population, 5 per cent are said to be allergic to penicillin alone, while an increasing number are becoming allergic to detergents, cosmetics, plastics, and other new drugs.

About half of the more than 5,000 people who die from asthma each year are in the working-age group.

Allergies are the leading chronic disease of children, accounting for one third of all chronic conditions in children under seventeen years.

Allergies ranked seventh among 19 medical reasons for draft rejection, with 7.4 of every 1,000 men examined being rejected for an allergic disorder.

Allergic patients require an average of three times as many medical visits as do those suffering from any other type of illness.

Allergies ranked sixth as a cause of medical appointments for children under one year of age and fifth up to the age of fourteen years.

Respiratory Distress in Newborn Infant

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At times the otolaryngologist or pediatrician is asked to see a newborn infant with respiratory distress. Such a request calls to mind a large number of potentially implicated lesions. An accurate specific diagnosis can be made by an orderly comprehensive approach to the problem. Careful evaluation of the history and clinical findings plus some combination of simple clinical tests, endoscopy, x-ray films, and laboratory tests will in most instances lead one to a diagnosis defining the site, extent, and type of the obstructing lesion.

History

Prior to evaluation of the signs and symptoms, it is helpful to review the history of the patient with neonatal respiratory distress. Maternal history should include information regarding preceding respiratory infection, existence of diabetes, and history of drug intake. It should be known whether the infant was pre- or postmature, whether the delivery was contaminated, or whether the membranes were ruptured for a long period of time.[1] In a neonatal history the time of onset of symptoms is of considerable importance. Several entities, such as congenital lobar emphysema and subglottic hemangioma, have an early symptomless interval. Other lesions such as significant webs or cysts of the larynx, cord paralysis, or dislocated arytenoid have an onset of symptoms at birth. The sequence in which the symptoms appear is also of note since it may give a clue to the location of the primary or the most severe abnormality. The course of the respiratory distress must also be known. Spontaneous improvement is seen in laryngomalacia, tracheomalacia, Pierre Robin syndrome, mild subglottic stenosis, and the like. Progressive worsening of symptoms is seen with such lesions as hemangioma, lymphangioma, or tracheal stenosis due to vascular compression. The history taken for evaluation includes the following:

Maternal
1. Preceding respiratory infections: neonatal pneumonia
2. Diabetes: hyaline membrane disease
3. Reserpine, and others: nasal edema
4. Iodides or antithyroid drugs: congenital goiter

Familial: occurrence of anomalies leading to respiratory distress

Delivery
1. Contaminated or membranes ruptured more than twelve hours: pneumonia
2. Premature: hyaline membrane disease
3. Postmature; breech; bleeding: massive aspiration

Neonatal
1. Time of onset of symptoms
    Early symptomless interval: some cases of laryngomalacia, lobar emphysema, subglottic hemangioma, hyaline membrane disease
    Onset at birth: some cases of laryngomalacia, some laryngeal cysts or laryngoceles, webs, cord paralyses, subglottic stenoses, and dislocated arytenoid
2. Sequence in which symptoms appear. difficulty with secretions before onset of respiratory distress in esophageal abnormalities
3. Course of the respiratory distress
    Spontaneous improvement: laryngomalacia, tracheomalacia, Pierre Robin syndrome, mild subglottic stenosis
    Progressive worsening: hemangioma, lymphangioma, tracheal stenosis due to vascular compression, bronchomalacia, some cases of laryngomalacia
    Repeated episodes of "croup": subglottic stenosis, tracheomalacia, tracheal compression

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RESPIRATORY DISTRESS *in newborn infants can be diagnosed accurately by evaluation and testing. The history should include maternal, familial, delivery, and neonatal information. A study should be made of the signs and symptoms: respiratory, deglutition, cardiovascular, associated anomalies, general appearance, and metabolic. Diagnostic procedures are physical examination, endoscopy, x-ray examination, and laboratory tests. Specific lesions can cause this condition: of the nose and nasopharynx, pharynx and oral cavity, larynx, neck, tracheobronchial tree, and lungs and thorax.*

Signs and symptoms

Signs and symptoms may be of considerable help in establishing the site and extent of the lesion. Stridor is often a principal manifestation of respiratory difficulty in the infant. The term is defined by Holinger and Johnston[2] as harsh or whistling respiratory sound resulting from partial obstruction of the air passages. Stridor often indicates a decrease in the laryngeal aperture but may accompany other airway narrowing. The pitch of stridor depends largely on the position and severity of the obstruction. High-pitched stridor usually indicates glottic obstruction whereas coarse, low-pitched stridor generally occurs with less severe supraglottic obstruction. Stridor associated with a deep barking cough is most often seen in tracheal lesions.

The respiratory phase of stridor is also important.[2] Pure inspiratory stridor is most common with supraglottic obstruction, especially if accompanied by a muffled cry. A muffled cry is also seen with pharyngeal lesions. Inspiratory stridor associated with a hoarse, weak, or absent cry or with a change in pitch is usually indicative of a glottic lesion. However, it should be remembered that inspiratory stridor and a normal cry may be present in bilateral cord paralysis. Expiratory stridor alone often indicates tracheal or subglottic obstruction in which case the voice is usually clear. Stridor which persists throughout inspiration and expiration is usually attributed to severely obstructing lesions which may be at any of the levels mentioned.

Stertor is a raspy, sonorous respiratory noise not accompanied by inspiratory stridor or crowing. In most cases it is considered indicative of oral or pharyngeal obstruction.

Dyspnea may be progressive as it is in obstructive emphysema, some cases of subglottic stenosis, or subglottic hemangioma. In other cases the dyspnea may be nonprogressive.

Retractions are generally indicative of respiratory obstruction, those of the suprasternal type being considered most characteristic of laryngeal obstruction by Jackson and Jackson.[3]

The character of the cry is of great diagnostic importance in infants with dyspnea, stridor, or cyanosis. A muffled pharyngeal type of cry is usually seen with pharyngeal obstruction. A weak or absent cry, with or without accompanying dyspnea and retraction, suggests a laryngeal anomaly of the glottic or paraglottic type. A loud stuttering, crowing inspiratory type of cry is usually characteristic of laryngomalacia but also may occur with bilateral recurrent nerve paralysis or tracheomalacia.[4]

Fluttering respirations are seen with pooling of secretions in the hypopharynx and in laryngomalacia. In the latter instance the fluttering respiratory noise is synchronous with fluttering intercostal and sternal retraction.

Frequent respiratory infections or croup may be associated with subglottic stenosis, tracheomalacia, or tracheal compression. A persistent brassy, seal-bark cough is seen with tracheal compression by vascular anomalies. Wheezing is seen in such abnormalities as tracheomalacia, vascular anomalies, bronchomalacia, or congenital lobar emphysema.

Feeding or swallowing difficulties may on the one hand be due to pharyngeal paralysis with overflow of secretions into the tracheobronchial tree or, on the other, to esophageal anomalies. The need for frequent hypopharyngeal suctioning should suggest the presence of esophageal atresia with tracheo-esophageal fistula.

The infant with respiratory distress may have associated anomalies of the central nervous system, cardiovascular system, skin, chest wall, esophagus, or tracheobronchial tree. The patient with tracheomalacia may prefer to lie with his neck hyperextended so as to stretch and open his trachea. The prone position usually provides some relief of symptoms for those patients with the Pierre Robin or Treacher Collins syndrome, macroglossia, or laryngomalacia. Until quite late in its course respiratory acidosis may be manifested clinically only by hyperpnea and dyspnea. In late stages weakness, stupor, and coma intervene. The signs and symptoms to be considered in the evaluation include the following:

Respiratory
1. Stridor
    Constant (two way): high grade obstruction
    Inspiratory: laryngomalacia, bilateral cord paralysis, subglottic hemangioma, tracheal compression (some cases)
    Expiratory: tracheomalacia, tracheal compression (some cases)
2. Stertor: obstructing oral or pharyngeal lesions such as internal thyroglossal duct cyst; tracheomalacia at times
3. Dyspnea
    Progressive: obstructive emphysema, some cases of subglottic stenosis or subglottic hemangioma
    Nonprogressive: laryngomalacia, bilateral cord paralysis, laryngeal cysts, laryngocele, internal thyroglossal duct cyst, posterior choanal atresia, tracheal compression
4. Retractions: airway obstruction of the degree seen in laryngomalacia, vessel anomalies, congenital lobar emphysema, posterior choanal atresia
5. Cry
    Aphonia: atresia and some webs, cysts, laryngoceles, and bilateral partial cord paralysis
    Weak or absent: unilateral cord paralysis, laryngotracheal-esophageal cleft, internal thyroglossal duct cyst
    Weak and hoarse: webs, dislocated arytenoid
    Weak and breathy: some cord paralyses
    Clear and weak: some bilateral cord paralyses
    Muffled: supraglottic or pharyngeal lesions
    Hoarse: cord duplication, subglottic hemangioma
6. Frequent respiratory infections or "croup": subglottic stenosis, tracheomalacia, vessel anomalies
7. Cough: persistent, brassy, seal-bark cough is seen with tracheal compression by vascular anomalies
8. Wheezing: tracheomalacia, vessel anomalies, bronchomalacia, congenital lobar emphysema

Deglutition: feeding difficulties are seen in choanal atresia, pharyngeal paralysis, cord paralysis, cleft palate, esophageal compression by anomalous vessels, and tracheal stenosis

Cardiovascular
1. Cyanosis: cardiovascular anomalies, subglottic stenosis, choanal atresia, tracheo-esophageal fistula
    Intermittent tracheal stenosis, bronchomalacia, congenital lobar emphysema, tracheal compression

Associated anomalies
1. Central nervous system: bilateral cord paralysis, feeding difficulties
2. Cardiovascular: unilateral cord paralysis, tracheal compression
3. Skin: >50 per cent of patients with subglottic hemangioma have hemangioma of skin; course often parallel
4. Pectus excavatum: laryngomalacia
5. Esophagus
6. Tracheobronchial tree

General appearance
1. Preferred position
    Neck hyperextended: tracheomalacia, cardiovascular anomalies
    Prone: Pierre Robin syndrome, Treacher Collins syndrome, macroglossia, laryngomalacia

Metabolic
    Respiratory acidosis: hypernea and dyspnea and late weakness, stupor, coma

Diagnostic procedures

The history, signs, and symptoms by means of which one may suspect a given lesion as underlying respiratory distress in a newborn child have been presented. It now remains to fit these data into a more comprehensive diagnostic plan.

Physical examination should include inspection and palpation of accessible upper air and food passage structures, observation of whether or not there is a change in symptoms with positioning of the infant, and passage of a catheter through the nose to test patency of the choanae and esophagus.

Endoscopy should be carried out in all cases in which the diagnosis cannot be definitely established otherwise. Beck pharyngoscopy is a good first procedure since it provides a wide view of the hypopharynx and larynx atraumatically in the unanesthetized patient. Direct laryngoscopy, esophagoscopy, or bronchoscopy may then be indicated. Bronchoscopy is essential in obstructive emphysema and helpful in diagnosing such lesions as congenital lobar emphysema or tracheomalacia.

X-ray examination of the patient is then in order and should initially include at least a chest film and a film of the soft tissue of the neck. In particular instances inspiratory, expiratory, or rapidogram chest films may be desirable, while in other cases laminograms of the larynx or trachea, films of the skull or paranasal sinus, contrast fluoroscopy of the esophagus, and angiography may be indicated.

In addition to the usual laboratory tests, blood gas and pH determinations are often very helpful for diagnosing respiratory acidosis or other acid base disturbances which may not be clinically apparent. The diagnostic procedures include the following:

- Physical examination
  1. Inspection and palpation of accessible structures
  2. Change of symptoms with positioning of the infant
  3. Catheter: patency of choanae and esophagus
- Endoscopy
  1. Beck pharyngoscopy
  2. Direct laryngoscopy: from vallecula
  3. Esophagoscopy-bronchoscopy: bronchoscopy is essential in obstructive emphysema and helpful in diagnosing congenital lobar emphysema or tracheomalacia
- X-ray examination
  1. Chest film: apparent atelectasis, agenesis (inspiratory-expiratory films or rapidogram)
  2. Films of soft tissue of neck
  3. Laminograms of larynx or trachea
  4. Skull or paranasal sinus films (contrast material in choanal atresia)
  5. Contrast fluoroscopy of esophagus: hungry child
  6. Angiography
- Laboratory tests
  1. Blood gas and pH determinations

Specific lesions

There are of course a large number of abnormalities capable of producing respiratory difficulty in infancy. Landing[5] believes that many of these abnormalities have a genetic aspect. Holinger *et al.*[6] has found that such anomalies as laryngomalacia, macroglossia, cysts of the tongue, and esophageal atresia with tracheo-esophageal fistula occur with an incidence of 0.01 to 0.4 per cent among children in hospitals. Abnormalities of the respiratory tract below the larynx are somewhat less common appearing only in approximately 0.002 per cent.

Before undertaking the clinical evaluation of a newborn infant with respiratory distress, it is well to remember that the commonest single cause of respiratory difficulty is hyaline membrane disease.[1] The commonest laryngeal cause is laryngomalacia.[7] In addition, one should recall that respiratory distress generally indicates airway obstruction and is usually associated with a rapid respiratory rate with supersternal and epigastric retractions, at times accompanied by dyspnea, cyanosis, gasping, and asphyxia. By contrast, cardiac or central nervous system abnormalities, intoxication, or maternal oversedation cause slow shallow respirations in a cyanotic infant, who makes poor attempts at breathing, and who has no retractions. The differential diagnosis of airway obstruction in a newborn child includes cardiac peripheral pulmonary, neurologic, and even esophageal abnormalities. Neonatal death caused by airway obstruction is usually due to hypoxia, respiratory acidosis, or circulatory failure.[1]

Some of the more important of these lesions are included in outline form. A discussion of the individual lesions is beyond the scope of this article.

- Nose and nasopharynx
  - Atresia of anterior nares
  - Nasal glioma (encephalocele)
  - Posterior choanal atresia
  - Congenital tumors (hemangioma, dermoid, teratoma)
  - Deviated septum
  - Edema of nasal mucosa
- Pharynx and oral cavity
  - Pierre Robin syndrome
  - Treacher Collins syndrome
  - Macroglossia
  - Ranula
  - Lingual thyroid or thyroglossal duct cyst
  - Cystic hygroma
  - Bronchial cysts
- Larynx
  - Laryngomalacia
  - Laryngeal cysts or laryngoceles
  - Webs
  - Subglottic stenosis or hemangioma
  - Papilloma
  - Vocal cord paralysis
  - Atresia
  - Laryngotracheal-esophageal cleft
  - Arytenoid dislocation
  - Minor anomalies[8]
- Neck[9]
  - Cystic hygroma
  - Branchial cleft cyst
  - Thyroglossal duct cyst

  - Tumors
- Tracheobronchial tree
  - Tracheomalacia
  - Bronchomalacia
  - Stenosis, webs, agenesis, anomalous branching
  - Congenital lobar emphysema
  - Compression of vascular anomalies or mediastinal masses
  - Tracheo-esophageal fistula (some)
  - Tracheal cyst
- Lungs and thorax
  - Agenesis-hypoplasia
  - Hyaline membrane disease
  - Atelectasia
  - Pneumothorax
  - Mediastinal cysts-tumors
  - Congenital lobar emphysema
  - Cystic malformations of the lungs
  - Aspiration
  - Infection
  - Anomalies or paralysis of diaphragm
  - Tumors

Conclusion

Although a considerable variety of malformations may cause respiratory distress in early infancy, the site, extent, and type of lesion involved can usually be diagnosed and appropriate therapy instituted.

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Decline in drug prices

The long-range decline in prescription drug prices has continued in 1967, according to statistics of the Pharmaceutical Manufacturers Association. The comprehensive index of prices at manufacturers' levels shows a 1967 price level of 85.2 as compared with the 1949 base of 100. This has reached its lowest point in eighteen years—a rather unique occurrence.

The government's Bureau of Labor Statistics Wholesale Price Index actually shows a greater decline than this study, prepared under the Pharmaceutical Manufacturers Association sponsorship.

The Bureau of Labor Statistics Consumer Price Index for prescription drugs at retail has also declined sharply. By December, 1967, it stood 11.6 per cent below the 1957–1959 base, while the over-all cost of living rose 18.2 per cent during the same period.

Price reductions have been especially noteworthy in antibiotics, because of their importance in the total market. Antibiotics have declined 8.5 per cent between 1966 and 1967, more than offsetting increases in some of the less important categories, such as dermatologicals. Price declines have also occurred, in recent years, in such major categories as tranquilizers, cardiovascular drugs, steroids, and oral contraceptives.

A 1967 index shows a decline of 1 per cent for patented products, while nonpatented items dropped only 0.05 per cent. Prices on patented items have fallen to 74.5 per cent of the 100 base, while the nonpatented ones stand at 101.1 per cent of the 1949 base.

Patents, thus, are not responsible for maintaining price levels. In the field of pharmaceuticals, in fact, there is strong cross competition among different products treating the same disease. A patent, thus, provides only partial protection.

Treatment of Diabetic Neuropathy with Diphenylhydantoin

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DIPHENYLHYDANTOIN WAS USED *to treat painful diabetic peripheral neuropathy in 60 patients. Based on symptomatic relief of pain and paresthesia, excellent results were obtained in 68 per cent (41 patients) and fair response in another 17 per cent (10 patients). When successful, improvement was noted in from twenty-four to ninety-six hours (usually forty-eight), and relapse occurred in from forty-eight to seventy-two hours when the drug was discontinued prematurely. Although diphenylhydantoin is clearly not a cure nor the ideal drug for diabetic neuropathy, the high rate of subjective benefit in a frustrating condition appears to justify a therapeutic trial. There is no long-term commitment to the drug. However, there is risk of toxicity.*

Of the many challenges posed by diabetic neuropathy, the fewest inroads have been made in the area of therapy. At present, there are no available dependable measures, and treatment remains a frustrating experience. Many therapeutic modalities have been used including hypertonic saline, phenothiazines, parenteral procaine, and all the vitamins of the B complex, singly and in combination; however, none of these has had any consistent or predictable effect. The urgent need for a beneficial therapeutic agent is underscored by the frequent indication for narcotics to control the severe pain with the ever-present threat of addiction.

Diphenylhydantoin was tried in an effort to achieve clinical improvement. The choice was based on rational grounds. The drug was originally selected to treat the convulsive state since it possessed little or no hypnotic action despite its high degree of anticonvulsive activity. Further experimental studies indicated a capability of direct action on peripheral nerve. Thus, it decreased hyperirritability induced by exposure to sodium oxalate of the isolated axon of the squid[1] and the sciatic nerve of the frog.[2] In mammalian peripheral nerve—the posterior tibial nerve of the rabbit—diphenylhydantoin increased the threshold, decreased the spike amplitude in A fibers, abolished nerve repetition, and reversed the enhanced excitability of oxalated nerve.[3] On the supposition that pain of peripheral nerve origin could be related to repetitive discharge in the afferent fiber and organs, the drug was tried in tic douloureux and met with considerable success.[4,5] Certain observations made in these investigations are pertinent since they are so comparable to our experience in diabetic neuropathy: (1) the drug was effective only in alleviating symptoms and did not appear to alter the underlying disease process significantly; (2) pain relief never occurred immediately but only approximately twenty-four to forty-eight hours after administration; and (3) the pain returned on drug withdrawal but only after an interval of from forty-eight to seventy-two hours. On the assumption that the symptoms of diabetic neuropathy might have a similar background, a therapeutic trial was undertaken.

Material and method

There was a total of 60 patients in this series, 38 males and 22 females. The age distribution revealed 9 in the fifth decade, 30 in the sixth decade, 18 in the seventh decade, and 3 in the ninth decade. Thus, 48 or 80 per cent were between the ages of fifty and seventy. The duration of diabetes was less than ten years in 32 patients, 18 had diabetes from eleven to twenty years, and the remaining 10 had diabetes more than twenty years. Forty-two patients were controlled with insulin, 2 with diet alone, and 14 with oral hypoglycemic agents.

Symptoms of neuropathy had been present in 38 patients for six months to one year, in 19 for one to two years, 2 had neuropathy for three years, and 1 suffered from neuropathy intermittently over a six-year period.

Diabetic patients who had peripheral neuropathy characteristic of and consistent with diabetic neuropathy were studied; specifically this denoted bilateral peripheral nerve involvement with impaired sensation and impaired deep reflexes. Selection was limited to those who had significant pain and/or paresthesias in addition to objective confirmatory signs. Autonomic and visceral manifestations per se were not evaluated. Only those patients under observation for diabetes and neuritis for a minimum of three months were included. This was done to exclude, insofar as possible, some of the frequent vagaries and variations known to occur in this complication. Also the time span was utilized to institute metabolic regulation when necessary and thus obviate any possible role this factor might contribute. Diphenylhydantoin was administered in the usual analeptic dose of 0.1 Gm. three times a day; in recalcitrant cases the dose was increased at times to 0.4 Gm. daily.

Results

The results were evaluated on the basis of symptomatic relief. This was necessary because there was no consistent and indeed little demonstrable change in objective manifestations. Of the 60 patients, 41 (68 per cent) were considered to have good to excellent results, 10 (17 per cent) were evaluated as a fair response, and 9 (15 per cent) showed no improvement; none became worse. Of those who were benefited, the improvement was noted after forty-eight but within ninety-six hours with continuing benefit over a period of time.

Those patients who failed to show a favorable response in the first few days did not improve with prolonged drug administration. The severity of the neuropathy or the duration of the diabetes did not appear to have any direct relationship to the response.

In one half of the successful cases the drug was stopped in two to three weeks and was followed by a recurrence of symptoms, albeit often less marked, but not before forty-eight to seventy-two hours had elapsed. On reinstituting medication a salutary response would be repeated uniformly. The drug was continued until the patient was comfortable (six to sixteen weeks) at which time the dosage was gradually reduced. If symptoms recurred, the preceding dose was reintroduced. In most instances the drug could be permanently discontinued after three to five months.

The relationship of sex to good response is intriguing. All of the 22 females in our series experienced a fair to excellent result; there were no failures. All the failures and most of the improvement of lesser degree were confined to the males. There is no evident explanation for this.

Twenty-seven patients had both pain and paresthesias; in 18 the paresthesias, were the predominant symptoms, and 15 complained primarily of pain. There was no basic difference in drug effect in any of the three groups. However, some concurrent observations are of interest and significance. The reaction of pain to therapy was generally more dramatic and more rapid than paresthesias which cleared at a slower pace. Of all the paresthesias, numbness tended to be slowest and less complete in disappearing and in some cases was the only remaining and persistent evidence of the neuropathy. When pain and paresthesias were present simultaneously, the paresthesias did not improve unless the pain also cleared. The converse did not necessarily hold true. In 2 patients the pain disappeared leaving the paresthesias essentially unchanged, and in 2 other patients the pain cleared promptly, but the paresthesias improved slowly and to a less striking degree.

The following case report is presented to indicate the typical course of events as ordinarily observed in our successful group of patients.

Case report

This fifty-five-year-old white male was admitted to The Mount Sinai Hospital with severe pain of two months' duration in both lower extremities. He had diabetes for seven years which was treated with 60 units daily of NPH insulin with only fair control. The pain was radicular in distribution, radiating from either hip down the anterior aspect of the thigh and into the knee, shin, and dorsum of the foot. It was greatly intensified at night and was accompanied by insomnia and depression; the patient also complained of marked constipation. As a result of the ensuing disability, he had to curtail his business commitments sharply.

On examination, the significant abnormalities were confined to the neurologic status. Knee and ankle jerks were absent; there was diminution of vibratory sensation in both feet and toes. There was moderate weakness of the thigh and leg muscles bilaterally. Retinopathy was not present.

Laboratory investigation revealed no abnormalities in the blood count, urinalysis, extensive blood chemistry determinations, electrocardiogram, and thyroid studies. Roentgen examination of the lumbosacral spine was normal. Lumbar puncture was normal except for a spinal fluid protein of 56 mg. per 100 ml. A myelogram was normal.

After discharge from the hospital, the patient required considerable amounts of propoxyphene hydrochloride (Darvon), acetylsalicylic acid, as well as occasional doses of codeine to achieve only a reasonable degree of comfort. Basically there were minor variations in this picture for the next twenty-six months. At this juncture, diphenylhydantoin was administered in a dose of 0.1 Gm. three times a day. After two days there was a dramatic decrease in pain so that he was able to eliminate codeine completely and to reduce propoxyphene hydrochloride from eight to three doses daily, and required only intermittent doses of acetylsalicylic acid. After the fifth day he discontinued all propoxyphene hydrochloride. In addition to relief from pain, depression and insomnia cleared; coincidentally, the severe constipation virtually disappeared. He soon returned to his customary business activities. After two months the drug was reduced to two doses daily and one month later to one dose daily. Two days after this latter decrease in dose, there was a recrudesence of pain although to a lesser degree. The drug was therefore increased to two doses daily and kept at this level for three months. He has since been well and back on a full schedule. There is mild, intermittent residual discomfort but no actual pain. Objectively, the ankle and knee jerks are still absent as is the vibratory sensation.

This case has added significance since this was our initial experience with diphenylhydantoin in diabetic neuropathy, and the dramatic response sparked the enthusiasm for further study.

Comment

One of the difficulties in evaluating any agent in diabetic neuropathy is inherent in the fact that the painful forms are, in most instances, self limiting with spontaneous remissions and recovery. Furthermore, in our cases the interpretation of relief was primarily subjective. Nevertheless, the beneficial results did follow a definite pattern and occurred only within a twenty-four- to ninety-six-hour period (usually forty-eight hours) in patients who had been well studied and carefully followed prior to institution of therapy. Another salient feature is the fact that there is no long-term commitment to the drug. Should it fail to yield satisfactory results in a few days, it is pointless to continue.

There is a definite risk of toxicity; many toxic manifestations have been attributed to and observed with prolonged administration of diphenylhydantoin. Skin eruptions were encountered in 2 of our patients and 1 of these was associated with fever. In both instances the patients were acutely ill but recovered rapidly following cessation of therapy; however, it was necessary to discontinue the drug in both instances. Five patients insisted that diphenylhydantoin improved the control of diabetes and their general well-being. The explanation for this may lie in the elimination or diminution of pain.

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Intensive Treatment of Fifty Children Born with Myelomeningocele*

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THE MULTIPLICITY of problems presented by the infant born with myelomeningocele have until recently led to no consistent policy of treatment, implying that the results of early neurosurgical care were poor and that untreated children would soon die. The natural history of such a group of untreated children, however, appears to indicate that an appreciable number will survive requiring prolonged hospital and custodial care with worsening of their neurologic, orthopedic, and urologic disabilities.[1] The present study was undertaken to demonstrate that an intensive program of treatment and prophylaxis by a group of specialists, if begun immediately after birth and continued on a regular basis, could decrease the mortality rate and length of hospitalization as well as enhance the quality of survival.

The patient material comprises 50 consecutive infants admitted to the neurosurgical service of the Children's Hospital of Philadelphia with the diagnosis of myelomeningocele and directly cared for by the authors. Thirty infants were admitted during the first twenty-four hours of life, 2 between twenty-four and forty-eight hours, and 18 after forty-eight hours. This preponderance of early admissions represents a concerted effort by the members of our birth defects staff to bring children to the hospital as soon as possible after birth, and the acceptance of all infants with myelomeningocele no matter how severe the lesion or how hopeless the defect may appear to the obstetrician or pediatrician. No patient with myelomeningocele was refused admission. The first patient in this series was born on February 24, 1964, and the last on February 24, 1967. There were 21 males and 29 females. In a critical evaluation of the results of such a program certain conclusions are presented. The over-all mortality rate was 20 per cent (10 patients). The D.Q. (development quotient) is available in the 40 survivors and indicates that 25/40 or 62 per cent are in the competitive range whereas 15/40 or 38 per cent are below this range with a D.Q. of 80 or less.

Methods

All children were initially admitted to the neurosurgical service with immediate pediatric, orthopedic, and urologic assessment. Neurologic evaluation included the determination of motor and sensory levels as well as sphincter function. Of the 30 infants admitted during the first day of life, 23 were operated on with repair of the back lesion before the end of this period. An additional 5 infants had their myelomeningoceles repaired between twenty-four and forty-eight hours of life, 1 at thirteen days, and 1 died before back closure could be undertaken. Surgery was performed under general endotracheal anesthesia and comprised dissection of the neural plate and roots, laminectomy of the cranial two segments, and dural, lumbosacral fascia, and skin closure without grafting. Of the 20 infants admitted after twenty-four hours of life, 18 underwent back closure following

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treatment of superficial infection of the myelomeningocele. One infant was admitted after having had the back lesion closed early at another hospital, and 1 child still has an unrepaired myelomeningocele.

Our primary neurosurgical approach has been to close the myelomeningocele because in the majority of patients this was an open, draining lesion. Size and location of the defect were not determinants as to whether or not the back should be closed; an attempt was made to close all lesions. Ten myelomeningoceles were thoracic, 3 lumbar, 35 lumbosacral, and 2 purely sacral. The largest defect was 10 by 9 cm., the average size was 5 by 5 cm. with 18 smaller and 22 larger than the average. Only 4 patients had "normal" motor, sensory, and sphincter performance. Fifteen were classified as moderately impaired with sensory and motor levels at the fourth and fifth lumbar vertebrae, and 31 were severely impaired with all function lost below the second lumbar segmental level. Wound healing of the myelomeningocele closure was primary in 29. In the remaining 19 patients, who had closure of the back lesion, healing was secondary with either loss of part of a rotation flap or infection causing skin necrosis and sloughing. Eight of these 19 wounds occurred in patients who underwent closure after the age of twenty-four hours, 11 in infants operated on during the initial twenty-four hours of life.

Forty-one patients were shown to have hydrocephalus and were treated by means of the Holter V-J* shunt device. In only 10 of these infants was the head circumference above the ninetieth percentile for the age. Twenty-three of the remaining 31 patients who were treated for hydrocephalus were shown to have moderate to marked ventricular dilatation on air study despite normal head circumference. In 16 of these patients the site of cerebrospinal fluid obstruction was at the aqueduct of Sylvius. The cerebrospinal fluid was shunted in 8 of the 31 patients because of a rapid change of head circumference, but with the head circumference at the time of shunting still within the normal range for the age, tightness of the anterior fontanelle, or both of these conditions associated with leakage of cerebrospinal fluid from the myelomeningocele repair wound. Aqueduct stenosis was found by air studies in 7 additional children who had large heads. Therefore, in 33 patients studied with air, 23 or 70 per cent had blockage of the aqueduct. This frequent association of stenosis with the Arnold-Chiari malformation in myelomeningocele is of interest.

TO DEMONSTRATE THAT *an intensive program of treatment and prophylaxis of infants born with myelomeningocele by a group of specialists, if begun immediately after birth and continued on a regular basis, could decrease the mortality rate and length of hospitalization as well as enhance the quality of survival, 50 consecutive infants were studied. The primary neurosurgical approach was to close the myelomeningocele. Forty-one patients had hydrocephalus and were treated by the Holter V-J (ventriculojugular) shunt device. The survival rate over three years was 80 per cent.*

In all cases initial urologic assessment included urine culture by catheterization and an intravenous pyelogram. Repeat pyelograms were obtained as indicated by the bacteriologic results and frequent urinalyses. In the initial study 37 infants had normal kidneys and ureters whereas 13 had hydronephrosis and pyelonephritis. Applying pressure to the bladder was begun immediately and was carried on by the mother at eight- to twelve-hour intervals after discharge. All children were given 50 mg. of a soluble sulfonamide per pound of body weight per day in two divided doses at twelve-hour intervals during the second week of life and were kept on this drug or a more appropriate urinary antiseptic thereafter. Kidney function did not enter into the initial decision to perform back closure since the intravenous pyelogram was not obtained during the first day of life. With such a program of urologic management, only 4 children have subsequently required tubeless cystostomies, and none have died of progressive kidney failure.

Orthopedic treatment has been directed toward immediate correction of foot deformity and contractures and later the correction of dislocations of the hip. The long-range goal of independent ambulation has been attained by all older patients, many requiring the aid of crutches and long leg braces.

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* Ventriculojugular shunt device.

Results

Length of hospitalization. In dealing with myelomeningocele, we strongly believe that early definitive treatment should be provided and the child returned to the family as soon as possible, so that he can fill the place created for him within the family during the pregnancy. The length of hospital stay during the intensive program outlined averaged thirty days. Thirty-three patients were in the hospital for less than thirty days and 17 patients for periods greater than thirty days.

Deaths. Six infants (12 per cent) died during the initial hospitalization from gram-negative septicemia and ventriculitis in all. Only 1 patient admitted and operated on during the first twenty-four hours of life died, on the fifteenth day, as compared with 4 in the group admitted and operated on after twenty-four hours of life. One child died prior to closure. This appears to be evidence supporting early closure. In addition, primary wound healing is to be anticipated after early closure with less need for protracted antibiotic and wound care. However, this could not be substantiated by our primary and secondary wound-healing figures. The 4 children who died after the initial hospitalization did so at one hundred ten days, one and a half years, two years, and two years two months, respectively. Two deaths resulted from complications of shunting, one from respiratory paralysis associated with laryngeal stridor, and one from unknown causes. All children in the last group were severely mentally impaired and in a noncompetitive group at the time of their death. The risk of death after the initial hospitalization, therefore, is in a ratio of 4:44 or approximately 9 per cent.

Hydrocephalus. In the 40 children who are still alive, 7 have had no need for V-J shunting according to the criteria stipulated previously. In the 33 children with shunts, who are survivors, 20 have required shunt revisions either because of a technical failure or because of symptoms of increased intracranial pressure, demonstrating a continued need for the device which had become short as a result of the child's growth. Are any of the 13 children who required no revision independent of their need for the shunt? Seven of these children are one year or older with the lower end of the shunt out of the right atrium, and they remain free of symptoms. In addition, 3 children who have had revisions at least once have had the shunt subsequently removed because of Staphylococcus albus septicemia in one, superior vena cava thrombosis in another, and a disconnected shunt in the third child. All are presently free of symptoms. This suggests that perhaps 10 of the total group of 33 are in the phase of "compensated hydrocephalus." Five of these conditions were initially diagnosed as aqueduct stenosis.

Developmental assessment. Twenty-five children have a D.Q. of 80 or above and are in the competitive range. The arithmetical mean of this group is 94, and one child who did not undergo shunting has a D.Q. of 125. The highest D.Q. in a child who has been treated for hydrocephalus is 98. Considered on the basis of the entire group of 40 children, 62 per cent therefore classed as competitive. No child in this group has died since the initial hospitalization and none has irreversible kidney damage. The four deaths since the end of the study were from the noncompetitive group with 15 children currently surviving in this group. The arithmetical mean D.Q. of this noncompetitive group is 65. Two of these children are in institutions, the others being cared for at home.

No child in the competitive group had a significantly enlarged head at birth compared with 7 children in the noncompetitive group. It would appear that an extreme degree of hydrocephalus at the outset is a poor prognostic sign.

Comment

When faced with the problem of an infant with myelomeningocele immediately after birth, early closure of the sac and the best approximation of neural continuity should be achieved in all instances. To postpone closure of the leaking sac is equivalent to a decision not to treat the child and makes all therapy more difficult and prolonged. Serious wound problems were not encountered in the present group of patients. Newer technics are being developed for the larger defects[2] so that no infant should be denied closure. If the back is closed within the first forty-eight hours of life, all subsequent management appears to be made easier; for there is no infection of the cerebrospinal fluid, and the hydrocephalus, which is present so frequently, can be assessed and treated early. Certainly, the length of hospitalization is shortened, allowing the child nearly normal entry into the home with acceptance of the abnormal child by the family. In comparing our results with a like group of infants in whom back closure was delayed until the hydrocephalus was treated,[3] fewer of our infants were lost because of infection, pointing to the continual threat of meningitis from the unclosed myelomeningocele. The present survival rate of 80 per cent is probably close to the best attainable and reflects the interest and attention of a group of specialists operating as a team in a birth defects center.

Summary

Fifty consecutive infants with myelomeningocele were treated by a group of specialists and followed in a Birth Defects Clinical Study Center. Early admission and closure of the back with shunting as soon as hydrocephalus was found have led to an early mortality rate of only 12 per cent and a three-year mortality rate of 20 per cent. The average length of initial hospitalization was thirty days. Of the surviving 40 children, 62 per cent have developmental quotients which would indicate that they have the potential for competitive, independent lives.

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Relationship of antibiotics to wound infection and enterocolitis in colon surgery

A study of 445 patients was undertaken by H. Azar, M.D., and T. Drapanas, M.D., and published in a recent issue of the *American Journal of Surgery,* to investigate the relationship of antibiotics given before and after colon operations to the incidence of wound infection and enterocolitis in the postoperative period. The salient conclusions are: The over-all combined wound and intraperitoneal infection rate was 19 per cent. The lowest rate of infection (11 per cent) occurred in patients who had preoperative orally administered antibiotics in addition to routine mechanical bowel preparation. This rate doubled (22 per cent) when postoperative systemic antibiotics were given those patients who had received preoperative intestinal antibiotics. The highest rate (36 per cent) occurred in patients who had only routine bowel preparation and were given systemic antibiotics after the operation. The highest incidence of postoperative staphylococcal enterocolitis (14 per cent) occurred in patients given both pre- and postoperative antibiotic therapy, while the lowest (3 per cent) was in patients in whom preoperative bowel antisepsis was omitted.

Careful mechanical cleansing of the colon plus a twenty-four- to thirty-six-hour period of preoperative preparation with oral antibiotics appears to offer the greatest protection against postoperative wound infection. Keeping the period of preoperative antibiotic administration relatively short does not appear to increase materially the incidence of postoperative enterocolitis. Apparently, the routine administration of systemic antibiotics postoperatively in patients who have received preoperative antibiotic bowel preparation greatly increases the hazard.

A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Current Status of Cardiac Surgery*

Part I

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THE MODERN ERA in cardiac surgery began in 1951 when Dennis *et al.*[1] attempted to repair an ostium primum septal defect using cardiopulmonary bypass. Two years later Gibbon[2] successfully employed this technic to close a secundum atrial septal defect. The growth of cardiovascular surgery thereafter has been spectacularly rapid and unmatched by any other area of medicine. Within a few years the basic principles of perfusion were established, and methods for correction of almost every type of congenital and acquired defect were developed. In recent years new concepts have continued to evolve but at a less explosive rate. Present major efforts are directed toward modifying established technics of perfusion and surgery and, of equal importance, establishing the proper application of these technics to cardiac disease.

Preoperative evaluation and management

Congenital heart disease usually represents a problem of correction of abnormal cardiac structure. If there is no associated pulmonary vascular disease, a satisfactory anatomic repair usually is followed by a satisfactory postoperative course. These defects are commonly repaired early in life when the myocardium itself is relatively normal. Rheumatic heart disease, by contrast, affects the myocardium as well as the valves. The heart muscle may be damaged by repeated bouts of carditis as well as through abnormal hemodynamics. Finally, coronary artery disease may further embarrass myocardial function. The New York Heart Association classification is a clinical evaluation of patient disability which is more useful in describing adult than childhood cardiac disease. Often it does not correlate at all with operative risk or the long-term benefits of surgery. It is a static classification and does not describe the time course of the deterioration of the patient's condition. A prime example is the Class I patient with aortic stenosis and a single episode of syncope, who suddenly dies.

The general problems of preoperative evaluation and management are: evaluation of the cardiac pathologic condition,

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optimum preparation of the myocardium, fluid and electrolyte management, respiratory system evaluation and therapy, protection against infection, and psychologic evaluation and support.

Determination of cardiac disease. Very few patients are operated on only on the basis of history, physical examination, and routine laboratory studies. Almost all are additionally studied in the cardiac catheterization laboratory. Conventionally, precise measurements are made of blood flow and pressures and the cardiac and great vessel anatomy outlined by angiocardiography. In congenital heart disease these studies are usually adequate to determine the type of surgery to be performed and to evaluate the operative risk. In contrast, however, such data are often inadequate in acquired heart disease because they do not indicate the degree to which poor heart muscle function is contributing both to the clinical picture and to the abnormal catheterization pressure and flow values. There are no methods known for measuring the extent of cardiac muscle dysfunction.

However, by a combination of clinical observation and laboratory tests, it is often possible to suspect that significant myocardial disease is present. Valvular surgery may not improve such patients, and, in fact, they often do not survive the operation. In several of our patients an abrupt change in the clinical course has been the best indication, in retrospect, of an exacerbation of acute rheumatic carditis. Selective coronary arteriography should occasionally be performed to delineate the extent of coronary artery disease. Cannulation of the coronary sinus allows for measurement of coronary blood flow and various parameters of myocardial metabolism, but these data are usually not helpful in clinical evaluation preoperatively. With severe coronary artery disease there may be evidence of anaerobic myocardial metabolism; the myocardium at rest, or usually in response to an isoproterenol infusion, may either extract less lactate from the arterial blood or produce lactate.[3] However, with mild coronary artery disease and congestive heart failure due to other causes, both myocardial blood flow and lactate metabolism are usually normal.[4] No specific enzymes or other products in the coronary sinus blood that indicate muscle dysfunction have been found. The ability of the heart to pump blood is dependent on the summated contractibility of the individual myocardial fibers. As they contract, wall tension increases, intraventricular pressure rises, and blood is ejected. By simultaneously measuring intraventricular pressure and ventricular volume changes by cineangiography, the associated rate of change of ventricular wall tension can be estimated.[5,6] Measurement of ventricular wall tension in response to exercise and pharmacologic agents probably will become a widely used method for evaluating myocardial function in certain patients.

Myocardial preparation. Normal cardiac muscle fibers contract to eject a normal cardiac output at a certain fiber length. There is a sequential depolarization pattern that usually is generated from the sino-atrial node. Diseased muscle fibers can maintain contractile force by hypertrophy or increased fiber length, and often the normal pattern of sequential activation is disturbed by an abnormal cardiac rhythm. Although atrial fibrillation is the most common rhythm of diseased hearts, all varieties can occur, including fatal ventricular fibrillation.

Digitalis improves the contractility of both the normal and abnormal myocardium; it would seem axiomatic that maximum effect from digitalis should be obtained pre- and postoperatively.[7] Most groups, however, use digitalis sparingly before and after open-heart surgery because they believe that the drug predisposes toward arrhythmias, especially ventricular irritability, after heart-lung bypass.[8]

Digitalis increases the permeability of myocardial cells to sodium and potassium and increases the rate of depolarization of these cells.[9] Toxic levels of digitalis will produce spontaneous discharge of myocardial cells and arrhythmias. There are many other factors that also cause increased myocardial irritability—hypokalemia, hypoxia, hypercapnea, trauma, and excessive stretch. Many of these are found postoperatively in the myocardium, and under these circumstances subtoxic dosages of digitalis may act synergistically to produce arrhythmias.

During heart-lung bypass, a relatively small amount of digitalis is probably lost from the body. Cardiac glycosides are strongly bound to tissues, and only a small fraction of the total body reservoir is in the blood. Lukas and Peterson[10] have pointed out that complete blood volume replacement would only remove with it about half the daily maintenance dose of digitoxin. Although similar quantitative data are not available for other digitalis preparations, it is almost certain that heart-lung bypass does not significantly change the body stores. The arrhythmic effects of digitalis, therefore, are probably not due to absolute toxic levels, but represent an arrhythmic effect of the drug on a previously diseased myocardium further altered by heart-lung bypass so that many of the additional factors mentioned also are operative. Our approach has been to maintain an optimal preoperative level of digitalis combined with supplemental potassium in those patients who have required digitalis. We do not administer digitalis to those patients who have not received the drug.

Steroids in massive doses have a poorly understood beneficial effect on many disease states. They protect dogs against a variety of experimental stresses, notably endotoxin shock.[11] They specifically increase myocardial contractility and probably lessen the vasoconstrictive effect of catecholamines.[12,13] They have been recommended for patients undergoing open-heart surgery.[14] We have treated seriously ill patients preoperatively with high levels of corticosteroids and have continued these drugs for three to four days postoperatively. We believe that the patients who received the steroids had a better postoperative course, and we continue to use them in the bad-risk patient. Our studies of coronary sinus blood have failed to show any differences in myocardial metabolism during the postoperative period in the steroid-treated patients as opposed to the non-treated patients.

FLUID AND ELECTROLYTE MANAGEMENT. Heart disease associated with cardiac failure causes significant alterations in body water and electrolytes. The extracellular changes are more marked than the intracellular. Interstitial water and plasma volume are increased. Total body sodium and water are also increased, and probably only a very small amount of this increased sodium or chloride enters the cells; it is extracellular.[15] There is generally slight to moderate hyponatremia, indicating a greater excess of water than sodium. Epstein *et al.*[16] have studied patients before and after vigorous diuretic therapy. Dyspnea was relieved, presumably because of less pulmonary vascular congestion. However, cardiac output also decreased, probably because of the decreased plasma volume and associated diminished ventricular diastolic filling.

The intracellular whole body alterations are less marked. Tissue wasting occurs with long-standing disease, and there is associated loss of potassium and intracellular water.[17] In experimentally induced cardiac failure in animals, similar intracellular changes occur.[18] Intracellular potassium concentration is either unchanged or slightly decreased, with similar values for skeletal and cardiac muscle. In human beings, intracellular potassium concentration followed a pattern similar to the one in experiments on animals.[19] Interpretation of the contribution of failure, per se, to intracellular potassium concentration is complicated because almost all these patients have received diuretics and digitalis. Many of the diuretics cause potassium excretion, and severe total body depletion can be produced. In some instances, actual myocardial damage has occurred.

As a practical matter, intracellular potassium depletion of varying degrees is present, especially in the patient treated vigorously with diuretics. There are no published data on the intracellular concentration of potassium in cardiac muscle excised at open-heart surgery.

There are seemingly contradictory data relating intracellular potassium concentration to myocardial performance. Histologic lesions can be produced by experimental potassium depletion.[20] However, pharmacologic interventions, such as isoproterenol, or mechanical interventions, such as transfusion, that increase myocardial contractility are associated with a net loss of potassium from the myocardium.[21] It has been suggested that there are two intracellular potassium moieties: one associated with cellular integrity and the other with the contractile mechanism.

A reasonable plan of preoperative diuretic therapy has two main objectives: one related to total body water and the other to electrolyte composition. Enough water should be removed to eliminate the signs and symptoms of pulmonary congestion. The patient should not be "dried out," because the associated loss of plasma volume will probably reduce cardiac output. Furthermore, vigorous diuretic therapy will cause potassium loss. It is safe to assume that patients on prolonged diuretic therapy will have a net potassium deficiency, and, therefore, this ion should be administered preoperatively.

Respiratory care. Patients with pulmonary congestion from mitral stenosis or with pulmonary overcirculation from left to right cardiac shunts frequently have decreased vital capacity and increased airway resistance.[22] Occasionally a patient with mitral stenosis may demonstrate marked pulmonary fibrosis with intrapulmonary shunting and may appear to suffer from primary pulmonary disease.

Most postoperative pulmonary complications may be minimized by careful preoperative care. Tobacco smoking appears to increase the already high airway resistance and must be discontinued at least four weeks prior to surgery. Preoperatively, the patient should be instructed in the technic of coughing.

Prophylaxis against infection. Two types of infection are seen in cardiac surgery: local suppuration, usually wound infection, seen in any kind of surgery, and endocarditis. Endocarditis based on an intracardiac prosthesis is usually fatal; almost without exception, once a prosthetic valve or patch becomes infected it cannot be sterilized, and sooner or later the patient dies from infection. Rarely, the infected prosthesis can be replaced without further episodes of infection. Any reasonable prophylactic measure is justified because of the catastrophic nature of such infections.

Transient bacteremias continually occur in healthy individuals. A common source is dental infections. These organisms are normally cleared by the reticuloendothelial system without establishing a focus of infection. Rodbard[23] found that endocarditis occurs in areas of turbulence with high-velocity blood flow. High-velocity flow reduces lateral pressure, eliminates normal blood flow from lumen to intima, and produces a local area susceptible to bacterial colonization. The addition of any foreign material into a wound greatly increases the ease of infection. Elek and Conen[24] found one silk stitch reduced the number of staphylococci necessary to produce an infection by a factor of 10,000.

The incidence of endocarditis in closed-heart procedures is about 2 per cent.[25] The incidence of endocarditis occurring after insertion of a prosthetic valve in patients not receiving prophylactic antibiotics is reported to be 4.6 to 10 per cent.[26,27]

Aortic valve prostheses become infected more commonly than valves inserted into the mitral or tricuspid position.[26,27] Perhaps the turbulent high flow across the valve is responsible for the higher incidence of infection, but an alternative explanation is that the aortic prosthesis, commonly positioned from above, is more vulnerable to airborne contamination. The consensus of most investigators is that prosthetic valve infection usually begins at the operating table. Firor[28] indicated that the air in the operating room and the blood from the blood bank were probable sources. Both have been found to harbor skin contaminants. The commonest organism found on prosthetic valves in patients with endocarditis is Staphylococcus albus, coagulase negative, normally regarded as a nonpathogenic skin saprophyte.

Burke[29] has demonstrated that to be effective, a titer of antibiotic must be present for at least one hour prior to contamination. Antibiotic therapy begun at the time of operation or immediately thereafter was found by Kittle and Reed[30] to be associated with an increased incidence of endocarditis. Nelson *et al.*,[31] Amory,[32] and Herr *et al.*[33] report that they have eliminated valve-based endocarditis by instituting a regimen of heavy preoperative administration of antibiotics.

Our regimen consists of penicillin 600,000 units, streptomycin 0.5 Gm., and methicillin 1 Gm. administered intramuscularly every twelve hours and begun twenty-four hours preoperatively in adult patients scheduled for open-heart surgery. Dosages are adjusted for pediatric patients, and drug allergy may require substitution of another agent. These antibiotics are continued throughout the operation and for five days thereafter, if no prosthesis is inserted. When a prosthesis has been used, the streptomycin is discontinued after five days, but the penicillin and methicillin are continued intravenously for ten days in doses of 6 million units and 2 Gm. daily, respectively. Oral sodium oxacillin is then given for two and one-half months. We assume the valve fabric surface to be endothelial by this time. On this regimen neither superinfections nor the emergence of resistant strains have occurred.

Another approach to the prevention of prosthetic valvular infection initiated in the operating room is the delivery of particle-free air to the operative field. A clean room equipped with high-efficiency particle filters can filter most particles above 0.3 micron and remove all bacteria and many viruses. Such units are used for the postoperative management of organ transplant recipients and may become routine in cardiac surgery.[34]

Psychologic preparation. Transient psychiatric disorders, usually confusion and hallucinations, occur in 20 to 40 per cent of adults after open-heart surgery. They are rare in children. The incidence after closed-cardiac procedures is considerably lower. The reasons for the high incidence following open-heart surgery are not understood. There are undoubtedly functional factors, but recent evidence suggests that there are also organic brain changes induced by perfusion.[35,36] Brain metabolism was shown by Stone *et al.*[37] to become anaerobic during the course of heart-lung bypass in human beings.

Most adult cardiac surgical patients have had to make emotional and physical adjustments to their disease for many years. Postoperatively they are in strange, frightening surroundings and get little or no sleep for several days and nights. Preoperative psychiatric evaluation and an electroencephalographic study are made on most of our open-heart surgical patients. The psychiatric evaluation aids greatly in managing these patients postoperatively. Of equal or greater importance, thorough psychiatric examination is absolutely necessary if the presence of organic brain damage is to be documented postoperatively.

Management of open-heart surgery

The development of the equipment and technics of perfusion was marked by many obvious problems, such as neurologic damage and red blood cell destruction. At present, most of these problems either do not exist or are less important. Several types of open-heart operations are now performed with a mortality rate of less than 5 per cent, making it attractive to suppose that heart-lung bypass per se does not impose an additional morbidity beyond that of the surgical manipulation. Actually, heart-lung bypass is an abnormal physiologic state. It induces many changes in the body, most of which have been incompletely studied. The greatest handicap to the understanding of perfusion in human beings has been the use of the dog as an experimental subject. Statements concerning clinical heart-lung bypass should be based on precise measurements made during open-heart surgery in man. Such data are still very meager.

Equipment. The perfusion machine is generally called the pump oxygenator because it must substitute for the pumping action of the heart and the gas exchange in the lungs. Almost all clinical perfusions are carried out with roller pumps delivering an almost pulseless flow. Finger pumps deliver a slightly more pulsatile flow. Initial studies indicated that distribution of blood flow to various organs and peripheral vascular resistance were the same with pulsatile and pulseless flow. Laboratory and clinical perfusions were successful with pulseless flow, and it became generally accepted that nonpulsatile flow was satisfactory. More recently, investigators interested in preserving isolated organs for transplantation have demonstrated that tissue function is better preserved with pulsatile rather than with nonpulsatile flow.[38] We have begun to use pulsatile flow in our clinical perfusions and have established its safety. We are presently making quantitative measurements comparing the effects of pulsatile versus nonpulsatile flow on several postoperative parameters, among them coronary blood flow, myocardial metabolism, and vascular and extravascular fluid volumes (Fig. 1).

Mechanical oxygenators all utilize the same principle as lung tissue: to spread the blood onto a thin film to facilitate diffusion of oxygen into and carbon dioxide out of, the blood. In the lung the freely permeable alveolar capillary membrane keeps the

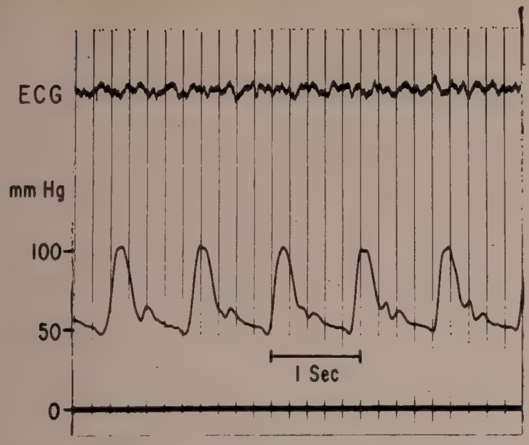

FIGURE 1. Tracing of radial artery obtained during open-heart surgery, utilizing pulsatile perfusion. Shows cardiac rhythm is vertricular fibrillation; pump rate was about 62 strokes per minute with 70-ml. stroke volume, giving total minute flow of about 4,300 ml.

blood from a direct gas interface, and the ideal oxygenator probably should allow diffusion through such a membrane rather than through direct contact of blood with oxygen. Direct contact of blood with gas alters proteins[39]; the full extent of the harmful effects has not been documented. Membrane oxygenators have been used clinically but are cumbersome, expensive, and have not gained wide acceptance. The usual clinical oxygenators have employed bubbles, rotating disks, and vertical screens to achieve a thin blood film in contact with oxygen. Bubble oxygenation initially caused embolic damage either from the silicone antifoam or possibly from uncleared bubbles. Most groups today employ rotating disk oxygenators, although some surgeons have employed vertical screen oxygenators. Successful perfusions of more than four hours are possible with this equipment, but, in general, survival has been less frequent as the duration of perfusion increases. This is partly caused by the more complex cardiac pathologic condition requiring longer periods for repair, but also there probably is a deleterious effect from perfusion per se. Recently, bubble oxygenators have been improved so that there are no clinical evidences for either antifoam or gas emboli, and the oxygenation capacity has been increased.[40] Many surgical groups have used these newer bubble oxygenators with no apparent increase in morbidity or mortality rates. Probably a practical membrane device will be developed in the future and will become the accepted means of gas exchange. The major advantage of the bubble type oxygenators now in use is that much less priming volume is required compared with either disk or screen types.

Perfusate. Initially, freshly drawn, heparinized whole blood was used to prime the pump oxygenator. It has since been demonstrated that forty-eight-hour-old citrated blood can be used if heparin is added before use, and the citrate is neutralized with calcium. The citric acid, trisodium citrate, and dextrose solution of citrated blood induces about a 20 per cent fall in hematocrit and a similar dilution of osmotically active plasma proteins. Bank blood of this age is acidotic, so that sodium bicarbonate or tromethamine (THAM) should be added.[41]

Many cardiac surgeons believe that the massive transfusion of homologous blood is deleterious, and the term "homologous blood syndrome" has crept into the literature.[42] This is unfortunate because there are almost no quantitative data from perfusions in human beings pertaining to the effects of homologous blood transfusion. The genesis of the term was the observation that dogs develop an anaphylactic-like reaction on receipt of blood from another dog.[43,44] The most prominent feature is a rise in portal venous pressure, but there is also generalized increased capillary permeability, and the reaction simulates the response to exogenous or endogenous histamine.[45] By contrast, in human beings portal pressure does not rise at the onset of heart-lung bypass, and the distribution volumes of red blood cells and albumin at the beginning and just before the conclusion of clinical perfusion do not change.[46,47] Therefore, the two prominent features of the so-called "homologous blood syndrome" do not apply to heart-lung bypass in human beings.

Litwak *et al.*[48] have reported that red blood cells become sequestered after open-heart surgery and later return to the circulation. Others have shown that measured blood volume is less than would be expected from careful monitoring of blood loss and replacement.[49] Undoubtedly, one factor common to all studies of postoperative blood volume is that there is considerable hemorrhage which does not exit through the drainage tubes in the chest. No doubt there are other alterations induced by heart-lung bypass, and this subject deserves further careful study. Conclusions should be based on human data; the responses of dogs to transfusion or perfusion should not be assumed to be in any way similar to human responses.

Most surgeons reduce the hematocrit of the priming volume of the pump oxygenator by adding fluids other than blood. Virtually no quantitative studies have been made regarding the effects of hemodilution during heart-lung bypass in human beings. The striking empirical observation is that survival rate seems to be similar to that obtained without hemodilution.

The minimal dilution is the obligatory 20 per cent fall of hematocrit occurring with the use of blood with citric acid, trisodium citrate, and dextrose solution. At the other extreme, Neville, *et al.*[50] have completely filled their rotating disk pump oxygenator with 5 per cent dextrose and water, causing a fall in hematocrit during perfusion to a mean of 24 per cent. Many groups using bubble oxygenators use a nonblood priming volume which is less than that required by disk oxygenators. The nature of the diluting fluid varies widely, the only requirement being that the priming solutions have the same osmotic pressure as plasma. Dextrose and water or electrolyte solutions, alone or in combination, are used. Some groups add serum albumin to provide for colloid osmotic pressure.

The major reason why hemodilution is employed is that it reduces the demands for whole blood. The risk of serum hepatitis, estimated to be from 2 to 12 per cent in patients undergoing open-heart surgery, should be reduced.[51] This is an important consideration since the prophylatic use of gamma globulin has not lowered the mortality rate from hepatitis.[51,52]

It is claimed that hemodilution provides better tissue capillary perfusion by lessening red blood cell sludging due to rouleaux formation.[53] The only direct observations in human beings showed that retinal vessel flow was better during low flow, hypothermic perfusion, when the hematocrit was reduced by a priming solution that included low molecular weight dextran.[54] Low molecular weight dextran is probably not as effective in reducing rouleaux formation as was initially believed.[55] Replogle, Kundler, and Gross[56] found that the improvement in regional blood flow during experimental hemorrhagic shock after a low molecular dextran administration was due to hemodilution. The dextran molecule itself had no effect, because when the dextran was administered with packed red blood cells, there was no fall in hematocrit, and blood flow did not improve.

Anemia is well tolerated in the otherwise healthy human being or experimental animal. The reduced oxygen-carrying capacity of the blood is compensated for by increased cardiac output and increased oxygen extraction from the blood by the tissues. Such studies have not been made in human beings during bypass.

Neville *et al.*[50] found that the blood urea nitrogen levels were lower postoperatively following hemodilution perfusions. It is a general observation that urine output is increased following hemodilution. These findings do not mean, however, that renal function is necessarily better.

It is very difficult to evaluate the effects of hemodilution on body water and electrolytes, because the nature of hemodilution and management of perfusion vary among surgical groups. The degree of red blood cell dilution varies. The diluents contain varying quantities of electrolytes, dextrose, and osmotically active molecules, such as albumin, depending on individual preference. Finally, the level of systemic venous pressure during bypass will affect capillary pressure and transcapillary water exchange. Venous pressure measurements during perfusion have not been included in studies of body fluids after clinical heart-lung bypass.

This is an important area for further studies because, although the effects of hemodilution seem to be minor, whether they are beneficial or deleterious would be important to survival in the critically ill patient.

MANAGEMENT OF PERFUSION. During anesthesia the metabolic rate and body oxygen requirements are reduced, and consequently the cardiac output necessary to deliver adequate oxygen to the tissues is also reduced. Data obtained from perfusions in human beings and dogs indicate that a flow rate of from 2.2 to 2.5 L. per minute per square meter of body surface area will deliver sufficient oxygen to the body when the body temperature is normal.[57] If the body temperature is reduced, oxygen requirements and blood flow are also reduced. Some of the earlier heart-lung machines could not deliver a flow of 2.5 L. per minute per meter of surface area, and refined hypothermic technics were developed to overcome this handicap. All basic types of pump oxygenators are now commercially available and allow "high-flow" perfusion at normal temperature. Almost all surgical teams today perfuse at rates over 2.2 L. per minute per square meter of body area. The fact is inescapable that if less oxygen is delivered to the tissues than is required, metabolic acidosis will develop as lactic acid is formed. Many groups induce moderate hypothermia of from 30 to 34 C. with a heat exchanger in the system, using this in conjunction with high-perfusion flow. We prefer this because it adds a safety factor. If there should be malfunction of the equipment or a technical error, total arrest of perfusion can be sustained for several minutes without brain damage.

Arterial blood from the pump oxygenator usually is introduced into the femoral or iliac artery, perfusing the aorta in a retrograde direction. The aortic blood flow is distributed similarly to the various arterial branches whether flow is in the normal direction or retrograde. An infrequently reported but not uncommon complication of femoral or iliac perfusion is retrograde aortic dissection.[58,59] This can occur either from intramural positioning of the catheter tip or dissection of proximal atheromatous plaque. Careful technic will eliminate the former, but there is no certain method to protect against plaque dissection. This is a particular problem in older patients with acquired heart disease in whom high-flow perfusions of several hours must be delivered into sclerotic vessels. Cannulation of the proximal ascending aorta avoids the possibility of retrograde dissection and also saves making a separate incision. We have routinely cannulated the ascending arch with a tapered flexible number 18 F. plastic cannula for the past two years without any complications.[60] The cannula is introduced through a stab wound and secured by slight tension from a Penrose drain passed around the aorta; no sutures are needed in the aortic wall.

The oxygenator not only introduces oxygen into the blood but also must eliminate carbon dioxide. With most oxygenator designs excessive carbon dioxide removal can occur, resulting in severe alkalosis during bypass. This will cause bicarbonate excretion, and at the completion of bypass, if the arterial carbon dioxide tension returns to normal, metabolic acidosis will occur. The methods of controlling carbon dioxide tension are different for each type of oxygenator, but satisfactory levels can be obtained by proper attention to this important detail of perfusion.

The role of cardiopulmonary bypass in the production of postoperative pulmonary insufficiency is not clear. Hedley-White *et al.*[61] found that physiologic shunts averaged 13 per cent of cardiac output in a series of 18 patients studied after heart surgery. They believe that the most important single cause of these shunts was diffuse atelectasis. Their patients, studied after closed-heart surgery, showed shunts equal to those in patients operated on with cardiopulmonary bypass.

Lung distensibility (compliance) was studied by Blair *et al.*[62] during and after cardiopulmonary bypass. They found some cases with improved compliance during bypass and could demonstrate no significant deterioration in elastic properties of the lung in perfusions of less than two and one-half hours. Ellison and Ellison,[63] however, reported a consistent fall in pulmonary compliance in the immediate postoperative period, associated with an increase in arteriovenous shunting. Patterson *et al.*[64] related disturbance of lung mechanics during and after perfusion to ventilation of the lungs during bypass with gas mixtures that did not contain carbon dioxide. The addition of carbon dioxide improved lung compliance and decreased work of breathing. Guest *et al.*[65] could not find evidence for decreased surfactant activity after cardiopulmonary bypass. They believe that the decreased surfactant activity reported by other investigators may be more apparent than real. Kirklin[66] has reviewed the problem of pulmonary dysfunction after open-heart surgery and concludes that multiple factors are involved: intrapulmonary hemorrhage caused by heparin and operative trauma, fat and fibrin emboli in the pulmonary capillaries, pulmonary edema caused by increased capillary permeability, preoperative lung disease, and management of the details of perfusion.

The term "pump lung" was coined during the early years of open-heart surgery. It is an imprecise, all-inclusive term. Most of the respiratory disorders were due to improper perfusion technics, which were subsequently corrected. The major error was to allow left atrial distention through failure to decompress the left side of the heart, in turn causing pulmonary vascular congestion.

However, there probably still remain a small number of patients who may properly be said to have suffered "pump lung," most with cyanotic congenital heart disease, usually tetralogy of Fallot.

In the most extreme cases adequate arterial saturation cannot be achieved, even when 100 per cent oxygen is delivered by a volume-cycled respirator through an endotracheal or a tracheostomy tube. Breath sounds may be normal, suggesting that gas is moving in and out of the terminal bronchioles, while the terminal alveoli are collapsed or fluid filled.

The etiology of this diffuse atelectasis is unknown but may be related to the altered relationships between the bronchial and pulmonary blood vessels in these patients. During heart-lung bypass, the pulmonary vessels are not perfused. Experimentally, lung compliance is better preserved when the lungs are perfused during bypass, and we have shown that the perfused vascular bed serves as a structural support that facilitates terminal airway opening.[67,68] The role of altered surfactant may be important in this special group.

Embolization. The entrance of room air into the circulation during bypass is dangerous because air contains 80 per cent nitrogen. Such bubbles are slowly absorbed from their site of lodgement, and serious tissue-bed anoxia can occur. There have been two approaches to the problem: prevention of entrance of gas into the circulation and replacement of the ambient gas around the operative field with soluble carbon dioxide so that any gas emboli would be rapidly absorbed. At first, cerebral gas emboli were the chief concern, but coronary artery gas emboli are also deleterious, since postoperative myocardial dysfunction can be caused by inadvertent coronary gas embolization.[69] This usually occurs when the aortic root is temporarily cross clamped, and air enters the proximal root. When the clamp is released, air can be forced into the coronary arteries. This can be prevented by placing a small vent into the aorta just above the valve and below the cross clamp and flushing this vent with carbon dioxide prior to release of clamp. Slow release of the clamp promotes release of gas through the vent, and if any gas does reach the coronary arteries, it will be the soluble carbon dioxide.

Most groups have given up flooding the field with carbon dioxide. The carbon dioxide concentrations thus obtained are low, and a high nitrogen content remains. The carbon dioxide returned to the oxygenator by the coronary suction system may cause elevated arterial carbon dioxide tension.

Postoperative management

Postoperative management begins in the operating room at the conclusion of bypass with measurement of urine output, assessment of myocardial function, and evaluation of the respiratory status by arterial gas analysis. Much additional valuable information can be obtained by physical display of vascular pressures on an oscilloscope, rather than merely read as systolic, diastolic, or mean pressures on a dial.

Blood volume management. Administration of blood postoperatively is governed by two factors: replacing the volume lost through hemorrhage and maintaining an optimal vascular volume which may be different from the "normal" volume.

Vascular tone is increased immediately after heart-lung bypass, and the veins are less distensible.[70] Most of the blood volume is contained in the veins so that with decreased distensibility less blood volume is required to achieve the same venous pressure. Later, as venous tone decreases, transfusion is necessary to maintain venous pressure and venous return. In a sense, the venous vascular bed expands and must be filled by continuing transfusions.

Severe postoperative bleeding occurs infrequently; its most common cause is failure to secure good surgical hemostasis. There are, nevertheless, several poorly understood defects in hemostasis introduced by heart-lung bypass. Deficiencies of factors V and VII and platelets have been measured but do not correlate with the amount of postoperative hemorrhage.[71] Destruction of blood coagulation elements probably is not important because Replogle, Kevy, and Gross[72] demonstrated no increased bleeding when the blood left in the pump oxygenator was used for a second bypass procedure. We have demonstrated that simple admixture of the homologous bloods from several donors initiates fibrinolysis prior to actual bypass.[73] This can be prevented by adding epsilon aminocaproic acid to the priming volume. This agent blocks the conversion of profibrinolysis to fibrinolysin.[74] Trasalol, a beef pancreatic extract that directly inactivates fibrinolysin, can also be added to the priming volume to inhibit fibrinolysis.[75] Blood loss, measured postoperatively, was not greater in those patients receiving either or both of these agents as compared with patients not receiving them, so that there is probably little practical importance to the measurable fibrinolytic activity.

The incidence of severe postoperative hemorrhage is greatest in patients with cyanotic congenital heart disease. This is probably caused by the collateral systemic-pulmonary arterial vessels, making surgical hemostasis difficult. There is no reason to believe that these patients have a specific coagulation defect. They do not bleed excessively after other operations, such as tonsillectomy.

Respiratory care. Fatal postoperative pulmonary complications were common in the early days of open-heart surgery and generally were classified as the "pump lung" syndrome. These problems were largely related to failure to decompress the pulmonary circulation during bypass, and now the incidence of such complications is much lower. Nevertheless, maintaining satisfactory respiratory function is one of the major postoperative problems. Theories concerning the causes of this difficulty have been discussed; the goal of therapy is to assure that the lungs carry out their dual functions of oxygenation and removal of carbon dioxide.

Many patients breathe easily and are able to maintain satisfactory arterial oxygen and carbon dioxide levels after open-heart surgery. In some patients, however, the effort of respiration is considerable, and respiratory excursions often are inadequate to achieve normal blood gas levels. Damman *et al.*[76] recommended that patients be kept on a respirator postoperatively to insure adequate ventilation and to lessen the work of breathing. We do this routinely on all adult patients, leaving the endotracheal tube in place and controlling ventilation with a piston-type respirator. The endotracheal tube is surprisingly well tolerated if the patients are adequately sedated; we prefer a combination of intravenous meperidine hydrochloride and promethazine. A further advantage of the respirator is that the lungs may be periodically maximally inflated, the so-called "sigh maneuver," thereby expanding atelectatic lung units, improving compliance, and decreasing veno-arterial shunting.[77] Frequent measurements of arterial pH and oxygen and carbon dioxide tensions should be made irrespective of whether or not the patient is on a respirator.

Fluid and electrolyte management. Postoperative fluid and electrolyte therapy should be based on the body water and electrolyte status that is present after bypass and the functional status of the kidneys.

The higher incidence of renal failure early in the development of open-heart surgery was presumably related to excessive hemolysis and acidosis secondary to poor perfusion technic, leading to deposition of acid hematin in the renal tubules. Renal failure is now rare; when it occurs, it is generally secondary to poor cardiac output and decreased renal blood flow. Usually it accompanies progressive, fatal myocardial failure. Transient elevations of blood urea nitrogen commonly occur in older patients, and if cardiac output is satisfactory, no specific therapy is required. Peritoneal dialysis has been recommended for postoperative renal failure; however, this may be ineffective in severe cases.[78] Tissue catabolism may be greater after open-heart surgery than after other major operations, in part caused by breakdown of red blood cells traumatized during perfusion. The build up of serum potassium, urea, and the other unidentified toxins may be extremely rapid, and even hemodialysis may not control the problem.

There are very few data concerning the alterations of body water and electrolytes after heart-lung bypass, and the values reported are not in agreement. Data must be related to the conditions of bypass which might affect water and electrolyte behavior during perfusion. These factors were discussed earlier and include the type of perfusate and its colloid osmotic pressure, the venous pressure of the perfusion versus the preoperative venous pressure, and the type of flow employed whether pulsatile or nonpulsatile. During the first few postoperative days, we administer maintenance fluids at 500 ml. of 5 per cent dextrose and water per twenty-four hours per square meter of body surface area. This should account for the difference between insensible water loss and the metabolic production of water. Urine volume is replaced volume for volume with the same solution, up to a maximum replacement of 100 ml. per hour. A total of 20 mEq. of potassium are added to each 500 ml. of intravenous fluids, if the serum potassium concentration is normal, and 40 mEq. are added if the serum potassium is below 4 mEq. per liter. This regimen has resulted in satisfactory renal function and essentially normal serum electrolyte values. In small children, the maintenance fluid is given as one-half dextrose and water and one-half lactated Ringer's solution. This empirically derived regimen will be changed if more complete knowledge regarding total body fluid and electrolyte values so dictate.

Circulatory system management. The management of arrhythmias and the maintenance or augmentation of myocardial contractility are the major problems in the postoperative management of patients following open-heart surgery. The most common arrhythmias are supraventricular tachycardias. A rapid ventricular rate seriously compromises cardiac output, while increasing cardiac work and producing a net oxygen deficiency.[79] This is particularly marked in patients with prosthetic valves, since these valves do not function adequately at high ventricular rates. Occasionally patients with rheumatic heart disease have truly intractable supraventricular tachycardia preoperatively. In such a patient we electively divide the bundle of His at the time of aortic and mitral valve replacement and control the ventricular rate postoperatively with a permanent pacemaker.[79]

The ventricular rate in atrial fibrillation generally can be controlled with ouabain or deslanoside given intravenously. If the circulatory status is poor, immediate correction should be attempted with electrical cardioversion. Ventricular irritability is uncommon, even when digitalis is administered, if adequate potassium has been given pre- and postoperatively. Lidocaine 1 mg. per kilogram administered intravenously will control isolated ectopic beats and may be given in a constant drip for continued irritability.

Diphenylhydantoin sodium protects against the arrhythmic effects of digitalis by preventing the delayed conduction time and lessening inherent ventricular irritability.[80] Propranolol hydrochloride, a beta adrenergic blocking agent, is the only pharmacologic agent that will slow sinus tachycardia. However, it depresses myocardial contractility and should be used with care and only if it is thought that the increased rate is more deleterious to over-all cardiac performance than the resultant decreased contractility. Paired pulsation may prove to be another valuable method of treating rapid ventricular rates.[81]

With better understanding of operative and postoperative management, fewer patients die during the early postoperative period. There remains a group of patients who have had satisfactory anatomic repairs who die from what appears to be poor myocardial function. The term "low output syndrome" has been applied to these patients. This is an imprecise term because all patients die with low cardiac output, but it has come to be associated with this particular group.

There are very few quantitative studies showing cardiac performance during the first few hours and days following open-heart surgery. Kirklin and Theye[82] have shown that for patients with congenital and acquired defects cardiac output was lower on the day following surgery than several hours after surgery. Austen *et al.*[83] have demonstrated a similar slight fall in cardiac

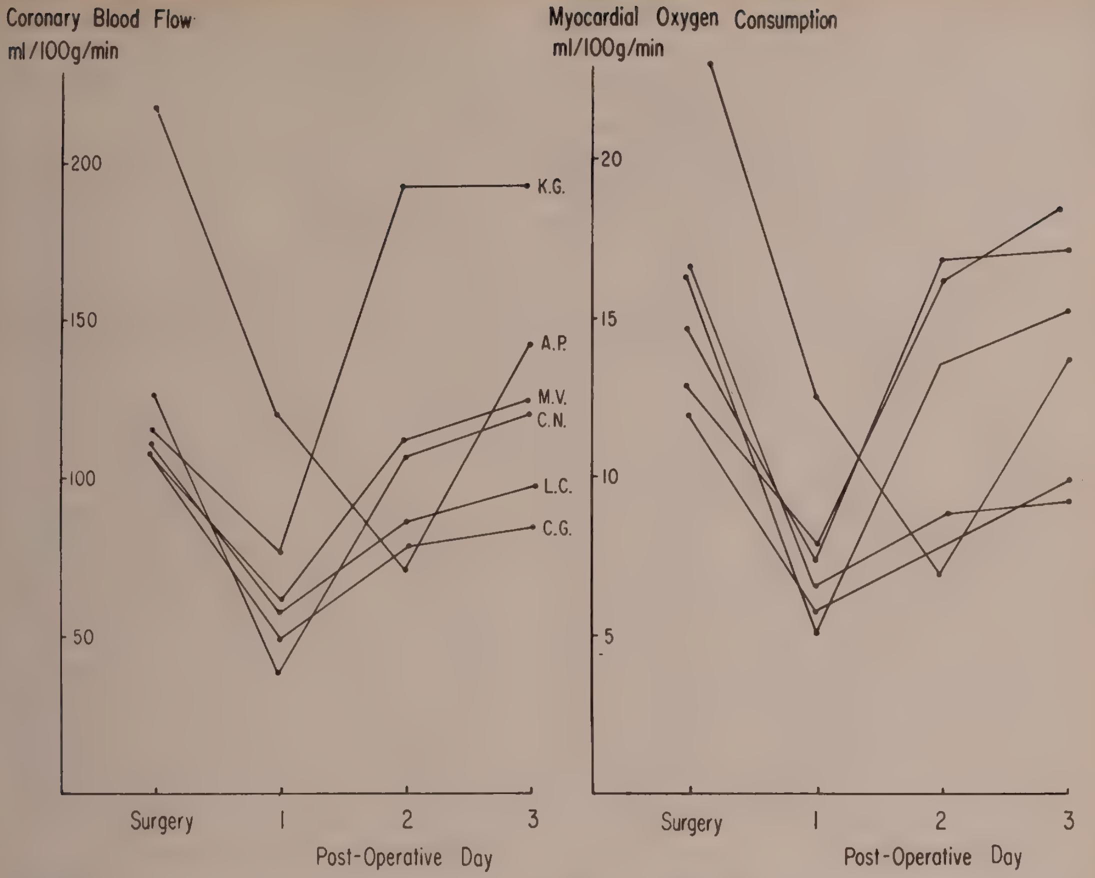

FIGURE 2. Data showing coronary blood flow and myocardial oxygen consumption in 6 patients following open-heart repair of mitral valve disease, either valvuloplasty or prosthetic replacement.

output following aortic and mitral valve replacement.

Our laboratory made studies showing myocardial metabolism in patients with rheumatic heart disease following open-heart surgery by means of coronary sinus catheters placed at the time of surgery and left in place for four days.[84] In 11 of 12 patients who had either mitral valvuloplasty or replacement, there was markedly diminished coronary blood flow on the day after surgery with subsequent gradual increase over the next two days (Fig. 2). The cardiac output was low on the first postoperative day. The myocardial metabolism was still aerobic at this time, with normal lactate extraction from the arterial blood. However, the myocardial response to isoproterenol was abnormal in that there was a consistent tendency toward anaerobic metabolism, with either decreased lactate extraction or actual lactate production. Fewer patients with atrial septal defect and aortic valve replacement have been studied and have also shown decreased coronary blood flow and a tendency toward anaerobic metabolism. These studies are still in progress, and conclusions cannot yet be drawn, but they should provide interesting information regarding the myocardial response to heart-lung bypass.

Treatment of myocardial failure rests on two types of therapy designed to increase the contractility of the myocardium: mechanical and pharmacologic. The myocardial fibers can increase contractility if their resting length is increased, the Frank-Starling hypothesis. Transfusion will increase the volume of the ventricles at the end of diastole. Since there is fairly close agreement between the end-diastolic ventricular pressure and atrial pressure, measurement of atrial pressure is a good index of ventricular function. Atrial pressures considerably above normal may be required to obtain satisfactory cardiac output in the postoperative period.[85,86]

It is not known to what extent this increased atrial pressure causes increased ventricular muscle fiber length. The ventricles may be stiffer after heart-lung bypass, and a higher distending pressure would be necessary to achieve a given fiber length.

If mechanical stretching by transfusion does not produce a satisfactory output, the final recourse is to give a drug to increase muscle contractility. Isoproterenol is favored by most groups because it increases myocardial contractility and reduces peripheral vascular resistance. Further investigations may show that another drug or a combination of drugs are superior. Our studies have demonstrated one undesirable property of isoproterenol that may or may not be shared by other drugs, a tendency to produce an anaerobic state.[84]

Mechanical augmentation of the left ventricle probably will play a role in postoperative myocardial support. Paired pulsation also may prove helpful. Both of these modalities are described in a later section.

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Clinicopathologic Conference

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Lenox Hill Hospital
New York City
June 30, 1967

Conducted by MICHAEL S. BRUNO, M.D.,
and WALTER W. FISCHER, M.D.

Discussed by MARTIN E. BLOOMFIELD, M.D., and
LAWRENCE P. SHEA, M.D.

Progressive Azotemia, Hyponatremia, and Altered Intestinal Motility with Chronic Pulmonary Disease

Case history

STEPHEN CARTER, M.D.: This was the third Lenox Hill Hospital admission for this sixty-nine-year-old white businessman who entered complaining of increasing cough and dyspnea.

The patient had a history of bronchitis and repeated pneumonias which required many past hospital admissions over a ten-year period. His first Lenox Hill Hospital admission, which occurred in June, 1966, was for treatment of one of his many pulmonary infections. Within the two-months period prior to this third and last hospital admission, he again developed a cough which produced yellow-brown sputum as well as dyspnea and a low-grade fever. He admitted to a 10-pound weight loss associated with anorexia but denied diarrhea, chest pain, night sweats, or hemoptysis.

The past history revealed that the patient had had angina for approximately two years. A myocardial infarction in October, 1966, necessitated his second admission to Lenox Hill Hospital. At that time his electrocardiogram revealed an old anteroseptal infarction as well as evidence of acute myocardial damage. Further work-up during that admission revealed an abnormal three-hour glucose tolerance test curve without glycosuria, hyperuricemia without clinical gout, and azotemia of unknown origin with blood urea levels in the range of 35 to 40 mg. per 100 ml. Random urinalyses revealed traces to 1 plus albumin, 4 to 8 white blood cells and 3 to 5 red blood cells per high-power field, and specific gravities ranging between 1.001 and 1.008. A flat x-ray film of the abdomen showed normal findings, and an intravenous pyelogram revealed poor dye concentration bilaterally. He denied any history of allergies or family history of tuberculosis, asthma, hypertension, and diabetes mellitus. His most recent medications consisted of chloramphenicol for his pulmonary infection and nitroglycerin. He formerly smoked one pack of cigarets a day for years and was a social drinker.

Physical examination revealed the patient to be a thin, white, elderly male appearing chronically ill and older than his stated age, with evidence of recent weight loss. The blood pressure was 110 systolic and 90 diastolic, the pulse was 80 per minute and regular, and the respirations were 16 per minute. The rectal temperature was 99 F. His face was thin, and examination of the eyes showed negative findings. The neck was supple, and the thyroid was not palpable. There was no venous engorgement or adenopathy. The chest had an increased anterior-posterior diameter with diffuse inspiratory dry rales in both lung fields posteriorly as well as increased percussion resonance; inspiratory and expiratory wheezing was also present. The heart rhythm was regular without any murmurs present, but the heart sounds were diminished. The abdomen was soft and nontender. The liver, kidneys, and spleen were not palpated nor were there any other intra-abdominal masses delineated. Rectal examination disclosed the prostate gland to be smooth and enlarged. There was no cyanosis, clubbing, or edema of the extremities. The dorsalis pedis pulses were absent bilaterally, but both femoral pulses were present and equal. The neurologic examination was intact and physiologic except for generalized diffuse muscle weakness with moderate, symmetrical muscle mass atrophy in the extremities.

The hemoglobin was 10.1 Gm. per 100 ml. and the hematocrit 32. The white blood cell count was 7,600 with 66 per cent polymorphonuclear neutrophils of which 11 were nonsegmented, 23 lymphocytes, 4 monocytes, 5 eosinophils, and 2 basophils; a few toxic granulations were seen. The sedimentation rate was 120 mm. per hour. The platelet count was 400,000 per cubic millimeter. Urinalysis revealed a specific gravity of 1.012, a pH of 5.3 albumin 3 plus, and negative test results for glucose and acetone; there were 5 to 8 white blood cells and 3 to 6 red blood cells per high-power field. A few hyaline casts and 8 to 10 granular casts were also present. The fasting blood sugar was 90 mg. and the two-hour postprandial blood sugar 116 mg. per 100 ml. The serum creatinine was 3.9 mg. and uric acid 11.5 mg. The sodium was 136, potassium 5.7, chlorides 103, and bicarbonate 23 mEq. per liter. The calcium was 8.7 mg. and phosphorus 5.1 mg. per 100 ml., and alkaline phosphatase was 7.9 King-Armstrong units. The total protein was 6 Gm. with 1.8 Gm. of albumin and 4.2 Gm. of globulin per 100 ml. The paper protein electrophoresis revealed 34.6 per cent albumin with 6 per cent alpha-1 globulin, 21 per cent alpha-2 globulin, 17.3 per cent beta globulin, and 21 per cent gamma globulin. The serum glutamic oxaloacetic transaminase was 12 units, and the lactic acid dehydrogenase was 240 units. The cephalin flocculation was 1 plus, thymol turbidity 2.5 units, and total bilirubin 0.5 mg. The sputum gram stain contained many white cells and gram-negative cocci. The sputum culture grew out Friedländer's bacillus and nonhemolytic streptococci sensitive to sodium cephalothin and ampicillin.

A twenty-four-hour urine volume which was reported to be 500 cc. contained no glucose and 0.333 mg. of protein per 100 ml. of urine. The urine culture revealed no growth. In another twenty-four-hour urine volume of 1,850 ml. there were 63 mEq. of sodium, 15 mEq. of potassium, and 63 mEq. of chlorides per liter. The urinary creatinine was 370 mg. per twenty-four hours. The twenty-four-hour urine total uric acid was 350 mg. The endogenous creatinine clearance was 5.1 ml. per minute or 7.2 L. per twenty-four hours. The electrocardiogram demonstrated low voltage, occasional premature ventricular contractions, as well as small progression of R waves in the precordial leads. The T waves were low and flattened in the standard leads (Fig. 1).

The chest x-ray film taken on admission showed a considerable increase in the parenchymal infiltration at the base of the right lung medially and posteriorly when compared with his chest roentgenogram taken five months earlier (Figs. 2A and B). At that time similar diffuse infiltrations in the left perihilar region and at the posterior base of the left lung were noted as well as areas of increased radiolucency. Repeat chest x-ray films taken five days later showed a further increase in the perihilar and basal infiltration of the left lung (Figs. 2C and D). A partial but incomplete clearing of the infiltration at the base of the right lung was also noted. A chest x-ray film from his first hospital admission in June, 1966, is shown for comparison (Fig. 2E).

He was placed on a low-salt, 1,800-calorie diet for diabetes along with chloramphenicol in full dosage. Use of intermittent positive pressure oxygen with bronchodilators and enzymes by aerosol was instituted. He maintained a low-grade fever over the next six days, and his anorexia and nausea continued with periodic vomiting of clear fluid.

Serial blood urea nitrogen determinations demonstrated a rise to 92 mg. per 100 ml.

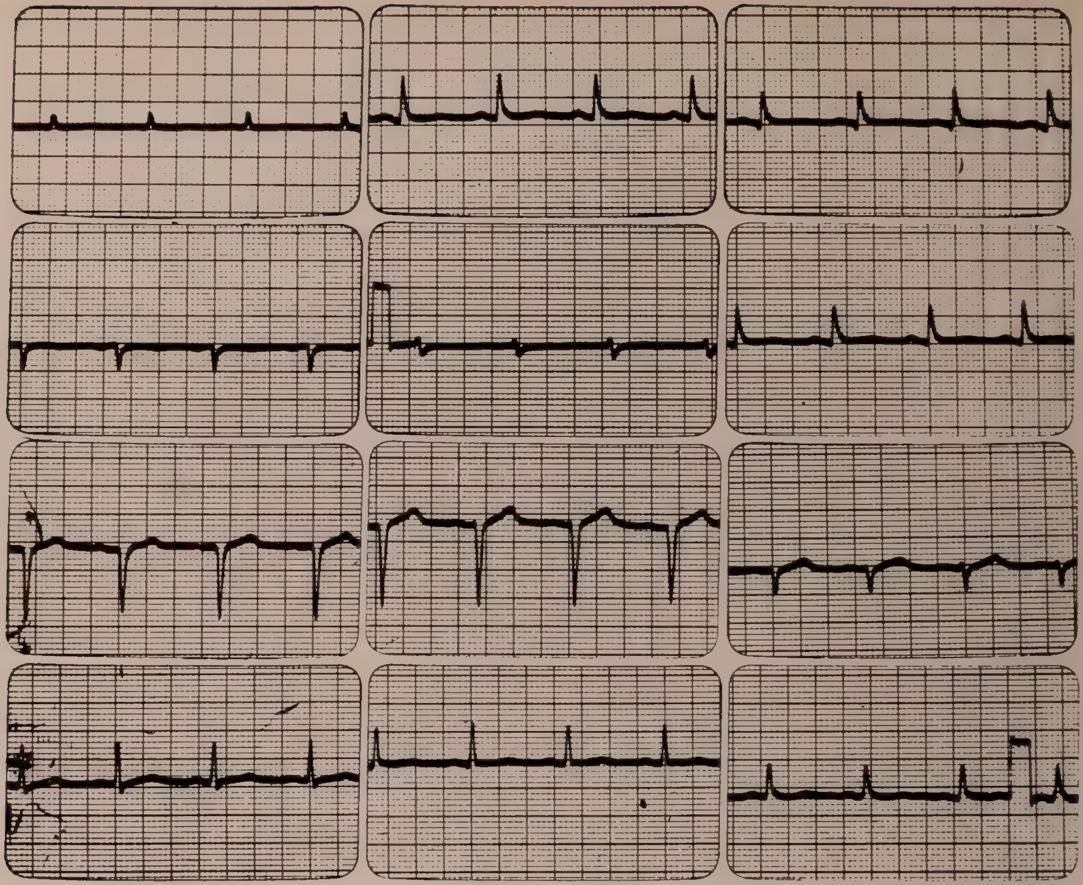

FIGURE 1. Initial electrocardiogram showing low voltage and small progression of R waves in media precordial leads; T waves lower and flattened in standard leads.

with a concomitant rise in serum creatinine to 5.8 mg. and uric acid to 10.9 mg. An upper gastrointestinal series revealed a slightly deformed duodenal cap without any crater and moderate retention of barium at six hours (Fig. 3). The head of the barium meal had progressed only to the proximal jejunum. The patient was placed on antacids as well as a bland diet. Multiple stools were examined for occult blood and showed negative findings, and his twenty-four-hour urine volumes remained adequate. On his eighth hospital day he suddenly became hypotensive without clinical evidence of shock or fever. The neurologic examination revealed no focal defects or localizing signs. A repeat electrocardiogram showed no changes. The serum sodium was now 119 mEq., potassium 5.5 mEq., chlorides 95 mEq., and carbon dioxide 12 mEq. per liter. He was started on intravenous fluids with sodium chloride and bicarbonate replacement as well as metaraminol (Aramine) drip. Cephalothin was administered intramuscularly. The radioactive iodine (I^{131}) serum albumin blood volume was 4.3 L. The endogenous creatinine clearance was 4.3 ml. per minute or 6.19 L. per twenty-four hours. The hemoglobin was 10 Gm. per 100 ml. and the hematocrit 33. The white blood cell count was 6,800 with 82 per cent polymorphonuclear neutrophils of which 24 were nonsegmented, 8 lymphocytes, 7 monocytes, 2 basophils, and 1 eosinophil. His blood pressure was maintained with vasopressors for the next two days. The serum electrolytes did not change in spite of vigorous treatment. The repeat values were reported as follows: serum sodium 103 mEq., potassium 4 mEq., chlorides 71 mEq., and carbon dioxide 19.5 mEq. per liter. The blood urea nitrogen was 75 mg. and creatinine 5 mg. per 100

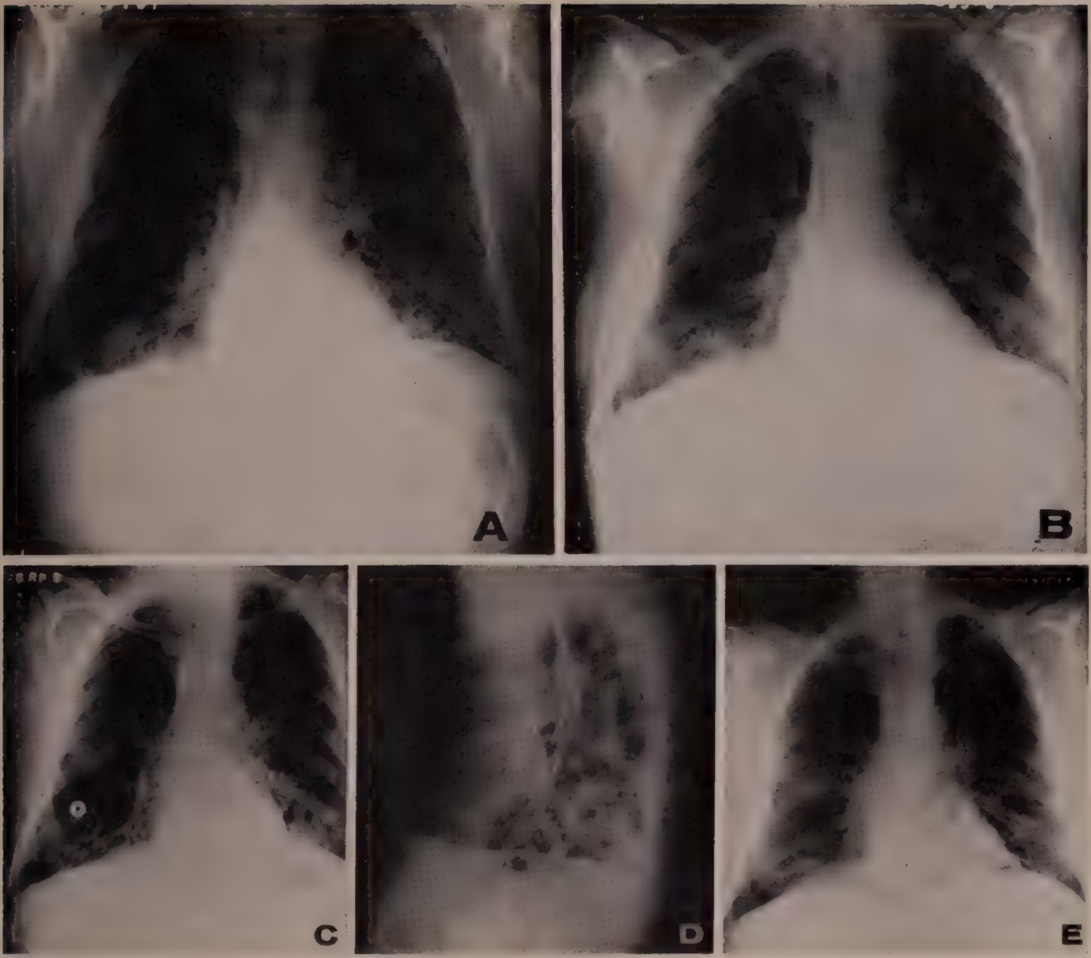

FIGURE 2. Chest x-ray films. (A) Initial film taken during third hospital admission showing superimposed acute pneumonic infiltrations and extensive fibrotic changes in both lungs. (B) Film taken during second hospital admission, October, 1966, revealing infiltrations at bases of both lungs. (C) Film taken five days after third hospital admission revealing some clearing at base of right lung but continued infiltration in left lung and prominent areas of radiolucency. (D) Corresponding lateral view showing segmental distribution of infiltrates and prominent areas of radiolucency. (E) Film taken during first hospital admission, June, 1966, showing bilateral infiltrations in both mid- and lower-lung fields.

ml. During this interval the patient had become stuporous. In addition, he gained 6 pounds in weight, ascites became manifest, as well as 1 plus pretibial edema and coarse rales at both lung bases.

The patient was given digitalis with lanatoside C (Cedilanid); hydrocortisone was administered intravenously and intramuscularly, and a Levin tube was passed. The repeat serum electrolyte remained markedly altered and low. Despite continued intensive treatment there was no improvement in his hypotension or mental status. On the thirteenth hospital day his blood pressure was no longer obtainable. Closed cardiac massage was instituted unsuccessfully, and he expired shortly thereafter.

Discussion

Martin E. Bloomfield, M.D.*: This sixty-nine-year-old businessman has at least a ten-year history of chronic pulmonary infection and most likely a history of chronic cough of much longer duration. Two years before he had an acute myocardial infarction. At that time a blood urea nitrogen was recorded as 35 to 40 mg. per 100 ml. His serum uric acid was elevated, and he had an abnormal glucose tolerance test result. I have also learned from our chief resident that the urinalysis at that time revealed a low specific gravity and 1 plus albuminuria. His present ad-

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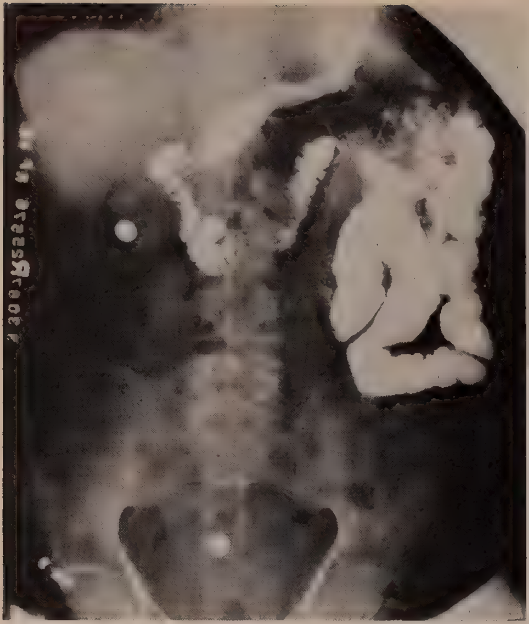

FIGURE 3. Six-hour delayed film of upper gastrointestinal series showing thickening of duodenal and jejunal mucosa, dilatation of jejunal loops, decreased small-bowel motility, and gastric retention.

mission was precipitated by increasing cough, dyspnea, fever, and weight loss. Positive physical findings were limited to the chest where rales and wheezes were heard. The examination did not reveal evidence of cor pulmonale, clubbing, or arterial oxygen desaturation. His course was that of progressive deterioration marked by nausea, periodic vomiting, azotemia, and hyponatremia, ending with shock and death. My major task will be to correlate the pulmonary disease, gastrointestinal symptoms, renal insufficiency, and electrolyte disturbance. At this point I would like Dr. Pezzulli to discuss the x-ray films.

FRED PEZZULLI, M.D.: The initial chest x-ray film of this patient taken during his first admission here in June, 1966, shows infiltrates in both mid- and lower-lung fields. The apices are hyperaerated, the hilar vessels are prominent, and the heart is slightly enlarged (Fig. 2E).

An intravenous pyelogram was performed at the same time, and a delayed thirty-minute film showed no discernible excretion through either kidney. The renal outlines are obscured and cannot be evaluated.

During his second hospital admission in October, 1966, his chest x-ray film shows essentially the same findings, the most prominent feature being the presence of bilateral infiltrates (Fig. 2B). There is no evidence of the postmyocardial infarction syndrome not infrequently seen on chest x-ray films of patients recovering from acute infarction. This consists of pericarditis, acute pneumonitis, and pleural effusion occurring simultaneously or in any combination.

During the patient's current admission the initial chest x-ray film shows evidence of superimposed acute infiltrates involving both lung bases and the left perihilar region (Fig. 2A). The chest roentgenogram shows otherwise unchanged findings.

A repeat chest x-ray film taken five days later shows slight clearing of the pneumonitis at the base of the right lung but increased infiltration at the base of the left lung and in the left perihilar region (Fig. 2C). A corresponding x-ray film of the lateral view of the left side of the chest shows the acute infiltrates to be localized to the posterior-basilar segments of the lower part of the left lung, the superior segment of the lingula, and anterior segment of the upper part of the left lung (Fig. 2D).

A six-hour delayed film from a gastrointestinal series done during the current admission is quite interesting (Fig. 3). The barium lies in a single uninterrupted column outlining the stomach, duodenum, and proximal jejunal loops. The stomach is normal in appearance and was noted at fluoroscopy to have normal tone and peristalsis. There is slight deformity of the duodenal bulb. The mucosal folds of the duodenal sweep and transverse portion are thickened. The visualized portions of the jejunal mucosal folds are thickened, and there is dilatation of several loops. An additional finding that is quite striking is the marked lack of small-bowel motility.

DR. BLOOMFIELD: The severe hyponatremia and progressive renal failure were the attending physician's prime concern during most of this patient's last hospital admission. The foremost consideration in evaluating and treating this condition is to determine whether this patient was salt diluted or salt poor. Could hypotonic expansion of the extracellular space or sequestration of sodium into some space have occurred? From the clinical history there is no evidence of excess water intake or congestive heart failure. Inappropriate antidiuretic hormone secretion must be considered in association with both acute and chronic lung disease. The cardinal features of this syndrome are: (1) normal blood volume in that both skin turgor and blood pressure are normal; (2) continued excretion of sodium; (3) both hyponatremia and hypo-osmolarity of serum; (4) urine less than maximally diluted; and (5) normal adrenal function. There is suggestive evidence in the protocol for a diagnosis of inappropriate antidiuretic hormone secretion, but because of the requirement of normal adrenal function I do not think it plays the major role in the cause of the hyponatremia. The evaluation of adrenal function will be discussed later. The gastrointestinal series does not demonstrate for us the picture of a large accumulation of fluid in the intestinal loops. On admission to the hospital he was placed on a low-sodium diet. The serum sodium was 136 mEq. per liter and five to six days later was 119 mEq. per liter. During this interval he was anorectic, had periodic vomiting, and probably had a borderline fluid intake. There is no explanation for the loss of sodium. The only other avenue of sodium loss then is by the kidneys. Levin and Cade[1] recently have described the influence of dietary sodium on renal function. Patients studied included those with arteriolar nephrosclerosis, polycystic disease, chronic glomerulonephritis, and pyelonephritis. Their data indicated that none of the patients were able to conserve sodium properly. As serum sodium fell, the blood volume diminished, resulting in deterioration of renal function. The precise nature of this defect is uncertain. As the disease progresses, the defect becomes increasingly severe until it cannot be compensated, even by decreasing the glomerular filtration rate and stimulating distal sodium-potassium exchange. The implication is obvious. This patient's use of salt was restricted, and he had a questionable fluid intake and intermittent emesis. In the light of Levin and Cade's[1] findings, this patient's hyponatremia and final demise could be explained by end-stage renal disease with salt wasting.

The renal salt loss can be explained in another way. The patient's history of severe long-standing pulmonary disease and the possibility that at some time he received steroids, coupled with the fact that he was quite ill and had nausea and anorexia, suggests the diagnosis of adrenal insufficiency. Addison's description of the disease is still the best: "The leading and characteristic features of the morbid state to which I would direct attention are anemia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change in the color of the skin."[2] The absence of pigmentation on the initial examination does not bother me, but with the onset of hypotension and the resultant diminished blood supply to the skin, pigmentation should become prominent. This, of course, would not be true if the adrenal insufficiency were acute or of recent onset. I think there is sufficient evidence presented for this diagnostic possibility to be considered.

Having considered the problem of hyponatremia, can we then explain his demise? On the eighth day, the patient became hypotensive, and despite continued treatment for hyponatremia he died in shock. The hypotension can be explained in many different ways. This patient had a history of coronary heart disease with angina. We are told his blood volume and hemoglobin were reduced which is a good setting for a myocardial infarction. This might also explain his congestive heart failure which occurred several days later. However, the electrocardiogram demonstrated no acute changes, and we are not given any enzyme values to support this hypothesis. I think this diagnosis is unlikely. The protocol states that the patient received antacids, and I have been told it was a preparation containing magnesium. Randall *et al.*[3] have cautioned that in patients with severe renal disease, magnesium intoxication can develop from the administration of magnesium antacids. The first sign of hypermagnesemia in his study was hypotension. A serum magnesium level of 3.5 mg. per 100 ml. can be reached after only several days of antacid therapy. Although this is intriguing, it does not explain the clinical course. The physicians caring for the patient considered septic shock, and he was started on cephalothin therapy. With the initial use of chloramphenicol as the only antibiotic, the possibility of a superinfection associated with terminal septicemia must be considered. The absence of fever in a debilitated man is not unusual, and a normal white blood cell count with a shift to the left is often seen; yet I can find nothing which would support the concept that sepsis was the cause of his abrupt demise. Could this all be the result of marked sodium depletion either from intrinsic renal disease or adrenal insufficiency? In this situation, it would be unusual for the patient to be responsive to vasopressors. In any case though, it is quite surprising he responded at all to vasopressors with such prominent hyponatremia. Certainly once a critical point is reached, patients do die from hyponatremia and hypovolemia.

Having attempted to explain this patient's demise, let us now go back and try to correlate the clinical problems. This patient had at least a ten-year history of pulmonary infection, and his present admission was precipitated by an exacerbation of this infection. Inspection of the x-ray films reveals the infiltrates to be multilobular and recurrent in the same segments. This pattern of infiltration is typical of bronchiectasis. Hiding somewhere in one of the infiltrates could be a carcinoma, but the clinical course and serial chest x-ray films do not suggest this diagnosis. The culturing of Klebsiella brings up the problem of treatment. This organism is capable of producing two different clinical pictures: one of an acute infection frequently leading to extensive parenchymal destruction and cavitation, and the other that of a chronic indolent infection resulting in destruction and distortion of bronchi and its supporting tissue. Treatment of both conditions requires intensive and long-term antibiotic therapy.

The other major organ involved is the kidney. His renal disease remained silent until two years prior to his demise, when an elevated blood urea nitrogen was recorded during hospital admission for a myocardial infarction. An intravenous pyelogram done at that time did not show sufficient concentration, even to determine renal size. There is no history presented in the protocol to suggest any specific type of renal disease. In this age group, arteriolar nephrosclerosis is frequently seen. With the degree of renal failure demonstrated during his last admission, I would have expected a past history of hypertension if arteriolar nephrosclerosis were the primary problem, and so I mention this diagnosis only to eliminate it. Freedman[4] has recently described a group of 15 patients who died of uremia. At autopsy, a diagnosis of chronic pyelonephritis was made. He excluded those with obstructive disease, terminal sepsis, and diabetes. Review of their histories revealed only 1 patient with a questionable history of pyelitis. The microscopic examination findings were identical to those of pyelonephritis. On gross inspection though, the broad scars and asymmetric damage of a suppurative process was lacking. Therefore, a prior history of genitourinary infection is not necessary to consider the diagnosis of chronic pyelonephritis, although the specificity of this diagnosis can now be questioned. The renal changes of diabetes must also be considered. We are told our patient had an abnormal glucose tolerance test curve two years before. The occurrence of severe vascular disease with relatively minor alterations in carbohydrate metabolism is now accepted, but did he have diabetes mellitus? As a person ages, his ability to utilize glucose normally diminishes, resulting in elevated glucose levels when challenged by a carbohydrate load. Therefore, our standards of normal are not acceptable in the aged. I doubt, however, that this picture can be explained on the basis of diabetic vascular disease. An elevated serum uric acid is often associated with renal disease. However, in view of the absence of arthritic manifestations, there is no reason to suspect renal gout.

There are several laboratory findings that are hard to fit into the picture of bronchiectasis and chronic renal disease: the sedimentation rate, hypoalbuminemia, and the abnormal findings on the gastrointestinal series. Since this is a clinicopathologic conference, the possibility of amyloidosis must be entertained. Long-standing infectious processes, such as chronic bronchitis with bronchiectasis, are often associated with amyloidosis. However, if we use the classic description of secondary amyloid there will be many unanswered questions. Azar[5] in a recent review of his experience with amyloid at Delafield Hospital makes the plea for the abandonment of distinctions between primary and secondary and typical and atypical amyloid. All amyloid is secondary to a proliferation of protein-synthesizing cells, and all amyloid has the same ultrastructure and optical properties. With this in mind, then, amyloid can be deposited in any organ, and only its concentration determines whether or not it becomes clinically significant.

Amyloid deposits in the small intestine are unusual, but when present the resultant x-ray picture can be identical to that seen in our patient. Amyloid deposits in the adrenals resulting in inadequate steroid production and resultant electrolyte imbalances again is compatible with our patient's clinical course. The renal deposition of amyloid is common, and once it occurs the development of the nephrotic syndrome may be anticipated. The twenty-four-hour urine protein was 1.7 Gm. in 500 cc. of urine. One wonders about the completeness of the urinary collection with such a volume, especially since we are told his output remained adequate. The low serum albumin fits in nicely with the concept of the nephrotic syndrome. However, I do not feel I have sufficient information to make this diagnosis. The other renal manifestation of amyloid to be thought of, especially in a patient who dies, is renal vein thrombosis. The thrombi occur not only in the major veins but also in the arcuate veins and capillaries. Barclay, Cameron, and Loughridge in 1960[6] described this in an excellent review. They reported 9 cases, and their ninth case had tuberculosis with amyloid involving the kidneys, liver, spleen, intestines, ovary, uterus, adrenals, and myocardium. When thrombosis does occur, uncomplicated nephrotic syndrome does not appear. Six of the 9 patients showed rapid deterioration of renal function with oliguria. Two showed symptoms of nephrotic syndrome quickly followed by oliguria and death. Our patient's clinical course does not correlate with those described who had a renal vein thrombosis complicating renal amyloid, and we shall, therefore, discard this remote possibility.

The major variation in our patient to be explained, if he did in fact have amyloid, is the absence of an enlarged liver. However, I will take Azar's[5] advice and approach this patient using a unitarian concept of disease and explain everything on the basis of amyloidosis, with major involvement of his kidneys precipitating uremia, his adrenals causing the striking and persistent electrolyte disturbance, and the gastrointestinal tract with morbid abnormality of small-bowel motility. He probably had involvement of other organs as well, including his heart.

Clinical diagnoses

1. *Chronic pulmonary disease with chronic bronchitis and bronchiectasis*
2. *Amyloidosis with infiltration of the kidneys, adrenals, and gastrointestinal tract*
3. *Uremia*
4. *Sepsis, terminal*

Dr. Bloomfield's diagnoses

1. *Chronic bronchitis with bronchiectasis*
2. *Amyloidosis involving primarily the adrenals, small intestine, and kidneys*
3. *Arteriosclerotic heart disease*
4. *Sepsis ?*

Michael S. Bruno, M.D.: Your final diagnosis then is generalized amyloidosis secondary to chronic suppurative pulmonary disease.

Dr. Bloomfield: That is correct, Dr. Bruno.

Jacob Bornstein, M.D.: Was multiple myeloma considered here? The patient had anemia, elevated alpha-2 globulin, and uremia, and all this may have been secondary to the deposition of abnormal globulins in the tubules. The para-amyloid deposits in the gastrointestinal tract and his multiple pulmonary infections could all be secondary to the myeloma process. There is no mention in the protocol of any Bence Jones proteinuria or reports on bone marrow examination.

Dr. Bruno: How would you reconcile that diagnosis with the ten-year history that is presented? Also, the distribution of the paraprotein in multiple myeloma corresponds to primary amyloidosis, that is tongue, skin, heart, and gastrointestinal tract, and not to secondary amyloidosis.

Dr. Bornstein: That is very hard to do, I must admit. Yet his increased susceptibility of infections still may all be part of a secondary process.

Dr. Bloomfield: I considered that diagnosis when I first read the protocol, but no spike or band was seen on the paper protein electrophoresis in the gamma globulin range. This finding alone does not rule out myeloma, since recent reports have described cases of myeloma with a normal paper protein electrophoretic pattern. The definitive diagnosis is made in these cases through the immunoelectrophoretic pattern both qualitatively and quantitatively. However, such cases are most rare. Immunoelectrophoretic studies have even been done on amyloid.

Dr. Bruno: Like collagen, amyloid has an ultramicroscopic form and is very hard to bring into solution. Studies have shown that amyloid is composed mostly of protein with a small but definite carbohydrate component.[7] Immunologic procedures have demonstrated gamma globulin, beta 1-C globulin, fibrinogen, and a serum lipoprotein to be the major components of amyloid. Interestingly enough all these are present in normal human serum protein.

Joseph Kessler, M.D.: If that is so, would you not say, Dr. Bruno, that amyloidosis is frequently seen in elderly people?

Dr. Bruno: In selected elderly people that is true. For example, amyloid has been found in the brain, pancreas, and heart in 89.5 per cent of patients over age sixty who died with senile dementia.[8] Even the presence of hypertension does not exclude amyloidosis.[9] To further qualify Dr. Bloomfield's statement about proteinuria, according to Schreiner,[10] the nephrotic syndrome does not occur until the protein excretion is in excess of 3.5 Gm. per twenty-four hours, and the presence of urinary fat bodies is demonstrated.

Gerson I. Lesser, M.D.: I would like to interject some thoughts about the recent reports of pulmonary carcinoma with hyponatremia secondary to inappropriate antidiuretic hormone secretion, and say that this might be a possibility in our patient who was a heavy smoker and had chronic pulmonary disease. The fact that the chest x-ray films did not delineate any carcinoma does not totally exclude it, as we all know from experience; there may be carcinoma in the lungs, and yet the chest x-ray film shows normal findings. I wonder if his acute hyponatremia might have been precipitated by the loss of salt from his kidneys?

Dr. Bruno: This patient was under the care of Norman Nichols, M.D., and I wonder if he would comment on the presentation and some of the questions asked and tell us what his thoughts were while treating the patient.

Norman J. Nichols, M.D.: To begin with, Dr. Bruno, this patient's pulmonary illness was actually of thirty years duration, and the diffuse honeycombing of every part of his lung noted on the chest x-ray films attest to that fact. He was dyspneic even at rest and had had angina pectoris. I actually saw the patient for the first time one year prior to his admission to Lenox Hill Hospital, when amyloid disease was first considered. He then had an abnormal oral glucose tolerance test result as well, but there was no associated retinopathy, so I doubted that there was any diabetic glomerulosclerosis present. With the usual case of amyloidosis involving the kidneys, the kidneys are large, but this could never be confirmed radiographically.

Nahum J. Winer, M.D.: I would like to propose that the multiple organ involvement in this patient might represent polyarteritis and that the entire clinical course could be explained by this.

Dr. Bruno: That is unlikely. There was no history of any antecedent hypertension, allergy or hypersensitivity phenomena, asthma, skin rashes, or eosinophilia. Also no evidence of arteritis or myositis was present on physical examination. I would doubt very much that this patient had systemic polyarteritis or periarteritis nodosa.

Dr. Carter: I would like to take issue with Dr. Lesser's statement that inappropriate antidiuretic hormone secretion may have played a role in the development of this patient's hyponatremia. If so, he would not show any response to the addition of salt or antidiuretic hormone but only to water restriction, and the protocol does not suggest that this happened.

Dr. Bruno: May we now discuss the pathologic report?

Pathologic report

Lawrence P. Shea, M.D.*: At postmortem examination there was bilateral bronchiectasis, acute and organizing bron-

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* Associate Pathologist, Lenox Hill Hospital.

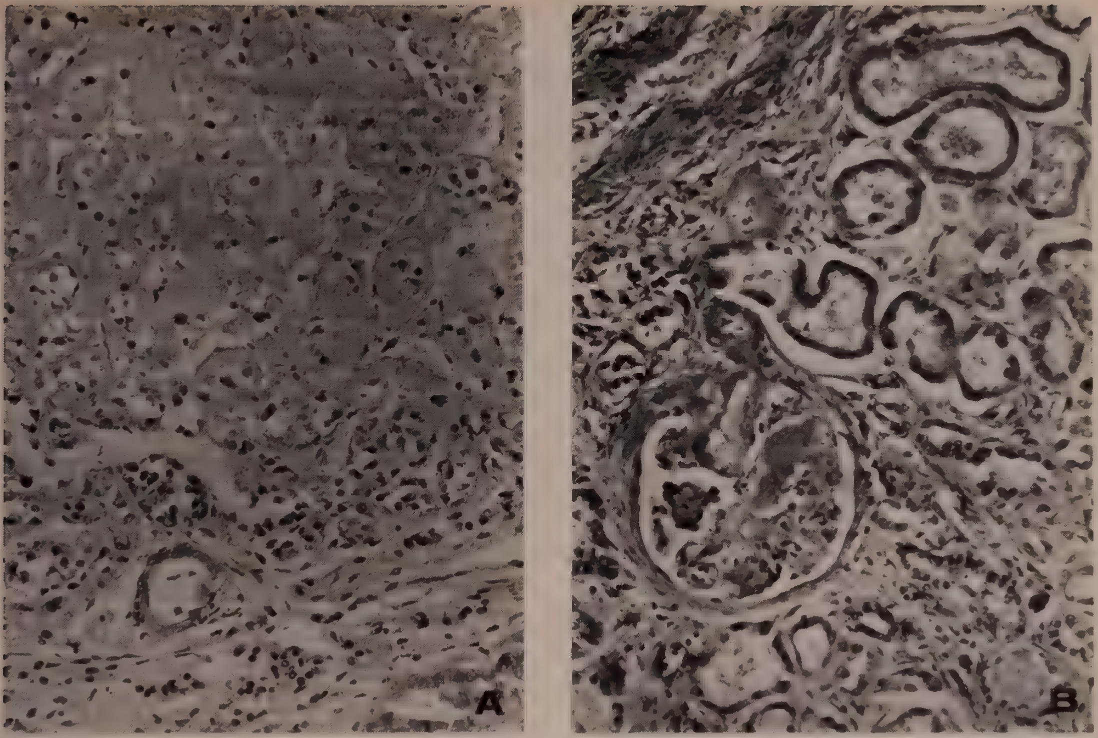

FIGURE 4. Microscopic sections showing (A) extensive amyloidosis of adrenal cortex and hyalin deposits between sinusoids and in arteriolar wall; and (B) extensive amyloid deposits in glomerulus, arterioles, and interstitial tissue. (Sirius red stain × 265).

chopneumonia, and extensive pulmonary interstitial fibrosis. The heart revealed the scar of an old anteroseptal myocardial infarction. The kidneys contained several depressed vascular scars.

Microscopic examination revealed severe amyloidosis affecting the adrenal cortices, the kidneys, and the thyroid (Fig. 4A). The adrenal cortical epithelium and the follicular epithelium of the thyroid showed marked compression atrophy. The amyloid deposits in the kidneys were located in the glomeruli, the arterioles, and the interstitial fibrous tissue (Fig. 4B). The amyloid appeared typical in sections stained with hematoxylin and eosin and with sirius red. The amyloid stained with the latter dye appeared green when viewed with the polarizing microscope. The myocardium contained a small amount of amyloid (Fig. 5A). Most organs, including the lungs, liver, spleen, pancreas (Fig. 5B), esophagus, stomach, intestines (Fig. 5C), trachea, and lymph nodes contained amyloid, usually deposited within small and medium-sized blood vessels.

Also noted at autopsy were acute ulcerations of the esophagus and stomach and multiple colloid nodules in the thyroid.

DR. BRUNO: I wonder if Dr. Fischer would like to say anything about the pathologic findings in the patient's chest, particularly the surgical management of bronchiectasis.

WALTER W. FISCHER, M.D.: I wondered about the ten-year history of his pulmonary symptoms since with classical bronchiectasis the history goes back to childhood. The question in my mind is whether or not this bronchiectasis could have been corrected at one age period despite the usual medical regimen. I would say that no surgery should be contemplated until bronchographic examination and bronchograms have been completed to find out if the process is localized. Then a surgical resection can be completed. We at Lenox Hill have seen this disease involve both lungs and localize in different areas, and after a bilateral segmental resection was completed, such patients were cured. Any patient with recurrent infection should be suspected of having many things, including bronchiectasis.

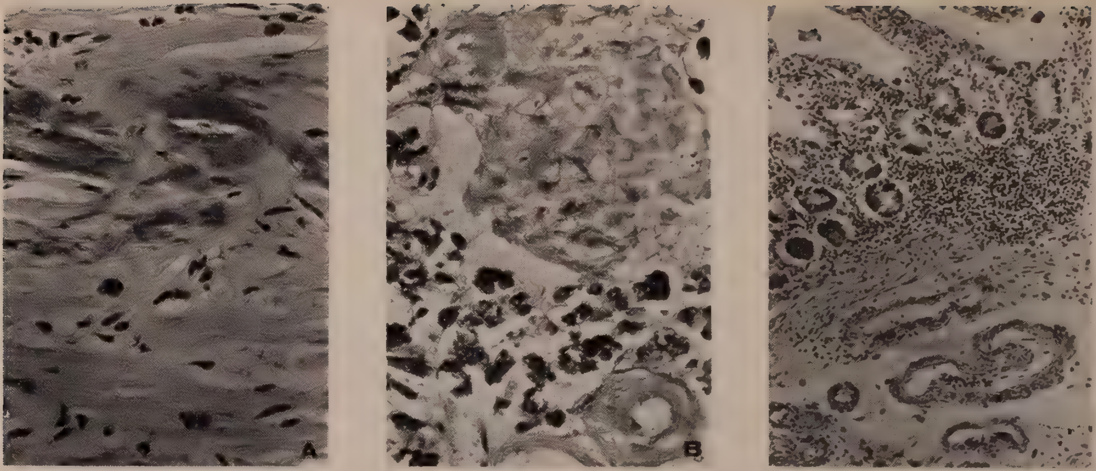

FIGURE 5. Microscopic sections showing amyloid deposits (A) in myocardium of left ventricle (sirius red stain × 250); (B) in islet of Langerhans' and adjacent arteriole with epithelial cells of islet appear atrophic and necrotic (sirius red stain × 250); and (C) in walls of arteries in submucosa of small intestine (sirius red stain × 165).

If the disease is localized, then surgery should be strongly considered.

Dr. Bruno: Are there any further questions?

Eugene Clark, M.D.: Could the diagnosis of amyloidosis have been established by rectal biopsy?

Dr. Bruno: Any biopsy would probably have confirmed the diagnosis, especially biopsy of the skin, rectal mucosa, liver, or lung. There was extensive involvement of many organ systems, blood vessels, and especially the adrenal and the thyroid glands. I would not be surprised that the extensive cortical adrenal replacement with amyloid led to an Addisonian-type picture with hyponatremia and hypotension. Were twenty-four-hour urine studies for 17-ketosteroids and 17-hydrosteroids or plasma cortisol levels determined?

Dr. Kessler: There was no mention of them anywhere in the patient's chart.

Dr. Bruno: In closing I would like to add to the proposition made before that this patient may have had inappropriate antidiuretic hormone secretion. There are also reports in the literature of severe hypothyroidism associated with amyloidosis. A protein-bound iodine or free thyroxine determination might have clarified this possibility. A comparison of the serum and urine osmolarity would also have been so some interest.

Anatomic diagnoses

1. *Chronic bronchiectasis, bilateral*
2. *Bronchopneumonia, acute and chronic*
3. *Generalized amyloidosis with severe involvement of kidneys, adrenals, thyroid, and gastrointestinal tract*
4. *Arteriosclerotic cardiovascular disease*
5. *Healed myocardial infarct, anteroseptal*
6. *Arterial nephrosclerosis*
7. *Acute ulcerative esophagitis*
8. *Acute ulcers of stomach*
9. *Colloid nodules in thyroid*

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Correlation Conferences in Radiology and Pathology

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Mass over Chest Wall

Case history

Joseph Martino, M.D.[*]: A twenty-eight-year-old white male mechanic's chief complaint was of a mass in the posterior right lower portion of the thoracic wall of approximately two years' duration. The mass had been essentially asymptomatic but recently became tender and was somewhat painful when the patient lay on his back in the course of his work. At physical examination the mass was found to be 10 by 5 cm. and was slightly raised. It had a rubbery consistency but was not red or warm. The clinical impression was that of a lipoma. Laboratory studies revealed normal findings.

Joseph Head, M.D.[†]: Radiographic examination of the chest and ribs, including tangential views and studies of the soft tissues of the thoracic wall, was made.

The radiographic study of the heart, lungs, and ribs fails to show any abnormality. In the right lower part of the chest wall there is a rather large mass, roughly equivalent in size to that described clinically (Fig. 1). The mass is of water density. Superficial to the mass there is a radiolucent stripe representing the subcutaneous fat. The fact that the mass lies deep to this fat would suggest that it is probably within the musculature of the chest wall. Within the mass there is one irregularly oval, calcific shadow at its superior margin, and throughout the remainder of the area there are a number of small, dense, rounded calcifications, some of which appear to have slight central radiolucency. The underlying ribs are entirely normal and do not appear to be separated or eroded. There is no periosteal new bone formation. In the absence of rib changes one can rather

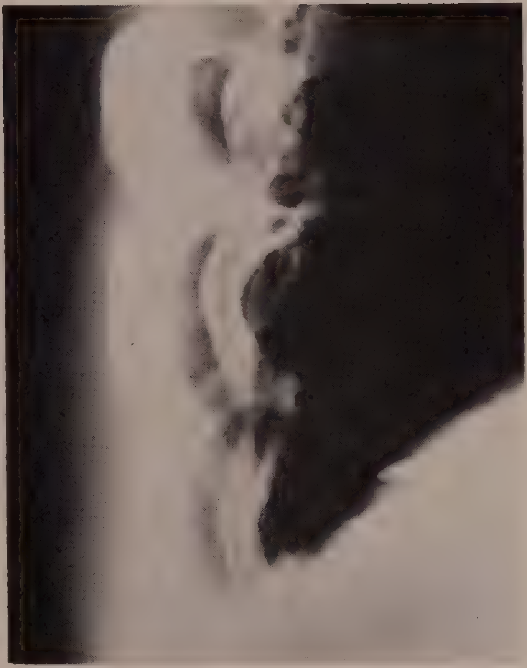

FIGURE 1. Overpenetrated lateral view of lower posterior portion of chest wall demonstrates multiple, rounded, calcific densities in soft tissues contiguous to normal ribs.

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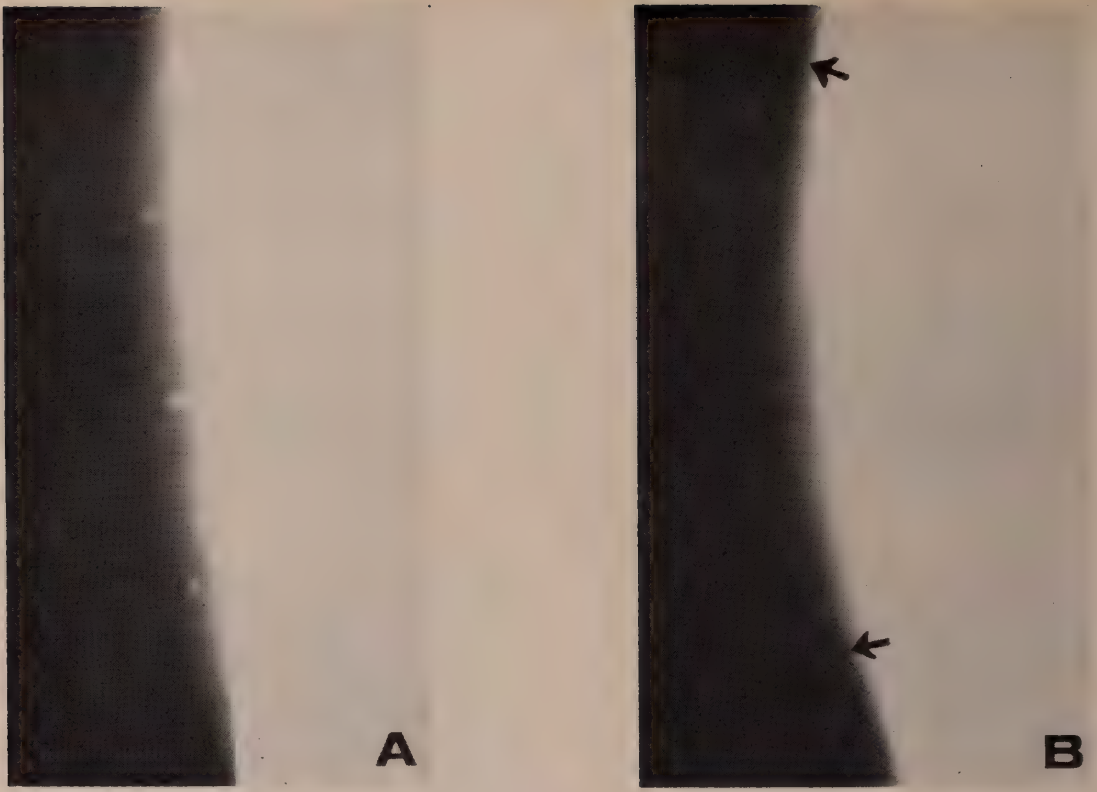

FIGURE 2. (A) Tangential view of right lower posterior part of chest wall shows calcifications to be dense, round, and somewhat radiolucent in their centers. These characteristics identify them as phleboliths. (B) Similar projection as (A) but with soft tissue technic to demonstrate that mass lies deep to subcutaneous fat (arrow).

confidently exclude a lesion arising from the rib or from the intercostal nerves.

The appearance of the calcifications strongly suggests that they are phleboliths (Fig. 2A). This observation plus the fact that the mass appears to lie deep to the subcutaneous fat of the chest wall suggest that this mass very likely represents a rather large cavernous hemangioma of the musculature of the chest wall (Fig. 2B). The unusual nature of the calcification and the absence of radiolucency would appear to indicate that this is not a lipoma despite the clinical diagnosis. Was a bruit heard over the mass?

Dr. Martino: No.

Dr. Head's diagnosis

Cavernous hemangioma of the skeletal muscle of the posterior part of chest wall.

Dr. Martino: At surgery a large, soft tissue mass was found within the intercostal musculature of the right lower portion of the chest wall. The mass was highly vascular, and approximately 500 cc. of blood were lost during the surgical procedure.

Robert Rohner, M.D.*: The specimen consisted of 78 Gm. of grossly hemorrhagic-appearing fibromuscular tissue which, on section, contained punctate gritty elements. Microscopically, the tissue was composed of skeletal muscle throughout which were multiple cavernous vascular spaces, many containing blood elements (Fig. 3). Some of the vessels were thrombosed, and there were varying degrees of organization and recanalization.

E. Robert Heitzman, M.D.†: The evaluation of calcification within soft tissue masses is one of the most common problems encountered in radiology. Such calcification may be amorphous, punctate, curvilinear, or in other configurations,

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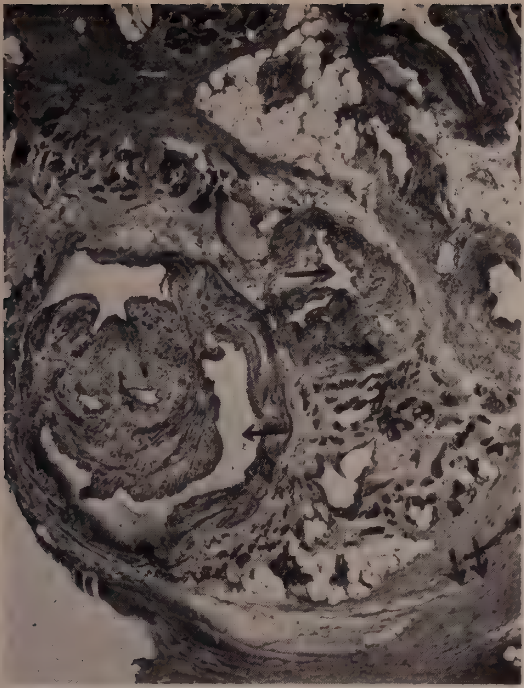

FIGURE 3. Microscopic study of mass shows large vascular channels (arrow) interspersed through skeletal muscle (arrows).

but these rarely allow a specific diagnosis to be made. Fine punctate or psammomatous calcification in a pelvic mass in a female is one exception and strongly suggests ovarian neoplasm.

One type of calcification, which is a pathognomonic finding in soft tissue masses, is the phlebolith. Fulton and Sosman[1] emphasized that the demonstration of phleboliths in an area where no venous plexus normally exists is diagnostic of cavernous hemangioma of striated muscle. Phleboliths, however, are not the only type of calcification which may occur in this tumor. As others have pointed out, the calcification may be amorphous or curvilinear, and at times the lesion may resemble a "calcified sponge."[2] The calcification may be very dense and compact and may, in some instances, represent bone. If, however, one or more phleboliths can be identified, the diagnosis is established. Phleboliths have been reported in 49 per cent of cases of cavernous hemangioma,[3] whereas other calcific shadows may be present in as high as 15 per cent of cases.[4]

Hemangiomas may have other radiographic features such as erosion of contiguous bony structures. Periosteal new bone may be seen in a small percentage of tumors. Regional hypertrophy of bones and soft tissues may occur in those patients in whom the epiphyses have not yet closed. In some patients, however, the bones may be normal or even hypoplastic. At times the large vascular channels over the surfaces of the hemangioma may be outlined against the subcutaneous fat.

It is important to make a correct preoperative diagnosis of this tumor since considerable bleeding may occur from the large vascular channels in the mass and may present a major problem for those unfamiliar with this type of surgery.

Final diagnosis

Cavernous hemangioma of skeletal muscle of the right posterior portion of chest wall.

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Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Inadvertent Hypothermia During Anesthesia

NORMAL HEAT-REGULATING mechanisms are compromised in the anesthetized patient. As a result, potentially dangerous elevations or declines in body temperature can develop insidiously and rapidly. A recent case report described the hazards inherent in progressive fulminating hyperthermia during anesthesia.[1] The following case report illustrates some of the problems associated with inadvertent hypothermia.

Case report

A nineteen-year-old woman was scheduled, during the month of August, for subtotal colectomy and ileostomy because of severe ulcerative colitis which was resistant to medical treatment. She had been maintained on 300 mg. of hydrocortisone daily. Her past history was irrelevant. Physical examination revealed a thin anxious patient with blood pressure of 110/70 and pulse rate of 92. Heart and lungs were normal as were the findings from electrocardiogram and chest radiogram. Hematocrit was 32, and electrolytes were within normal limits.

The patient was medicated with chlorpromazine 50 mg., meperidine hydrochloride 50 mg., and atropine 0.4 mg., administered intramuscularly one and one-half hours prior to surgery, and she came to the operating room awake and apprehensive. Anesthesia was induced with thiopental sodium 150 mg. followed by cyclopropane-oxygen in a closed circle absorption system. Following the intravenous injection of 50 mg. of succinylcholine, a cuffed endotracheal tube was inserted with ease. Thereafter, anesthesia was maintained with diethyl ether (5 to 10 per cent)-oxygen (500 ml.). Respirations were controlled manually. D-tubocurarine was used in intermittent increments, total dose 15 mg. Blood pressure ranged from 120/90 to 80/40 and pulse rate from 90 to 130 per minute during the procedure. The electrocardiogram showed regular sinus rhythm throughout, and urinary output was 100 to 120 ml. per hour. Three thousand ml. of lactated Ringer's solution containing 200 mg. of hydrocortisone and 1,500 ml. of whole blood were infused with the blood administered by moderately slow drip. The surgical procedure lasted for four hours and ten minutes; the bowel was exposed for approximately three hours.

The patient left the operating room with the endotracheal tube in place and respirations controlled with a self-inflating bag. On arrival in the recovery room, she was noted to be areflexic, without spontaneous respiratory efforts, and very cold to touch. Her pupils were fixed in mid-dilatation, but reacted to light. A thermistor inserted into the esophagus recorded a temperature of 89 F. She was immediately placed on a water mattress, the temperature of which was set at 100 F. Her respirations were controlled by a volume-limited ventilator. Within two hours, her temperature rose to 95 F., and she began to breathe spontaneously. The endotracheal tube was removed five hours after the end of anesthesia. There were no postoperative complications, and the patient left the hospital two weeks later.

Comment

Hypothermia, occurring inadvertently in the anesthetized patient, is most commonly caused by air-conditioned environments, the administration of cold blood from a blood bank, or a combination of both factors. Since the advent of air-

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conditioned operating rooms, precipitate falls in body temperature have been reported with increasing frequency, particularly in infants or when large body cavities were open for prolonged periods, as in this patient.[2,3] Transfusion of cold blood leads to hypothermia when large volumes are given rapidly, but the complication can be avoided by the use of blood-warming devices.[4]

The initial responses of the homeothermic organism to external cold, that is, shivering, vasoconstriction, increases in oxygen consumption, cardiac output, heart rate, respiratory rate, and so on, are abolished to a great extent if the patient is in surgical planes of anesthesia. Thus, the general results of cooling in anesthetized man are inhibition of metabolic and chemical processes, reduction in oxygen consumption, and diminution of physiologic activities. Spontaneous respiration becomes depressed, respiratory rate and tidal volume decline, while both the physiologic and anatomic deadspace are increased. Cardiac output and heart rate decrease in linear relation with the decrease in body temperature; arrhythmias are frequent at temperatures below 28 to 30 C. (83 to 86 F.) and may take the form of premature ventricular contractions, auriculoventricular block, or even ventricular fibrillation. The functions of the liver and kidneys are decreased in proportion to the degree of hypothermia. Glomerular filtration and tubular reabsorption are reduced, although urinary output may be maintained. These effects on liver and kidneys cause a slowing of the degradation and excretion of drugs.[5,6] The reduction in metabolic rate together with the delayed breakdown and elimination of drugs leads to overdose of anesthetic. The action of muscle relaxants differs with different agents: the neuromuscular blocking activity of d-tubocurarine is decreased when muscle temperature is lowered, while that of succinylcholine increases.[7] Metabolic acidosis commonly develops because of temperature differentials in muscle tissues and is enhanced by certain anesthetic agents such as diethyl ether.[6]

Depression of physiologic functions secondary to hypothermia must be differentiated from the effects of muscle relaxants or anesthetic agents per se. A thermometer and the block-aid monitor may be of help in the differential diagnosis. However, all three causes may play a role in any given patient.

The dangers associated with inadvertent hypothermia are not confined to the cooling period. During rewarming, care must be taken to prevent burns by controlling the temperature of the warming device. If anesthesia has lightened before a relatively normal temperature has been reached, shivering may develop and increase the oxygen consumption significantly. Shivering must be treated with drugs, such as chlorpromazine or promethazine hydrochloride, possibly in conjunction with a narcotic. Since even occult shivering elevates the oxygen expenditure markedly, adequate ventilation with a high oxygen atmosphere is essential. When tissue perfusion is impaired during hypothermia, mobilization of sequestered anaerobic metabolites may augment the degree of metabolic acidosis and necessitate therapy with sodium bicarbonate or organic buffers, such as tromethamine (THAM).[3]

It must also be kept in mind that the effects of muscle relaxants are reversed during rewarming, that is, d-tubocurarine block is potentiated and succinylcholine block is reduced.[7] Thus, it is best to prevent inadvertent hypothermia by constant monitoring of the body temperature. This precaution will also avoid development of the full-blown syndrome of fulminating hyperthermia which occurs occasionally.[1]

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Special Article

Problems, Care, and Rehabilitation of Blind and Almost Blind*

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THE PROBLEMS OF THE blind and the rehabilitation of the blind are subjects very close to every member of the medical profession. It is, therefore, timely to present a short summary on this topic.

It is necessary to distinguish between (1) total blindness, light perception or none, and (2) legal blindness, from 20/200 and down in the better seeing eye or more than 20/200 and a visual field diminished to less than 20 degrees area in the better eye (so-called partial blindness).

In 1968, the total number of blind was about 450,000 in the United States of America. The number of new cases fluctuates between a minimum of 9,000 and a maximum of 33,000 yearly. New York State has the largest blind population in the country; California is next, and Wyoming and Vermont have the fewest.

Statistics

Breaking down the figures according to race, 1962 statistics are as follows: white, 34.2 per cent; nonwhite, 48.4 per cent. According to ages: between twenty to fifty-five years, 35 per cent; over fifty-five years, 48 per cent; and under twenty years, 17 per cent. The 1965 ratio of blind to deaf is 8:1.

According to the 1962 statistics, causes of blindness are as follows: infectious diseases, 5.4 per cent; injuries, 3 per cent; neoplasms, 1.2 per cent; general diseases (including diabetes and vascular diseases), 22.4 per cent; prenatal influences (including retrolental fibroplasia), 13 per cent; unknown to science (glaucoma, cataract, myopia, and so forth, 42 per cent; and others, 13 per cent.

According to the 1962 statistics, eye injuries occur in 300,000 to 375,000 cases. A number of these injuries will result in permanent blindness. The number of glaucoma cases in 1960 was 130,000 and in 1965 this number increased to 140,000 (increase due to glaucoma screenings?). The number of partially seeing school children (acuity under 20/70) in 1960 was 840,000 and in 1965 this was increased to 980,000.

The 1966 statistics show that the causes of eye injuries among children were as follows: blows, 40 per cent; sharp objects and flying particles, 30 per cent; BB guns, slingshots, and other weapons, 4.3 per cent; and various causes, 25.7 per cent.

Finally, the following is a statistical survey on legal blindness by site and type of eye affection (Table I).

It is expected that blindness caused by infections, injuries, glaucoma, and cataract will be considerably diminished by 1971. On the other hand, eye affections associated with aging and chronic diseases will result in an increase of the figure of blindness caused by general diseases. Trachoma figures as only 0.2 per cent in the United States as a factor in blindness. Ophthalmoblennorrhea, syphilis, and tuberculosis, which were the leading figures in old statistics, play a very small role in the United States figures for 1965.

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* Sightsaving review publications are included among various publications, articles, and pamphlets issued by: The National Society for the Prevention of Blindness, 1959–1968; The Library of Congress: Division for Blindness, 1964–1967; the American Foundation for the Blind, 1958–1967; and the New York Association for the Blind (The Lighthouse), 1957–1967. In addition, the New York Association for the Blind (The Lighthouse) supplied verbal information in February, 1968.

TABLE I. Statistical survey on legal blindness

Site	Per Cent
Eyeball (glaucoma, myopia, and others)	24.9
Cornea	4.8
Lens	22.5
Uveal tract	4.9
Retina	29.4
Optic nerve	10.6
Vitreous	0.2
Others	2.7

Organizations for the care of the blind population

Available organizations (Federal, State, and local) to care for and rehabilitate the blind are presented. This, perforce, is an incomplete list (Table II).

The National Association for the Prevention of the Blind has done an invaluable job in preaching means to prevent blindness medically and in the industrial field; its publication, the *Sight Saving Review*, truly reflects its manifold activities. It helped in the formation of legislation to improve the lot of the blind economically and socially and has contributed to the coordination of the various other organizations for the blind.

The American Foundation for the Blind, in New York City, is the link between the Federal and State organizations and the great number of voluntary organizations for the care of the blind population. It administers locally the publishing and distribution of Braille literature. It makes available "talking records" and tapes and large-print books through libraries, schools, and individuals.

Aids available for the blind

Gadgets and tools so necessary for the blind, to carry out their everyday life all by themselves, is a project of the Foundation, and the products are being sold at nominal cost to the blind. A great number of such gadgets available for everyday use are: Braille stylus and plate; Braille writers; watches; kitchen aids; thermometers, barometers, and syringes; Braille music; tools and instruments needed in the shops, including meters and tapes; writing and drawing aids; megascope projection readers, telescopic lenses, and magnifiers for the partially sighted; Tell-a-touch machine to provide communication with a deaf-blind person who knows Braille; all sorts of games for recreation of the blind; various geographical maps, globes, and aids; traveling canes—all at very low prices; and for partially sighted persons: low-vision aids of tremendous variety and degree at the New York Lighthouse.

TABLE II. Organizations for care of blind population

Organization	Type
Prevention and research	National Society for the Prevention of Blindness; Sight-saving Review, 1959–1968
Federal	Library of Congress, Division for Blindness, 1964–1967
State	New York State Department of Social Services; Commission for the Blind and Visually Handicapped; Vocational Rehabilitation Service offices (New York State)
Services	American Foundation for the Blind (New York City) The New York Association for the Blind (The Lighthouse) (New York City and Queens) New York Guild for the Jewish Blind Industrial Home for the Blind (Brooklyn) Associations for the Blind (Albany, Buffalo, Rochester, Syracuse, Utica) The New York Public Library The Lighthouse Music School (New York City) Vacation Camp for the Blind (Waretown, New Jersey) The Veterans Administration, Prosthetic and Sensory Aid Service Jewish Braille Press Xavier Society for Braille Press

The New York Association for the Blind, commonly called the Lighthouse, together with the New York Guild for the Jewish Blind, and Brooklyn Industrial Home for the Blind are the "Grand Central" for rehabilitation, social care, moral and spiritual attention, and recreation centers of the blind people in the New York area. The American Foundation for the Blind, in addition, also has services for deaf-blind and for deaf-mute and blind persons.

Both the Lighthouse and the American Foundation for the Blind have extensive lending library services for and about the blind. Scholarships are available through these organizations for these nonsighted people who aim to attend institutions of higher learning.

The National Industries for the Blind and the Industrial Home for the Blind in Brooklyn are very active in retraining nonsighted people for skilled and unskilled occupations and in placing capable blind workers in various sensitive industries.

The Federal government, through the Division of the Blind of the Library of Congress, organizes, prints, and publishes great numbers of "talking books" and tape recorders for the blind and supervises distribution throughout the country. "Talking" machines to listen to the contents of the "talking books" are either sent free or at a nominal cost. Legislation also helps the blind by preferring them in certain jobs, by reduction of fares on various means of transportation, reduction in taxes, and rendering Federal and state aid where needed. Large-print books and Braille literature are now being printed at government cost, and low-vision aids are sold at a nominal price through the Division of the Blind, Library of Congress, Washington, D.C.

The public is taking an active, heartwarming part in giving time, talent, and other help to the blind, as seen daily in the various activities of the organizations for the blind throughout New York City and elsewhere.

It is characteristic of the need for large-type books and recording tapes that beside the nonprofit organizations, private enterprise has seen the light in discovering a potential market for the partially sighted. The Book of the Month Club, in cooperation with Recording for the Blind, is offering the services of the Recorded Book Society, a new monthly service that provides outstanding books on long-playing records.

Recording for the Blind, Inc., is an affiliate of New York Lighthouse and since 1951 has distributed some 250,000 textbooks on records to blind college and graduate students, among other of its manifold useful activities.

Care and rehabilitation of children, blind or partially sighted, is a joint effort of Federal, state, and city administrations by organizing prenurseries, nurseries, and kindergartens for these children and in organizing sightsaving classes throughout the nation. In addition, the government sponsors schools to train special teachers for the blind and for the sightsaving classes. Unfortunately, the number of specially trained teachers is still woefully small.

The New York Public Library is available for lending Braille books, music sheets for the blind, tapes and tape records, as well as talking machines. Partially sighted persons can borrow all kinds of large-print books, fiction and nonfiction. These talking books and Braille books encompass every aspect of literature. Texts are available from elementary school material to university lectures and from science to economics. Fiction and music texts, daily papers, and journal reviews also are available as well as topics on daily sports and financial events.

The following is an additional list of large-print book suppliers: *The New York Times* weekly; *Webster's Large Print College Dictionary*, by Microfilm Corp., Los Angeles; *Readers Digest* in large-print type; and most recently the Xerox Corporation has introduced facilities to enlarge small print to sizes such as 10, 14, and even 24 points. The Lighthouse has arranged for recreational activities from amateur skits to serious dramatic performances and concerts.

Rehabilitation being programmed in daily practice

How much rehabilitation is being programmed in daily practice? There is medical care, which includes a physical checkup; psychologic work-up, care, and readjustment; ophthalmologic check-up and care; and audiologic check-up and care for the deaf-blind.

Rehabilitation is carried on in separate groups: those who cannot be rehabilitated such as elderly and weak persons who in addition present problems other than blindness alone, and blind children with other overwhelming mental and physical disabilities.

Decisions must be made concerning psychologic, medical, and religious reassurance, and amount of rehabilitation possible. Should the patient stay with the family or in a home for the blind aged? Can the patient participate in the recreation activities of the various agencies?

Those with good chances for rehabilitation may be (1) retrained for independence of a physical nature, including self-grooming and self-help in the house; (2) retrained for orientation, locomotion, and motility with a cane and with a seeing-eye dog; and (3) retrained to establish communication with the outer world by learning Braille reading, writing, and printing. Talking books, tape recordings for the blind and, in other cases, large-print books and low-vision aids are used. The blind-deaf can be taught "manual" reading and/or Braille.

Vocational rehabilitation is dependent on previous experience, intellectual training, present psychologic attitude, present physical condition, training for unskilled labor, training for skilled labor, training for very specialized skills, and training for further education.

The rehabilitation potential is determined by the patient's elementary school level, high school level, suitability to follow academic courses, and for the highly intelligent, rehabilitation in vocations approximating their former fields of activity.

Rehabilitation for blind children should include prenursery school, nursery and kindergarten training, and preschool training. The school education to be considered must be arranged for the totally blind, for the partially sighted, and for blind-deaf children. It is assumed that about 80 per cent of the blind can be rehabilitated.

Recreational activities for the blind include entertainment, games, parties, sports, music and drama, and summer camps.

The blind must be taught to relearn the simplest acts of personal grooming, to tell time with Braille watches and clocks, and to identify coins by their feel. They are retaught to recognize objects in use during the course of daily living in cooking, sewing, and cleaning. Braille labels help in the identification of foods and household appliances. In the shop, rudiments of house repair are taught from electrical appliances to changing a doorknob.

The ugly and offensive eating manners of some blind individuals are eliminated by calling attention to it and bluntly explaining the unpleasant impression it creates in the sighted ones. Many individuals who become blind lose their facial expressions, especially the expression of smiling. Attention to this should be direct and to the point. A great deal can be done to teach the blind person to turn his head, move his eyes toward the source of sound, and thus to encourage the unsighted to avoid the impression of helplessness and pitifulness.

Regarding re-orientation and locomotion

Handling a cane while walking indoors is taught first and then the blind person is taken outdoors by his instructor. He is encouraged to do the walking all by himself. Cold sweat breaks out all over him while he tries this first step but eventually overcomes his fear. The steps, and going up and down the stairs remain a terror for quite a while. Next he is taught how to step on and off a bus, a train, and finally a subway. All these are jobs of "sweat and tears" until well learned.

The blind person then is gradually trained to use his tactile sensation to recognize hard and soft ground or uneven surfaces, to differentiate between rocks or pavement (asphalt or cobblestones) under his feet. His ears and other sensory perceptions, even the shades of temperature, will gradually develop.

The denseness of a wall will be recognized, the emptiness of a ditch or hole near the feet will be sensed. He will notice an open window or a door caused by decreased denseness in a solid wall. The characteristic noise of a restaurant, the smell from a bakery, the odors coming from an open grocery store will become guiding landmarks in orientation. Solid objects emit a density of radiation which the blind can learn to sense.

In his occupation the blind person will have to learn the position of the stationary and moving parts of machines, and so on. He has to relearn the inclines of space. He will tell where east, south, or west is by just sensing from where the heat of the sunshine comes. The characteristic click of changing streetlights and the sounds of the direction of oncoming cars will be recognized.

Trees, trunks, poles, or other larger objects give faint echoes which if identified prevent collision. Echoes or sounds will tell if a room is large or small. The resilience of rugs, grass, concrete, or wooden floors can be learned quickly. Plastic, metal, or wood have different, and make different, sounds which also can be distinguished. The sense of smell and temperature emitted from clothing will tell the blind about new and different wearing apparel.

All this needs intelligence, will power, and motivation. However, if achieved, the nonsighted person will regain much of his psychologic and physical independence and self-trust.

Recently "blind canes" with sonar or radar guidance and some with laser beams have been developed. The energy or radiation emitted from rough surfaces is gathered into the fingertips through a vibrating pin in the handle of the cane. If the orientation or mobility training with the cane is sometimes not feasible, then such people may be helped by a "seeing-eye" dog.

The "seeing-eye" training generally lasts about four weeks, depending on the individual progress. The higher the intelligence, the higher the motivation, the better the result. However, "seeing-eye" dogs are not the answer to training of orientation and locomotion. Real independence has not been developed in such sightless persons. Economically, too, it is not feasible because of the considerable financial expense entailed in getting suitable dogs and in training them for the job. In the New York City area, Morristown, New Jersey, is the place for training "seeing-eye" dogs.

The most important step now will be to rehabilitate the blind. This is important to himself and to the community in which he lives.

Means of communication

Means of communication for the blind and for the deaf-blind are: Braille reading and writing, Braille shorthand, Braille typewriter, regular typewriter to communicate with the sighted people, "palm alphabet" and "palm manual," Braille music sheets, and Tactophone for telephone conversation, especially for the deaf-mute and blind.

Braille reading is a very slow and time-consuming process and it is extremely difficult for people over the age of thirty-five to learn. Learning, however, will have to be done, in spite of all difficulties. Reading of notes and making notes, too, in Braille is particularly important to enable the blind person to make his personal notes and reminders with sufficient ease.

Tape recorders for the blind have been improved only recently to use $16^2/_3$ and recently $8^1/_3$ speed. This speed permits the recording of one book on one single or two records. Talking books and blind tapes are extremely clear, noiseless, and pleasant to listen to. Private organizations publish and sell tapes and tape-reading machines at a very low cost in monthly editions.

The tapes from "Science Service for the Blind," Haverford College, Haverford, Pennsylvania, cover fields such as physics, chemistry, mathematics, and astronomy. The most recent tape is by Dr. Linus Pauling on "Atomic Structures in Organic Molecules."

In the New York Lighthouse, people with good reading voices (actors and others) offer their services regularly to record the latest books, publications, magazines, and journals for the benefit of those interested.

The blind-deaf are being taught the palm manual for communication with each other. Lip reading for the blind is, of course, not feasible. The blind are being taught an alphabet which is based on tactile codes applied to the palm-fingers or to the dorsal surface of the hands and to the tips of the fingers. In addition, each deaf-blind person will have an identifying ring on his fingers. Writing and perceiving the manual alphabet is difficult. It may take months of practice. When learned, however, it is amazing to notice the dexterity and ease with which the blind-deaf people can communicate and gossip with each other. Those able and willing, also will be proficient in Braille reading and writing.

Another device for the deaf and blind is the Tactophone, put out by the New York Telephone Company, whereby it is possible for a deaf person to use the phone via the code, by sending dot and dash signals with the dial, which then is perceived by the palm of the hand on the other end of the line.

Regarding the actual rehabilitation of the blind, the employment of the blind depends on whether or not his visual limitations are compatible with the type and demands of the job to be performed; his own health is not endangered by the working situation; his mobility skills are sufficiently developed to enable him to travel to and from work and to move about the place of employment to the extent required to perform his job efficiently; and he can behave personally and socially in a manner acceptable to his employer and to his co-workers.

Very often it takes time to convince management that intelligent blind people with will power can be trained to become as effective workers as the sighted. Once the demonstration has been made, there usually is no further trouble from management. More and more industries ask for skilled blind people to be used in industries where fine touch and careful, selective work is needed.

Regarding the rehabilitation of the deaf-blind, there are fundamental differences in this severely handicapped group. There is difficulty of communication plus personality factors. In addition, travel to and from work is a serious obstacle with the deaf-blind. At best, the locomotion skills in this latter group are, on an average, not up to par. The Office of Vocational and Rehabilitation of the Department of Health of the State of New York estimates that about 4,000 blind persons are being rehabilitated vocationally annually.

In the education of blind children, their response is much faster in developing and accumulating skills appropriate to career planning and job placement activities.

Blind children will be placed in prenurseries, then in nurseries and kindergartens together with the other children preferably kept under the supervision of special teachers. A blind child should be given family and school responsibilities commensurate with his capacity and development. He should be encouraged in sports so that coordination and balance will be improved. Blind children should be given as much contact with sighted persons, both adults and children, as possible. The reading needs of blind children should be separated from those of adults.

Schools for blind and blind-deaf children

Some of the schools which are available for the education of these children, the blind as well as the blind-deaf, are: Alabama Institute for the Blind; Illinois Braille and Sight Saving School; Iowa School for the Deaf; Michigan School for the Blind; Washington State School for the Blind; Perkins School for the Blind, Watertown, Massachusetts; and New York Institute for the Blind.

The curriculum in these schools is abbreviated and modified; the teacher-pupil ratio and teaching methods have quite different standards from those normally accepted.

Deaf-blind children number about 600 to 800 in the United States. The most important cause of their disability is maternal rubella which is responsible for visual loss and deafness. Usually other physical or mental disabilities are present also.

The education for all types of visually handicapped children which the City of New York Department of Health has established includes resource classrooms in elementary, junior, and senior high schools; itinerary teaching services; classes for emotionally disturbed blind children; classes for mentally retarded blind children; and, finally, classes for children where visual acuity cannot be corrected to more than 20/70 in the better eye—so-called sightsaving classes.

The basic criterion for placement in these programs is whether or not the child's visual defect is an impeding force in his total school adjustment. Large-type print books are used for partially sighted children, and special blackboards with special colored chalks are being used.

Braille material, as a tool for learning, is being used only for those children who cannot read large-type print. Instruction on typewriting large letter type also is being given. The children are referred to their regular classrooms for any other education where attention is more important than seeing alone. A continuous consultation with the regular classroom teacher is an accepted routine.

The visually handicapped children also are provided with special guidance and school bus service.

Besides the half-million blind in the United States, an additional half-million persons may be functionally blind or partially sighted. There are a great variety of low-vision aids already in existence and various low-vision aid services, especially that of the New York Lighthouse, do outstanding work.

Mentioned before are the serious problems facing the deaf and blind in every aspect of rehabilitation. However, the human spirit is very often unconquerable. To witness the gay game parties of the deaf-blind, and know that these same people go out on fishing parties and do their own angling and baiting, and that they can enjoy their life with zest, is a soul-inspiring experience. The manual language of the deaf and blind and the very ingenious way developed to enable these people to use the telephone for tactic communication must also be emphasized.

Research projects

The various research projects which aim to modernize and improve the rehabilitation of the blind and the blind-deaf include: auditory training technics to amplify remnant sound into perceptible sound; the improvement of the electronic cane (Franklin Institute) through application of sonar and radar principles, together with use of the laser beam; improved facilities for the partially sighted; improved aid and assistance to the blind by coordinating efforts of the Federal and state governments together with the voluntary organizations; and more active research into the causes of blindness, the most potent weapon being *prevention*.

In addition, a thorough biophysical study should be made of all the sensory channels utilized by blind travelers. These are: muscle sensory; organs of equilibrium; skin sensations (pressure sensing and temperature sense); olfactory sense; and auditory channel (monaural and binaural).

Research is being done to further develop and improve the various guidance device services, the Radio Corporation of America recognition machine (Mauch Laboratories), A-2 reader, the Massachusetts Institute of Technology infra-red sensing instrument, and others; devices to scan ordinary print and to turn it into sound tones or even spoken words; and to turning ink-print automatically into Braille print.

An effort has been made to present a very superficial and a very unscientific presentation on blindness, on semiblindness, and on brave people without fear, who try to overcome their disastrous handicap, blindness, sometimes compounded with deafness and even with muteness.

Attention has been called to the tremendous effort which is being made by sighted people to aid these handicapped human beings to become self-reliant and useful members of society. On the physicians, and especially the ophthalmologists, falls the task to double their efforts to work hard, by all means possible, to increase their scientific research to prevent blindness. Physicians and especially ophthalmologists should not abandon their patients when they feel that they are unable to help them any more. The cooperation and interest in the further fate of the blind, and in the unending work of their rehabilitation, should be work of positive participation.

Such an active interest by the medical and especially the ophthalmic profession will contribute immeasurably to the development of the public concept of blindness, as a disability that can be dealt with, in a positive and constructive fashion. The sadness at parting with patients will be mingled with joy, when it is seen that these same people are turned into dignified human beings, through the physicians' and ophthalmologists' devoted and concerted efforts.

5 West 86th Street
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Necrology

Lawrence John Alvarez, M.D., of Brooklyn, died on August 10 at the age of fifty-six. Dr. Alvarez graduated in 1937 from New York Medical College. He was an attending physician in general practice at Prospect Heights Hospital Pavilion. Dr. Alvarez was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Donald Budd Armstrong, M.D., of Scarborough, died on August 24 at the age of eighty-one. Dr. Armstrong graduated in 1912 from Columbia University College of Physicians and Surgeons. Retired, in 1948, he was the recipient of the Elizabeth S. Prentiss National Award in Health Education which is presented by the American Public Health Association. Dr. Armstrong was a Diplomate of the American Board of Preventive Medicine, Inc. (Public Health) and a member of the American Public Health Association and the New York Academy of Medicine.

Louis Herbert Becker, M.D., of New York City, died on July 14 at the age of sixty-nine. Dr. Becker graduated in 1927 from Boston University School of Medicine.

Michael Anthony Bokat, M.D., of The Bronx, died on July 22 at the age of thirty-three. Dr. Bokat graduated in 1961 from Albert Einstein College of Medicine. He was an assistant attending physician at Montefiore Hospital. Dr. Bokat was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Thomas Walter Carey, M.D., of New York City, died on August 21 at the age of eighty-three. Dr. Carey graduated in 1911 from Cornell University Medical College. He had been a senior attending physician at St. Vincent's Hospital of the City of New York.

Frank Edward Cormia, M.D., of New York City and Chappaqua, died on August 26 at the age of sixty-three. Dr. Cormia graduated in 1930 from the University of Vermont College of Medicine. He was an attending physician at The New York Hospital and a clinical professor of medicine at Cornell University Medical College. Dr. Cormia was a Diplomate of the American Board of Dermatology, Inc., and a member of the American Academy of Dermatology, the American Dermatological Association, the Society for Investigative Dermatology, the New York Academy of Medicine, the New York Dermatological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Erwin Jakob Freundlich, M.D., of East Orange, New Jersey, formerly of Brooklyn, died on July 29 at the age of seventy-three. Dr. Freundlich received his medical degree from the University of Berlin in 1920 and in 1945 from New York University School of Medicine. He was a member of the New Jersey State Medical Society.

George Gamsu, M.D., of Rochester, died on July 11 at the age of sixty-five. Dr. Gamsu graduated in 1930 from the University of Michigan School of Medicine. He was a Diplomate of the American Board of Radiology (Diagnostic Roentgenology), and a member of the Rochester Academy of Medicine, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter Heinemann, M.D., of New York City, died on August 14 at the age of eighty-four. Dr. Heinemann received his medical degree from the University of Berlin in 1908. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Kurt Michael Lipschitz, M.D., of Flushing, died on July 20 at the age of eighty-one. Dr. Lipschitz received his medical degree from the University of Berlin in 1913. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

John Parker McQuillin, M.D., of Westhampton Beach, died on April 22 at the age of ninety-five. Dr. McQuillin graduated in 1895 from Long Island College Hospital. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Jakob Mohr, M.D., of New York City, died on July 20 at the age of seventy-seven. Dr. Mohr received his medical degree from the University of Munich in 1915. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Eli Hyman Rubin, M.D., of The Bronx, died on August 28 at the age of sixty-nine. Dr. Rubin graduated in 1925 from Yale University School of Medicine. He was a consulting physician in pulmonary diseases at Morrisania City Hospital, an honorary consulting physician in pulmonary diseases at Bronx-Lebanon Hospital Center, and an attending physician in chest diseases at Bronx Municipal Hospital Center and Montefiore Hospital. Dr. Rubin was a Fellow of the American College of Physicians, a Fellow of the American College of Cardiology, and a member of the American Thoracic Society, the New York Academy of Medicine, the New York Society for Thoracic Surgery, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Frederick Rodney Sanborn, M.D., of Jackson Heights, died on August 25 at the age of ninety-one. Dr. Sanborn graduated in 1902 from Dartmouth Medical School. Retired, he was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Dennis Bernard Sullivan, M.D., of Queens Village, died on July 28 at the age of seventy. Dr. Sullivan graduated in 1924 from the University of Vermont College of Medicine. He was an honorary affiliate surgeon at Mary Immaculate Hospital. Dr. Sullivan was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Samuel Walder, M.D., of Brooklyn, died on July 31 at the age of seventy-four. Dr. Walder received his medical degree from the University of Vienna in 1921. He was a clinical assistant surgeon at Brooklyn-Cumberland Medical Center Outpatient Department and an attending surgeon at Adelphi Hospital. Dr. Walder was a Fellow of the International College of Surgeons and a member of the American Geriatrics Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Fred Otto Winter, M.D., of New York City, died on July 13 at the age of seventy-six. Dr. Winter received his medical degree from the University of Vienna in 1917.

Length of disability

The incidence of disability lasting more than eight days reached a new low in 1967, according to the Metropolitan Life Insurance Company. New cases of disability occurred at the rate of 118 per 1,000 of their personnel in 1967 or more than 7 per cent under the previous low of 127 in 1966. Over the preceding eight-year period, the disability rate ranged from 133 to 158 per 1,000.

This downward trend is in general agreement with estimates of the incidence of disability in the United States population. For the year ending in June 30, 1967, new cases of disability because of acute conditions were estimated to be approximately 10 per cent below the rate for the preceding year.

The major factor responsible for the lower morbidity rate in 1967 was a drop in disabilities caused by respiratory diseases. The incidence rate from this cause declined from 31 per 1,000 to 26. Other major causes which registered a lower frequency in 1967 were diseases of the digestive system and accidental injuries.

These two latter causes were the leading ones of disability among males in 1967, each registering an incidence rate of 18 per 1,000. At ages under twenty-five, accidental injuries were much more frequent than any other disabling condition. They remained the leading cause of disability up to age forty-five. In the age range from forty-five to sixty-four, diseases of the circulatory, digestive, and respiratory systems were the leading causes of disability, in that order.

Among women, diseases of the respiratory system continued to be the leading cause of disability. In each age group, these diseases accounted for nearly 30 per cent of all new cases of disability in 1967. Accidental injuries were next in importance as a cause of disability among females, followed by disease of the digestive system and neoplasms. Accidental injuries, together with diseases of the respiratory system, accounted for nearly two thirds of all new cases of disability among women.

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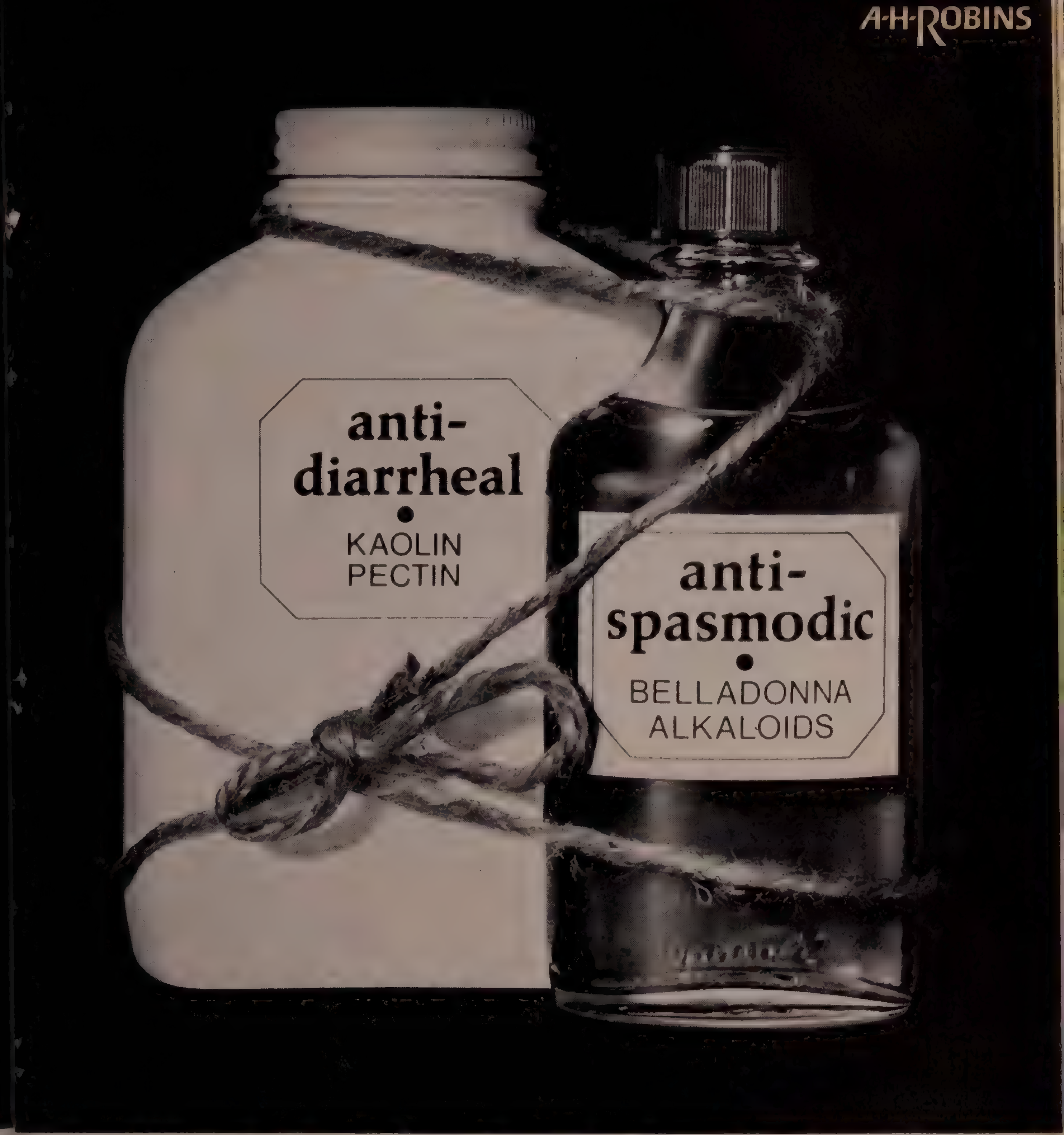

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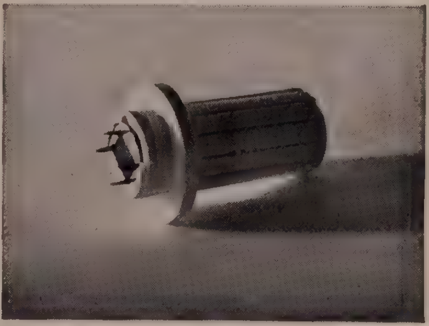

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Contraindications: Hypersensitivity to any component.

Warning: In renal impairment, since liver toxicity is possible, lower doses are indicated; during prolonged therapy consider serum level determinations. Photodynamic reaction to sunlight may occur in hypersensitive persons. Photosensitive individuals should avoid exposure; discontinue treatment if skin discomfort occurs.

Precautions: Drowsiness, anorexia, slight gastric distress can occur. In excessive drowsiness, consider longer dosage intervals. Persons on full dosage should not operate vehicles. Nonsusceptible organisms may overgrow; treat superinfection appropriately. Treat beta-hemolytic streptococcal infections at least 10 days to help prevent rheumatic fever or acute glomerulonephritis. Tetracycline may form a stable calcium complex in bone-forming tissue and may cause dental staining during tooth development (last half of pregnancy, neonatal period, infancy, early childhood).

Adverse Reactions: *Gastrointestinal*—anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. *Skin*—maculopapular and erythematous rashes; exfoliative dermatitis; photosensitivity; onycholysis, nail discoloration. *Kidney*—dose-related rise in BUN. *Hypersensitivity* reactions—urticaria, angioneurotic edema, anaphylaxis. *Intracranial*—bulging fontanels in young infants. *Teeth*—yellow-brown staining; enamel hypoplasia. *Blood*—anemia, thrombocytopenic purpura, neutropenia, eosinophilia. *Liver*—cholestasis at high dosage.

Upon adverse reaction, stop medication and treat appropriately.

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colitis

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Side effects, when seen, are typical of anticholinergic agents—dryness of the mouth, blurring of vision, etc.—and/or of chlordiazepoxide HCl—drowsiness, ataxia and confusion, particularly in the elderly or debilitated.

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Contraindications: Patients with glaucoma; prostatic hypertrophy and benign bladder neck obstruction; known hypersensitivity to chlordiazepoxide hydrochloride and/or clidinium bromide.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering Librium (chlordiazepoxide hydrochloride) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards. As with all anticholinergic drugs, an inhibiting effect on lactation may occur.

Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: No side effects or manifestations not seen with either compound alone have been reported with Librax. When chlordiazepoxide hydrochloride is used alone, drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido — all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally with chlordiazepoxide hydrochloride, making periodic blood counts and liver-function tests advisable during protracted therapy. Adverse effects reported with Librax are typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy and constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diet.

Dosage: Individualize for maximum beneficial effects. Usual maintenance dose is 1 or 2 capsules, 3 or 4 times a day, before meals and at bedtime. Geriatric patients—see Precautions.

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New York State Journal of Medicine

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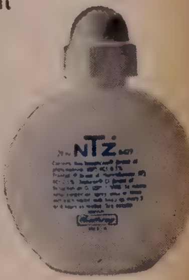

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Warnings: Acute anaphylaxis (may prove fatal unless promptly controlled) is rare but more frequent in patients with previous penicillin sensitivity, bronchial asthma or other allergies. Resuscitative (epinephrine, aminophylline, pressor amines) and supportive (antihistamines, methylprednisolone sodium succinate) drugs should be readily available. Other rare hypersensitivity reactions include nephropathy, hemolytic anemia, leucopenia and thrombocytopenia. In suspected hypersensitivity, evaluation of renal and hematopoietic systems is recommended.
Precautions: In suspected staphylococcal infections, perform proper laboratory studies including sensitivity tests. If overgrowth of nonsusceptible organisms occurs (constant observation is essential), discontinue penicillin and take appropriate measures. Whenever allergic reactions occur, withdraw penicillin unless condition being treated is considered life threatening and amenable only to penicillin. Penicillin may delay or prevent appearance of primary syphilitic lesions. Gonorrhea patients suspected of concurrent syphilis should be tested serologically for at least 3 months. When lesions of primary syphilis are suspected, dark-field examination should precede use of penicillin. Treat beta-hemolytic streptococcal infections with full therapeutic dosage for at least 10 days to prevent rheumatic fever or glomerulonephritis. In staphylococcal infections, perform surgery as indicated.
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Abstracts

Tozzo, P. J.: Semen analysis in unilateral epididymitis, New York State J. Med. **68:** 2769 (Nov. 1) 1968.

Semen analyses were done on 16 men with unilateral nongonorrheal epididymitis to evaluate the effect on the sperm. Counts of less than 20 million per cubic centimeter were found in 7 of the men, with 1 azoospermic. Motility did not seem to be significantly altered.

Bakamjian, V. Y.: Total reconstruction of pharynx with medially based deltopectoral skin flap, New York State J. Med. **68:** 2771 (Nov. 1) 1968.

Following total or subtotal surgical ablation of the larynx for head and neck cancer, a safe and expeditious method for replacing both the laryngopharynx and large deficits in the oropharynx, reaching as high as the posterior wall of the nasopharynx, offers a less yielding and more decisive attack on the disease than radiation and/or chemotherapy. Pharyngeal reconstruction using the deltopectoral skin flap is described and the advantages discussed.

Abstracts in Interlingua

Tozzo, P. J.: Analyse del semine in epididymitis unilateral (*anglese*), New York State J. Med. **68:** 2769 (1 de novembre) 1968.

Analyses del semine esseva effectuate in 16 masculos con nongonorrheic epididymitis unilateral con le objectivo de evalutar le effecto del condition super le sperma. Numerationes de minus que 20 milliones pro cm^3 esseva trovate in 7 del masculos studiate. Un de illes esseva azoospermic. Il pare que le motilitate del sperma non esseva alterate significativemente.

Bakamjian, V. Y.: Reconstruction total del pharynge con lobo de cute deltopectoral a base medial (*anglese*), New York State J. Med. **68:** 2771 (1 de novembre) 1968.

Post le total o subtotal ablation chirurgic del larynge in casos de cancere in le area de capite e collo, le reimplaciamento del laryngopharynge e extense deficits in le oropharynge con extension in alto usque al pariete posterior del nasopharynge representa—si le methodo usate es salve e efficace—un plus aggressive e ergo potentialmente plus decisive attacco contra le morbo que radiation e/o chimotherapia. Es describite reconstruction pharyngee con le uso de un lobo de cute deltopectoral. Le avantages del methodo es describite.

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eruptions with or without fever. Rarely, dermatitis goes on to exfoliation with hepatitis, and further dosage is contraindicated. Gingival hypertrophy, hirsutism, and excessive motor activity are occasionally encountered. During initial treatment, side effects may include gastric distress, nausea, weight loss, nervousness, sleeplessness, feeling of unsteadiness. Macrocytosis, megaloblastic anemia, leukopenia, granulocytopenia, thrombocytopenia, pancytopenia, agranulocytosis, and aplastic anemia have been reported. Nystagmus, lymphadenopathy, lupus erythematosus, erythema multiforme (Stevens-Johnson syndrome), and a syndrome resembling infectious mononucleosis with jaundice, have occurred.

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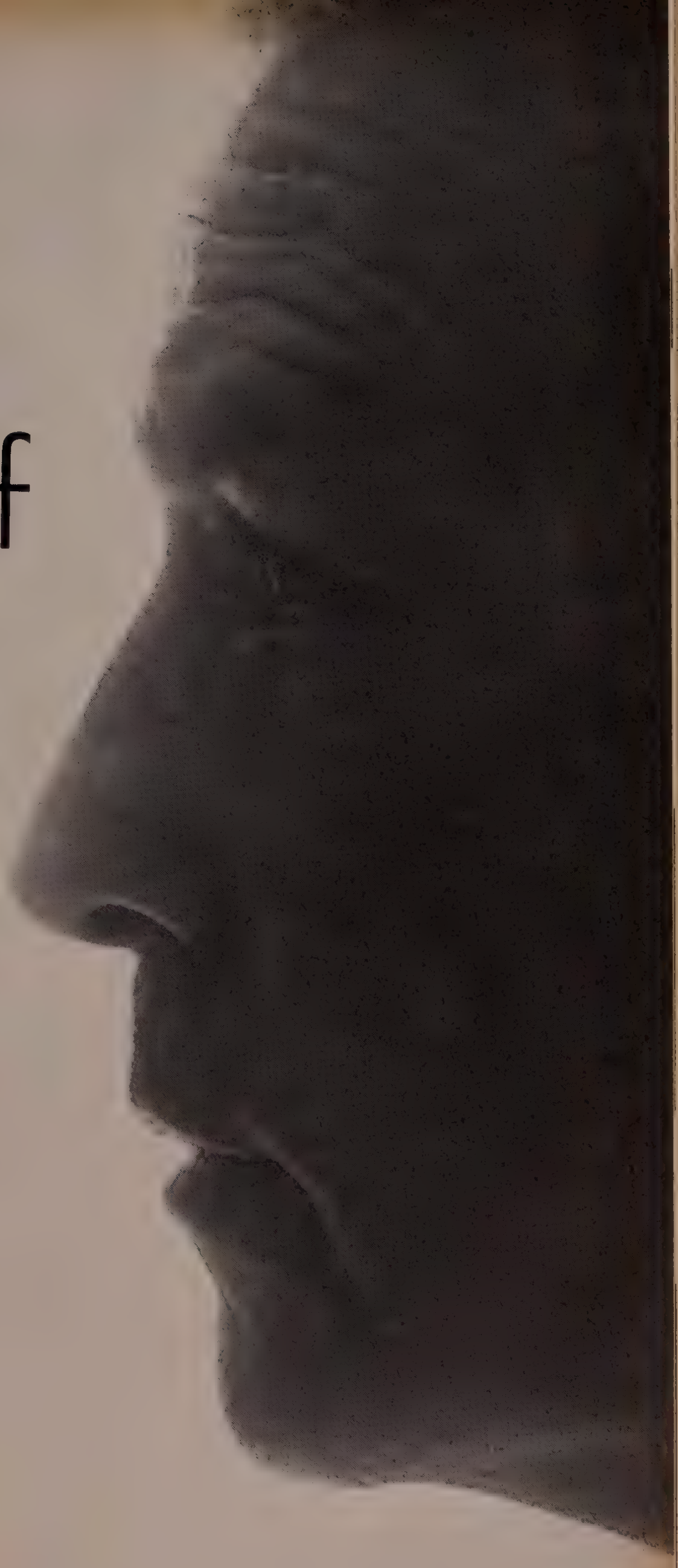

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INDICATIONS: Mild to severe hypertension.
CONTRAINDICATIONS: Anuria; increasing azotemia and oliguria during treatment of severe progressive renal disease. Known sensitivity to hydrochlorothiazide or reserpine. Active peptic ulcer and ulcerative colitis. Nursing mothers. If drug is essential, patient should stop nursing. Active mental depression, especially with suicidal tendencies. Electroshock therapy; discontinue drug at least 7 days before initiating electroshock therapy.
WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls. Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. Consider possibility of sensitivity reactions in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Discontinue at first sign of depression. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of childbearing age potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.
PRECAUTIONS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. **Reserpine:** Since reserpine may increase gastric secretion and motility, it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other GI disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. For emergency surgery, vagal blocking agents parenterally may be needed. Anxiety, depression, or psychosis may develop. Preexisting depression may be aggravated. Discontinue at first sign of mental depression. Use with extreme caution in patients with history of mental depression, noting possibility of suicide. Use caution when treating hypertensive patients with renal insufficiency, as they adjust poorly to lowered blood pressure levels. Use cautiously with digitalis and quinidine; cardiac arrhythmias have occurred with reserpine preparations.
ADVERSE REACTIONS: Hydrochlorothiazide: Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, and paresthesias may occur. Purpura, rash, urticaria, photosensitivity, or other hypersensitivity reactions have been reported. Also, cutaneous vasculitis in elderly patients on repeated and continuing exposure to several drugs. Scattered instances of pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice have been reported. With moderate or severe reactions, thiazide dosage should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, increased salivation, vomiting, bradycardia, mental depression, nervousness, paradoxical anxiety, epistaxis, purpura due to thrombocytopenia, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS sensitization manifested by dull sensorium, deafness, glaucoma, uveitis, and optic atrophy have also been noted. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure.
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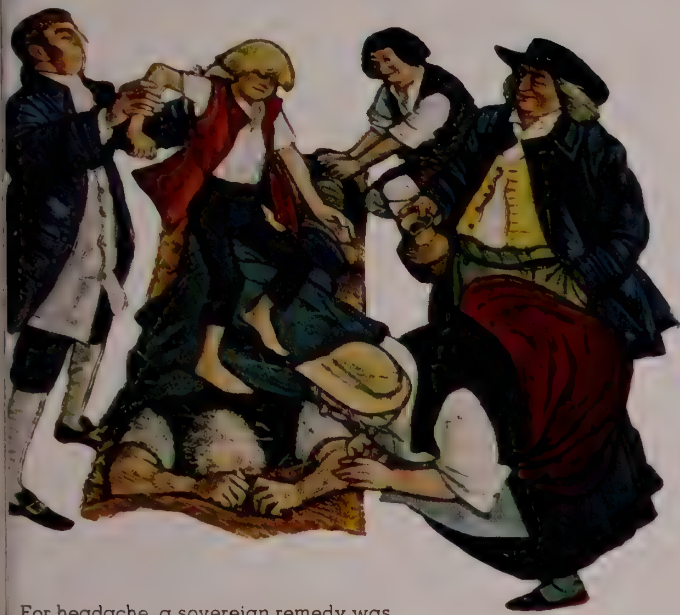
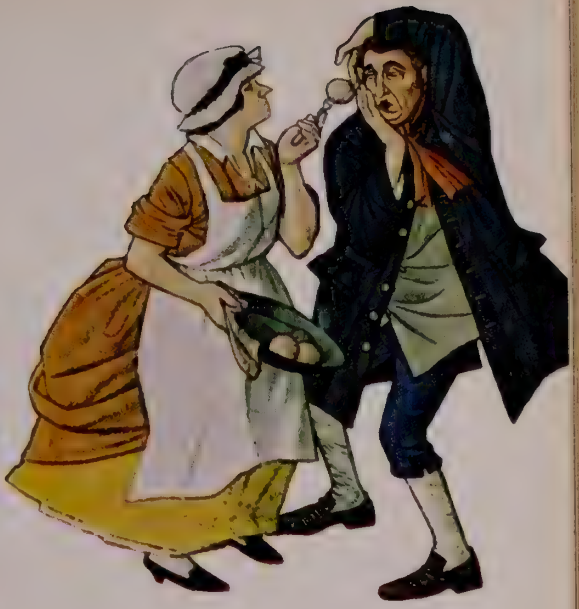
where today's theory is tomorrow's therapy

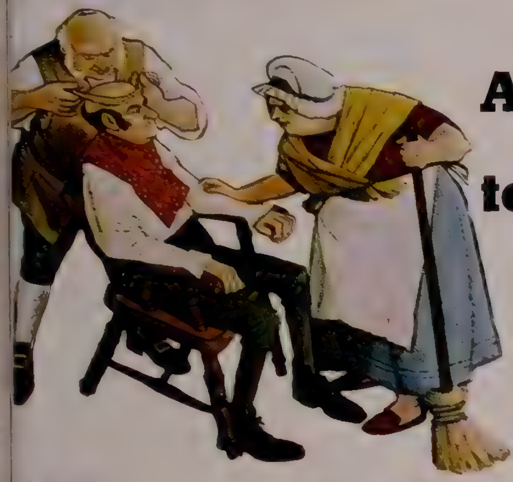
A once-popular treatment for back pains was to have the seventh son of a seventh son stand or walk on the patient's back.





The pain of earache was allegedly relieved by holding a hot roasted onion to the ear.

For headache, a sovereign remedy was to wear a snakeskin round one's head.



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Book Notes

Diagnostic Laboratory Hematology. By George E. Cartwright, M.D. Fourth edition, Revised and Enlarged. Octavo of 441 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $10.

Many innovations have been made in laboratory methodology since the publication of the third edition of this manual in 1963. The availability of high quality commercially prepared tests, packaged complete with reagents, supplies and disposable equipment, has brought many methods to the laboratory which previously were not available. At the same time, accurate, reproducible, specific and rapid, automated methods requiring expensive equipment have been developed. This new edition has been written to reflect these innovations. To this end, 25 new methods have been added, nine old methods have been deleted, and most of those remaining from the third edition have been revised extensively.

As in previous editions, the technics are presented in a stepwise fashion and emphasis is placed on small technical details and on possible sources of error. This is done because the text is written for students of medicine and medical technology and for physicians inexperienced in the ways of the laboratory.

Where it has seemed pertinent to an understanding of the principles of a method, a brief outline of the biochemistry and pathophysiology has been presented. A limited amount of material on the results of the tests in disease states also has been included.

Medical Department, United States Army. Physical Standards in World War II. Editor in Chief, Colonel Robert S. Anderson, MC, USA. Editor for **Physical Standards**, Charles M. Wiltse, Ph.D., Litt.D. Octavo of 356 pages, illustrated. Washington, D.C., Office of the Surgeon General, Department of the Army, 1967. Cloth, $3.

A history of the U.S. Army Medical Department's role in the development and application of physical standards in World War II has been intermittently in preparation for several years. This extremely pertinent aspect of military planning is now presented in the latest volume of this historical series.

Not only are the changing standards themselves delineated, but also the evolution of the whole concept of physical standards is explored. The authors have underlined one of the most useful lessons of the war—in total conflict one must call on total resources, human as well as material.

Preludin is indicated only as an anorexigenic agent in the treatment of obesity. It may be used in simple obesity and in obesity complicated by diabetes, moderate hypertension (see Precautions), or pregnancy (see Warning).
Contraindications: Severe coronary artery disease, hyperthyroidism, severe hypertension, nervous instability, and agitated prepsychotic states. Do not use with other CNS stimulants, including MAO inhibitors.
Warning: Do not use during the first trimester of pregnancy unless potential benefits outweigh possible risks. There have been clinical reports of congenital malformation, but causal relationship has not been proved. Animal teratogenic studies have been inconclusive.
Precautions: Use with caution in moderate hypertension and cardiac decompensation. Cases involving abuse of or dependence on phenmetrazine hydrochloride have been reported. In general, these cases were characterized by excessive consumption of the drug for its central stimulant effect, and have resulted in a psychotic illness manifested by restlessness, mood or behavior changes, hallucinations or delusions. Do not exceed recommended dosage.
Adverse Reactions: Dryness or unpleasant taste in the mouth, urticaria, overstimulation, insomnia, urinary frequency or nocturia, dizziness, nausea, or headache.
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Special Liver-Stomach Concentrate, Lilly (containing Intrinsic Factor)	150 mg.
Cobalamin Concentrate, N.F., equivalent to Cobalamin	7.5 mcg.
(The total vitamin B_{12} activity in the Special Liver-Stomach Concentrate, Lilly, and the Cobalamin Concentrate, N.F., is 15 micrograms.)	
Iron, Elemental (as Ferrous Fumarate)	110 mg.
Ascorbic Acid (Vitamin C)	75 mg.
Folic Acid	1 mg.

Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinios, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

Precautions: Anemia is a manifestation that requires appropriate investigation to determine its cause or causes.

In pernicious anemia, the use of folic acid without adequate vitamin B_{12} therapy may result in hematologic remission but neurological progression. Adequate doses of vitamin B_{12} (parenteral, or oral with potent intrinsic factor as in Trinsicon® [hematinic concentrate with intrinsic factor, Lilly]) usually prevent, halt, or improve the neurological changes.

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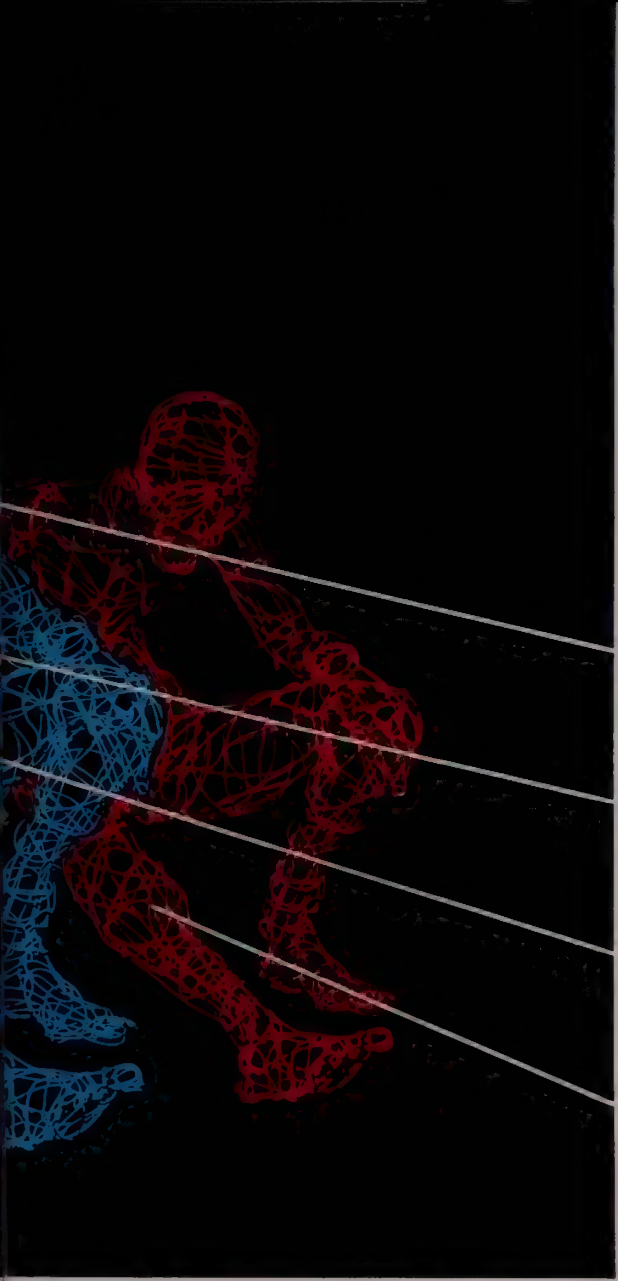

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studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

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Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

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Medical Meetings

Lecture on sarcoidosis

The division of dermatology of the Department of Medicine of the State University of New York, Downstate Medical Center, is sponsoring a lecture on "Sarcoidosis" by William Atwood, M.D., instructor in dermatology, Columbia College of Physicians and Surgeons, on November 6, from 10:00 A.M. to 11:00 A.M., in "F" building conference room, second floor, Kings County Hospital Center, 451 Clarkson Avenue, Brooklyn.

Meeting to discuss cancer programs

The second annual meeting of the New York State Cancer Programs Association is to be held Saturday, November 9, from 8:30 A.M. to 4:30 P.M., at the Sheraton-Tenney Inn, La Guardia Airport, Queens. The following topics will be discussed: Standardization of Tumor Registries; Rehabilitation Programs for Cancer Patients; Cancer Programs in Different Type Hospitals; and Sources of Funds for Cancer Programs.

There is a $5.00 charge for the luncheon. For further information write to: Hugh Barber, M.D., secretary, Jamaica Hospital, Van Wyck Boulevard and 89th Avenue, Jamaica, New York 11418.

Postgraduate course in urologic pathology

Columbia University College of Physicians and Surgeons is offering a postgraduate course in urologic pathology, under the direction of Meyer M. Melicow, M.D., and Myron Tannenbaum, M.D., to be held Mondays and Thursdays, January 6 through February 6, 1969, from 3:00 P.M. to 6:30 P.M., at Columbia University College of Physicians and Surgeons.

This is a preparatory course for board examinations and covers gross and microscopic pathology of the entire urinary tract, including the adrenal gland and retroperitoneum in adults and children.

For further information write to: Melvin D. Yahr, M.D., associate dean, Columbia University College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032.

New York Eye and Ear Infirmary sponsors clinical conference

The forty-second annual clinical conference sponsored by the Alumni Association of the New York Eye and Ear Infirmary will be held February 27 and 28, 1969, at the Biltmore Hotel and on March 1, 1969, at the New York Eye and Ear Infirmary.

Registration fee is $20. For further information and programs write to: Jane Stark, registrar, Alumni Association, New York Eye and Ear Infirmary, 310 East 14th Street, New York, New York 10003.

Psychiatry and neurology topics of postgraduate course

The Page and William Black Post-Graduate School of Medicine of the Mount Sinai School of Medicine of The City University of New York is offering the following postgraduate courses in psychiatry and neurology at The Mount Sinai Hospital, Fifth Avenue and 100th Street, New York City.

Neuropharmacology—Gerard M. Lehrer, M.D., Howard S. Maker, M.D., and Jack Green, M.D.; Tuesdays, January 7 through May 20, 1969, 5:00 P.M. to 6:00 P.M. (Fee: $300).

Clinical Electroencephalography Workshop—Hans Strauss, M.D., Sidney P. Diamond, M.D., and Robert Jaffee, M.D.; 4 half-days per week, hours to be arranged, January 7 through May 23, 1969. (Fee: $400).

Psychopharmacology for Psychiatrists—Samuel L. Feder, M.D., and Seymour Rosenblatt, M.D.; Wednesdays, January 8 through February 19, 1969, 4:00 P.M. to 5:30 P.M. (Fee: $100).

Introduction to Group Psychotherapy for Graduate Psychiatrists—Aaron Stein, M.D., and staff; Mondays and Thursdays, February 3 through June 30, 1969, 9:00 A.M. to 12 NOON. (Fee: $50).

Psychodiagnostics for Psychiatrists—Fred Brown, Ph.D.; Tuesdays, March 4 through April 8, 1969, 1:00 P.M. to 2:30 P.M. (Fee: $50).

Hypnosis for the Physician and Dentist—Elliot N. Wineburg, M.D.; Thursdays, March 6 through May 22, 1969, 4:30 P.M. to 6:00 P.M. (Fee: $75).

Clinical Neurology—Morris B. Bender, M.D., and staff; Monday through Friday, March 17 through 21, 1969, 9:00 A.M. to 5:00 P.M. (Fee: $75).

For further information and applications contact: registrar, The Page and William Black Post-Graduate School of Medicine, Fifth Avenue and 100th Street, New York, New York 10029.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.

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Help clear up that miserable stuffed-up feeling with Dimetapp. Each hard-working Extentab brings welcome relief from the stuffiness, drip and congestion of upper respiratory conditions for up to 10-12 hours. Yet, patients seldom experience drowsiness or overstimulation. The key to success is the Dimetapp formula: Dimetane (brompheniramine maleate)—along with phenylephrine and phenylpropanolamine, two time-tested decongestants. They get the job done... in a hurry.

Indications: Dimetapp is indicated for symptomatic relief of the allergic manifestations of respiratory illnesses, such as the common cold and bronchial asthma, seasonal allergies, sinusitis, rhinitis, conjunctivitis, and otitis. *Contraindications:* Hypersensitivity to antihistamines. Not recommended for use during pregnancy. *Precautions:* Until patient's response has been determined, he should be cautioned against engaging in operations requiring alertness. Administer with care to patients with cardiac or peripheral vascular diseases or hypertension. *Side Effects:* Hypersensitivity reactions including skin rashes, urticaria, hypotension and thrombocytopenia, have been reported on rare occasions. Drowsiness, lassitude, nausea, giddiness, dryness of the mouth, mydriasis, increased irritability or excitement may be encountered. *Dosage:* 1 Extentab morning and evening. *Supplied:* Bottles of 100 and 500.

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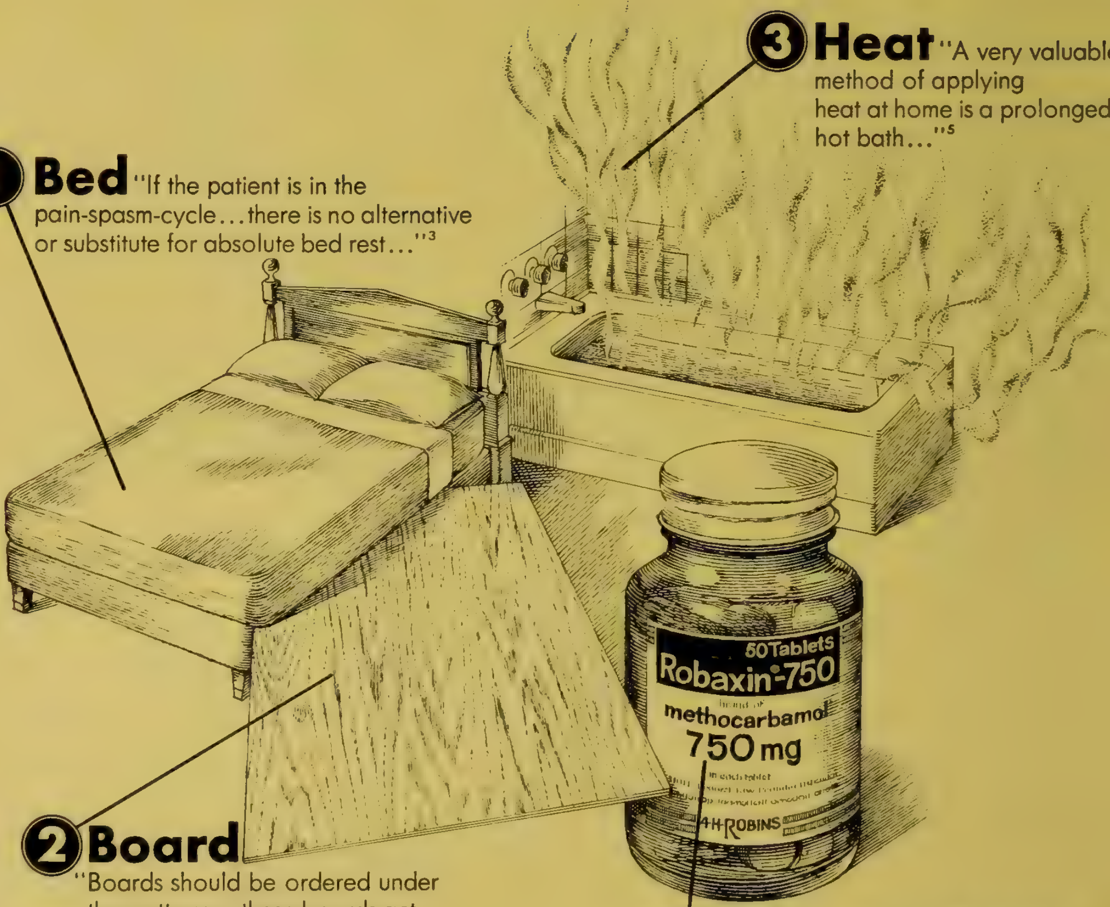
up to 10-12 hours clear breathing on one tablet

LOW-BACK PAIN

A CONSERVATIVE, FOUR-POINT PROGRAM

The low back pain that is most frequently seen in general practice is mechanical in nature, i.e., postural back pain, joint dysfunction and acute back strain.[1,2] For this type of discomfort, a conservative regimen is usually sufficient to relieve aches and pains, and to help keep the patient functioning. Components of this basic program include:



③ Heat "A very valuable method of applying heat at home is a prolonged hot bath..."[5]

① Bed "If the patient is in the pain-spasm-cycle...there is no alternative or substitute for absolute bed rest..."[3]

② Board "Boards should be ordered under the mattress...these boards act by immobilizing the spine..."[4]

④ Robaxin®-750 (methocarbamol, 750 mg. capsule-shaped tablets) A well-tolerated[6] skeletal muscle relaxant, methocarbamol helps relieve spasm "...without interfering with normal tone and movement."[7] And there is little likelihood of sedation.[6]

Indicated for relief of skeletal muscle spasm. **Contraindicated** in hypersensitive patients. **Side Effects** (lightheadedness, dizziness, drowsiness, nausea) may occur rarely, but usually disappear on reduced dosage. Hypersensitivity reactions develop infrequently. See product literature for further details. **Also available:** Robaxin® Tablets (methocarbamol, 500 mg.) Robaxin Injectable (methocarbamol, 1 Gm./10 cc.)

References: (1). Godfrey, C.M.: Applied Therap. 8:950, 1966. (2). Gottschalk, L.A.: GP 33:91, 1966. (3). Rowe, M.L.: J. Occup. Med. 2:219, 1960. (4). Cozen, L.: South Dakota J. Med. *18*:26, 1965. (5). Soto-Hall, R.: Med. Sc. *14*:23, 1963. (6). Weiss, M. and Weiss, S.: J. Am. Osteopath. A. 62:142, 1962. (7). Feuer, S.G., *et al.*: New York J. Med. 62:1985, 1962.

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Medical News

Manhattan Eye, Ear and Throat Hospital affiliated with Cornell University

The boards of The New York Hospital, Cornell University Medical College, and Manhattan Eye, Ear and Throat Hospital have approved an agreement that will lead to the full affiliation of the three institutions.

While the unique identity of each cooperating institution will be maintained, this plan combines the use of facilities and will make it possible to interrelate medical services, disciplines, medical staffs, and teaching programs. In addition to patient care and treatment, Manhattan Eye, Ear and Throat Hospital will serve as the teaching facility in ophthalmology, otolaryngology, and related plastic surgery. Medical teaching will be under the direction of Cornell University Medical College. Facilities now required for the treatment of patients with disorders of sight, hearing, and speech at The New York Hospital-Cornell Medical Center will be freed for the treatment of patients with acute and chronic illnesses. New York Hospital and Cornell University Medical College, in turn, will provide a wide range of consultative and other services not ordinarily available in a hospital rendering specialized treatment.

The affiliation, which has the enthusiastic endorsement of the Health and Hospital Planning Council of Southern New York, Inc., will mean better health care for the people of New York City.

Albany Medical Center authorizes building program

The Board of Governors of the Albany Medical Center Hospital voted to proceed with the largest building program in its history, at an estimated cost of $26 million. It authorized the borrowing of money in the bond market to build an 8-story addition to the hospital to house inpatient facilities, and a 14-story "west tower" to contain outpatient services, laboratories, and doctors' offices.

The 8-story addition is designed primarily to replace those areas of the hospital which are growing obsolete for patient care and teaching. The new wing will contain a surgical suite of 17 operating rooms, a surgical supply center, and a 24-bed recovery room; administrative offices; computer center; laboratories; blood bank; intensive care units; a unit to treat patients with tuberculosis; and maternity and pediatric facilities.

The west tower will provide an extension of present emergency room services; an outpatient testing center, which includes clinical chemistry, microbiology, virology, and cytology laboratories; and offices to be used by attending staff physicians.

Construction of the new buildings is contemplated for 1969.

Buffalo site of field trial of vaccine to prevent rubella

Buffalo has been selected as one of the nine communities in the United States to participate in field trials to determine the effectiveness of a vaccine to prevent rubella (German measles). The State University of New York at Buffalo and the National Institute of Allergy and Infectious Diseases are sponsoring and directing this program.

While specific school sites have not as yet been selected, this full-scale national testing program will involve about 7,500 children of school age, from kindergarten to fourth grade. Included in this program is a follow-up evaluation period of from three to five years. This testing program is a necessary step before government licensing can be granted next year.

Personalities

Appointed. Allan B. Weingold, M.D., New York City, as executive officer of the Maternal and Child Health Institute of New York Medical College and coordinator of obstetrics for the Maternal and Infant Care Program at Metropolitan Hospital. . .Thomas L. Hawkins, M.D., Albany, as executive vice-president and director of Albany Medical Center Hospital.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

Books Reviewed

Palliative Care of the Cancer Patient. Edited by Robert C. Hickey, M.D. Quarto of 621 pages, illustrated. Boston, Little, Brown and Company, 1967. Cloth, $23.50.

Most physicians realize that patients with cancer in the curable stage should be treated radically. Many physicians view patients with disseminated cancer as being beyond medical aid and are loathe to spend any time or effort on the care of these patients.

This book describes the palliative care of these patients and attempts to show that with the new and combined therapeutic modalities now available, there are few patients who will not benefit from some medical regimen.

The various methods of radiation therapy, surgery, and chemotherapy are described in outline form as they apply to the different problems of advanced cancer in different anatomic areas, such as head and neck, breast, abdominal, and skeletal cancer. Total care of the patient is stressed including pharmacology of analgesic drugs, proper nursing care, nutrition, social care, and so forth. The great importance of emotional support of the patient, ranging from the child to the aged person, is outlined. There is a detailed discussion of the question of how much to tell the patient about his or her disease.

The individual chapters are written by physicians mainly from the University of Texas M. D. Anderson Hospital and Tumor Institute, Houston, the State University of Iowa College of Medicine, Iowa City, and University of Wisconsin Medical Center, Madison. These physicians and the editor are well versed in caring for the cancer patient and they have produced a textbook that can be heartily recommended for the medical student, resident, and general physician, and any other physician who cares for patients with advanced cancers. BERNARD S. ARON, M.D.

Garlock's Surgery of the Alimentary Tract. By John H. Garlock, M.D. Quarto of 494 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $19.50.

This is one of the finest textbooks on the surgical management of diseases of the alimentary and biliary system. It is a recapitulation of the experience of one of the foremost surgeons of this period. While the book is incomplete because of the absence of management of carcinoma of the stomach and pancreatic disease, it is most complete in the details that are covered.

The operative technics are described with the minute details that evolve in a master surgeon. The work represents the experience of a vast number of cases. The results of the work are carefully appraised after follow-up. Of course this work is not encyclopedic in scope because it represents the experience and surgical philosophy of one man.

The opening chapter entitled "Surgical Training" is a classic and it would aid in all training programs if read by the surgical residents. The subject matter is excellent.

This book is an outstanding contribution to the surgical literature. ALAN A. KANE, M.D.

New and Controversial Aspects of Retinal Detachment. Edited by Alice McPherson, M.D. Quarto of 509 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, 1968. Cloth, $30.

This valuable book on retinal detachment is based on the contributions of almost 50 international authorities. New and controversial aspects are discussed to add to the understanding of this challenging eye disorder. The latest concepts of eye pathology and heredity are investigated thoroughly.

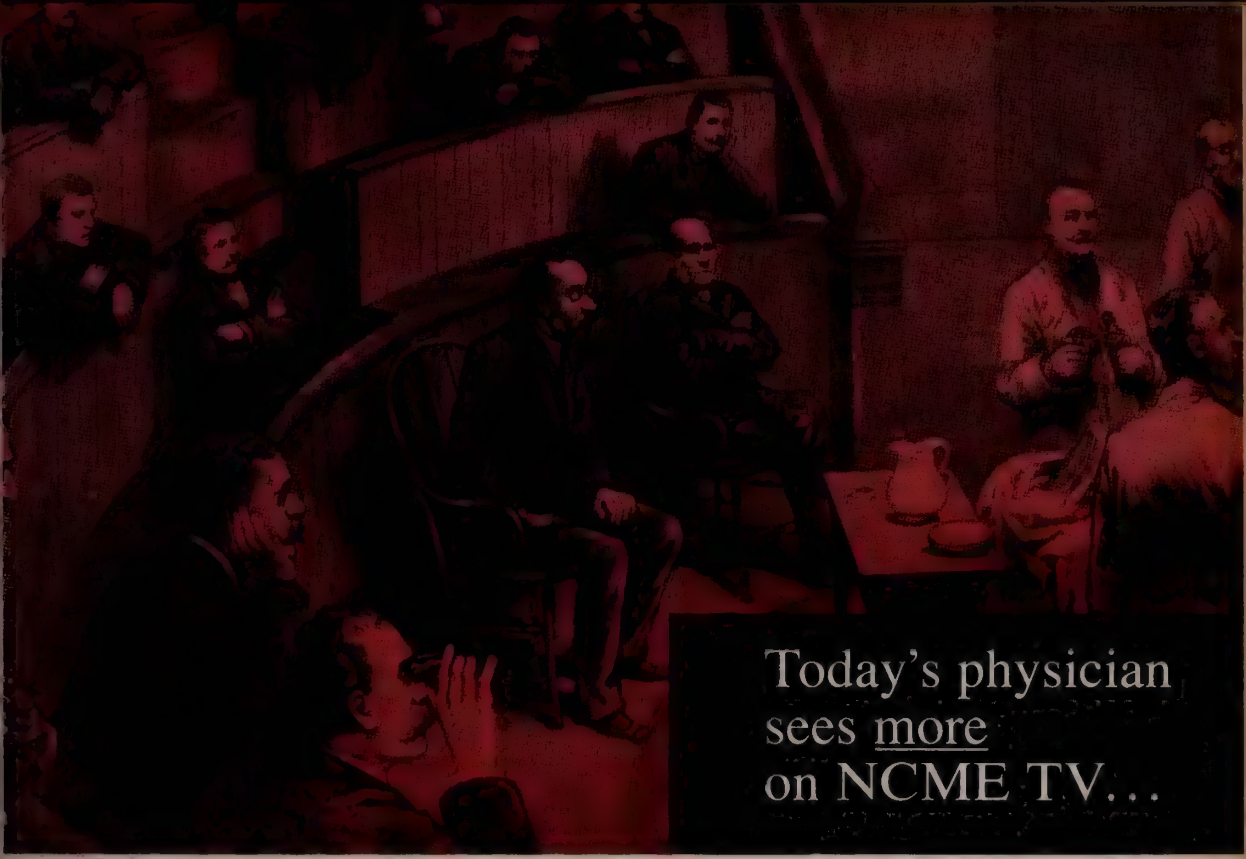
The major portion of the book is devoted to the management of retinal detachment. Different contributors have offered their pet methods of treatment which include scleral buckling, intraocular injection of vitreous substitutes, diathermy, xenon-arc coagulation, cryosurgery, and the laser. Fundus cinematography and a new stereoscopic indirect ophthalmoscope prove exciting. The illustrations are many and superb. EMANUEL KRIMSKY, M.D.

An Atlas of Surgery of the Face, Mouth, and Neck. By Robin M. Rankow, D.D.S., M.D. Quarto of 292 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $25.

Surgery of the face, mouth, and neck is a specialized field of surgery that encompasses a great number of surgical procedures. The author is both a dentist and a physician and brings the disciplines of both fields to the text. The material is based on the experience and background of a well-trained surgeon.

The basic principles of radical surgery of the areas are gathered in a concise format. General principles are emphasized in the handling of all problems. The material is presented in a lucid, succinct, and comprehensive style. The presentation is in the form of line drawings, illustrating each step of an operative procedure, with accompanying work description. The

continued on page 2737



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The first nationwide medical television service, NCME—The Network for Continuing Medical Education—brings you visually the important achievements of leading medical authorities. By means of closed-circuit television, this independent network provides your hospital or medical school with a complete videotape service that helps shorten the gap between new medical knowledge and its availability for clinical or teaching purposes.

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☐ Frequently NCME makes available published papers related to subjects presented on closed-circuit television.

A recent NCME hospital telecast presented Philip N. Sawyer, M.D., Professor of Surgery and Head of the Vascular Surgical Service at Downstate Medical Center, Brooklyn, N.Y., in a demonstration and evaluation of "Gas Endarterectomy."

In this program, Dr. Sawyer performs the operation on a patient with gross occlusion of the right iliac, femoral and popliteal arteries.

In Dr. Sawyer's view, gas endarterectomy has several advantages over mechanical methods: the operation can be completed faster, causes less damage to the arteries and offers a more successful outcome.

NCME is an independent network supported by Roche Laboratories to increase the use of closed-circuit TV for medical education under direct hospital and school control.

If your hospital or school does not participate in the biweekly NCME program, information on the cost-free service may be obtained by writing to
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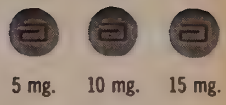

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of
controlling
your weight

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help you
control your
weight...

Please see Brief Summary on next page.

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Brief Summary

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10 mg. Methamphetamine Hydrochloride,
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DESBUTAL 15 Gradumet

15 mg. Methamphetamine Hydrochloride,
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Indications: Desoxyn and Desbutal are used orally as appetite suppressants, for reduction of mild mental depression, and to help in management of psychosomatic complaints or neuroses. Desoxyn, when administered parenterally, may be used as a vasopressor agent or analeptic.

Contraindications: Methamphetamine (in Desoxyn and Desbutal) is contraindicated in patients taking a monoamine oxidase inhibitor. Do not use pentobarbital (in Desbutal) in persons hypersensitive to barbiturates.

Precautions, Side Effects: Observe caution in patients with hypertension, cardiovascular disease, hyperthyroidism, old age, or those sensitive to sympathomimetic drugs. Prolonged usage may lead to tolerance or psychic dependence. Careful supervision is necessary to avoid chronic intoxication and drug dependence.

Amphetamine side effects such as headache, excitement, agitation, palpitation or cardiac arrhythmia usually may be controlled by reducing the dose. Paradoxically-induced depression is an indication to withdraw the drug. Pentobarbital (in Desbutal) may cause skin rash. Nervousness or excessive sedation with Desbutal is often transient.

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excellent artistic reproductions depict the applied anatomy and orderly sequence of each operation.

This text reflects accepted principles in the management of both tumor and trauma of these regions. The book is well planned and will serve as an excellent guide to the resident and general surgeon called on to treat the type of lesion described in the book. It is divided into ten sections, namely: fractures of the facial bones, the lips and associated face, cysts and tumors of the jaws, the temporomandibular joint, tumors of the floor of the mouth and tongue, the radical neck dissection, developmental cysts of the neck, malformations of the jaws, the salivary glands, and a fine chapter on regional anesthesia. ALAN A. KANE, M.D.

Cancer of the Breast. By John S. Spratt, Jr., M.D., and William L. Donegan, M.D. Philadelphia, W. B. Saunders Company, 1967. Cloth, $10.75.

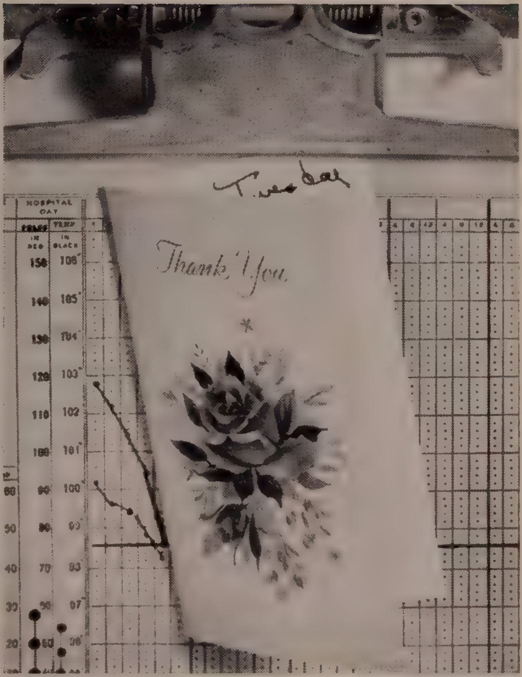
The writers try to bring into this very comprehensive book the entire problem involving cancer of the breast. Traditional and orthodox views are being challenged from all sides.

The self-scrutinizing, experienced surgeon will have some doubt whether his indication for radical or simple mastectomy can stand modern criticism. More difficult is the answer to be found if the postoperative treatment should be x-ray, chemotherapy, or ablation therapy.

The authors base their opinion on careful evaluations of their own studies, a profound knowledge of the literature, and critical statistical judgment. Most modern approaches in the different methods of diagnosis of pathologic morphology are described. The material is so enormous that sometimes the analysis seems to be in contradiction with the final result. The sharp negativistic critic with regard to radiation therapy still leads to the result that properly used surgery and radiation remain the most effective methods available for the treatment of breast cancer.

Special types of malignant tumors, besides carcinoma, are carefully discussed.

Every surgeon who is involved with diseases of the breast should try to find many unanswered questions solved, but still has to agree with the words of Pierre Simon De La Place "nearly all of our knowledge is problematical—the principal means for ascertaining the truth as based on probabilities." HELMUTH NATHAN, M.D.



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the family's downed
Because the
G.I. bug's around

Parepectolin for quick relief of acute diarrhea
...soothes colicky pain with paregoric*
...consolidates fluid stools with pectin
...adsorbs irritants with kaolin,
and protects intestinal mucosa

Whether it's a 24-hour "bug", a food problem, or simply nervousness and anxiety, Parepectolin will bring the diarrhea under control until etiology can be determined. In some cases, Parepectolin may be all the therapy necessary.

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Each fluid ounce of creamy white suspension contains:
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Contains opium (¼ grain) 15 mg. per fluid ounce.
warning: may be habit forming
Pectin .... (2½ grains) 162 mg.
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Usual Adult Dose: One or two tablespoonfuls three times daily.
Usual Children's Dose: One or two teaspoonfuls three times daily.

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Fort Washington, Pa.

Films Reviewed

*These films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Muscles of Mastication and the Infratemporal Fossa. Sound, color, 16 mm., fifteen minutes.

Inguinal Region. Sound, color, 16 mm., sixteen minutes.

Male Perineum. Sound, color, 16 mm., eighteen minutes.

Dissection is performed on injected cadavers, with demonstrations stressing function as well as anatomic relationship. Details are clarified in slowly paced narrative. The film on human anatomy is designed to aid in teaching the medical student and auxiliary personnel and to serve as a review method for the medical surgical resident.

Source and producer: Teaching Films, Inc., Division of A-V Corporation, 2518 Northern Boulevard, Houston, Texas 77006.

Oral Lesions in Children and Adults. Sound, color, 16 mm., twenty-eight minutes.

This film illustrates infectious and metabolic lesions in children and infectious and cancerous lesions in adults. A majority of the film time is devoted to the portrayal of patients with actual disease; a minimum of time is spent with discussion by the experts. The excellent photography and numerous lesions make it a good teaching film. It is directed to nurses, medical students, premedical students, and postgraduate audiences.

Source and producer: Wayne State University, Detroit, Michigan 48202.

Nonoperative Treatment of Scoliosis and Round Back with the Milwaukee Brace. Sound, color, 16 mm., thirty minutes.

This film is for professional use by nurses, physical therapists, and students of these professions. It deals with the indications, technic,

continued on page 2740

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* Film evaluations are provided by the Committee on Audio Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman;* Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

early relief from

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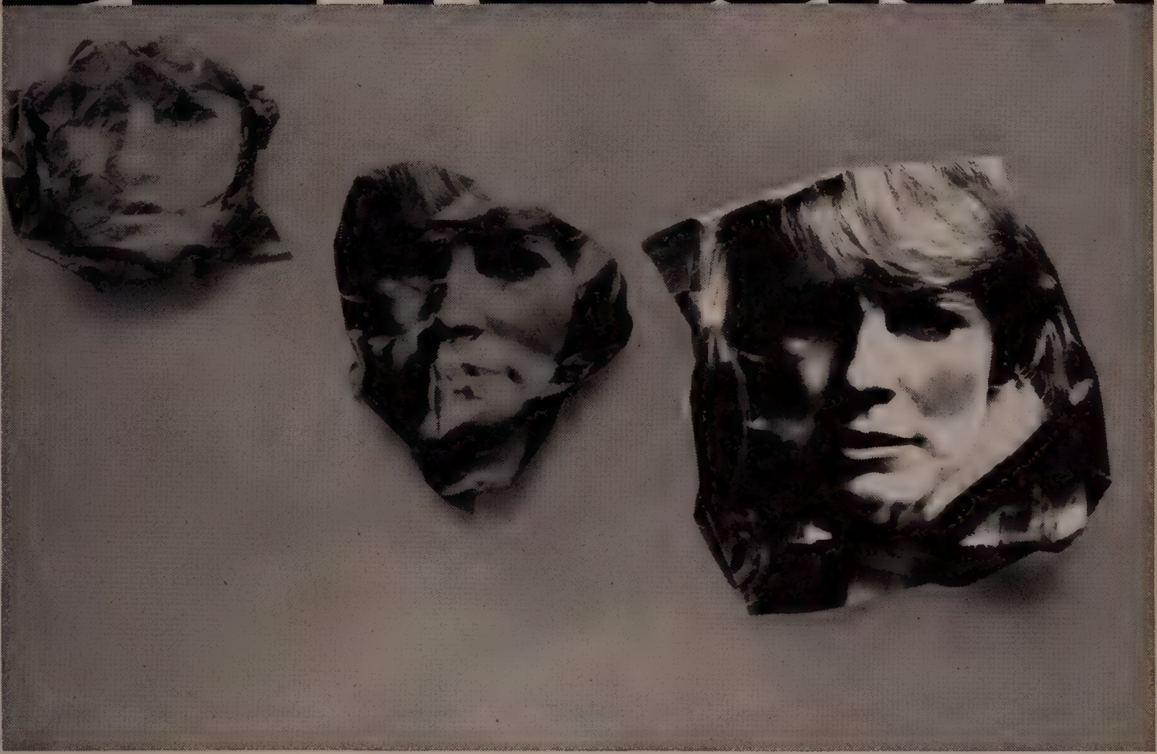

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CONTRAINDICATIONS: Glaucoma, urethral or ureteral spasm, recent myocardial infarction, severe coronary heart disease, epilepsy. Should not be given within two weeks of treatment with a monoamine oxidase inhibitor.

RELATIVE CONTRAINDICATIONS: (1) Patients with a history of paroxysmal tachycardia. (2) Patients receiving concomitant therapy with thyroid, anticholinergics or sympathomimetics may experience potentiation of effects of these drugs. (3) Safety in pregnancy has not been established. (4) Perform liver function studies in patients suspect of having hepatic disease.

PRECAUTIONS: (1) Desipramine hydrochloride should not be substituted for hospitalization when risk of suicide or homicide is considered grave. Suicidal ingestion of large doses may be fatal. (2) If serious adverse effects occur, reduce dosage or alter treatment. (3) In patients with manic-depressive illness a hypomanic state may be induced. (4) Discontinue drug as soon as possible prior to elective surgery.

ADVERSE EFFECTS: The following side effects have been encountered: dry mouth, constipation, dizziness, palpitation, delayed urination, agitation and stimulation ("jumpiness," "nervousness," "anxiety," "insomnia"), bad taste, sensory illusion, tinnitus, sweating, drowsiness, headache, hypotension (orthostatic), flushing, nausea, cramps, weakness, blurred vision and mydriasis, rash, tremor, allergy (general), altered liver function, ataxia and extrapyramidal signs, agranulocytosis.

Additional side effects more recently reported include: seizures, eosinophilia, confusional states with hallucinations, purpura, photosensitivity, galactorrhea, gynecomastia, and impotence. Side effects which could occur (analogy to related drugs) include weight gain, heartburn, anorexia, and hand and arm paresthesias.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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A Division of American Cyanamid Company
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and end results in the use of the Milwaukee brace.

Source and producer: Walter P. Blount, M.D., 2040 West Wisconsin Avenue, Milwaukee, Wisconsin 53233.

Medical Genetics—Part I. Sound, color, 16 mm., thirty-four minutes.

This film shows the historical development, the physical basis of inheritance, and some chromosomal abnormalities in man.

Medical Genetics—Part II. Sound, color, 16 mm., thirty-one and a half minutes.

This film portrays biochemical genetics in man.

Medical Genetics—Part III. Sound, color, 16 mm., thirty-four minutes.

This film explains population genetics and genes in families and in populations.

Source and producer: Miller Fenwick, Inc., 3800 Liberty Heights, Baltimore, Maryland 21215.

Computer I. Sound, color, 16 mm., twenty minutes.

The film portrays the need for research in cerebral palsy and gives interesting examples of research now being done. It can be useful for introducing a talk about cerebral palsy to get audience attention. Various types of this disease are described.

Source and producer: United Cerebral Palsy Association, Inc., 321 West 44th Street, New York, New York 10036.

Maternity Care: Labor and Delivery. Sound, color, 16 mm., thirty-seven and a half minutes.

This film depicts and treats the actual events that occur during labor and delivery to help every pregnant woman understand more realistically and meaningfully the ways in which she can contribute to her own comfort and her baby's safety during labor and delivery; by so doing it helps to minimize or eliminate the possible apprehension and groundless fears normally experienced by most primiparas. Art work is utilized to clarify the difference between false and true labor, to explain what happens to the cervix and uterus during labor, and to depict the usual signs which portend the start of labor.

Source and producer: American College of Obstetricians and Gynecologists, 79 West Monroe Street, Chicago, Illinois 60603.

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Acne is constantly present in epidemic proportions. At any given time 60% to 90% of teenagers are afflicted.[1]

Because many different therapeutic approaches are available, no single "regimen of choice" is applicable to all patients. There is, however, one generally agreed upon basic procedure: the use of therapeutic cleansing. In most instances, antibacterial pHisoHex is "right" for cleansing acne skin. Its regular use complements other therapies and enhances results.[2-4] When deep-seated acne lesions occur, the thorough, antibacterial skin cleansing action of pHisoHex is beneficial whether or not oral antibiotics or sulfonamides are used. pHisoHex, containing 3 per cent hexachlorophene, makes the skin surgically clean. Repeated exclusive use builds a cumulative antibacterial film on skin to help protect against skin bacteria (especially Staph) that may infect lesions.

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Available in plastic squeeze bottles of 5 oz. and 16 oz.

References: **1.** Sulzberger, M. B., and Witten, V. H.: *M. Clin. North America* 43:887, May, 1959. **2.** Hodges, F. T.: *GP* 14:86, Nov., 1956. **3.** Wexler, Louis: *Clin. Med.* 70:404, Feb., 1963. **4.** McLean, I. E. D.; Graham, K. T., and East, M. O.: *Practitioner* 189:82, July, 1962.

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Jan. 27–31, Mon.-Fri., 9–5 PM
Dermatology in General Practice
Mar. 3–24, Mon. & Thurs., 9–10 AM
Hypnosis for the Physician and Dentist
Mar. 6-May 22, Thurs., 4:30–6 PM
Recent Developments in Obstetrics and Gynecology
Mar. 13, 14 & 15, Thurs. & Fri., 9–5 PM, Sat., 9–12 Noon
Laboratory Methods in Blood Banks
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Mar. 17–21, Mon.-Fri., 9–5 PM
Differential Diagnosis in Gastrointestinal Radiology
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Gastroenterology
Mar. 24–28, Mon.-Fri., 9–5 PM
Differential Diagnosis in Radiology of The Chest
Mar. 24-June 9, Mon., 5–6 PM
Rehabilitation of an Arthritic
Apr. 16, Wed., 9–1 PM
Annual Teaching Conference on Arthritis
May 21, Wed., 9–1 PM

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Feb. 3–7, Mon.-Fri., 8:30–5:30 PM
Introduction to Group Psychotherapy for Graduate Psychiatrists
Feb. 3-June 30, Mon. & Thurs., 9–12 Noon
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Feb. 24-Mar. 7, Mon.-Fri., 9–6 PM
Occupational Dermatology
Mar. 3-Apr. 24 Mon. & Thurs., 10–11 AM
Psychodiagnostics for Psychiatrists
Mar. 4-Apr. 8, Tues., 1–2:30 PM
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Mar. 1-Apr. 28, Mon., 3–5 PM
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Mar. 19–22, Wed.-Fri., 9–5 PM, Sat., 9–12 Noon
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Precautions: Use cautiously, if at all, in a patient with a strongly positive history of allergy.

In prolonged therapy with penicillin, and particularly with high parenteral dosage schedules, frequent evaluation of the renal and hematopoietic systems is recommended.

In suspected staphylococcus infections, proper laboratory studies (including sensitivity tests) should be performed.

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November 1, 1968 Volume 68 Number 21

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Essential facts in the attack on environmental pollution

The scientific attack on air and water pollution has been greatly aided by voter approval of large financial borrowings. It behooves us all to understand the technics used in the attack. Physicians have been trained in sanitation and will be asked concerning safe methods of waste disposal. The State Health Department has released pertinent information on one commonly used technic known as the "sanitary landfill."

As defined by the Sanitary Engineering Division of the American Safety Society of Civil Engineers, a sanitary landfill is not a "dump." It is a method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical area, to reduce it to the smallest practical volume, to cover it with a layer of earth at the conclusion of each day's operation or at such more frequent intervals as may be necessary."

Sanitary landfill is the only currently acceptable method which will dispose of all types of normal solid waste including the large and bulky items as well as general refuse and garbage.

The sanitary landfill operation includes delivery of the refuse to the site, spreading of the refuse into thin layers, compaction of the refuse to eliminate the void spaces in the refuse, and covering the refuse with dirt at daily intervals or less.

It does not give rise to air pollution because no open burning is necessary, and does not pollute the surface or ground waters because these factors are taken into account in the engineering design of the landfill. It is possible to design a landfill so that all unsatisfactory conditions are avoided.

Several variables are involved in estimating the cost of operating a sanitary landfill, including the distance the refuse must be carried to reach the sanitary landfill, the type of soil, the type of equipment required, the availability of soil for cover material, the location and depth of the ground water, and the quantity of refuse received. The variable factors may be broken down into the broad general categories of the cost of hauling to the sanitary landfill, the costs of spreading and compacting the refuse, the cost of direct movement, and the cost of land.

The cost of refuse disposal usually is considerably less than the cost of refuse collection. In fact, collection costs may be as much as 25 times greater than disposal costs. The economic rule of thumb used to determine the cost of sanitary landfilling for the average community is that a sanitary landfill will cost approximately 50 cents to $1.50 per person per year depending on operating cost factors.

A sanitary landfill is a construction project as well as a refuse disposal project. It is a method of reclaiming land. Examples of reclaimed land from a sanitary landfill may be found in many areas. The California refuse disposal areas around Los Angeles are examples.

There are also several examples of the use of refuse disposal sites for land reclamation in New York State. Collins Park in Scotia, (Schenectady County), the Cardinal McCloskey High School site in Albany, (Albany County), LaGuardia Airport in New York City, and the former New York World's Fair site in Flushing Meadows are a few.

Alternative procedures for refuse disposals are: *Incineration.* Incineration and sanitary landfill are the proved methods of refuse disposal in the United States. A properly designed and operated incinerator will reduce the volume of refuse to be disposed of by 65 per cent to 85 per cent in practical operation. The practical weight reduction obtained in incineration is about

75 per cent. It should be noted that a sanitary landfill must be run in conjunction with an incinerator for the disposal of the incinerator residue as well as for the disposal of bulky materials which the incinerator will not handle. The reported incineration costs run approximately $6 to $12 a ton depending on the size of the incinerator, the operating procedures, and the capital cost of construction. When an incinerator is equipped with air-cleaning equipment meeting modern code requirements, the cost is close to the $12 figure. The capital cost of constructing an incinerator which will meet modern code requirements is about $10,000 per ton of capacity. It should be noted that most incinerators are operated as waste reduction facilities rather than as waste destruction facilities. In this concept, the incinerator is only one step in the process from the production of the waste to the ultimate disposal of the wastes.

The traditional open dump. This method of refuse disposal is no longer allowed and is specifically prohibited by Part 19 of the State Sanitary Code. Open dumping of selected nonputrescible solid wastes may be allowed if an exemption is issued by the full-time health officer of the involved area. Normally, the only material for which an exemption could be justified would be nonputrescible wastes such as inorganic demolition material (bricks, concrete, and such) and perhaps other wastes such as junk, old lumber, sawdust, and so forth.

Composting. Composting is a process whereby the organic portion of the waste material is converted into a humus material which is usable as a soil conditioner or as a base for fertilizer products, but it is not, in itself, a fertilizer. This process is sound theoretically, but to date has not proved to be practical in the United States. This is attested to by the fact that only 4 of the 16 major composting plants constructed in the United States since 1950 are operating presently. The reasons for closing the various plants have ranged from unfavorable economics to nuisance conditions which arose from the operation.

Hi-density compaction. A recent innovation in solid waste handling has received a great deal of publicity. This new approach involves compressing refuse into very dense blocks by using hydraulic presses that exert tremendous pressures on the material. The volume of the refuse after compaction is only 40 per cent of the original volume; in some cases, depending on the material, volume reduction to as little as 10 per cent of the original is possible. This process offers substantial economies by reducing transportation costs, making rail or barge transfer feasible. Sanitary landfills receiving baled refuse from this process can be used for a longer period. In addition, the volume reduction is equal to incineration and at lower capital and operating costs.

The compacted refuse has a specific gravity greater than sea water, making ocean burial possible. The Japanese are exploring the possibility of encasing baled refuse with concrete or sheet steel for use as building blocks.

It can be seen that proper waste disposal is a problem of logistics, engineering, and cost effectiveness. The medical public needs to be well informed on this subject and we intend to enlarge on it further as the attack gains momentum.

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E. Dean Babbage Memorial Lecture

RICHARD AMENT, M.D., Buffalo, New York

Associate Clinical Professor in Anesthesiology, State University of New York at Buffalo School of Medicine; Attending Anesthesiologist, The Buffalo General Hospital and Buffalo Children's Hospital; Immediate Past President, New York State Society of Anesthesiologists; and Past Chairman, Anesthesia Section, Medical Society of the State of New York

E. Dean Babbage, M.D., to whom this memorial lectureship is dedicated, died on December 15, 1966, at the age of sixty-two. Dr. Babbage devoted his professional life and much of his personal life to the principles and practice of the total care of the patient. He was an outstanding advocate of the belief that anesthesiology presents the physician with a unique opportunity to achieve this end. This concept had been the unbroken thread through all his manifold activities and also the incentive for his extraordinary efforts and accomplishments on behalf of organized anesthesiology.

Dr. Babbage was born in Batavia, New York, in 1904 and attended local schools and the University of Buffalo, graduating from its School of Medicine in 1930. He interned at the Millard Fillmore Hospital in 1931 and then began a postgraduate program in anesthesiology at the University of Toronto and the Toronto General Hospital in the following year. Dr. Babbage was certified a Diplomate of the American Board of Anesthesiology in 1939. He was also a Fellow of the American College of Anesthesiologists.

He was active in the Armed Forces, serving as a member of the Reserve Officers Training Corps from 1926 to 1930 and as a First Lieutenant in the United States Army from 1930 to 1935. In World War II he served as a Lieutenant Commander in the Navy, first at the Great Lakes Naval Training Center, Great Lakes, Illinois, and later at the Bethesda Naval Hospital, Maryland. While at Bethesda, he was chairman of the Department of Anesthesiology with the rank of Commander. After leaving the Armed Forces, he was Anesthesia Consultant to the Veterans Administration Hospital in Batavia between 1946 and 1950 and at the Veterans Administration Hospital in Buffalo from 1950.

For many years this highly gifted and articulate man devoted his time to anesthesia resident training programs in western New York. He served as clinical professor of Anesthesiology at the School of Medicine of the State University of New York at Buffalo and head of the Department of Anes-

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Presented at the 162nd Annual Meeting of the Medical Society of the State of New York, New York City, Section on Anesthesiology, February 13, 1968.

thesiology until 1957. He was chief of the Department of Anesthesiology of the Meyer Memorial Hospital until the same date and was chairman of the Department of Anesthesiology at the Millard Fillmore Hospital in Buffalo until his death. Within the past twenty years, he had trained 40 residents of whom 21 are practicing actively in Buffalo at the present time.

Dr. Babbage did not confine his activities to teaching or to clinical anesthesiology alone but was a most enthusiastic participant in all areas of organized medicine. He found time to be active in local, State, and national medical circles. He served as president of the Medical Society of the County of Erie in 1948 and as president of the New York State Society of Anesthesiologists in 1956. In 1963 he was second vice-president of the American Society of Anesthesiologists. At the time of his death, he was Speaker of the Medical Society of the State of New York's House of Delegates, having served in this capacity for two years. In addition he was a delegate to the House of Delegates of the American Medical Association.

In all of his endeavors, Dr. Babbage was satisfied only with the best result. As chairman of the Committee on Economics of the American Society of Anesthesiologists in 1962, he exerted a strong influence toward the acceptance of the Relative Value Guide. He stood out among his colleagues as a highly articulate man, possessed with the necessary competence to accomplish such a fruitful study with facility. As a tribute to his endeavors, the American Society of Anesthesiologists Relative Value Guide was adopted by the New York State Society of Anesthesiologists in 1965.

To those of us who were privileged to know him and join in his activities, we will always remember that he gave of himself wholeheartedly. We all mourn the untimely passing of this leader and fighter for the recognition of the anesthesiologist as a scientist and teacher, as well as a clinician. In consideration of the respect and affection we bore Dean Babbage, this memorial lectureship has been established by the Section on Anesthesiology of the Medical Society of the State of New York in conjunction with the New York State Society of Anesthesiologists.

It is fitting and proper that the first E. Dean Babbage memorial lecture be given by a man whose career in anesthesiology has paralleled Dean Babbage's in many respects. Dr. Betcher has served anesthesiology for many, many years in many capacities, and I name but a few. He has been chairman of this Anesthesia Section, president of The New York State Society of Anesthesiologists, and treasurer and then the president of the American Society of Anesthesiologists. He is the chairman of the board of trustees of the Wood Library-Museum of Anesthesiology and a director of the American Board of Anesthesiology. It is with distinct pleasure that I introduce Albert Betcher, M.D.

Anesthesiology

Interdisciplinary Contributor*

ALBERT M. BETCHER, M.D.
New York City

Professor of Anesthesiology, the Mount Sinai School of Medicine; Director of Anesthesiology, Hospital for Joint Diseases

In 1963, DURING MY TERM as president of the American Society of Anesthesiologists, we received a notice from the U.S. Department of Labor announcing a proposed revision of its dictionary of occupational titles. For the past fifty years it had defined the practice of anesthesiology as: "The administration of ether, chloroform, or other anesthetics to render a patient insensible to pain during an operation." Revision was necessitated by the obvious inadequacy of the definition in describing what the science of anesthesia had grown to be.

This matter was referred to the Committee of the Survey then in action. Robert D. Dripps, M.D., and Leroy D. Vandam, M.D., were instrumental in the final version of the new definition. Based on the findings, the thinking, and the opportunities generated by the survey, the Committee proposed the following definition as much more accurately describing the nature of anesthesiology and its mission:

> Anesthesiology is a practice of medicine dealing with:
>
> 1. The management of procedures for rendering a patient insensible to pain during surgical operations.
> 2. The support of life functions under the stress of anesthetic and surgical manipulations.
> 3. The clinical management of the unconscious subject from whatever cause.
> 4. The management of specific problems in pain relief.
> 5. The management of problems in cardiac and respiratory resuscitation.
> 6. The application of specific methods of inhalation therapy.
> 7. The clinical management of various fluid, electrolyte, and metabolic disturbances.

The difference between the two definitions is more than a semantic one.[1] The new formulation prescribes precisely a mission for anesthesiology which, while it encompasses the founding clinical needs for anesthesiology, profoundly influences the future development of our specialty. In the burgeoning fields of advancing knowledge, on all fronts, anesthesiology is prepared now to be a partner rather than a handmaiden.

Accomplishments and opportunities

The clinical accomplishments of our specialty have been enormous. The management of procedures in the conduct of anesthesia has increased the safety of the patient; has made possible surgical operations into heretofore unexplored areas of the body; has suspended animation of life's functions during certain moments of cardiac operations; has reduced metabolic functions by pharmacologic and physical means; has increased the salvage potential of the newborn babies with congenital anomalies who are unable to sustain their existence without surgical correction of great magnitude; has enlarged the scope and number of drugs which could be used without detriment to human life; and above all, has permitted the surgeon of whatever specialty to prolong life by organ transplants. The comprehensiveness of modern anesthetic practice ranges beyond the original intention of simply rendering a patient insensible to pain during surgery; it is a major interdisciplinary contribution to medicine.

Anesthesiology became of age only when the physician-anesthesiologist looked beyond the mere technical aspects of this section of medicine.[2,3] Of course, our primary concern is with the safe administration of anesthesia. The able anesthesiologist-clinician in the operating room

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* First Dean E. Babbage Memorial Lecture.

Presented at the 162nd Annual Meeting of the Medical Society of the State of New York, New York City, Section on Anesthesiology, February 13, 1968.

theater attends to patients in addition to supervising his residents. But he must also be a pediatrician who is familiar with congenital defects and infectious diseases, a cardiologist with experience in the care of patients with heart disease, and an endocrinologist who understands the problems of diabetes, hyper- and hypothyroid states, pheochromocytoma, and the adrenocortical deficiencies.

Brian F. Hoffman, Ph.D., David Hosack professor of Pharmacology at Columbia, College of Physicians and Surgeons, and member of the panel "Effect of Anesthetics on the Heart" at the recent New York Postgraduate Assembly in Anesthesiology, made the observation that pharmacologists believe that anesthesiologists are really pharmacologists, those who work with animals have to look to anesthesiologists to study those effects on man. Without leaving the operating theater, the anesthesiologist has ready access to human subjects and thus has been able to make many contributions in the area of applied pharmacology. Vandam[2] has pointed out the similarity of the anesthesiologist's application of the use of drugs to elucidate physiologic processes to the experiments of Claude Bernard. The anesthesiologist, strategically situated for the observation of human pain, has been able to demonstrate that pain experimentally contrived in man could not be controlled dependably even by large doses of narcotics, whereas small doses of narcotics will always lessen or relieve pain of pathologic or surgical origin.[4-6]

The anesthesiologist as clinical pharmacologist, while managing the patient during surgery, has been able to carry out two other traditional pharmacologic aims: to define the safe limits of drug usage and to discover and assist in the evaluation of new ones.[2,7] Examples of such anesthesiologic investigation are the development of the theory of the uptake and distribution of anesthetic agents[8]; the enzymatic effects and blocking actions of the muscle relaxants[9,10]; the method, extent, and involvement of the different nerve fibers by the action of local anesthetic drugs[11-13]; the effects of narcotics, narcotic antagonists, and tranquilizers[14-18]; and the search for nonbarbiturate intravenous agents.[19-22] A by-product of the search for an effective intravenous anesthetic agent resulted when Greifenstein *et al.*[23] reported abreactions following the use of sernyl (l-aryl-cyclohexylamine). They suggested that the schizophrenomimetic properties of this drug might be of assistance in psychotherapeutic treatment which was, in fact, done.[24] Similarly, in the investigation of new volatile hydrocarbons as anesthetic agents, a drug which proved to be a convulsant instead of an anesthetic in animals and man and was discarded by anesthesiologists was subsequently used in convulsive psychotherapy with apparent success.[25]

We have accepted the challenge and responsibility to continue seeking new knowledge from our contact with patients. The investigation of human beings in conditions of convenience and safety, which has made possible the measurement of physiologic variables, has been further facilitated by the continued improvement in, and reliability and availability of, the recording equipment which is now part of almost every operating theater.[26] Measurements of the responses of patients have elicited new information on hemodynamic effects of drugs during total cardiopulmonary bypass.[27-29] During the time the heart and systemic circulation are isolated from each other, one can assess independently the effects of anesthetic drugs and of drugs such as digitalis glucosides. It has been possible also in certain cardiac operations to define the hemodynamic characteristics of aortic regurgitation in man, something hitherto impossible because the most important variable could not be measured, namely, the absolute magnitude of regurgitant flow through the aortic valve.

The ability to monitor such parameters as carbon dioxide tension, oxygen tension, and pH during the administration of anesthetic drugs that depress respiration and the use of muscle relaxants with resulting respiratory inadequacy has led to a thorough examination of the physiologic effects of carbon dioxide, the pathologic effects of hypoxia, and the response of the sympathoadrenal system.[2,30-32] The readiness with which spontaneous breathing can be suspended during modern anesthesia has demonstrated that artificial respiration is an adequate substitute and thus applicable in almost any situation in which respiratory insufficiency develops. The use of positive pressure pulmonary ventilation has led to investigation of the circulatory depression noted in some instances. It has made possible extensive surgery of scoliosis patients with severely deformed thoraces and markedly diminished vital capacities.

From the knowledge obtained with the use of the ventilators and extracorporeal circulation, their application may be tried for prolonged periods until circulatory compensatory mechanisms can develop. Partial circulatory bypass technics perhaps may be used in cardiac infarction, cardiac decompensation, and shock to tide the patient over a crucial period for several days.[29,33]

The contributions in obstetric anesthesia of interested anesthesiologists such as Apgar, Hingson, Phillips, Bonica, and others, has helped to reduce maternal and infant mortality rates.[34-39] In the newborn baby nursery, anesthesiologists have suggested and carried out a promising method of treating the respiratory distress syndrome or hyaline membrane disease. It consists of intubating and placing the neonate on intermittent positive pressure respiration for several days to tide him over the danger period in which death would otherwise have occurred from exhaustion and hypoxia.[40-42] The salvage rate, while not high, still offers hope of a successful interim period which, with the aid of other methods, may increase chances of survival.

There are not many contributions which have been as quickly accepted and so widely utilized as the Apgar scoring system. Originally intended as a method of establishing a scoring system for the newborn infant to predict survival and to compare several methods of resuscitation in use at the time, it is now employed to correlate its prognostic value with birth weight, neonatal mortality rates, and neurologic abnormalities.[43,44] Studies have shown that the five-minute score is more valuable for deciding which infants may be in danger of dying in the neonatal period or having neurologic abnormalities.[45] It has become a yardstick equally familiar to the obstetrician, pediatrician, and anesthesiologist—one of the most important contributions to medicine which came from an anesthesiologist.[46]

These examples illustrate the many opportunities the anesthesiologist has, within the special interests he has developed, to make contributions to various aspects of medicine far removed from the anesthetized patient and yet within his proper field of interest and competence.* The anesthesiologist who is oriented to clinical investigation and who is trained in its methods and disciplines can provide valuable new knowledge in addition to good anesthesia.[27,47] Dripps[48] has summed up the role of the anesthesiologist-investigator well:

> Each administration of an anesthetic (or surgical procedure) is an experiment. The patient's reaction cannot be known in advance. The clinician experiments, in the best sense of the word, with drug, dosage, and technique. He has read in preparation for the study. From this reading and from the thoughts of his teachers, past, and present, has come a protocol. He keeps a record of the experiment and can, if he wishes, analyze the results. The variables are overwhelming, admittedly. Cause-effect is difficult to establish. Yet the opportunity is there for the dedicated.

Increased responsibilities

The comprehensiveness of the anesthesiologist's interests and of his technical skills has resulted in increasing his responsibilities in the care of the hospital patients outside of the operating room suite. In effect, he was originally an internist because many pioneers in anesthesiology were physicians who had practiced general medicine before they began to limit their practice to anesthesia. They brought to the specialty their interest in all phases of patient care, and the opportunities have never ceased to expand.[49] His new functions often seem far removed from the traditional anesthetist's role, the medical preoperative preparation of the surgical patient; supervision of the postanesthesia rooms, intensive care units, and respiratory care units; and often consultation or responsibility for blood banks and fluid therapy; and for drug intoxication and cardiopulmonary resuscitation in the emergency rooms.[50-56] He can be called on for difficult intravenous and intra-arterial injections, for lumbar punctures, for tracheal intubations and bronchial suction therapy, for diagnostic and therapeutic nerve blocks, for the control of convulsions, and occasionally for emergency bronchoscopies and tracheostomies.

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*It should be stressed that in the listing of various accomplishments, it is not meant to imply that they were those of anesthesiologists alone, but rather that, in a great number of instances, they were shared with coinvestigators of other specialties; nor should it be obscured that many anesthesiologists in other countries, notably England and the Scandinavian countries, were equally, if not originally, contributors to the other disciplines.

The anesthesiologist's involvement as a clinician in the preparation of the patient for surgery is essential to correct, as far as possible, all deviations from the physiologic normal condition, to bring the patient to surgery with his homeostatic mechanisms in the best possible condition, and to psychologically evaluate and influence the unconscious mind of the patient. As such he practices the art of treating the whole patient and enjoys a close physician-patient relationship in addition to being a medical scientist.[7,57]

Within these areas he seeks all information on unusual drugs the patient may have been taking over a period of time. These include the corticosteroids with their depression of endogenous corticosteroid production,[58] the carbonic anhydrase diuretics causing potassium depletion,[59] and the mono-amine oxidase inhibitors, which markedly increase the patient's sensitivity to certain sympathomimetic amines and to the depressant effects of narcotics, barbiturates, and tranquilizers.[60,61] He also knows that reserpine compounds and guanethidine monosulfate will cause depletion of the norepinephrine depots of the sympathetic nervous system[62-64] and that such seemingly innocuous agents as topically applied anticholinesterases, used in therapy of glaucoma, may have serious consequences in inhibiting plasma cholinesterase.[65,66] It is well known that the ill effects of the use of these drugs preoperatively were painfully and sometimes tragically discovered by the anesthesiologists who alerted the other specialties to either discontinue or modify their use.

Anesthesiologists in other situations

It is as supervisor or consultant in the other sections of the hospital for the care of the postoperative and nonsurgical patients that he proves of value to the other disciplines in the postanesthesia room, the intensive care and respiratory units, the emergency room, and the nerve block clinic. It is only natural that as the availability of anesthesiologists increased, so did the application of their technics to other situations in which their special skills and experience might apply, beyond the care of the patient in the operating room. Thus the anesthesiologist demonstrates that there are placebo-reacting patients,[6,67] that combined use of smaller doses of narcotics and a tranquilizer may give better results than larger doses of narcotics alone,[68] and that the use of narcotic antagonists as effective analgesics still may have its own side action liability.[33]

The various textbooks and symposia by anesthesiologists on inhalation therapy and resuscitation attest to intense interest in research and in care of the respiratory disabled individuals.[69-77] The anesthesiologist found it essential to acquire a thorough knowledge of respiratory physiology and pathophysiology. In anesthetizing patients, his is the task of maintaining and often even improving vital respiratory functions during surgery. Thus, he is qualified to be an effective participant in the over-all care of the patient with chronic pulmonary disease and in episodic pulmonary exacerbations which require prolonged respiratory support.[74] He stresses the need for pulmonary function tests, arterial blood gas studies, and the removal of retained secretions in patients with obstructive pulmonary diseases before elective surgery can be accomplished. He practices meticulous and continuous care and supervision of the surgical patient in the postanesthesia room and of the patient with chronic lung disease in the intensive care and respiratory units. He has developed equipment and technics for prolonged artificial respiration, chest physical therapy, breathing exercises, postural drainage, ultrasonic nebulization and humidification, intubation, and tracheostomy.[78-82] He has monitored the patient in all parameters during constant artificial ventilation.[83,84] He has managed the respiratory problems encountered in crush injuries of the chest, the flail chest, intracranial lesions, myasthenia gravis, acute idiopathic polyneuritis, tetanus, acute poisoning, poliomyelitis and other neurologic diseases, extreme obesity, and acute exacerbation of obstructive pulmonary disease.[74,85,86]

In addition to the respiratory problems

encountered in the intensive care unit and the emergency room, the anesthesiologist contributes to the management of neurologic, circulatory, electrolyte, and metabolic disturbances. He also handles sedation and the control of convulsions and stimulants in tetanus cases, head injuries, acute poisonings, and other adverse drug reactions.[87-95]

By his accumulation of knowledge concerning the composition of body fluids in health and disease and because of his concern with correcting disorders of biochemical control before and during anesthesia, he has continued to ensure maintenance of the homeostatic mechanisms postoperatively. He is thus equipped to handle the electrolyte, water, and other fluid derangements.[96,97]

This has led to the recruitment of anesthesiologists in the modern team investigation and treatment of victims of drowning. When one considers that there are 7,000 deaths by drowning in the United States each year, it can be seen that the problem is a formidable one. Studies and proposals for treatment of aspiration of sea water and fresh water were carried out by Redding and coworkers.[98-100] The increased popularity of swimming pools containing chemically treated water has presented another type of reaction following the aspiration of the pool water differing in character from both fresh and sea water drowning. Modell,[101] pointing out that the most severe problem appeared to be fulminating pulmonary edema and resultant hypoxia rather than rapid changes in fluid and electrolyte balances, introduced a method of therapy based primarily on these findings.

Both as a research investigator and a clinician outside the operating room, the anesthesiologist has engaged in still other activities which have proved of value in the other medical specialities. The literature is replete with investigation and use of the local anesthetic and related agents by anesthesiologists both in the laboratory and the nerve block clinic.[102-110] The bronchoscopist, the gastroenterologist, the urologist, the orthopedist, and the neurosurgeon, among other specialists, all use local anesthetic drugs. The safety of these procedures, the side reactions, and the proper dosage of these drugs are constantly being explored by anesthesiologists.[12,111-113]

Since the textbook of Labat, all subsequent local anesthetic technics and drugs have appeared in textbooks written exclusively by anesthesiologists and used by all specialties.[114-117] The pain clinic originated by Rovenstine in 1941 has been duplicated in many hospital centers. An outstanding interdisciplinary clinical team approach to the patient with pain exists at the University of Washington Hospital in Seattle, in which the patient is presented to several specialists at a conference before therapy is decided on.[115] The first classification of reflex sympathetic dystrophy on the basis of severity of symptoms and signs rather than degree of trauma was by an anesthesiologist in collaboration with a surgeon.[118] The response to unrelenting continuous paravertebral sympathetic nerve block furnished the indications for or against surgical ganglionectomy.[119] Carden and Steinhaus[120] reported the successful use of lidocaine in cardiac resuscitation from ventricular fibrillation produced by temporary occlusion of a coronary vessel. Hitchcock and Keown[121,122] were the first to show conclusively the value of this drug in the control of mechanically induced arrhythmias occurring during and following cardiac operations. Weiss[123] found it preferable to procaine amide in the management of ventricular arrhythmias.

Equally important and far reaching in scope have been the explorations of analgesics and of muscle relaxants. Significantly, just as in the local anesthetic drugs, Foldes and coworkers[124-132] have been in the forefront in the investigations and reporting of results in these two areas. Beecher,[67] Keats, and others[133-136] have investigated the many synthetic narcotic drugs for the relief of pain which has resulted in standards being adopted by the specialities for their use in patients. In 1951 Eckenhoff, Elder, and King[137] introduced nalorphine hydrochloride into clinical medicine as an antagonist for morphine which, in subsequent demonstrations, proved to be an effective antidote also for the synthetic narcotics.[16] The narcotic antagonists have also been used for the prevention of narcotic-induced respiratory depression of the mother and newborn child in obstetrics, for postoperative pain relief, and for the management of intractable pain.[138-141] The knowledge and interest which resulted from studying the effects and side actions of the antagonists have led to the use of the drug pentazocine which structurally resembles nalorphine hydrochloride and has analgesic properties.[142-145] Clinicians are following the results of the studies being conducted by anesthesiologists with the hope that at long last there may be a drug with analgesic properties equivalent to morphine, with fewer and less severe side-effects and, most important, without addictive qualities.

Of all contributions by anesthesiology to medicine in recent years, the most fascinating has been the progress made in relating the chemical structure of the muscle relaxants to their possible site and mode of action. Although anesthesiologists were not the first to use curare in this country, it was its use by Griffith and Johnson following the suggestion by Wright in 1942 that provided the impetus not only for revolutionizing anesthetic technics, but also for stimulating investigation and use of the synthetic compounds in many other disciplines.[146-151]

Foldes and his associates[124,152] introduced succinylcholine chloride in the United States in 1952. The subsequent biochemical investigation of the acetylcholine-choline-acetylase-cholinesterase system as well as the study of the other muscle-relaxant drugs have concentrated interest on the neuromuscular junction and to assess how these drugs are bound to the motor end-plate.[153,154] In an excellent review of myasthenia gravis by Foldes and McNall,[155] they outlined not only the principles of the anesthetic but also the medical management of the myasthenic patient. The enormous multifaceted laboratory investigations carried out on the effects of acetylcholine, the enzymes, the curare drugs, and their antagonists have contributed much to the knowledge on myasthenia gravis and the management of severe respiratory and circulatory emergencies that may occur in these patients.[156,157]

Laboratory investigation

Besides the contribution, described earlier, of the anesthesiologist as a clinical pharmacologist and physiologist, he has also engaged in the area of pure laboratory investigation not only in subjects related to, and subsequently utilized in, the field of anesthesiology, but also in subjects which have application in other medical disciplines. One of the earliest studies was that of Comroe *et al.*[158] in studying the toxicity effects of prolonged high-oxygen inhalation on normal man at sea level and at a simulated altitude of 18,000 feet. The reverse effects of hypoxia were explored by Severinghaus, Bainton, and Carcelen[159] who spent two years in the mountains of Peru studying the respiratory chemosensitivity of highlanders and lowlanders to the effects of chronic hypoxia. From these investigations they postulated that chronic hypoxia results in desensitization of the carotid body chemoreceptors and that the reduced stimulus permits ventilation to fall and carbon dioxide tension to rise; thus, it may be that severe polycythemia and perhaps mountain sickness are a result of deficient respiratory drive.[159] They also showed that at high altitudes, cerebral blood flow does not fall below normal and that none of the symptoms produced could be attributed to an effect of hyperventilation or cerebral blood flow.[160] Work is being done at their center as well as in other anesthesiology departments to assess the ability of various respirators to function at simulated high altitudes. All parameters including oxygen tension, carbon dioxide tension, and pH are being monitored. Returning anesthesiologist medical officers confirm that ventilators are standard equipment on aircraft evacuating serious battle casualties from Vietnam to the United States. Some concern has been expressed as to how the ventilators will function in the contingency of a sudden decompression at these altitudes. With the vast knowledge accumulated on mechanical ventilators, we can expect a breakthrough on this problem.[161-163]

Results of laboratory investigations by anesthesiologist researchers have also proved of value to other specialties. These include anatomic and physiologic studies of the microcirculation,[164-166] the use of adrenergic blocking agents and balanced salt solutions in the hypovolemic animal,[167-169] and research in analgesic drugs and the bisquaternary ammonium compounds.[170-174]

Wang, Ngai, and Frumin[175] and Cozine and Ngai[176] observed the respiratory pattern in decerebrate cats and produced evidence supporting a new location of the apneustic center within the lower pontile region rather than within the confines of the medulla. Other groups have studied the influence of hypercapnia in increasing retinal vasodilation, intracranial pressure, and noradrenaline content of sympathetically innervated skeletal muscle in dogs.[177,178] Peterson and Haugen[179] carefully designed an experiment to study the responses of various elements of the nervous system of dogs and cats during hemorrhagic shock; they found a functional breakdown of the nervous system before a state of severe hemorrhagic hypotension was present. This important finding was demonstrated even more clearly by an investigation of the nature of changes in the nervous system as a result of anoxia in anesthetized and unanesthetized cats exposed to 100 per cent nitrogen. They pointed out that the electrocardiogram does not provide a reliable "early warning" of the approach of irreversible anoxia and suggested that the electroencephalogram might prove better as a monitor of early changes.[180] In view of the problem of determining the moment of death in the case of organ transplants, they had, in 1958, made the suggestion which today seems evident as the best criterion of death.

Community medicine

One of the most significant achievements of anesthesiology as an interdisciplinary contributor has been in the field of what I have designated community medicine. This area can be subdivided into professional and nonprofessional areas, but in both anesthesiologists have either inaugurated programs or, by joint efforts with other specialities, have been part of the medical world professionally, educationally, and politically.

In the professional area, Safar and Brose[181,182] exemplify the contributions, setting up cardiac arrest teams in hospitals and cardiopulmonary resuscitation manuals for field use. The complete revision of technics of respiratory resuscitation came about through the efforts of several anesthesiologists including Safar, Elam, and Brown. The reintroduction of mouth-to-mouth artificial respiration as a technic which is taught to physicians, paramedical personnel, and laymen, has proved of great advantage in the field of resuscitation.[183-185] The anesthesiologist, likewise, has much to offer in problems of civil defense and of developing methods for handling mass casualties.[186,187]

Collins, Emma, and Saklad were instrumental in the encouragement of inhalation therapists to create standards and in the development of the American Association for Inhalation Therapy. This association, now formally sponsored by the American College of Chest Physicians and the American Society of Anesthesiologists, encourages and develops educational programs and, through its Board of Registry, certifies properly trained candidates by written and oral examinations. M. Saklad, M.D., is presently chairman of the examinations committee.

Apgar is head of the research division on congenital malformations at the National Foundation—March of Dimes; Wasmuth[188] is author of the textbook, *Law for the Physician*, which covers all of the ramifications of legal medicine, in private and group practice as well as in the hospital. Dornette,[189] Mousel,[190] and Martin,[191] among others, showed that the anesthesiologists, possessing a unique blend of information regarding the function and integration of important areas of the hospital, have made thoughtful and energetic contributions in the planning stages of new construction in hospitals. This has been demonstrated not only in the operating suite but also throughout other areas, such as, the postanesthesia room, emergency rooms, the intensive care units, delivery suites, and, more recently, the preoperative unit.[189-191]

The experience of anesthesiologists in the use of electronic computers has only slowly been followed by the other branches of medicine. The findings, however, have added to the knowledge adopted by the other disciplines.[192-196] The Federal grant which resulted in the simulated human being known as SIM 1, developed under the direction of S.T. Denson, M.D., in California, has captured the imagination of all those engaged in clinical medicine. This mannikin has the ability to react to dangers which are intentionally created during the administration of anesthesia for the purpose of training residents in anesthesiology. Thought is being given to the development of other types of situations created in SIM in keeping with teaching technics of other specialities.

On the world scene anesthesiologists recently played a role in combatting the poliomyelitis epidemic in Nicaragua. Through the combined efforts of the American Society of Anesthesiologists and the World Federation of Societies of Anesthesiologists, there resulted not only donations of over $100,000 worth of equipment and supplies, but also offers to help from more than 20 anesthesiologists from this country. Robert M. Smith, M.D., Christian Rattenborg, M.D., and Manuel Guerrero, M.D., were among the first volunteers to serve in this crisis. We are also cognizant of the role played by Thomas F. Hornbein, M.D., as the physician attached to the Mount Everest expedition in 1963.

On the nonprofessional side of the medical and educational community, the names of anesthesiologists making outstanding contributions to enhance the status of the profession as a whole are legion. E. Bryce Robinson, M.D., serves on the Council on Medical Education of the American Medical Association; Urban Eversole, M.D., and Irving Pallin, M.D., are in the House of Delegates of the same organization as delegates from their states; Stuart C. Cullen, M.D., is dean of the University of California School of Medicine at San Francisco; Joseph White, M.D., associate dean at the University of Oklahoma; and John Dillon, M.D., assistant dean at University of California at Los Angeles. E. M. Papper, M.D., served as principal consultant to the Institute of Medical Sciences on the President's Committee on Heart Disease, Cancer, and Stroke; as a member of the National Advisory Heart Council of the National Institutes of Health; and he is presently chairman of the Program Project Committee of the General National Institutes of Medical Sciences. Albert Faulconer, M.D., is a member of the Board of Governors of the Mayo Clinic. Robert D. Dripps, M.D., served as president of the University Senate at the University of Pennsylvania and last year was elected as a trustee at Princeton University. Francis F. Foldes, M.D., was president of the Myasthenia Gravis Foundation. Carl E. Wasmuth, M.D., is an associate professor of law at the Cleveland-Marshall Law School. Finally, it is a matter of distinction that there are four endowed chairs in anesthesiology in this country: the Dorr chair at Harvard, the McNeil chair at the University of Pennsylvania, the McDermott chair at the University of Texas, and the Mallinkrodt chair at Washington University of St. Louis.

Summary

To summarize the achievements of anesthesiology as an interdisciplinary contributor: The anesthesiologist today has many faces, many hands, and many interests. In addition to his technical skill, he must have the wisdom of the physician, an appreciation of the problems of the surgeon, and must serve as the internist of the operating room. His services are concerned with the total care of patients of all ages and with all types of disorders. He has taken advantage of his extraordinary opportunity to study the effects of certain drugs and procedures because of his ready access to human subjects in the operating room, in the main denied to the basic scientists. He has accepted the challenge and responsibility to continue seeking knowledge from his contact with patients in and outside the operating room. Thus, in addition to being a pharmacologist, he is also a biochemist and physiologist because he is involved in maintaining vital functions under widely varying conditions; he performs as psychiatrist because he deals with human behavior under stressful conditions. All of these accumulated pharmacologic and physiologic contributions by anesthesiologists have added to increased safety in the administration of anesthetics, enhanced knowledge of basic physiologic processes, and determined the usefulness of new drugs.

Finally, the ability of the anesthesiologist to transmit and apply this knowledge and his skills, resulting in the imaginative application of such technics outside the operating room, has led to contributions by anesthesiology in almost every branch of medicine, especially those dealing with circulatory and respiratory systems, to a greater extent, perhaps, than most of the other specialties of medicine.

Since the scope of anesthesiology has become wide and is ever widening by its contributions, it advances not only its own specialty field but medicine as a whole.

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Effects of cigaret smoking on endurance performance

In a study, written by K. H. Cooper, M.C., G. O. Gray, M.C., and R. A. Bottenberg, Ph.D., and published in a recent issue of *J.A.M.A.*, involving 419 airmen before and after six weeks of basic training, the chronic effects of cigaret smoking on endurance performance were evident. In addition to the standard twelve-minute walk-run evaluation, 47 of the subjects underwent a treadmill test for determination of maximum cardiopulmonary indexes. The results were: (1) The mean distance covered in twelve minutes by the nonsmokers was significantly greater than that of the smokers at the beginning and end of six weeks basic training; (2) performance was inversely related to the number of cigarets smoked regardless of the stage of training; (3) smoking for more than six months affected endurance performance; for six months or less, no effect; (4) cigaret smoking without inhaling had no appreciable effect on performance; (5) response to training was significantly affected in those who smoked 10 to 30 cigarets per day or more; (6) in the treadmill test, cardiopulmonary indexes were comparable in smokers and nonsmokers, except for a significant reduction in the minute ventilation of the smokers; (7) there was a highly significant correlation between twelve-minute performance and oxygen consumption in the smokers and nonsmokers; (8) mean height and weight were not related to smoking category; weight and amount smoked made a difference in performance but were not related and acted independently. Physical characteristics were considered most important at beginning of training, cigaret smoking at the end; and (9) those with athletic histories did better than those with none, but this was independent of other variables.

The mean age was 19.1 years. On the basis of smoking history, the subjects were classified as follows: never smoked, 128; quit, 64; smoked less than 10 cigarets per day, 86; 10 to 30 per day, 131; and more than 30 per day, 10. Of the smokers, only 28 did not inhale. Most had smoked for less than five years.

The subjects walked-ran the greatest distance possible within twelve minutes before breakfast on an accurately measured tract at least one hour after cigaret smoking, the latter to eliminate, as far as possible, the acute effects of smoking. Also, 47 subjects were given a treadmill evaluation at various stages of training, and maximum cardiopulmonary indexes were determined. A multiple regression analysis was done to find whether performance differences were attributable solely to cigaret smoking or whether contributing factors might be physical characteristics or athletic history.

Allergic Reactions to Insect Stings

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THE FIRST ALLERGIC REACTION to an insect sting was recorded in 2641 B.C. on the tomb of the Egyptian King Menes depicting the occupant's fatal wasp sting.[1] Since then, the magnitude of the insect hypersensitivity problem has become better defined by virtue of improvements in medical communications and/or reporting via death certificates, professional meetings, medical journals, and the lay press. The true incidence of insect sting hypersensitivity is still not known but certainly is not rare. Most physicians, whether specialist or general practitioner, have one or more such patients within their practice. The publicity attendant on a death related to an insect sting has made the general public as well as the physician more aware of this condition and, in fact, has been a major stimulus for clinical research.

Hymenoptera

Insects, like the rest of the animal kingdom, defend themselves in a variety of ways. Some escape enemies by speed of movement; some construct or use shelters; others use camouflage. Insects, like human beings, are not always satisfied with purely passive roles, and some have evolved more aggressive and positive means of chemical warfare. These insects secrete substances that repel by taste, odor, irritation, or venom that may be delivered into an enemy through hollowed spines, biting, or via stingers. Of all the insects, only the Hymenoptera make use of this most effective sting method.

Hymenoptera, of which there are at least 103,000 species, form one of the largest and most highly developed orders of insects.[2] This order includes wasp, hornet, yellow jacket, bee, and ant. It is the female that stings, since stingers are actually egg-laying tubes that have been modified into a hypodermic mechanism for venom injection. In the bee the stinger is located at the tip of the abdomen and consists of a needle-like shaft to which is attached a bulb-like glandular sac. In this sac are three glands; one secretes a lubricant, one the poison, and the other an alkaline substance. In the act of stinging, the secretions of the poison and alkaline glands are mixed to form the highly toxic venom. Most Hymenoptera can sting repeatedly, but the stinger of the bee is barbed and cannot be withdrawn by the bee, serving as an identifying sign after a bee sting.

Hymenoptera venom contains histamine, serotonin, acetylcholine, kinins, a hemolysin, a neurotoxin, a convulsant factor, hyaluronidase, other enzymes, and amino acids.[3] Formic acid presumably accounts for most of the pain associated with insect sting. Venom also contains antigenic substances which are responsible for the development of insect hypersensitivity. Bee, wasp, hornet, and yellow jacket extracts contain at least four to six antigenic fractions. Some of these antigens are species specific, but some cross react with other Hymenoptera.[4] These antigens are presumably responsible for the development of skin sensitizing, hemagglutinating, and/or precipitating antibodies that are found in insect-sensitive patients. Antigens are found both within the insect body and the venom sac extract.

Types of reactions

Hymenoptera stings may result in a variety of symptoms, depending on the

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amount of venom injected, the content of the venom, the site of sting, and whether or not the patient is hypersensitive. In the normal person who experiences a sting, sharp pain which lasts a variable period of time follows the insertion of the stinger. Within minutes a small reddened area appears at the sting site, followed by gradual induration and red "flare" reaction. This is replaced by irritation, itching, heat, and again pain. The total duration of this normal response is usually twenty-four hours. If the sting occurs in a dependent portion of the body, such as hand or foot, there may be a prompt or delayed tissue fluid accumulation which will result in significant local edema for several days.

Toxic reactions are usually characterized by profound gastrointestinal symptoms, vertigo, headache, fever, and syncope, and sometimes are difficult to separate from hypersensitivity reactions since many of the toxic symptoms may be related to the venom's histamine-like action. Deaths have been reported after 500 stings, but recently a man in Africa survived at least 2,243 counted bee stings.[5]

Patients with systemic allergic reactions to insect stings have been classified into two major groups: the immediate and the delayed types. The immediate reaction is seldom difficult to diagnose on the basis of history and physical findings and may be characterized by urticaria, angio-edema, rhinitis, bronchial asthma, chills, vertigo, syncope, gastrointestinal symptoms, or frank shock. The delayed reactions to insect stings can occur in a matter of hours to ten to fourteen days following the sting. In the latter instance, the mechanism is considered to be similar to that of serum sickness, and symptoms may range from painful joints, lymphadenopathy, fever, and urticaria to purpura. Other delayed reactions reported include hemiplegia, peripheral neuritis, nephrotic syndrome, encephalopathy, allergic vasculitis, unclassified connective tissue disorders, and coagulation defects.

Fortunately, most insect sting hypersensitivity reactions are nonfatal although many do require heroic emergency measures in accident wards or doctors' offices. During the period 1957 through 1964, 234 deaths from insect stings were recorded in the United States.[6] Those statistics do not allow for the unreported deaths nor for those attributed to unknown causes or heart disease because of the rapidity of the fatal reaction. Death has occurred within minutes to a matter of months after the onset of the abnormal sting reaction. A recent autopsy study has shown that there are four primary kinds of fatal reactions.[7] The majority involved the respiratory system, but acute anaphylactic shock and vascular or neurologic system disease also occur. Most fatal reactions are preceded by one or more constitutional reactions, thus alerting the patient to seek medical evaluation.

Comment

Since 1961, the American Academy of Allergy through its Insect Committee has maintained a registry of over 2,300 insect-sensitive patients.[8]

In analyzing the data from the entire group, it was found that about one half of the patients who manifested severe allergic reactions to insect stings had had no prior unusual sting reaction. The incidence of insect sting hypersensitivity is greater in the male population under the age of twenty but comparable in both sexes after that age. Only one third of the patients in the registry had a personal history of atopy, and so severe systemic reactions can and do occur in persons who have no personal or family histories of atopy. The Insect Registry has been polled yearly by mail in an attempt to clarify the natural history of this disease and the benefits of desensitization therapy. One or more stings have been reported by 1,021 patients since their entry into the registry.

In reviewing Table I, 94 per cent of the desensitized patients still under therapy report less reaction following subsequent stings. Eighty-six per cent of the desensitized patients who have discontinued therapy and 67 per cent of the nondesensitized patients report improvement following subsequent sting. Conversely, 6 per cent of the desensitized patients continuing therapy failed to improve or were worse following resting as compared with 33 per cent of the nondesensitized group. There is little doubt that desensitization therapy is effective treatment

TABLE I. Response of patients in all categories stung since registry (1967)

Category	Total	Response Same	 Better	 Worse
Desensitized (treatment continued)	503	21 (4)*	471 (94)	11 (2)
Desensitized (treatment stopped)	275	21 (8)	237 (86)	17 (6)
Not desensitized	243	57 (24)	164 (67)	22 (9)

*** Figures in parentheses represent percentages.**

for this disease entity, although the optimum duration of such therapy is still unknown.

In the untreated re-stung group, the percentage of patients reporting better reactions has gradually risen from a level of 50 per cent in 1965 to 60 per cent in 1967. The reason for this trend remains unclear. The suspicion of a clinical sensitivity decrease as the interval between stings increases has not been supported by information from the registry. It shows the same approximate percentage of improvement regardless of whether the interval between stings was less than or more than three years after the sting which caused the primary reaction. It may be that there are many more patients receiving symptomatic treatment at the time of stings, and this accounts for the apparent improvement in their sensitivity. In the group of nonhyposensitized patients reporting better reactions, we know at least half have taken some medication immediately after a subsequent insect sting. This figure is a minimum figure, and it is probable that a much higher percentage of these patients have taken some symptomatic therapy.[9] One must realize that this group is gradually decreasing in size, since the more severe reactors are referred for desensitization and are eliminated from their former category. Thus, this trend may be more apparent than real.

It goes without saying that patients with insect sting hypersensitivity should avoid being stung. They should be reminded that uncovered food, such as outdoor cooking, eating, or feeding outdoor pets, will attract Hymenoptera. Trash receptacles are irresistible to all insects. These patients should ensure adequate window and door screening, be cautious gardeners, and avoid all electric garden power equipment since a constant humming noise irritates bees. Perfumes; hair sprays; sun tan lotions; and floppy, bright, flowery, or black clothing also attract bees. Shoes should be worn at all times out of doors. Insect-sensitive patients should carry an identification device on their persons which gives information concerning such allergy. They should be instructed in how to remove an imbedded stinger by scraping rather than by grasping, since the latter method merely squeezes in more venom. Ice applied locally will delay antigen absorption as does appropriate tourniquet application. Epinephrine hydrochloride is the drug of choice in the treatment of acute anaphylaxis, and all other symptomatic medications (antihistamines, vasopressors, corticosteroids, and so on) play a secondary role.

These measures are recommended not as a substitute for specific desensitization therapy but only for protection in the event such specific therapy is not effective. If desensitization is undertaken, long-term treatment with polyvalent bee, wasp, hornet, and yellow jacket antigens are suggested. The proportion of each is dependent on the clinical history, results of skin testing, and/or other immunologic evaluation. Patients are extremely poor observers concerning the true identity of the offending insect, thus enforcing the need for polyvalent extract therapy.

Summary

Insect sting hypersensitivity is a disease state which gives rise to significant morbidity in the general population. Most fatal reactions are preceded by one or more constitutional reactions; and since desensitization is effective prophylactic treatment, it is believed that such deaths may be prevented. The patients with this problem should be educated concerning

those factors which may decrease the incidence of subsequent sting, as well as to administer their own first aid or treatment in the event medical care is not immediately available.

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Corticosteroid treatment of infectious mononucleosis in military population

A group of 40 patients with uncomplicated infectious mononucleosis were treated with short-term corticosteroids in moderate dosage. The results, based on total days of fever, average stay in the hospital, and average number of days away from active duty were compared with the results in a retrospective group of 40 patients treated symptomatically with bed rest and salicylates by M. P. Gordon, M.C., who reported this in a recent issue of *Military Medicine.*

The comparison showed that the average number of days febrile was reduced from 4.4 to 3.4, the average hospital stay from eighteen to 7.4 days, and the number of days absent from active duty from 28.4 to 14.3 days. In neither group were there any readmissions or complications of therapy. The over-all experience indicates that the judicious use of short-term moderate doses of corticosteroid can significantly reduce the amount of time lost from active duty in a military population.

All patients had the classical symptoms of infectious mononucleosis and characteristic laboratory findings. They ranged in age from seventeen to twenty-two years. Forty consecutive but retrospectively selected patients were put on bed rest and salicylate therapy. The next 40 consecutive patients were started on steroid therapy as soon as there was laboratory confirmation of the diagnosis of infectious mononucleosis, usually within the first seven days after admission to the hospital. Prednisone was then given in a daily dose of 40 mg. for seven days and then 20 mg. daily for another seven days. The criteria for hospital discharge included absence of fever, marked reduction in lymphadenopathy and splenomegaly, and return to normal of serum glutamic oxalopyruvic transaminase. The steroid-treated patients were given seven days convalescent leave before being returned to active military duty. The convalescent leave among the control group varied.

The effectiveness of the programs was measured in 3 parameters: (1) the total number of days the patient remained febrile dating from the first day of hospitalization; (2) the total number of days hospitalized; and (3) the total number of days of absence of leave from active duty.

Clinical and laboratory follow-ups were obtained in 19 of the 40 patients in the steroid-treated group a month after discharge. No significant abnormalities were found in any of these patients, and there were no readmissions from either the treated or the control group.

Semen Analysis in Unilateral Epididymitis

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SEMEN ANALYSES were done on 16 men with unilateral nongonorrheal epididymitis to evaluate the effect on the sperm. Counts of less than 20 million per cubic centimeter were found in 7 of the men, with 1 azoospermic. Motility did not seem to be significantly altered.

FROM 50 TO 80 PER CENT of men with bilateral gonorrheal epididymitis become sterile.[1] Once a complicating factor in as high as 25 per cent of acute cases, gonorrheal epididymitis has now become rare as a result of the use of antibiotics.[2]

Gartman,[3] in a review of 310 cases of epididymitis, found that 50 per cent were idiopathic, 20 per cent occurred after upper respiratory tract infection, and 25 per cent were associated with urinary tract infection. Tuberculosis, trauma, and sarcoids were listed as causes in the remaining 5 per cent. To evaluate the effect of unilateral nongonorrheal epididymitis on the sperm, semen analyses were done on 16 men between the ages of eighteen and forty-five years with this disease.

Method

The patients had unilateral epididymitis diagnosed clinically by accepted standards. The subjects were 8 Negro and 8 white males with a mean age of twenty-eight years. Five of these men had had children before the onset of epididymitis, but up to this date none have impregnated their wives since they acquired the disease. Eliminated from the study were any patients whose past history or physical examination revealed factors which might contribute to abnormal semen analysis results. These factors were: (1) history of mumps with orchitis, (2) history of anaphylactoid reaction or chronic allergic condition, (3) evidence of cryptorchism with or without orchidopexy, (4) history of excessive x-ray exposure, (5) evidence of endocrinologic disease, (6) chronic alcoholism, and (7) varicocele.

Semen specimens were taken at intervals ranging from five days to up to one and a half years after the onset of acute epididymitis. All specimens were obtained by masturbation after a period of continence of no less than four days. Motility studies and numerical evaluation were performed within three hours after specimens had been obtained.

Results

Chronic prostatitis with Bacteriaceae alcaligenes urinary tract infection was seen in 2 cases. Average ejaculate volume was below 2.4 cc. in 9 of the 16 subjects (56 per cent), 4 had average volume between 2.4 and 3.3 cc. (25 per cent), and the remaining 3 had volumes above 3.3 cc.

One case was found to be azoospermic, and 6 had average counts below 20 million per cubic centimeter. Table I depicts the results. Abnormal motility, that is, less than 40 per cent active sperm per field, was seen in 3 of 16 cases. Morphologic studies were significant in that at no time were less than 60 per cent oval forms seen.

Comment

MacLeod and Gold[4] analyzed the semen of 2,000 men, half of whose wives were attending antenatal clinics, the other half being parties in what were considered infertile marriages. He found that mean

TABLE I. Sperm count in 16 subjects

Sperm Count (Million Per Cubic Centimeter)	Number of Cases
0	1
1 to 20	6
20 to 40	2
40 to 60	2
60 to 80	2
80 to 140	2
140 and over	1

semen volume in the fertile group was 3.3 cc. and in the infertile group 3.5 cc. The differential of 0.2 cc. mean volume between fertile and infertile groups did not offer any leads of clinical value that might help to distinguish fertile from infertile men. In this series of diseased patients, 56 per cent of the men had volumes below 2.4 cc. as compared with 26 per cent in MacLeod and Gold's[4] series of subjects who did not have unilateral epididymitis, and 22 per cent had volumes between 2.4 and 3.3 cc. as compared with 25 per cent in MacLeod and Gold's[4] series.

Investigators have proposed various standards of sperm count per cubic centimeter as being compatible with good fertility. Previously regarded as a good index of fertility was 60 million per cubic centimeter; however, Hotchkiss[5] in a study of 200 fertile men found that 25 per cent were below this level, and Falk and Kaufman[6] in a series of 100 fertile men found 15 per cent below this level. MacLeod and Gold[4] in their series found that 5 per cent of men in 1,000 fertile marriages had counts below 20 million per cubic centimeter. In this series, 6 of 16 or 37.5 per cent had counts in this category.

MacLeod in 1961[7] stated that after three days of continence, sperm count should be at least 20 million per cubic centimeter, 40 per cent of the sperm should be motile, and at least 60 per cent should be normal in structure. In this series, 7 of 16 (44 per cent) had counts less than 20 million with 1 man being azoospermic. It is interesting to note that 1 of these 7, who had a count of 5 million per cubic centimeter, had 2 children by his first wife before his episode of epididymitis. During a six-months follow-up period thereafter, he has been unable to impregnate his second wife. Sterility work-up by her gynecologist has had negative results. Motility did not seem to be significantly altered, since only 3 of 16 had motility below 40 per cent.

Summary

Multiple semen analyses on a small series of selected patients with unilateral epididymitis not caused by gonorrhea have been done.

Comparison of results with semen in "fertile" men shows a significant percentage with low sperm count and low volume.

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Total Reconstruction of Pharynx with Medially Based Deltopectoral Skin Flap

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FOLLOWING TOTAL OR *subtotal surgical ablation of the larnyx for head and neck cancer, a safe and expeditious method for replacing both the laryngopharynx and large deficits in the oropharynx, reaching as high as the posterior wall of the nasopharynx, offers a less yielding and more decisive attack on the disease than radiation and/or chemotherapy. Pharyngeal reconstruction using the deltopectoral skin flap is described and the advantages discussed.*

RECONSTRUCTION OF THE PHARYNX after its total or subtotal ablation has been one of the more difficult and challenging problems of rehabilitation after surgery for head and neck cancer. Because of this, a certain lack of determination still appears to color attitudes toward resectability of some of the more advanced cancers of the pharynx and oropharynx. Too often we see the only remaining hope for a possible cure denied the patient, small though this may be, in favor of treating him with radiation and/or chemotherapy with grossly exaggerated hopes for achieving satisfactory palliation. A safe and expeditious method for replacing not only the laryngopharynx but also large deficits in the oropharynx, reaching as high as the posterior wall of the nasopharynx, offers a less yielding and more decisive attack on the disease.

Presented at the 162nd Annual Meeting of the Medical Society of the State of New York, New York City, Section on Plastic and Reconstructive Surgery, February 13, 1968.

Technic

The excisional operation begins with a tracheostomy, performed under local anesthesia through a low-neck transverse incision. General anesthesia is then administered through the tracheal opening, thus avoiding passage of the anesthesia tube through the area of cancer in the pharynx.

A pair of transverse parallel incisions of the McFee[1] type are used for the excision and radical neck dissection. Although these incisions do not contribute materially to the reconstruction that is to follow, they give better final appearance and also substantially reduce the risks of cervical flap necrosis. The upper incision follows a prominent skin crease at the level of the hyoid bone. The lower incision is also made in the direction of a skin crease but at a much lower level than that described by McFee. It starts at one end of the tracheostomy incision and, in its medial half to two-thirds, runs on the clavicular line where it also coincides with the medial portion of the upper border of the deltopectoral flap which is to be used later in the reconstruction (Fig. 1). Recently I have been making this incision to correspond entirely with the superior border of the reconstructive flap, which causes no special difficulties in doing the neck dissection.

The reconstructive flap is an elongated rectangle, outlined horizontally across the upper anterior chest wall and shoulder (Fig. 1). Its base lies parasternally over branches of the internal mammary artery and vein that perforate through the first four intercostal spaces. As stated previously, its superior border lies on the clavicular line. The lower border runs 2

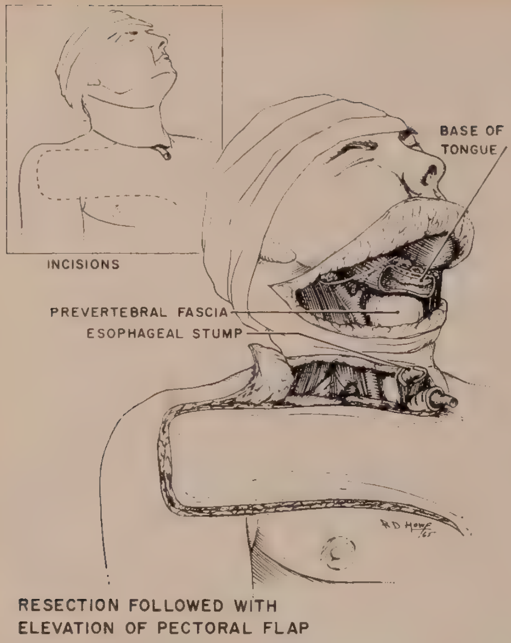

FIGURE 1. Diagrams of deltopectoral skin flap intended for total pharyngeal reconstruction showing transverse parallel incisions used for the laryngopharyngectomy and radical neck dissection.

or 3 fingerbreadths above the level of the male nipple and crosses to the shoulder at the apex of the anterior axillary fold. The tip margin is curvilinear and follows the anterolateral contour of the shoulder. If additional length should be needed, however, I do not hesitate to place this margin on the midlateral or even on the posterolateral border of the shoulder in well-preserved individuals. In this manner the flap can easily be made to reach as high as the level of the eustachian tubes in the nasopharynx (Case 2) and, if used to cover external cutaneous deficits, to as high as the zygomatic arch on the side of the face (Fig. 2).

The flap is raised with sharp knife dissection in a plane deep to the fascia that covers the deltoid and the pectoralis major muscles. As the base of the flap is approached, caution is exercised not to injure the perforators from the internal mammary vessels that are to feed the pedicle. Ideally perhaps, and under certain extenuating circumstances, a delay

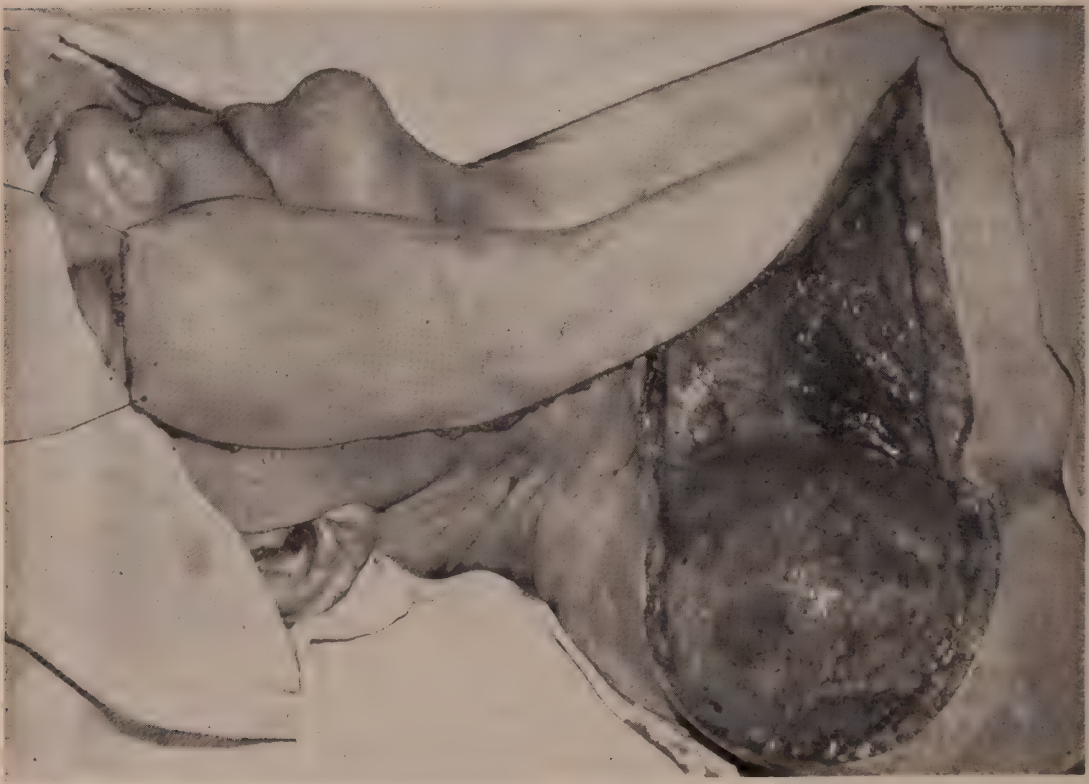

FIGURE 2. Undelayed deltopectoral flap showing the height it can easily attain in repair of external cutaneous deficits.

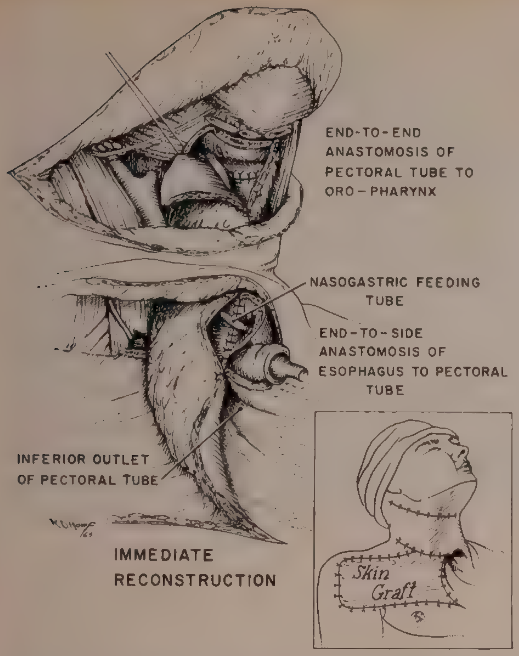
END-TO-END ANASTOMOSIS OF PECTORAL TUBE TO ORO-PHARYNX
NASOGASTRIC FEEDING TUBE
END-TO-SIDE ANASTOMOSIS OF ESOPHAGUS TO PECTORAL TUBE
INFERIOR OUTLET OF PECTORAL TUBE
IMMEDIATE RECONSTRUCTION
Skin Graft

FIGURE 3. Diagrams demonstrating manner in which deltopectoral flap used to replace missing pharynx.

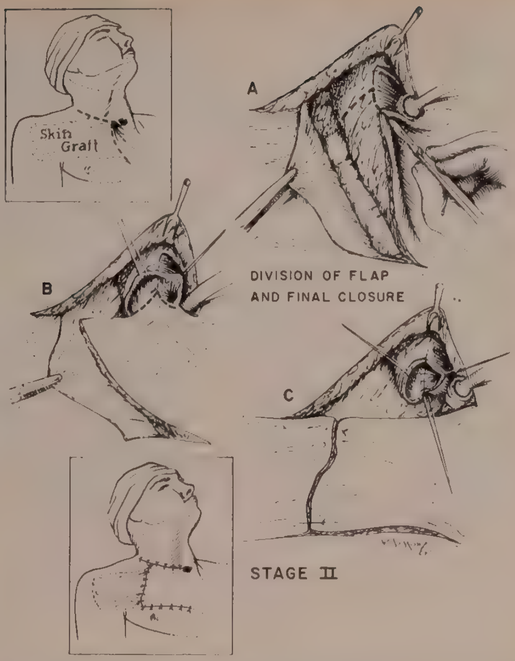

FIGURE 4. Diagrams showing steps of second-stage operation dividing deltopectoral flap and closing fistula at its entry into neck.

procedure of a week to ten days before the intended day of the major operation may be deemed best to ensure the circulatory safety of the flap. In approximately two thirds of 50 or more pharyngeal and other reconstructions, however, the flap has demonstrated an excellent index of viability when the procedure was not delayed. In addition to the adequate blood supply from the internal mammary vessels, the dependency of venous drainage ensuing from the more cephalad position of the tip of the flap, as it lies in its new location, may be another important factor contributing to the safety of the flap.

The raised flap is introduced into the neck, passing under the bipedicled cervical flap from the incisions used in the excisional phase of the operation. The tip margin is sutured to the circumferential line of excision in the oropharynx to form a skin-lined hollow tube for the missing part of the pharynx (Fig. 3). The longitudinal seam of this tube spirals gently anterolaterally from above down toward the stump of the esophagus located behind the trachea. Here, the esophageal end opening is enlarged with a small longitudinal slit, if necessary, and is joined in end to side anastomosis with an unsutured opening at the lower part of the longitudinal seam of the skin tube. Before completion of this anastomosis a nasogastric tube is passed for feeding purposes. The neck incisions are then closed, and a split-thickness skin graft is applied to the donor bed on the chest and shoulder. The reconstruction thus essentially completed leaves a temporary fistulous outlet at the site of entry of the flap into the neck. This outlet is later to be closed in a minor second-stage operation, when it is time to divide the flap and return its unused part to the chest wall (Fig. 4). In the meantime, the fistula provides a conduit for oral secretions away from the neck wounds and below and lateral to the tracheostomy.

Case reports

Case 1. This seventy-two-year-old woman had an extensive cancer of the laryngopharynx, occupying almost its entire circumference, and a 6 by 5 by 4-cm. large mass of lymph nodes in the right upper part of the neck. The lesion required a total laryngopharyngectomy and right radical neck dissection. Because of her diabetic and arteriosclerotic condition, it was deemed best to delay a deltopectoral flap prior to resection and reconstruction. This flap is

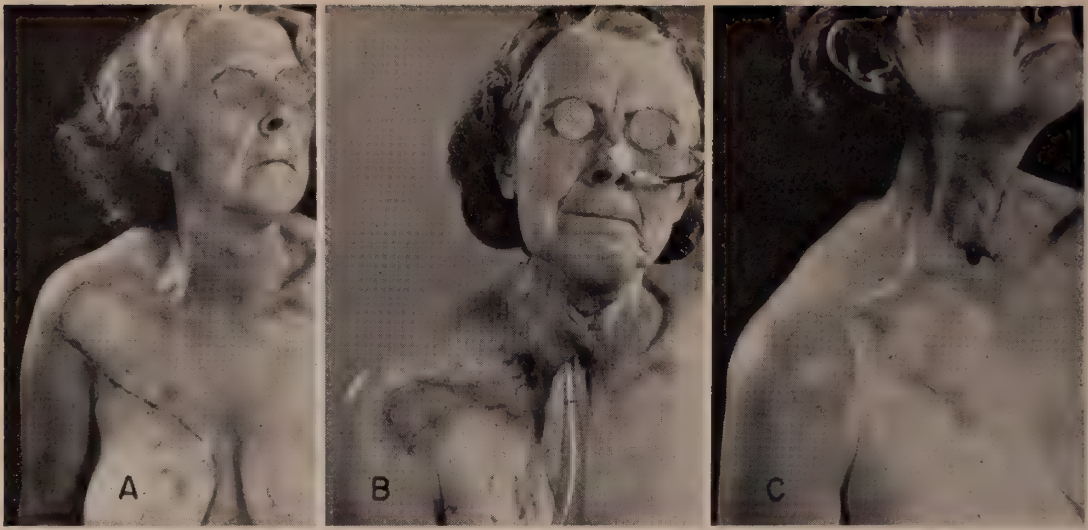

FIGURE 5. Case 1. (A) Deltopectoral flap delayed ten days before excision to ensure satisfactory blood supply. (B) Interim condition seen three weeks after resection and first step in pharyngeal reconstruction. (C) Final result after division of deltopectoral flap and closure of its fistula of entry into neck.

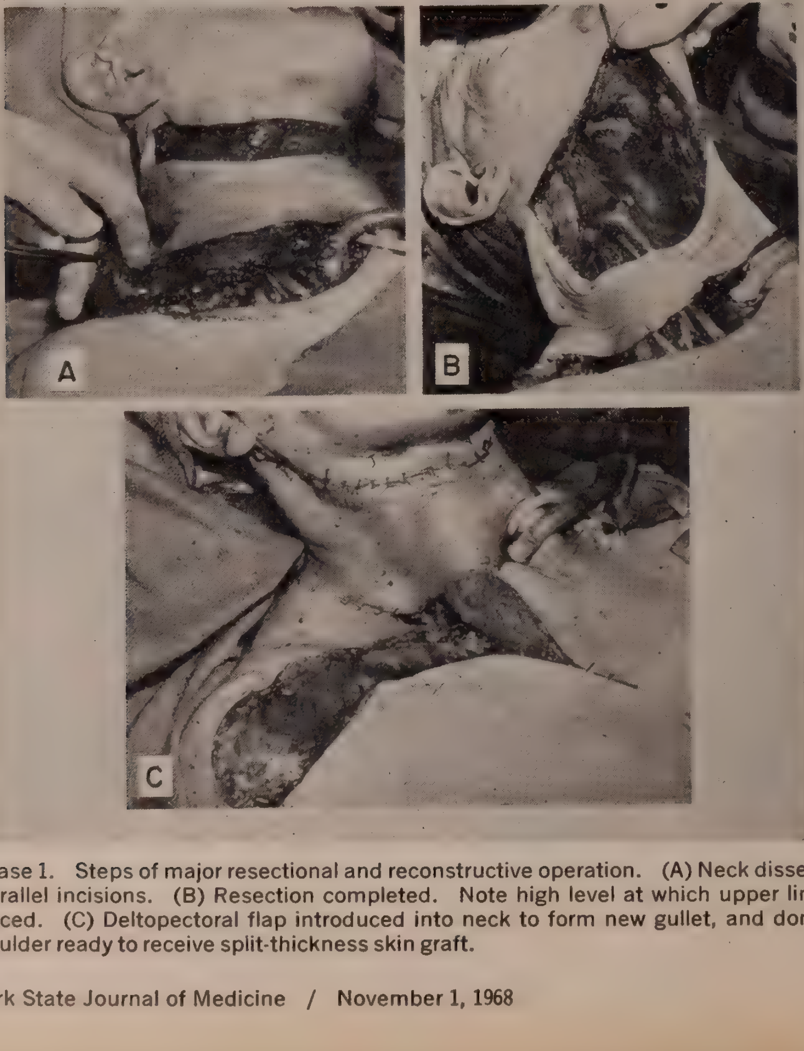

FIGURE 6. Case 1. Steps of major resectional and reconstructive operation. (A) Neck dissection through transverse parallel incisions. (B) Resection completed. Note high level at which upper line of excision had to be placed. (C) Deltopectoral flap introduced into neck to form new gullet, and donor wound on chest and shoulder ready to receive split-thickness skin graft.

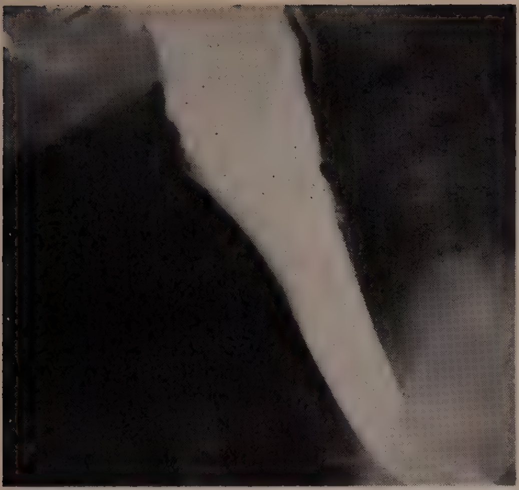

FIGURE 7. Radiogram showing more than adequate caliber of reconstructed pharynx.

seen in Figure 5A, somewhat distorted by the pull of the breast in the sitting position. Figure 5B shows the patient in the interim between the resection and the final stage, and Figure 5C shows her after division of the flap and closure of the fistula of entry into the neck. Ten days later the main operation was performed as shown in Figure 6. An esophagogram in Figure 7 demonstrates the adequate caliber of the reconstructed pharynx. This patient lived symptomless for three and one-half years and succumbed to pulmonary metastases at the end of that period.

Case 2. A full course of radiation therapy had failed to control a squamous cell cancer on the posterior pharyngeal wall of this sixty-nine-year-old male patient. When referred to Roswell Park Memorial Institute, a large necrotizing ulcer occupied the posterior wall of the pharynx, extending from the right side of the nasopharynx to the left pyriform sinus which was completely filled. He complained of persistent pain and dysphagia with considerable weight loss. Under these circumstances the prospects for achieving a cure seemed almost nil, but the only realistic approach to his problem was a surgical one. A total laryngopharyngectomy was performed which also included the entire posterior wall of the oropharynx and nasopharynx reaching to the level of the eustachian orifices (Fig. 8A). Since no lymph nodes were palpable on either side of the neck, and the treatment was primarily intended for palliation, no neck dissection was performed lest serious complications ensue from the effects of previous heavy radiation. A deltopectoral flap was immediately used, without a prior delay procedure, to reconstruct the pharynx (Fig. 8B to F). Because the pharyngeal defect extended almost to the base of the skull, an extra long pedicle flap was needed. This was obtained by placing the tip margin of the flap onto the posterior aspect of the shoulder as seen in Figure 8B. Despite this and the undernourished state of the patient, the flap healed without complications (Fig. 8G and H). Because of the possibility of a microscopic tumor having been left high in the nasopharynx, a second course of radiation therapy was given while the flap still remained attached at its base. Soon after completion of this treatment the flap was divided, and the fistula of entry was closed. It is now more than three months since he has been discharged from the hospital, completely relieved of his symptoms, eating normally, and already regaining some of his lost weight.

Case 3. This case demonstrates use of the flap in a somewhat different situation to repair a massive defect of the posterior, lateral, and anterior walls of the oropharynx without having to remove the larynx. As extensive squamous cell cancer involved the left tonsillar fossa, half of the soft palate, the posterior third of the floor of the mouth, and half the base of the tongue, and extended past the midline on the posterior pharyngeal wall. Monobloc ablation included, in addition to the structures mentioned, the left half of the mandible and a left radical neck dissection. The larynx was retained because it was not encroached on by the lesion. A deltopectoral skin flap was used without delay, in much the same manner as in Case 2, to repair the massive oropharyngeal deficit as shown in Figure 9. The patient's wound healed without complication. Five weeks later the pedicle was divided, and the fistula of entry was closed.

In similar cases in which the larynx is retained, it has been our experience that about half of the patients eventually manage to swallow without aspirating, whereas the other half always remain prone to the dangers of aspiration. If the patient still cannot manage to eat without aspirating after a trial period of a few months, he is given the choice of having the larynx removed or of keeping the larynx and staying permanently with a tracheostomy and nasogastric tube feedings.

Comment

Many ingenious technics have been advanced for pharyngeal reconstruction, but all fall short of ideal, some of them considerably so. Among the more practical of these is a mucosa-lined, ready-made tubular segment from another part of the alimentary canal, which is perhaps the most natural replacement for the pharynx. Whether this be a gastric, jejunal, or colic segment, it can be migrated to the neck, carried either on a mesenteric vascular

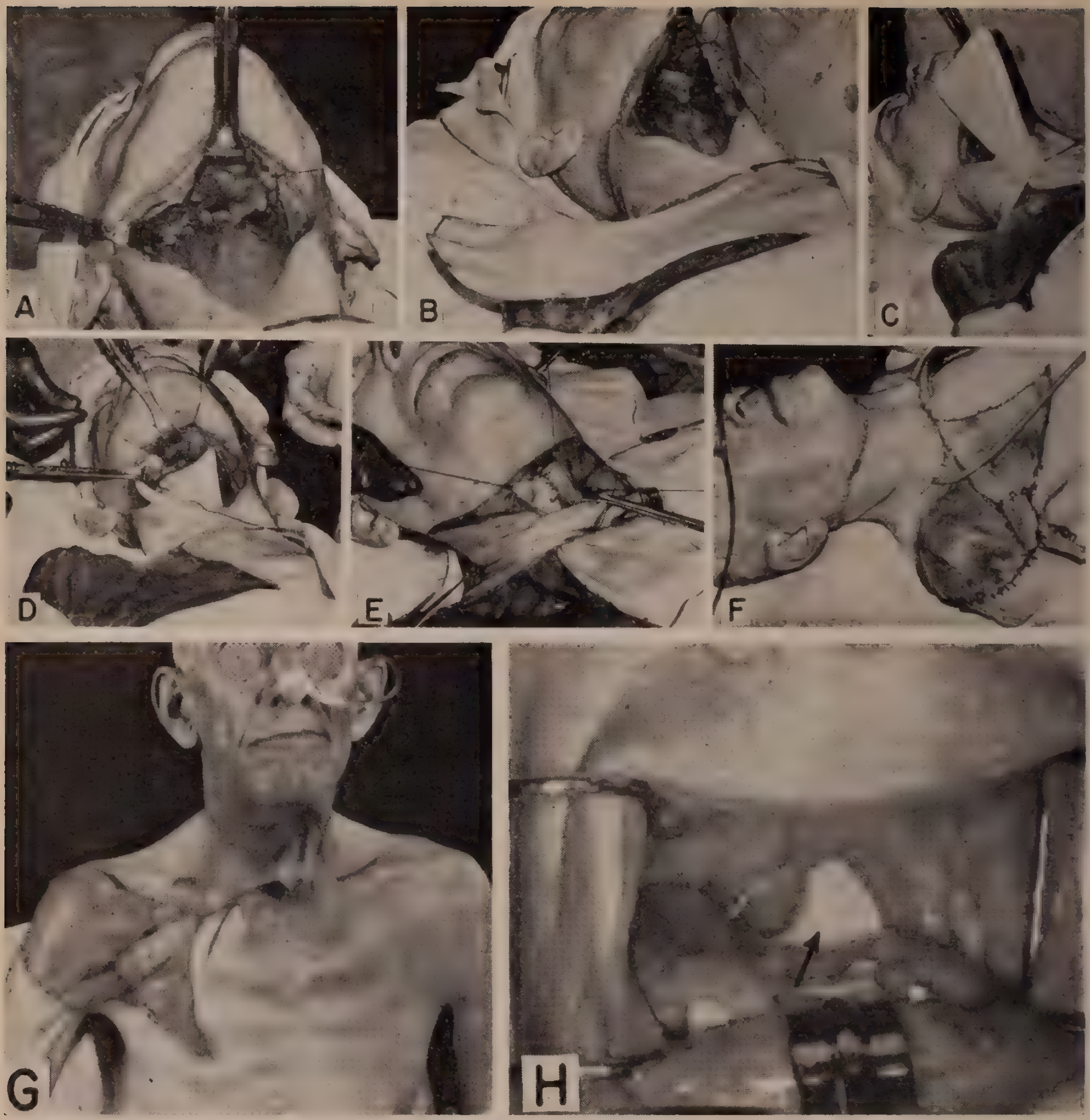

FIGURE 8. Case 2. (A) Defect resulting from pharyngectomy and laryngectomy reaching high into nasopharynx at level of eustachian tube orifices. (B) Extra long deltopectoral flap elevated without primary delay for reconstruction. (C) Flap entering neck. (D) Formation of new pharyngeal tube. (E) End to side anastomosis of esophageal stump with opening in longitudinal seam of skin tube. (F) Resection and first-stage reconstruction completed. (G) Interim period before second-stage operation. Skin graft on chest and shoulder, and fistula of entry of deltopectoral skin tube into neck. (H) Oral view showing high reach of healed flap into nasopharynx.

pedicle[2-4] or, as has been advocated lately, transplanted freely and revascularized in the neck by anastomosing its artery and vein to similar vessels of like caliber in the recipient wound.[5-7] Although variously feasible in low reconstructions of the hypopharynx and esophagus, such technics are not suitable for defects extending higher into the oropharynx or the nasopharynx. Furthermore, they compound the risks of a long and already difficult operation with those of an open abdominal and thoracic procedure, and also with the possibility of serious complications arising from circulatory insufficiency of the transplanted segment of gut. Whenever possible, simpler and less hazardous methods are therefore to be preferred in the solution of problems that are solely limited to the confines of the head and neck.

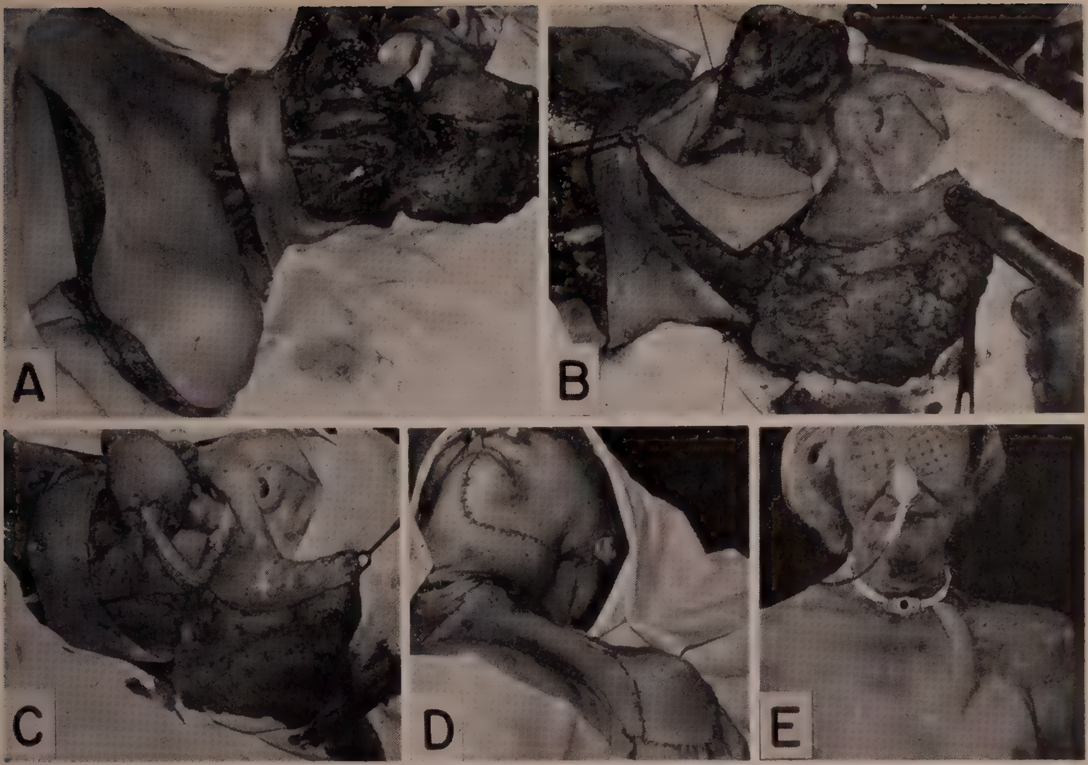

FIGURE 9. Case 3. (A) Surgical defect and primary deltopectoral flap ready for introduction into neck. (B–D) Steps in reconstruction. (E) Result after first-stage excisional and reconstructive operation.

Inlay free-skin-grafting technics enjoy the merits of simplicity in completing the restoration of gullet continuity in a single stage at the time of the resection.[8-10] They are, however, frequently burdened with complications and poor results because of graft losses, infections, fistula formations, and serious strictures. There is no question but that better results are to be expected from pedicle flaps when these are carefully planned and executed. Pedicles carry their own blood supply, and their healing process does not depend as much on factors prevailing in the recipient area as can adversely affect the take of free-skin grafts. Their subcutaneous padding of fat prevents excessive fibrosis and contracture and contributes much needed bulk to fill at least partially the void left by the resection. Also, better protection is afforded the large vessels and nerves, bared in the adjoining wound of neck dissection, from the dangers of contamination with oral secretions. Multiple stages, however, are needed to achieve the desired end results, often with protracted delays during which the patient must bear the considerable inconveniences of a draining pharyngostoma and of having to be fed by nasogastric tube. Wookey's[11] well-known technic tries to minimize these disadvantages by using Trotter's transverse cervical flap to achieve the major initial step of a two-stage reconstruction at the same time as the resection. But it also has serious shortcomings.

The following advantages to be gained by using the deltopectoral skin flap overcome many of these limitations: (1) The deltopectoral flap provides better quality skin that is usually much less hairy, has a thicker subcutaneous fat pad, and has more circulatory reserve than a transverse cervical flap. (2) The magnitude of the surgical resection, whether this includes a unilateral or bilateral radical neck dissection, has no bearing on the viability of the deltopectoral flap. (3) Previous radiation therapy, administered unsuccessfully to the neck, does not greatly interfere with the use of the deltopectoral flap, since the flap comes from a nonradiated area and brings its own blood supply to the affected region. When used in conjunction with the transverse parallel neck incisions as described, the reconstruction has a much better chance for success than with methods employing either cervical flaps or free-skin grafts. (4) The length of the pharyngeal replacement may extend much higher than is possible with the Wookey flap and can be made to supply lining tissue for areas high in the tonsillar fossa and base of the tongue. (5) Unlike the Wookey flap, the deltopectoral flap does not require an assumption from the start that the entire circumference of the gullet is to be sacrificed; it has the versatility to provide any portion or all of the circumference of the gullet as may be needed. (6) With the fistulous outlet located below and lateral to the tracheostoma, the interim nursing care is greatly simplified, the dangers of aspiration are avoided, and the possibilities of contaminated secretions leaking into the neck wound are kept to a minimum. (7) The proximal portion of the pectoral flap rests over the common carotid artery and protects it from infection and rupture. (8) The deltopectoral flap does not rob the neck of its natural covering and, therefore, gives better end results cosmetically.[12]

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Unwanted hospital patient trespasser

A private hospital was granted an order requiring the removal of a patient who no longer needed hospital care but could be adequately cared for in a nursing home. The patient became a trespasser by remaining in the hospital after it had demanded that she be removed, a Federal trial court ruled.

The patient's husband wished to have her remain in the hospital for the rest of her life. A private hospital has the right to accept or refuse any patient, the court said. It has a moral duty to reserve its accommodations for persons actually needing hospital and medical care and not to permit its facilities to be diverted to uses for which hospitals are not intended. To permit the patient to remain in the hospital would not be in the public interest.

Since the patient's husband was able and willing to pay whatever the hospital would charge if it were willing to retain her, an action for damages would not be an adequate remedy. The fact that the hospital had a remedy by way of an action for ejectment or an action for forcible entry and detainer did not detract from equity's power to grant relief by way of injunction. Neither of those actions would provide an adequate remedy.

A series of review articles dealing with medical progress

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Current Status of Cardiac Surgery*

Part II

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PART I of this article appeared in the October 15, 1968, issue of the NEW YORK STATE JOURNAL. It dealt with preoperative evaluation and management including cardiac pathologic disease, optimum preparation of the myocardium, fluid and electrolyte management, respiratory care, prophylaxis against infection, and psychologic preparation; surgical management including equipment and management of perfusion; and postoperative management including blood volume regulation, respiratory care, management of circulatory system, and regulation of fluid and electrolytes.

Treatment of congenital heart disease

Many patients with surgically correctable heart disease have not been followed up with serial cardiac catheterization studies. The result of this is that the clinical and hemodynamic course of such lesions, ventricular septal defect, is incompletely understood.

To correct this, a cooperative, prospective study involving several institutions has been initiated under the auspices of the National Institutes of Health. Its object is to follow up those patients who are not acutely ill but who would be considered for surgery, such as the essentially asymptomatic patient with a ventricular septal defect and a small shunt. The lesions being studied are aortic stenosis, pulmonic stenosis, and ventricular septal defect. Atrial septal defect was included initially but has been deleted from the study because of the insufficient number of unoperated cases. Tetralogy of Fallot is not included because of the difficulty in precisely separating the different forms of this anomaly.

ATRIAL SEPTAL DEFECT AND ANOMALOUS PULMONARY VENOUS DRAINAGE. There are three main types of atrial septal defects, each caused by a different error in development. The sinus venosus and secundum types have similar hemodynamic behavior. The sinus venosus defects may not be related to the fetal structure, but this term has been firmly attached to the atrial defect high in the septum, next to the superior cava, that is associated with drainage of the pulmonary veins from the right upper lobe, and often the middle lobe, into the right atrium. Secundum defects incorporate the fossa ovalis and may extend to the inferior cava, but the mitral and tricuspid valves are normal. One or more of the pulmonary

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veins commonly drain into the right atrium. The primum atrial septal defects are related to maldevelopment of the endocardial cushions and will be discussed together with endocardial cushion defects. The defect is low on the septum, and in 90 per cent of cases the mitral or tricuspid valves are abnormal.

Secondum and sinus venosus defects have essentially similar hemodynamics, and it probably makes no difference whether or not left-to-right intracardiac shunting is due in part to anomalous pulmonary drainage or entirely to a septal defect. The natural history of atrial septal defect probably will never be known, because surgical repair became possible soon after perfection of cardiac catheterization technics. Almost all defects are being closed soon after the diagnosis is made. Hoffman, Danilowicz, and Rudolph[87] performed serial catheterizations on infants aged four days to two months and found that 4 of 6 patients studied had no shunts at the second study, and 4 more patients had lost their heart murmurs. The ratio of pulmonary to systemic flow varied from 1.2 to 4.6:1. Cayler[88] studied 3 infants, seven days to three months of age with secundum atrial defects, in whom the atrial septal defect was closed on recatheterization. In this latter group, the highest pulmonary to systemic flow ratio was 4:1. The location was not documented. In a cooperative study, Zaver and Nadas[89] reported on 298 older patients from five medical centers with secundum defects (89). Catheterization data was available on 214 patients, and only 15 had a pulmonary to systemic flow rate of less than 1.5; 14 per cent of all patients and 44 per cent of patients thirty years of age and older had a history of congestive heart failure. Of interest is that 6.6 per cent of patients with ratios of less than 1.5:1 had congestive heart failure.

In adults, supraventricular tachycardia is a fairly common complication. In children, arrhythmias are rare. However, one year ago we operated on a nine-year-old girl who was known to have a secundum atrial septal defect when she developed multiple Stokes-Adams attacks due to complete heart block.[90] She has not had another fainting episode since closure of the defect. First-degree heart block has been present since surgery.

The incidence of bacterial endocarditis in atrial septal defect is essentially zero.[91] An undetermined percentage of patients develop increased pulmonary vascular resistance. Increased resistance is rare in patients below age twenty.[92] Serial cardiac catheterization were reported in 3 cases, and only 2 patients developed increased pulmonary vascular resistance ten years after the first study.[93] Therefore, pulmonary hypertension develops in certain persons. Dalen, Haynes, and Dexter[93] reported 48 patients with secundum defect followed up for ten years; 20 of 23 with normal pulmonary vascular resistance were alive; whereas only 5 of 20 with pulmonary hypertension survived. Six more died while undergoing surgery or of their disease at an average age of forty-one.

The mortality rate for surgical correction of atrial septal defect with normal pulmonary vascular resistance is about 1 to 2 per cent during the first three decades. Therefore, surgical correction is generally recommended for all patients with atrial septal defect, when it is discovered and when patients are old enough for easy repair. Because of this, cases of atrial septal defect have been dropped from the cooperative study.

The various methods of closed-heart repair have been superseded by open-heart repair with heart-lung bypass. All but the largest defects can be closed by direct suture. The sinus venosus defects are usually repaired with a patch of Teflon or free pericardial graft.

Atrial septal defect is commonly associated with anomalies of pulmonary venous drainage. Partial anomalous venous drainage is usually asymptomatic and acts to increase the volume of the left-to-right shunt. It is corrected by repositioning the atrial septum at the time the atrial septal defect is closed. In sinus venosus defect, a baffle may be placed to divert the aberrant pulmonary venous flow into the left atrium and the wall of the cava enlarged, if necessary, with a patch.

Total anomalous venous drainage is a more serious matter. Children with this defect are commonly seen with severe symptoms during infancy, and 75 to 80 per cent are dead by one year of age. Correction must be done under less than ideal conditions if these infants are to survive. They are classified according to the site of the anomalous pulmonary drainage. Three general types are recognized: the supracardiac, where the anomalous veins commonly enter a left superior vena cava emptying into an innominate vein; the cardiac, where the veins drain into the right atrium or coronary sinus; and the infradiaphragmatic, where the drainage is into the inferior cava, portal vein, or hepatic veins. The infradiaphragmatic type is the most lethal because there is almost always some obstruction to the pulmonary venous drainage, leading to early and severe pulmonary congestion and pulmonary vascular hypertension. The natural history of this defect, therefore, is marked by development of pulmonary hypertension from two causes: hyperdynamic, from the left-to-right shunt, and pulmonary vascular obstructive changes initiated by elevated pulmonary venous pressure, similar to mitral stenosis. Associated defects and transitional or combined forms of this anomaly are common. A review of anomalous pulmonary venous return by Blake, Hall, and Manion[94] describes some 27 variations in a series of 113 cases.

Surgical repair depends on the type. In general, the repair consists of an anastomosis between the left atrium and the anomalous veins, closure of the atrial septal defect, and finally closure of the anomalous connection to the systemic vein. The surgical mortality rate in these infants under one year of age is more than 75 per cent. However, an operation represents their only chance for survival and is indicated.

Ventricular septal defect. Ventricular septal defect is the commonest intracardiac form of congenital heart disease. The natural history of ventricular septal defect in infants has been studied with serial cardiac catheterization by Hoffman and Rudolph.[95] They report 40 recatheterizations in a series of 62 infants up to one year in age; 44 were three months or younger. The ventricular septal defect closed spontaneously or almost closed in 36 per cent. Elevation of pulmonary vascular resistance is greatest with the larger left-to-right shunts. They could not document persistence of fetal high pulmonary vascular resistance; in these infants the pulmonary vascular resistance falls and then rises again. They theorize that the development of pulmonary hypertension in these cases is caused by an elevation of left atrial pressure, as a result of increased pulmonary blood flow, which, in turn, initiates a pulmonary vasoconstriction. They suggest that surgical intervention is not indicated for a ventricular septal defect with pulmonic/systemic flow ratio of less than 2:1. The patients with larger left-to-right shunts, elevated pulmonary artery pressures, and low to moderately elevated pulmonary vascular resistance should have serial catheterization to discover elevations in left atrial pressures or pulmonary vascular resistance. Early surgical intervention may prevent irreversible pulmonary vascular changes; pulmonary hypertension regressed in 3 out of 4 such cases.

The natural history of ventricular septal defect has been studied by Ash.[96] In 249 cases followed up for an average of eight years, diagnosis was made by clinical signs only in 100 cases. There was a general tendency toward stability and improvement. Pulmonary vascular resistance increased in only 2 of the 10 patients who had serial catheterization. Rapid progression of pulmonary vascular disease was not seen in patients under five years of age.

Bloomfield[97] has analysed 424 cases of ventricular septal defect in children three years of age or older. His data indicated that in lesions with a pulmonic to systemic flow ratio of less than 3:1, the risk of increasing pulmonary vascular resistance is zero. He estimated that in children with larger defects and larger shunts, fewer than 5 per cent will become inoperable between the ages of one to seven years.

The incidence of endocarditis in his series was estimated to be 30 per cent, uncorrected for the influence of penicillin prophylaxis. Nadas[98] estimates the risk to be 15 per cent.

Although the operative mortality rate from closure of a small ventricular defect is minimal, about 1 per cent, we believe surgical intervention is not indicated for lesions with pulmonic to systemic flow ratios of less than 1:5.

Operative closure of the uncomplicated ventricular septal defect is now a relatively standardized procedure. We prefer the transatrial approach, with retraction or partial mobilization of the septal leaflet of the tricuspid valve but have no hesitation about the ventricular approach should exposure via the former be inadequate. A small ventricular septal defect of 5-mm. diameter or less may be sutured primarily; a patch is indicated for larger lesions. Operative injury to the bundle of His should be rare, if care is taken to avoid the medial inferior edge of the defect when placing the sutures. Clamping of the aorta intermittently affords a relatively bloodless field for a precise anatomic repair.

Bacterial endocarditis, even if it is controlled, will often either enlarge the defect or damage the aortic or pulmonic valves and thus make repair difficult or impossible.

In a small percentage of cases, the ventricular septal defect compromises the annulus of the right coronary arterial cusp, and this prolapses causing aortic insufficiency. In some of these, the insufficiency is corrected when the defect is closed. Usually some form of valvular repair is performed, most commonly a reefing of the cusp. This generally is not completely satisfactory, but one should replace the aortic valve only as a last resort.

Infants with ventricular septal defect below the age and weight for the usual perfusion are occasionally seen with symptoms of refractory congestive failure secondary to overwhelming left-to-right shunt through the defect. The mortality rate from total correction by surgical procedure in this group, usually under 20 pounds in weight and under one year of age, is prohibitive, and a palliative operation is indicated if aggressive nonsurgical management cannot handle the problem. Banding of the pulmonary artery through a left anterior thoracotomy to reduce the pulmonary artery to about one third of its size will decrease the left-to-right shunt by increasing resistance to blood flow into the pulmonary artery.[99] Studies to rule out a simultaneous patent ductus are indicated prior to operation, and ligation must be done if the ductus is present. By this means these children may be tided over to a better age for open correction. Removal of the band, with plastic repair of the pulmonary artery if necessary, is done at this time.[100]

As a rule, the mortality rate for closure rises with increasing pulmonary vascular resistance, and when the ratio of pulmonary to systemic vascular resistance is 0.85 or higher, surgical repair is generally futile.[101] A group of such "high-pressure" ventricular septal defects reported by Lillehei *et al.*[102] had an operative mortality rate of only 10 per cent, and reversal of the vascular changes was observed in most patients postoperatively.[102] This is contrary to the experience of Reeve *et al.*[103] who reported that established pulmonary vascular changes were irreversible in their series. Ross, Morrow, and Braunwald[104] have reported successful results from the operation and improvement in pulmonary hypertension postoperatively in a patient with demonstrated reversal of shunt.[104] The change of shunt from left-right to right-left probably was a transient occurrence during cardiac catheterization, and there was likely a reversible component to the pulmonary vascular resistance.

Pulmonic stenosis. Pulmonic stenosis with intact ventricular septum is a common congenital heart defect; it represented 10 per cent of Keith, Rowe, and Vlad's[105] series. Most patients are first seen between the ages of five to fifteen years. The diagnosis is suggested by the characteristic murmur, right-axis deviation revealed on the electrocardiogram, and prominence of the pulmonary artery shown on posteroanterior view of x-ray film of the chest. Cyanosis is uncommon, sometimes resulting from an obligatory right-to-left shunt through a patent foramen ovale as pressures rise on the right side of the heart. Such children occasionally squat; the combination of cyanosis and squatting does not invariably point to tetralogy of Fallot.

Cardiac catheterization is advised for all patients presenting clinical symptoms of pulmonic stenosis, who show cyanosis, or who show evidence on electrocardiogram of right ventricular hypertrophy. Ayres and Lukas[106] did not find definite evidence for right ventricular hypertrophy in any of their patients with right ventricular pressures under 50 mm. Hg. Some groups forego cardiac catheterization prior to surgery; however, we believe that the valvular and subvalvular gradients should be measured and the anatomy demonstrated by angiocardiography. Little, Lavender, and De Sanctis[107] found 6 of 13 patients with pulmonic stenosis had angiographic evidence for infundibular stenosis as well. In Johnson's[108] series of closed pulmonary valvulotomies the incidence was 51 per cent.

Operation is usually advised for patients with a right ventricular pressure greater than 80 mm. Hg. The data of Lewis *et al.*[109] suggest that this is the point where cardiac output no longer increases after exercise. Marked changes noted on electrocardiogram or severe disability are themselves indications for operation.

The surgical approach to this lesion is controversial. The closed transventricular valvulotomy using the Himmelstein valvulotome is recommended by several groups because of its simplicity and generally good results.[110,111] Several recent reports have recommended open cardiac surgery with cardiopulmonary bypass, stressing the superior hemodynamic results as determined by postoperative studies, the added ability to deal with associated lesions, and the low morbidity and mortality rate.[112,113] We prefer the open approach through the pulmonary artery.

There is little known concerning the natural history of this lesion.[114] The infundibular hypertrophy seen with valvular stenosis will most often regress following adequate valvulotomy. Engle *et al.*[115] reported 3 patients with right ventricular pressures in excess of 100 mm. Hg measured in the operating room after open valvulotomy whose infundibular stenosis regressed spontaneously within one year after operation and concluded that infundibular resection is rarely indicated. Johnson,[116] on the other hand, suggests infundibular resection if the right ventricular pressure does not fall below 100 mm. Hg after valvulotomy. Lillehei, Simmonds, and Todd[117] state that infundibular resection is indicated in cases where the right ventricular pressure, as measured at the operating table, is more than one-third to one-half the preoperative level. Postoperative pulmonic insufficiency may not be as benign as has been reported with tetralogy of Fallot, and every effort should be made to avoid producing it during valvulotomy. The need for a patch on the pulmonary outflow tract should be rare, but as Lillehei points out, it may be the only means of reducing the outflow gradient to an acceptable level.

ENDOCARDIAL CUSHION DEFECTS. Ostium primum atrial septal defect is the simplest form of endocardial cushion defect; usually there is an associated cleft of the septal leaflet of the mitral valve. This group of lesions ranges from ostium primum atrial septal defect to complete atrioventricular canal with common ventricle.

Patients with ostium primum defects should all be considered for surgical treatment, since the size of the shunt and the common associated valvular defects make a normal life span unlikely. In contrast to the secundum atrial defects that are usually closed primarily, ostium primum defects are best closed with patches sutured into place with great care to preserve the conduction bundle near the posterior leaflet of the tricuspid valve. We have not found it necessary to extend the patch to divert the coronary sinus into the left atrium as suggested by Lillehei and Gannor,[118] but this method of avoiding the conduction system may be of value in a situation presenting a problem. A cleft mitral valve noted in association with ostium primum defect should be repaired by suture if there is mitral insufficiency. If there is no insufficiency, the cleft probably should be left alone.[119] The correct handling of the cleft mitral valve is a difficult problem, and, occasionally, severe postoperative regurgitation occurs. The operative mortality rate from ostium primum defect is ordinarily 10 per cent or less. The postoperative systolic murmurs heard in these patients do not always indicate residual mitral insufficiency and may be caused by the deformed left ventricular outflow tract.

The more complex forms of atrioventricular canal malformations involving clefts or loss of substance in the mitral and tricuspid valves and defects in the ventricular septum happily are rare. The repair of these defects is complicated, the mortality rate high, and residual mitral insufficiency all too common. At the extreme end of the spectrum is complete atrioventricular canal. The operative mortality rate has been over 60 per cent.[120] Replacement of the mitral valve with a prosthesis is sometimes necessary in these young patients.[121]

TETRALOGY OF FALLOT. The commonest form of cyanotic heart disease after the age of one year is tetralogy of Fallot. One of the first of the congenital lesions to be successfully operated on, surgical treatment has evolved from palliation to complete correction and now can offer these disabled children normal hemodynamics and, hopefully, a normal life. The risk involved in complete correction has progressively declined, and now is in the range of 7 to 10 per cent.

Palliation is reserved for infants too small for safe cardiopulmonary bypass. Palliative procedures are designed to increase pulmonary blood flow, and the primary indications for their use are hypoxic spells or severe exercise limitation. Any palliative operation must be done with a view to a later totally corrective surgical intervention. The subclavian-pulmonary artery anastomosis procedure of Blalock is time tested. The ascending aorta-right pulmonary artery anastomosis first described by Waterston[122] is gaining wide acceptance. Both these palliative anastomoses can be taken down with minimum inconvenience at the time of total repair. Great difficulty attends the closure of the descending aorta-left pulmonary artery anastomosis, the Potts-Smith-Gibson operation, and we are unaware of any successful reconstructions of a superior vena cava-pulmonary artery anastomosis. This latter operation should not be attempted unless unusual circumstances preclude complete correction at a later date.

The natural history of tetralogy of Fallot is marked by progressive obliteration of pulmonary vasculature caused by a combination of sluggish flow and the viscid blood characteristic of this anomaly. Ferencz[123] found this to be most marked in patients suffering anoxic spells. This author also described acute pulmonary vascular injury in patients dying immediately following Blalock anastomosis. Malm *et al.*,[124] however, do not believe this is a factor in postoperative death, when surgery is performed before the end stages of the disease are reached. Complete correction should be done before these pulmonary vascular changes become irreversible. Operation should be considered as soon as the child has grown sufficiently to undergo perfusion.

The key to the repair is the relief of the obstructed right ventricular outflow tract. Every effort should be made to minimize the outflow gradient by a combination of resection of infundibular musculature and release of hypertrophied trabeculae carnae. The vertical ventriculotomy provides the best exposure and will also serve to hold a patch on the outflow tract in the infrequent case where one is necessary. Transverse ventriculotomy, in the direction of the muscle fibers, has been said to cause less decrease in right ventricular function than the vertical incision, but this probably is not an important consideration.[125] Rarely, a branch of the coronary artery, usually the right, crosses the outflow tract of the right ventricle. Such an aberrant must not be ligated; a patch on the outflow tract cannot be used in these cases. Malm *et al.* have emphasized that use of an outflow patch imposes an extra burden on the right ventricle.[126] Ross and Somerville[127] have used aortic valve homografts to avoid pulmonary insufficiency in difficult reconstructions of the outflow tract.

The ventricular septal defect should be closed with a patch, with the sutures placed to avoid the region of the bundle of His. Heart block should be a rare complication. If heart block occurs during the surgical procedure, permanent epicardial leads of a synchronous pacemaker system as well as temporary wires should be implanted prior to closure of the chest.

The major postoperative complications, such as hemorrhage, cardiac failure, and respiratory difficulty can be minimized by careful attention to details of operative management. Meticulous hemostasis is mandatory because these patients all have increased systemic-pulmonary arterial collateral blood flow.

The insertion of an outflow patch to enlarge the right ventricular outflow tract creates pulmonary insufficiency, and generally failure of the right side of the heart develops in the immediate postoperative period. Therefore, when a patch is inserted, digitalis therapy is begun in the operating room and continued postoperatively.

Patients with tetralogy of Fallot have a higher incidence of postoperative atelectasis than patients undergoing repair of other congenital defects. This was discussed in an earlier section and may be a major postoperative problem.

OBSTRUCTION OF LEFT VENTRICULAR OUTFLOW TRACT. Gasul, Arcilla, and Lev[128] classify congenital obstruction of the left ventricular outflow tract into three varieties of aortic stenosis: supravalvular, valvular, and subvalvular, and they include "idiopathic hypertropic subaortic stenosis" in this general group. We will discuss this latter condition in the section on "acquired heart disease." These lesions are not rare; in several large series of patients with congenital heart disease they comprise 3 to 5 per cent of all cases. Congenital valvular aortic stenosis is the commonest lesion of this group, 65 to 70 per cent of the cases in this series.[129]

Many patients with mild stenosis are asymptomatic, and the diagnosis is made by auscultating the characteristic aortic stenosis murmur over the right second and left third intercostal spaces. Despite the benign appearance, sudden death occurs; Nadas[130] estimates its incidence to be 7.5 per cent. Cardiac catheterization is indicated if the patient shows symptoms of angina, syncope, dyspnea, or fatigue; shows left ventricular hypertrophy; or strain is noted on the electrocardiogram. Catheterization is also performed if there is a basal systolic thrill, this being present with both mild and severe obstruction. Occasionally, a thrill will point to the presence of a large gradient that is not suggested by the results on the electrocardiogram. Measurements at catheterization should include a study of the right side of the heart, to exclude other anomalies, and measurement of the gradient across the aortic valve while the patient is at rest and with exercise, as stressed by Malm and Hutchinson.[131] Abnormal findings on electrocardiogram, a resting valve gradient of 60 mm. Hg, or an exercise gradient greater than 100 mm. Hg are indications for surgical intervention.

Unfortunately, these stiff, contracted, often bicuspid aortic valves can only rarely be restored to normal by surgical intervention. Nevertheless, a reconstruction should be attempted, usually representing a compromise between the widest possible opening and the development of aortic insufficiency. In children, the valve should not be replaced with a prosthesis unless absolutely necessary. Long-term follow-up studies will show how many of these patients will eventually require valve replacement. The nature of the pathologic condition and the limited correction possible suggest that reoperation will be needed for most; hopefully, better prostheses will be available at that time.

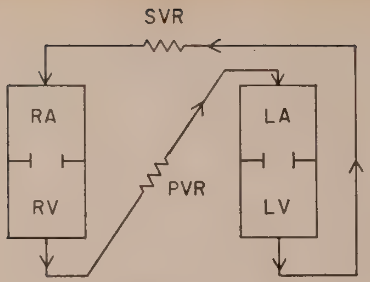
A particular problem is the infant with aortic stenosis. These babies are desperately ill, and nonsurgical management shows a mortality rate of about 50 per cent.[132] Because of their small size, operation employing a pump oxygenator carries a forbidding mortality rate, 66 per cent in the series of Nadas, Hugenholtz, and Bernhard.[133] Operation using temporary circulatory arrest by occlusion of the cavae in the hyperbaric oxygen chamber has resulted in 5 survivors in 6 operations and may be the procedure of choice.[134]

Discrete subvalvular stenosis usually presents signs of a fibromuscular ring just below the aortic cusps. Excision, with due regard for the aortic leaflet of the mitral valve and the conduction bundle, is usually followed by prompt and sustained relief, because the aortic valve is normal.

Supravalvular aortic stenosis is a variant of aortic coarctation showing symptoms of narrowing of the aorta just above the aortic valve. Diffuse narrowing of the aorta and associated cardiac lesions are often present. The narrowed segment of the aorta can usually be dealt with by endarterectomy or patch angioplasty; the associated anomalies make the results of surgical intervention less favorable than in the other varieties.

TRANSPOSITION OF GREAT VESSELS. Transposition of the great vessels is a frustrating problem. It is the commonest cause of cyanotic heart disease in children under one year of age.[135]

A schematic representation of this anomaly is seen in Figure 3. The greater and lesser circulations are parallel rather than in series. A communication must exist between the two so that oxygenated blood may reach the systemic circulation. This communication provides for the balancing of pressures and flows necessary for the equilibrium of the two parallel systems. The shunt, therefore, is bidirectional and is equivalent to the effective pulmonary blood flow. There may be



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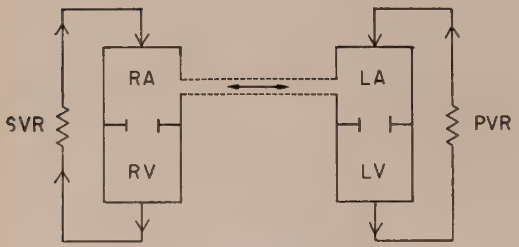

TRANSPOSITION

FIGURE 3. Diagram showing normal circulation and circulation with transposition of great vessels with bidirectional shunt at atrial level. RA = right atrium; RV = right ventricle; LA = left atrium; LV = left ventricle; PVR = pulmonary vascular resistance; and SVR = systemic vascular resistance.

more than one shunt, such as patent ductus and septal defect.

Knowledge of the hemodynamics of transposition is expanding as technics of cardiac catheterization improve.[136] In general, longevity has been greatest in patients with ventricular septal defect and pulmonary stenosis. Patients with ventricular septal defect may do well but are more likely to develop increasing pulmonary vascular resistance.

Palliation is obtained for most infants by creation of an atrial septal defect, a concept devised by Blalock and Hanlon,[137] to increase the admixture between the two circulations. Atrial septectomy may be carried out by the closed-heart method of Blalock and Hanlon, or atrial septostomy (splitting of the septum) may be carried out by the Rashkind and Miller[138] balloon method. A balloon cardiac catheter is passed across the atrial septum through the foramen ovale, the balloon is inflated, and the catheter jerked back into the right atrium, thereby tearing the septum. Both procedures serve the same purpose, but the Rashkind and Miller procedure has a distinct advantage in the seriously ill small infant, whereas the direct surgical approach is more effective in older children in whom the thicker atrial septum may not be torn by the balloon catheter. Patients with increased pulmonary blood flow, secondary to a ventricular septal defect or patent ductus arteriosus, may maintain satisfactory systemic oxygen saturations, and it has been suggested that creation of an atrial septal defect in this group may not be beneficial.[139] Another consideration is that patients with these communications, but without an adequate atrial septal defect, may have an increased left atrial pressure which may predispose to pulmonary hypertension. Septostomy may lead to decreased pulmonary vascular resistance.

At the present time, balloon septostomy should be attempted as part of the diagnostic catheterization. Should adequate mixing not be obtained, atrial septectomy should be performed. In patients with increased pulmonary blood flow, with persistent pulmonary hypertension after septostomy, pulmonary artery banding should be performed.

The corrective procedure of Mustard *et al.*[140] employs a pericardial baffle to redirect systemic and pulmonary venous drainage. Some operative results have been gratifying, but long-term follow-up is still lacking. The statistics reported by Cooley *et al.*[141] are illuminating: from a group of 93 survivors of 133 palliative operations, 17 complete corrections by Mustard's technic were performed with 8 long-term survivors. The best candidates for complete correction have been those patients with an intact ventricular septum and without significant pulmonary stenosis. More study will be required to establish criteria for operability and timing of surgery in the more complicated forms of transposition.

Eighty per cent of children with this anomaly will die in the first year of life, chiefly of anoxia. Successful creation of an atrial septal defect will save at least 70 per cent of these infants. Operation for complete correction should be undertaken early, before irreversible pulmonary vascular changes have taken place, and at the present time, such surgery is usually attempted at age two. Any attempt at total correction should be preceded by careful evaluation of the hemodynamic condition, including measurement of pulmonary artery pressures and saturations.

PATENT DUCTUS ARTERIOSUS. Patent ductus arteriosus is the commonest extracardiac cause of left-to-right shunt.

The true incidence of the associated complications in this anomaly will probably never be known because relatively few patients are catheterized prior to operation. Lukas Araujo, and Steinberg[142] could document 16 cases, 4 of Lukas and 12 from the literature, of patent ductus with severe pulmonary hypertension and reversal of flow; all patients were over sixteen years of age. Endocarditis is viewed by Nadas as relatively rare during childhood but more common in adults.[143] In his series of 173 patients with patent ductus, under age fifteen, only 1 case of endocarditis was found; in his series of 43 adult patients, 4 cases were discovered. Jones[144] operated on 2 adults with aneurysms, in his series of 899 patients with patent ductus and describes an infant dying of such an aneurysm.

The characteristic "machinery" murmur is a diagnostic sign in the majority of cases, and cardiac catheterization is rarely needed. Indications for catheterization include suspicion either of an associated anomaly or marked pulmonary hypertension. Clinical guides to the latter are cyanosis, which may be differential in character, and polycythemia.

Surgical intervention is indicated in every case where the diagnosis of uncomplicated patent ductus is made. The risks are minimal, 1 per cent or less, while the complications of pulmonary hypertension, endocarditis, or aneurysm formation are grave. Provided good anesthesia and nursing care are available, the procedure can be done at any age and certainly should be done before the child goes to school. We favor division and oversewing of the ductus after a test period of occlusion, rather than simple ligation. The latter has a place in the management of the sick infant with congestive failure when time is of the essence.

In infants only the systolic component of the murmur may be present, and the presence of a patent ductus may be overlooked. Appropriate angiographic studies are indicated in any infant with congestive heart failure, because ligation of a patent ductus in this situation may be lifesaving.

The operative management of patent ductus in the adult is more difficult than in the child. The ductus in the older patient, especially if there is pulmonary hypertension, tends to be tortuous, thin-walled, and fragile. The vessel walls may be calcified with actual aneurysm formation. The experience of Jones[144] indicates that most of these difficult cases may be managed with closed-heart technic. An alternative and possibly safer method of management is the use of cardiopulmonary bypass as described by Morrow and Clark.[145]

CORONARY ARTERY ANOMALIES. Congenital absence of one coronary artery is commonly regarded as a rare benign anatomic variation, although a recent report ascribes sudden death from myocardial ischemia to its presence.

Anomalous origin of a coronary artery, usually the left, from the pulmonary artery should be considered in the differential diagnosis of left ventricular hypertrophy and cardiac failure in the infant. The low pressure in the pulmonary artery is inadequate for myocardial perfusion. The symptoms and prognosis depend on the state of the collaterals with the normal coronary artery. As the pulmonary vascular resistance falls toward normal soon after birth, the pulmonary artery pressure falls, and then an anomalous coronary artery acts as an arteriovenous fistula.[146]

The anomalous vessel should be ligated at its origin from the pulmonary artery. This prevents loss of coronary blood into the pulmonary circuit, thus improving left ventricle perfusion. If feasible, direct anastomosis of the coronary vessel with the aorta, as described by Cooley and Hallman[147] should provide maximum benefit.

Coronary artery fistula commonly involves the right coronary artery and may empty into the atrium, ventricle, pulmonary artery, or coronary sinus. The ensuing left-to-right shunt depends on the flow through the feeding coronary artery and the size and number of the fistulous openings. Salient clinical signs are the presence of a continuous murmur and cardiac enlargement. Selective angiocardiograms confirm the diagnosis and allow for planning of definitive surgery.

The fistula is ideally obliterated by dividing the fistula and repairing the coronary artery. This is not always possible, and it may be necessary to divide the feeding coronary artery. This latter is occasionally followed by acute myocardial ischemia.

TRICUSPID ATRESIA. Tricuspid atresia is the commonest cause of cyanosis and left ventricular hypertrophy in the infant. It is a complex anomaly involving absence of the tricuspid valve, hypoplasia of the right ventricle, an atrial septal defect, and, on occasion, transposition of the great vessels, pulmonic stenosis, or ventricular septal defect.

In an infant, the combination of cyanosis left axis deviation shown on the electrocardiogram, the characteristic convexity of the left border of the heart, and prominent right border of the heart shown on posterioanterior view of chest film strongly suggest the diagnosis. Confirmation is obtained by selective angiocardiography and inability to pass a catheter from right atrium to right ventricle.

At cardiac catheterization, the catheter may be advanced from right to left atrium and from left atrium to left ventricle. The catheter may also occasionally be manipulated to the pulmonary artery via ventricular septal defect. Pressures in these locations may help in deciding on the surgical approach.

Complete correction of tricuspid atresia is not possible; surgical treatment is only palliative. The choice of palliative procedure depends on the size of the patient and whether the pulmonary blood flow is decreased or increased. Regardless of the state of pulmonary blood flow, an adequate atrial communication is essential to life. Although Glenn, Browne, and Whittenmore[148] found only rare occasions when an atrial communication was inadequate, cases with such obstruction to blood flow are being reported with increasing frequency.[149] We presently perform atrial balloon septostomy at the time of diagnostic catheterization, regardless of atrial pressures and the status of the pulmonary blood flow.

The majority of patients with tricuspid atresia suffer from decreased pulmonary blood flow, and further palliation is usually directed toward increasing flow to the lung. Systemic to pulmonary artery anastomosis, the Blalock, Potts, or Waterston procedures, has satisfactorily palliated this condition in infants.[150]

In older children, the superior vena caval-pulmonary artery anastomosis, described by Glenn and Patine,[151] appears to be the procedure of choice. Cerebral edema, secondary to superior caval hypertension, and late occlusion of the anastomosis have led to a high mortality rate, 50 per cent in one series.[148] The suggestion of Bargeron and Edwards[152] that the azygos vein be ligated five to seven days after the initial operation may improve the survival rates. As children with caval-pulmonary artery anastomosis have grown older, it has occasionally been necessary to further supplement pulmonary blood flow with a left-sided pulmonary to systemic arterial anastomosis. In the unusual case of tricuspid atresia with increased pulmonary blood flow, pulmonary artery banding may give symptomatic relief.

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Clinicopathologic Conference

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Beekman-Downtown Hospital
New York City
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Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by YAT TING MOY, M.D.

Intractable Heart Failure with Long-Standing Granulomatous Disease

Case history

Brij Mohan Singh, M.D.: A forty-one-year-old Negro housewife was admitted to Beekman-Downtown Hospital with cough and dyspnea of two weeks' duration.

Six years previously, the patient had been admitted to another hospital because of a 25-pound weight loss, weakness, and darkening urine. The blood pressure was 110/80, the pulse 120, and the respirations 124 per minute; the temperature was 98.6 F. There was a questionable scleral icterus; a few shotty lymph nodes were palpable in both cervical regions. The heart rhythm was regular, and a blowing systolic murmur was audible over the entire precordium. The liver edge was palpable at the iliac crest; there was slight pretibial edema. The hemoglobin was 12 Gm. per 100 ml.; the white blood cell count was 13,100 per cubic millimeter. The sputum showed negative findings for acid-fast bacilli on smear and culture. The urine urobilinogen excretion was increased; the thymol turbidity was 3.2 units (normal 0 to 4); the serum alkaline phosphatase was 80 units (normal 5 to 13), and the serum glutamic oxaloacetic transaminase was 94 units (normal 0 to 40). X-ray film of the abdomen showed a mass in the right upper quadrant identified as an enlarged liver on the scintigram. Liver aspiration biopsy was reported to show "sarcoid as the most likely diagnosis." During her three and one-half weeks in the hospital, the patient's temperature varied from normal to 103 F. A high-carbohydrate, high-protein, low-fat diet was prescribed, and the patient improved and was discharged.

Four years prior to the present admission, the patient was admitted to a hospital for an episode of hematemesis. She underwent a laparotomy, apparently for a "liver condition," but the details of that admission are not available.

On her present and final admission to the Beekman-Downtown Hospital, the patient indicated that two weeks previously she had developed a mild dry cough which increased in severity and was associated with dyspnea on exertion and repeated bouts of nocturnal paroxysmal dyspnea. During the four days before admission, her family noticed that there was an icteric tint to the sclera.

The patient's family and past history were otherwise not remarkable. There was no history of alcoholism and no indication that the patient had been taking medication during many months preceding this final admission.

On physical examination the blood pressure was 90/70; the pulse rate was 110 and respirations 36 per minute; the temperature was 101 F. The patient appeared chronically ill and jaundiced with mild dyspnea and evidence of chronic

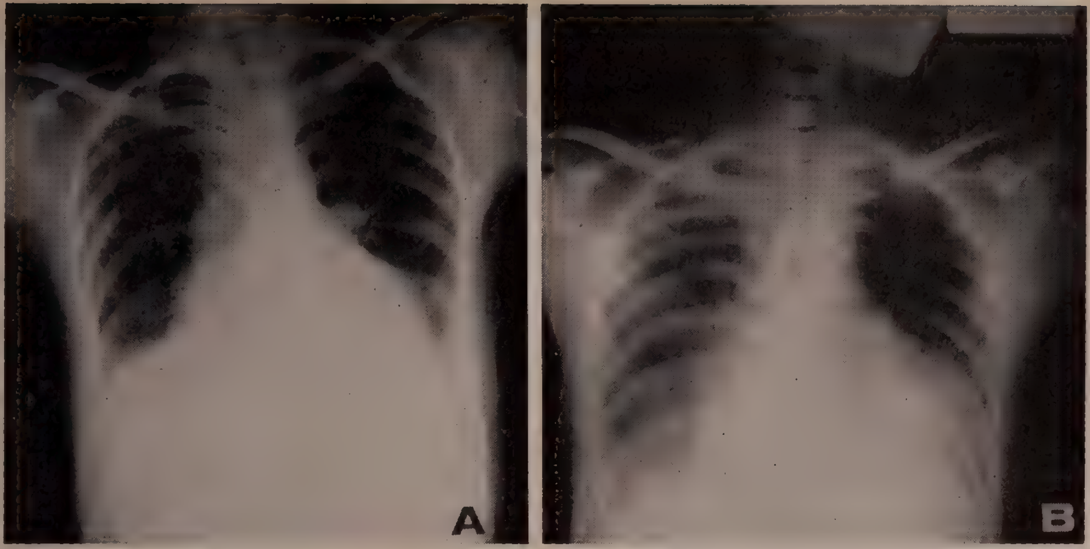

FIGURE 1. X-ray films of chest showing (A) normal cardiac silhouette with mild pleural reaction at base of right lung, and (B) increased infiltration of right lung and pleural reaction at bases of both lungs.

weight loss. Crepitant rales were heard at the posterior base of the left lung. The heart rhythm was regular, the sounds were distant, and no murmurs were audible. There was a localized pulsation in the fourth interspace in the left parasternal region. The liver edge was firm and readily palpable 2 to 3 fingerbreadths below the right costal margin. The spleen and kidneys were not palpable; there was a well-healed laparotomy scar in the right upper quadrant of the abdomen.

The urinalysis showed a specific gravity of 1.017, 10 to 15 white blood cells per high-power field, and red blood cells too numerous to count. The hemoglobin was 12.4 Gm. per 100 ml. and the hematocrit 38; the white blood cell count was 8,700 per cubic millimeter with a normal differential count. The results of tests for fasting blood sugar, blood urea nitrogen, serum creatinine, alkaline phosphatase, and prothrombin time were within normal limits. The total bilirubin was 8.2 mg. (direct bilirubin 8.2 mg.) per 100 ml.; the thymol turbidity was 3 units (normal 0 to 2) and cephalin flocculation test 3 plus (normal 0 to 1 plus). The serum glutamic oxaloacetic transaminase was 217 units (normal 1 to 40), the serum glutamic pyruvic transaminase 125 units (normal 1 to 40), and the serum lactic acid dehydrogenase 800 units (normal 200 to 600). The twenty-four-hour excretion of urobilinogen was 64.6 mg. (normal 0 to 4). The total cholesterol was 354 mg. per 100 ml. (normal 150 to 260). The total serum protein was 7.4 Gm. with albumin 2.8 Gm. and globulin 4.6 Gm. per 100 ml. The serum sodium was 124 mEq., the chlorides 86 mEq., and the serum potassium 3.6 mEq. per liter. A repeat urinalysis showed a specific gravity of 1.012, albumin 2 plus, and 10 to 20 white blood cells and 40 to 50 red blood cells per high-power field. The sputum culture showed gram-positive cocci in chains (alpha hemolytic streptococcus), Candida albicans, and diphtheroids. Two sputum specimens gave negative results on direct smear and culture for acid-fast bacilli. A blood culture showed no growth after eleven days' incubation.

The initial chest x-ray film showed infiltration at the base of the right lung with a local pleural reaction; the cardiac silhouette was within normal limits (Fig. 1A).

The initial electrocardiogram showed sinus tachycardia, and low voltage in all leads, with slight S-T segment elevation and inverted T waves in leads V_2 through V_6, suggesting pericardial involvement or myocardial injury.

Throughout the hospital course the patient's temperature fluctuated between 99 and 102 F. She remained lethargic, mentally depressed, and persistently jaundiced. Repeated examination of the heart indicated the presence of an S_3 gallop rhythm; there were persistent rales at the base of the right lung and generalized venous distention. During the first week, the spleen became palpable, and pitting edema of both lower extremities increased. The urine showed persistent albuminuria with a few finely granular and coarsely granular casts. Urine culture showed an Aerobacter species and Gaffkya tetragena; the bacterial count was below 1,000 per milliliter. The results of a latex fixation test and 3 lupus erythematosus preparations were negative. The serum glutamic oxaloacetic transaminase remained elevated at 127 units. The serum calcium was 8.8 mg. and the phosphorus 3.7 mg. per 100 ml. Repeated x-ray films showed persistence of the pleural reaction in the right lung and eventually a progressive clouding of the entire right lung field, suggesting a combination of parenchymal infiltration and pleural effusion (Fig. 1B). Following a right thoracentesis, chest x-ray film showed persistence of free pleural fluid and some changes in the congestion throughout both lung fields; the cardiac silhouette appeared enlarged. Fluoroscopic examination demonstrated diminished cardiac pulsations. A flat film showed multiple metallic sutures in the upper part of the abdomen with enlargement of the liver but no evidence of calculi and no calcification in the regions of the adrenal glands.

The pleural fluid showed a specific gravity of 1.018, protein of 4.9 Gm. per 100 ml., and white blood cell count of 4,700 per cubic millimeter. It showed no bacteria on smear and no aerobic or anaerobic growth after forty-eight hours' culture. Cell block revealed moderate numbers of mesothelial cells, red blood cells, neutrophils, and lymphocytes but no malignant cells. Smear of the pleural fluid gave negative results for acid-fast bacilli, and culture for tubercle bacilli showed negative findings after six weeks' incubation. Five days later a repeat thoracentesis produced fluid with a cell count of 1,152 red blood cells and 3 white blood cells per cubic millimeter. The serum sodium was 134 mEq. and the potassium 3.3 mEq. per liter. The bilirubin remained elevated at 6.4 mg. (direct 6.4 mg.) per 100 ml. The electrocardiogram showed further diminution in precordial QRS voltage, suggestive of persisting intrathoracic effusion.

The patient remained lethargic and hypotensive with blood pressure recordings of 80 to 90/60 to 70 and unresponsive to metaraminol (Aramine). Fever persisted in spite of ampicillin and procaine penicillin therapy; in view of the likelihood of sarcoidosis, the patient was started on dexamethasone (Decadron) 4 mg. per day together with isoniazid and streptomycin. In spite of bed rest, digitalis, and diuretics, the patient remained dyspneic, with elevated venous pressure, rales at the base of the right lung, persistent pleural effusion, tachycardia of 120 per minute, and an S_3 gallop rhythm. After lanatoside C (Cedilanid) 0.8 mg. was given intravenously and digoxin (Lanoxin) 0.5 mg. was given twice daily during a three-day period, the patient developed complete atrioventricular dissociation with a moderate intraventricular block. By the third day, after discontinuance of digitalis, the complete heart block was replaced by normal sinus rhythm, but numerous ventricular premature contractions from multiple foci persisted. The urinalyses showed specific gravities of from 1.001 to 1.007, with a trace of albumin, 5 to 10 white blood cells, and 5 to 10 red blood cells. During the patient's third week in the hospital, the serum sodium was 129 mEq., the chlorides 85 mEq., and the potassium 2.7 mEq. per liter; serum calcium was 12.4 mg. and phosphorus 4 mg. per 100 ml.

A cautious attempt to reinitiate digitalis therapy failed to improve the symptoms of cardiac failure. The patient's condition progressively deteriorated, and she ceased breathing on the afternoon of the eighteenth hospital day.

Discussion

YAT TING MOY, M.D.*: This forty-one-year-old Negro housewife was admitted to this hospital with cough and dyspnea for the preceding two weeks. When the patient was admitted six years previously to another hospital, she had evidence of obstructive jaundice with a markedly enlarged liver, an elevated alkaline phosphatase, and an increased serum glutamic oxaloacetic transaminase. In the differential diagnosis of hepatomegaly, one must include hepatitis, hepatoma, pancreatic carcinoma with bile duct obstruction, and metastatic neoplasm of the liver. Examination on admission to the other hospital indicated the presence of shotty lymph nodes in the cervical region which in a patient with jaundice would also alert us to the possibility of Hodgkin's disease. In Hodgkin's disease the jaundice may be due to hepatic infiltration or to compression of the extrahepatic ducts by involved lymph nodes. However, if this patient had had a malignant neoplasm of the liver, I would not expect her to survive six or seven years. At the time of her initial hospitalization, she may have had viral hepatitis, with an initially good response to a high-carbohydrate, high-protein, low-fat diet. Subsequently she may have developed a chronic, slowly progressive hepatitis which infrequently can result in granuloma formation. If a cirrhosis follows chronic hepatitis, it can eventually lead to portal hypertension. Her later admission to another hospital because of hematemesis was the occasion for a laparotomy, the details of which unfortunately are not available, but which may have involved a portocaval shunt. If tuberculosis was the cause of the granulomatous lesions in the liver, we would have to explain the prolonged six-year clinical course. However, if she had received antituberculous therapy in the interval, the clinical course might be atypical and less predictable. Furthermore, if the organism was an atypical mycobacterium, this could account for a relatively indolent infection. Assuming that tuberculosis was the cause, then her general resistance might have been lowered by the episode of hematemesis and the subsequent laparotomy. Tuberculous involvement of the urinary tract would explain the albuminuria, pyuria, and microscopic hematuria, as they were reported at the time of her final admission to the hospital. It also may explain the pleural effusion and pericarditis, with resulting enlargement of the cardiac silhouette shown on x-ray film. Generalized tuberculosis with liver involvement may be associated with an elevated gamma globulin and even an elevated alkaline phosphatase, although in such cases there is usually a high fever and a marked leukocytosis. The cell blocks of the pleural fluid gave negative results for acid-fast bacilli; they showed numerous red blood cells and white blood cells, but no differential count of the white blood cells is reported. With tuberculosis of the pleura we would expect the fluid to contain lymphocytes predominantly. We can expect only about 20 to 25 per cent of patients with tuberculosis to show acid-fast bacilli on culture of such pleural fluid. About the same percentage of such patients show positive acid-fast bacilli on cultures from gastric washings or sputum, after inhalation of heated aerosol. I think a pleural biopsy would have been helpful. A positive tuberculin test result would have encouraged us to consider a diagnosis of tuberculosis more strongly.

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Another possibility is systemic lupus erythematosus. The earliest renal lesion in lupus is a localized membranous glomerulonephritis with hematuria, a few urinary casts, white blood cells, and red blood cells. The clinical hallmark of this disease is a serositis, such as pleurisy and pleural effusion, with progressive dyspnea, tachypnea, cyanosis, and scattered rales at the bases of both lungs, as seen in our case. The L.E. preparations on three occasions gave negative results, but this test has its limitations. No more than 80 per cent of patients with systemic lupus will eventually be found to show a positive result on L.E. cell test. The plasma L.E. factor responsible for the formation of the cells is present only intermittently, so that repeated tests are necessary in any case of suspected lupus. Tests for lupus erythematosus on blood drawn every day for three or four days would be less helpful than such tests performed once a week for three weeks.

Charles Karpas, M.D.: A negative result from L.E. preparation does not necessarily rule out disseminated lupus, especially in a patient with protean symptomatology. The positive result from L.E. test reflects the presence of circulating antinuclear antibodies which have been designated as the lupus factor.[1] However, other gamma globulins, especially antiDNA (antideoxyribonucleic acid) antibodies, have been identified in patients with lupus, and, therefore, when the L.E. test result is negative, an attempt should be made to identify these antiDNA antibodies. By immunodiffusion technics it has been shown that these antibodies usually but not always cross-react with natural DNA, heat-denatured DNA, and sonic-disrupted DNA antigens.[2] Occasionally in active lupus, these antiDNA antibodies may combine with circulating DNA so that in vitro isolation is not possible. Under these circumstances complement is taken up by the antibody antigen complex so that a lowered serum complement usually results.[3] Furthermore in patients with clinical evidence of lupus nephritis, a renal biopsy may show fluorescent anticomplement or antigen-antibody complex on the glomerular membrane. Positive findings in this instance would be most informative.[4]

Dr. Moy: The electrocardiogram taken on admission showed S-T segment elevations in the precordial leads, and the question of myocardial infarction was further suggested by the elevated serum glutamic oxaloacetic transaminase, progressive congestive heart failure, pleural effusion, and an enlarged cardiac silhouette. The question of pericarditis remains unanswered. At this point I would like Dr. Batillas to discuss the x-ray films.

John Batillas, M.D.: Examination of the chest, at the time of admission, demonstrates an infiltrative process in the lower part of the right lung with pleural reaction. The left lung field is clear. There is slight prominence of the hilar regions and minimal widening of the right superior mediastinum. The heart appears enlarged (Fig 1A).

Repeat x-ray film studies reveal persistence of the parenchymal infiltration at the base of the right lung and a moderate increase in the amount of fluid in the right pleural cavity. The cardiac silhouette appears to be increasing in size (Fig. 1B).

A film of the abdomen taken while patient was in supine position demonstrates the liver to be enlarged. Multiple metallic sutures are noted to extend across the upper part of the abdomen.

Dr. Moy: Can you see any enlargement of the hilar lymph node on the lateral view of the x-ray film?

Dr. Batillas: No, the lateral view demonstrates only the pulmonary infiltration, blunting of the costophrenic angle, and some prominence of the horizontal and the oblique fissures. This is probably due to free pleural fluid. The hilar regions are a little prominent, but this might be part of the pulmonary congestion. On the x-ray film of the abdomen we see a large soft-tissue density in the right upper quadrant which is undoubtedly an enlarged liver.

Dr. Moy: What were the fluoroscopic findings on this patient?

Dr. Batillas: Fluoroscopic examination confirmed the x-ray film findings and indicated that the cardiac pulsations were markedly diminished.

Dr. Moy: From the radiologic standpoint, this patient may have had pericarditis and subsequently a pleural effusion due to heart failure, resulting from arteriosclerotic heart disease.

Of course we must consider sarcoidosis in this patient. The most common single finding in sarcoidosis is hilar adenopathy, although it is found in only about 50 per cent of the cases.[5] Dr. Batillas mentioned a questionable enlargement of nodes in the right hilar region in this patient. If a patient with sarcoidosis develops extensive interstitial changes in the lung, one may expect dyspnea, which may become progressively more severe, with eventual cyanosis when the patient is at rest, and rales in both lung fields. The patient then can develop the typical symptoms of cor pulmonale. However, pleural effusion is uncommon in sarcoidosis, and in that small percentage of patients who develop pleural effusion, we should suspect that some other disease coexists with the sarcoidosis.

Boeck's sarcoid involves the liver in about 20 per cent of the cases, but the aspiration biopsy of the liver is a valuable diagnostic tool because in cases of liver involvement about 70 per cent of aspiration biopsies show positive findings.[5,6] When sarcoid disease involves the liver, the patient is usually asymptomatic with mild elevation of the serum bilirubin, but often with a striking elevation of the alkaline phosphatase, as in this case. The patient may develop intense pruritus and clinical symptoms resembling biliary cirrhosis. The patient may also have hypercholesterolemia, as in this instance, and both portal hypertension and esophageal varices. It is also reported that a patient may have sarcoidosis with granulomatous disease involving the liver, spleen, and abdominal nodes, without any other clinical or radiologic evidence of the disease.

The patient with sarcoidosis may have tuberculin anergy and show a negative reaction to a tuberculin test, an important feature in supporting the diagnosis of sarcoidosis.

The sarcoid granuloma may show central fibrinoid necrosis, no caseation, a minimal cellular infiltrate, and Langhans' giant cells. None of these findings is typical only of sarcoidosis but can be found in such diseases as brucellosis, beryllosis, fungus infection, erythema nodosum, and tertiary syphilis. The pathologist cannot tell these entities apart by microscopic study alone. Some lymph nodes that drain an area of malignant tumor may also show similar changes.

Sarcoidosis has been reported to cause acute pericarditis with S-T segment elevation noted on the electrocardiogram, pericardial effusion, and physical findings compatible with heart failure.[7] Our patient had tachycardia, numerous ventricular premature contractions, and an S_3 rhythm. If sarcoidosis involves the myocardium directly, the resulting congestive failure usually is not responsive to digitalis and diuretics, as this case demonstrated.[8]

I believe the most probable diagnosis is sarcoidosis, which, it seems to me, explains every clinical manifestation in this protocol.

John T. Flynn, M.D.: In this case, from the beginning, we had accepted the diagnosis of sarcoidosis as established in another hospital, although we did not have access to the original slides of the liver aspiration biopsy. However, Dr. Moy, would you be dissuaded from making a diagnosis of extensive myocardial sarcoidosis by the fact that only 40 cases have been reported in which that condition was the cause of death?[9]

Dr. Moy: It would discourage me, but the fact that you were especially interested in that statistic tells me something, too.

Henry Sampson, M.D.: Sarcoidosis involving only the liver is an extremely rare condition, although hepatic granulomas often form part of the symptoms of a widespread sarcoidosis. The same is true for myocardial sarcoidosis; there are at least a few granulomas scattered throughout the heart in the generalized form of the disease.

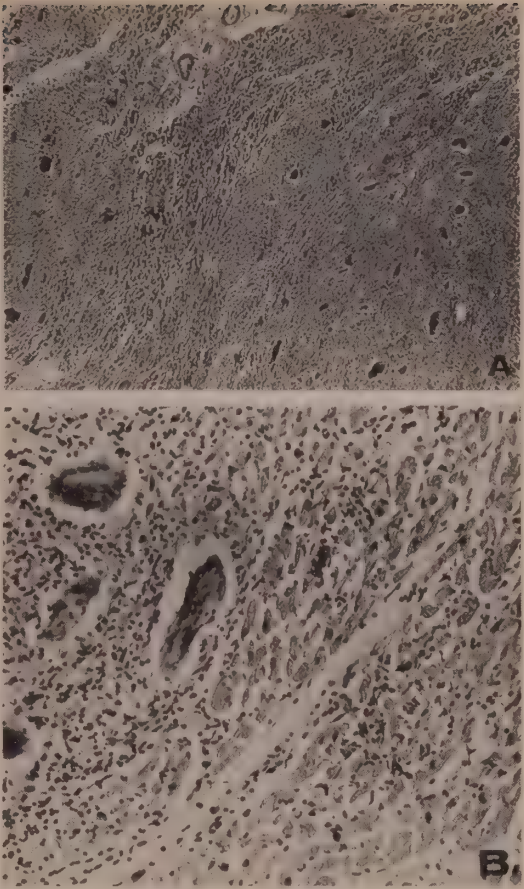

FIGURE 2. Microscopic sections showing (A) low-power view of extensive myocardial infiltration by granulomatous tissue and numerous giant cells, and (B) high-power view of infiltrated myocardium.

Isadore Schlamowitz, M.D.: Sarcoidosis could be the answer here, but multiple myeloma or macroglobulinemia would cause an illness of about the same duration as in this case and would produce all of the same clinical manifestations, including the elevated globulin and a reversed albumin-globulin ratio. If a serum electrophoresis had shown a characteristic M peak, then we could be more certain of myeloma.

Dr. Karpas: In diseases like Waldenström's syndrome or multiple myeloma, if the total serum protein were sufficiently high I am sure it would stimulate the physician to request an electrophoresis, but in this case the serum protein changes were not that impressive.

Lewis Bronstein, M.D.: In reviewing the protocol and in trying to relate the clinical symptoms to sarcoidosis, what makes me unhappy is the continued severe dyspnea, the lack of response to cardiac medication, and the marked intolerance to digitalis. People at this age do not develop such intolerance to digitalis unless they have a significant amount of fibrosis in the heart muscle. You can get sarcoid in the heart but almost never to any serious degree. The cardiac picture in sarcoidosis is usually that of cor pulmonale, which we do not see here.

Dr. Schlamowitz: Endocardial fibroelastosis would give you a clinical picture similar to this one but would not explain the sarcoid lesions on a liver biopsy. Patients with fibroelastosis have a tachycardia, go into intractable failure of the right side of the heart, and develop enlarged congested livers. The heart in that condition shows little contraction on fluoroscopic examination, and the condition can be mistaken for a pericardial effusion.

Clinical diagnoses

1. *Disseminated sarcoidosis*
2. *Right pleural effusion, secondary to (?) congestive heart failure*
3. *Chronic pyelonephritis*

Dr. Moy's diagnoses

1. *Sarcoidosis, generalized*
2. *Right pleural effusion, (?) secondary to congestive heart failure, and (?) secondary to tuberculosis*

Pathologic report

Basil Moumgis, M.D.: In the thorax we found a right pleural effusion characterized by 1,800 cc. of a slightly turbid yellowish fluid associated with marked atelectasis. The left side was almost completely obliterated by fibrous adhesions, probably representing an old pleurisy. We also found an increase of straw-colored pericardial fluid measuring 100 cc. The liver was moderately enlarged, weighing 2,000 Gm. It was also displaced downward because of the lowered diaphragm secondary to the right pleural effusion.

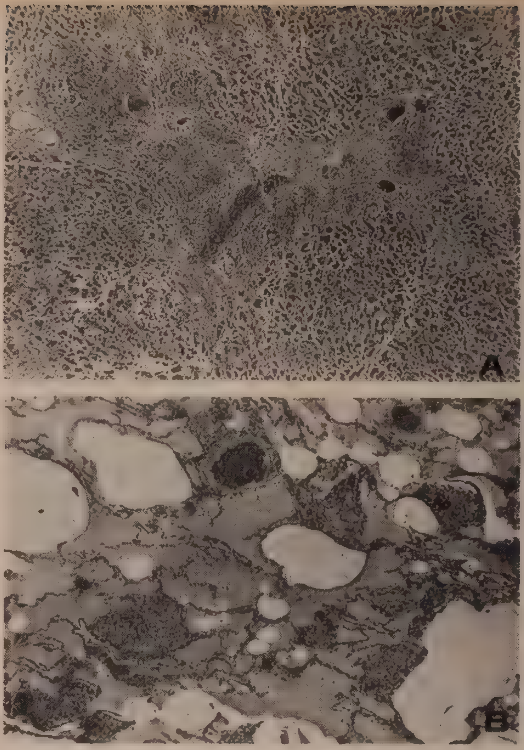

FIGURE 3. Microscopic sections. (A) Low-power view of liver showing portal infiltration by granulomatous tissue and infrequent giant cells. (B) Scattered sarcoid granulomata in lung associated with edema but with minimal fibrosis.

The heart was not appreciably enlarged. On the epicardium of the left ventricle were irregular gray patches which on cut section could be seen to be infiltrating the myocardium. Characteristically this infiltration exhibited a fleshy appearance as it involved the interventricular septum, left ventricle, and portions of the right ventricle. In other words, there was a diffuse involvement of the myocardium. Histologic examination showed the lesion was hallmarked by a granulomatous process composed of epithelioid inflammatory cells, a variable number of lymphocytes, and numerous multinucleated giant cells of the Langhans' type (Fig. 2). There was a conspicuous absence of necrosis. We were able to identify only an occasional asteroid body. Even with a battery of tests with special stains, we were unable to

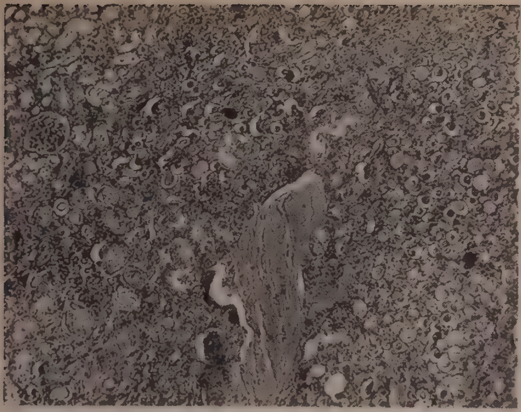

FIGURE 4. Microscopic section showing "thyroidization" of kidney with pyelonephritis.

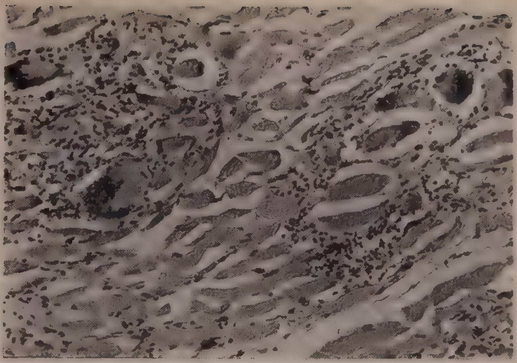

FIGURE 5. Representative microscopic section of diaphragm showing sarcoid involvement of striated muscle.

demonstrate a specific organism. Therefore, we felt secure in interpreting the processes to be a diffuse sarcoidosis. In addition there was involvement of lymph nodes, particularly in the anterior mediastinum, the hilar regions, and the internal mammary chains. There are also some enlarged portal lymph nodes. Incidentally we found no appreciable evidence of coronary arteriosclerosis.

The liver was diffusely and finely nodular, suggesting a cirrhosis except that it was more friable than usual. The cut surface was characterized by a similar soft white streaking seen in the heart. On microscopic sections we again found a diffuse sarcoidosis but with minimal fibrosis (Fig. 3A).

The left lung was markedly congested and edematous, while the right lung was atelectatic. There was no evidence of nodularity or distinct lesions. Microscopic examination, however, showed diffuse but discrete infiltrations of granulomatous lesions, again with the characteristics of sarcoid (Fig. 3B). The kidneys were granular and associated with occasional but distinct deep scars and pits. The soft white infiltrations seen in the heart and liver were not evident. Histologically we found no evidence of a granulomatous lesion consistent with pattern of sarcoidosis. We did, however, find evidence of pyelonephritis. There was an occasional focus in which the nonspecific inflammation was marked. These areas were characterized by a loss of architecture, a diffuse infiltrate of mononuclear inflammatory cells, and prominent clustering of tubules containing pink-staining protein-like material. This architecture suggests that which is characteristic of the thyroid gland and is commonly referred to as "thyroidization" (Fig. 4).

In summary we have a case of generalized sarcoidosis with extensive involvement of the heart, liver, lungs, and the lymph nodes. Incidentally we found an occasional lesion in the striated muscle of the diaphragm and the wall of the stomach (Fig. 5). I am not quite sure why a laparotomy was performed at the other hospital, but the presence of a 20-cm. incision in the right upper part of the abdomen suggests that some definite surgical procedure may have been intended. However, we were unable to demonstrate resection of a viscus, a portacaval shunt, or other vascular anastamoses, and without the surgeon's report, we can only speculate as to what was done at the time of operation.

Dr. Flynn: Thank you, Dr. Moumgis. This degree of myocardial sarcoidosis obviously explains the progressive intractable heart failure and the sensitivity of the myocardium to the toxic effects of digitalis.

At present only about 40 cases of extensive myocardial sarcoidosis have been reported in the world literature. We have to define the nature of the rarity of this particular lesion. About 20 per cent of patients who have sarcoidosis have some microscopic involvement of the myocardium, which almost never produces clinical symptoms. Therefore, almost all cases of progressive congestive failure in sarcoidosis are secondary to a progressive pulmonary fibrosis with cor pulmonale.

Myocardial sarcoidosis as the primary cause of symptoms, and as in this instance the primary cause of death is extraordinarily rare.[10] In such cases the involvement of the interventricular septum is very common, and, therefore, nearly all of these 40 reported patients had arrhythmias and conduction defects, some with complete heart block. The other interesting and unhappy finding was the unresponsiveness of such myocardial involvement to steroid therapy, even when treated vigorously and for long periods of time.

Anatomic diagnoses

1. *Sarcoidosis with diffuse infiltration of the myocardium with disseminated involvement of the lungs, liver, lymph nodes, diaphragm, and stomach*
2. *Congestive heart failure, secondary to myocardial sarcoidosis*
3. *Pyelonephritis, bilateral*

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Medical Society of the State of New York

Annual Convention

February 9 through 13, 1969

The Americana, New York City

Electrocardiograms of the Month

Montefiore Hospital and Medical Center
The Bronx, New York

Editors
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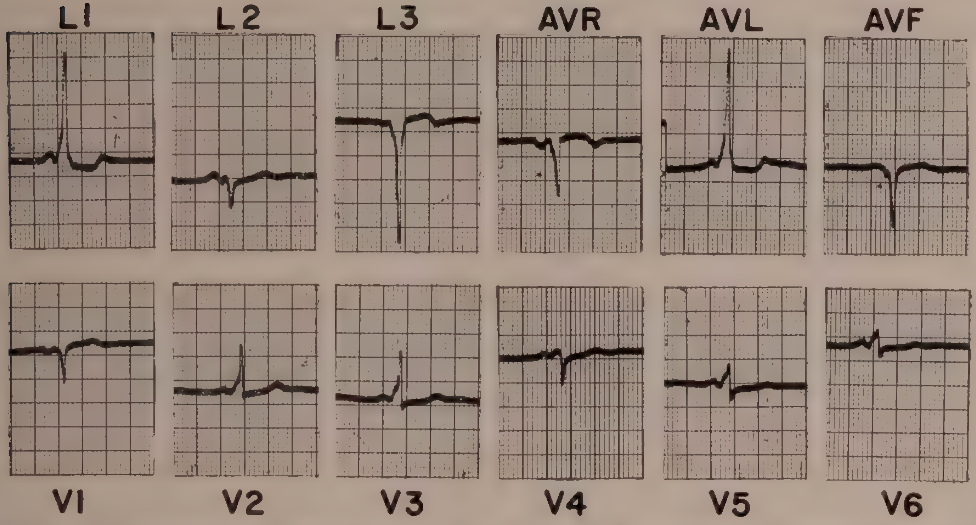
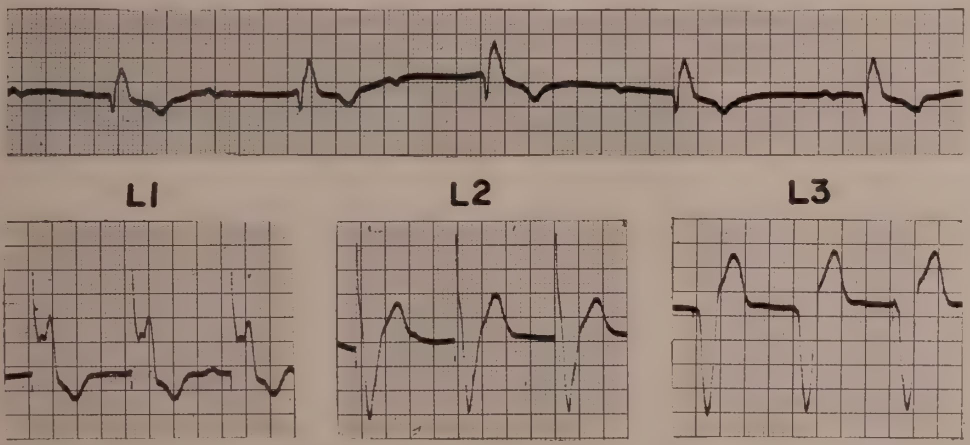
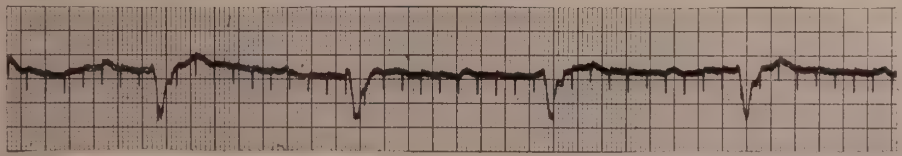


QUESTION 31. This tracing was obtained from a thirty-year-old man admitted to the hospital following a bout of palpitations. What is the electrocardiographic diagnosis?

CONTINUOUS TRACING LEAD 3



CONTINUOUS TRACING LEAD 2



QUESTION 32. The top strip was obtained from a seventy-year-old patient with a history of lethargy and increasing ankle edema. The middle strip (leads I, II, and III) was obtained following pacemaker insertion. The bottom strip was taken when recurrent symptoms developed two years later. What is the interpretation?

Electro-
cardiograms
of the Month

ELUCIDATION

QUESTION 31. The P-R interval is 0.08 second and the QRS duration is 0.14 second. The QRS prolongation is due to slurring of the initial portion of the R wave. This is known as a delta (Δ) wave and is best seen here in leads I, aVl, and V_2 to V_6. The combination of a short P-R interval and a prolonged QRS with a delta wave is characteristic of the Wolff-Parkinson-White (WPW) syndrome. Often patients with the Wolff-Parkinson-White syndrome are asymptomatic, and the abnormality is detected on a routine electrocardiogram. Others are subject to recurrent supraventricular tachycardia.

QUESTION 32. The top strip shows complete heart block with the P waves and QRS complexes totally unrelated. The P-P interval is irregular at a rate of 66 to 73; the R-R interval is regular at a rate of 38 per minute. The middle strip (leads I, II, and III) demonstrates the characteristic pacemaker spike followed by an aberrant QRS configuration, as is usually seen when the transvenous pacemaker is in the right ventricle. The bottom strip demonstrates one of the complications of pacemakers. In this case there was a "runaway pacemaker" with rapid discharge of the pacemaker at 375 per minute. Fortunately, the amplitude of the pacemaker spikes was low, and the patient's heart did not follow the pacemaker but reverted to its slow idioventricular rhythm. This patient's battery had not been checked at the scheduled periodic intervals, and the runaway pacemaker was the result of battery failure.

Correction: In the Electrocardiograms of the Month in the NEW YORK STATE J. MED. **68:** 2331 (Sept. 1) 1968, Question 28, the electrocardiograms were mounted incorrectly. The top and bottom strips were reversed.

Firearm accidents

Although prevention programs in the firearm accident field often emphasize the inherent hazard to hunters, the Metropolitan Life Insurance Company points out that nearly 60 per cent, or 1,500 of the 2,600 estimated accidental deaths by weapons in the United States in 1966, resulted from mishaps in and about the home. To a considerable extent they were the result of servicing or playing with a firearm and were largely self-inflicted. The weapon most often involved was a long gun, that is, a shotgun or rifle.

Eleven per cent of those fatally injured were under age ten. Nearly two fifths of the victims were ten to twenty-four years old; most of these were in their teens. Approximately one fifth of the fatalities occurred in each of the older-age groups, twenty-five to forty-four and forty-five to sixty-four. Four fifths of the total number killed were males.

At least one fifth of the 143 fatal accidents occurred during the cleaning, oiling, or repairing of the firearm. Several of the fatalities were contributed to "unloaded guns," some were the result of dropping the weapon, and some resulted from touching the trigger while holding the weapon between the knees with the barrel pointed at the head.

Twenty-six lives were lost while playing with guns, many of these from playfully pointing the gun at the victim. At least 4 deaths were caused by "Russian roulette." An additional 14 were fatally injured either during shooting instruction or demonstration of the weapon's mechanism. Twelve persons sustained fatal wounds while target practicing or shooting at game. A wife or husband was the victim in 4 out of 5 accidents resulting from scuffling for possession of the gun.

Firearm accidents often involve body areas containing vital organs, so that the victim has little chance of survival. In this study, 59 of the 127 fatalities about which information was available involved the head, most often reported as a brain or skull injury. An additional 44 of the accidents caused injuries to the chest area, particularly the heart and lungs. The abdomen was the site of most of the remaining injuries.

Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

GERTIE F. MARX, M.D.,
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Air Embolism During Neurosurgery

MASSIVE EMBOLISM IS a relatively rare but serious complication during anesthesia. Depending on the patient's disease and/or type of surgical procedure, the embolus may consist of air, fat, or solid material, such as a blood clot, bacterial vegetation, or tumor cells. The clinical picture and recommended treatment differ with the different types of emboli, and the following case report describes the characteristics of air embolism.

Air embolism may be arterial or venous. Arterial air embolization is an infrequent complication of thoracentesis or thoracic surgery (air entering the pulmonary vein passes through the left side of the heart into the arteries of the upper part of the body, lodging particularly in the coronary and cerebral arteries) or may develop paradoxically when air present in systemic veins reaches the arterial system through a septal defect. Venous air embolism has two common causes; it occurs with the accidental introduction of air during the administration of blood under pressure and during surgical procedures when the pressure in an opened vein becomes subatmospheric. The latter is associated most frequently with operations performed in either the Trendelenburg position (pelvic veins) or the sitting position (cerebral or neck veins). Venous air embolism developed in a patient undergoing neurosurgical operation while placed in the sitting position and was recognized early and treated successfully by newer methods of diagnosis and therapy.

Case report

A twenty-four-year-old man was admitted to the hospital because of "buzzing" in the right ear and occasional headaches of two weeks' duration. One week prior to the onset of these symptoms, he had been stabbed behind the right ear with the tip of a scissors and had sustained a laceration which was sutured. Physical examination revealed a healthy young male with a 5 by 5-cm. pulsatile mass in the right suboccipital region over which a palpable systolic thrill and bruit were recorded. Heart and lungs were normal, and there were no positive neurologic findings. Blood pressure was 120/80 mm. Hg and pulse rate 80 and regular. Blood examination, electrocardiogram, and chest radiogram revealed normal findings. Vertebral angiograms disclosed an arteriovenous fistula involving the right and left vertebral arteries located at the level of the first cervical vertebra.

The patient was scheduled for repair of the fistula. Following premedication with atropine 0.4 mg., anesthesia was induced with thiopental sodium 300 mg. and maintained with nitrous oxide-oxygen-halothane via a cuffed endotracheal tube. The patient was placed in a sitting position with the legs slightly elevated. Respirations were spontaneous but assisted regularly. Arterial and central venous pressures (catheter positioned in superior vena cava) were recorded at five-minute intervals; electrocardiogram was monitored continuously; and a precordial stethoscope was in place for auscultation of the heart sounds. Vital signs remained constant for the first seventy-five minutes of surgery when, suddenly, the patient became apneic and hypotensive, (blood pressure fell from 110/66 to 70/40 mm. Hg); at the same time, central venous pressure rose from 7 to 14 cm. water, a "rough" heart murmur became audible, and the electrocardiogram showed an irregular rhythm, namely ventricular premature contractions followed by a "bizarre" pattern. A

Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, March 25, 1968. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

diagnosis of air embolism was made. The anesthesia reservoir bag was immediately emptied and intermittent positive-pressure ventilation with 100 per cent oxygen instituted. The surgeon compressed and then closed the opening in the vein. Simultaneously, air was aspirated from the central venous catheter, and 25 mg. of ephedrine were injected intravenously. Over a fifteen-minute period, 200 ml. of air were thus withdrawn. Positive-pressure ventilation with oxygen was maintained until air was no longer aspirated. Thereafter, the vital signs and electrocardiogram results returned to their normal patterns, and the operation was finished without further incident.

Comment

Venous air embolism leads to mechanical obstruction to the outflow tract of the right heart. Survival depends on prompt recognition and restoration of circulation. Previously, the diagnosis was based on the combination of arterial hypotension and the appearance of a loud "mill-wheel" murmur and was often not apparent until after profound circulatory failure had already developed. Moreover, the typical "mill-wheel" murmur may not be audible in every instance, having been noted in only 3 of 11 cases.[1] Early diagnosis is possible by the use of modern diagnostic methods, such as a precordial or esophageal stethoscope, a central venous catheter, an electrocardiogram monitor, and an infrared carbon dioxide analyzer for the determination of exhaled carbon dioxide. Any type of cardiac murmur or change in heart sounds, an elevation of venous pressure, and a cardiac arrhythmia are suggestive of obstructed flow in the right side of the heart.[2] The most sensitive diagnostic tool, however, appears to be the continuous monitoring of the level of exhaled carbon dioxide. Since venous air emboli impede flow of blood to the pulmonary arteries, a sudden decrease in exhaled carbon dioxide invariably results.[3]

The hazards of air embolism during certain surgical procedures can be minimized by predetermined anesthesiologic precautions and preparations. First, the central venous catheter should be placed in or near the right atrium so that air can be aspirated promptly should air embolus occur.[2] Correct localization will be facilitated by electrocardiographic[4] or roentgenographic guidance or by pressure pulses.[2] Second, some minutes prior to the critical period during surgical intervention, venous pressure should be raised above atmospheric pressure by increasing intrathoracic pressure, that is by using intermittent positive-pressure ventilation. Third, nitrous oxide should be discontinued during the critical surgical period. The latter recommendation is based on a study of the effect of nitrous oxide on intravenously injected air in rabbits. The median lethal volume of air was reduced by a factor of 3.4 in the group of animals anesthetized with nitrous oxide-oxygen-halothane as compared with the group similarly anesthetized with halothane-oxygen.[5] Nitrous oxide is 36 times more soluble in blood than in nitrogen. Consequently, when a bubble of air appears in blood with a high nitrous oxide content, more molecules of nitrous oxide enter the bubble than molecules of nitrogen leave; thus, the bubble increases rapidly. This phenomenon of expansion is the same as reported in a previous case which dealt with severe gastrointestinal distention during nitrous oxide-oxygen anesthesia.[6]

Treatment of venous air embolism must entail: (1) compression of the opened vein; (2) intermittent positive-pressure ventilation with 100 per cent oxygen; and (3) aspiration of air from the central venous catheter. In addition, vasopressors with inotropic action such as ephedrine may aid in moving the air out of the right ventricle into the pulmonary circulation where its absorption can occur.[2] Placing the patient in a head-down, left lateral position may also help move the air into the pulmonary arteries.[2] When these measures fail, closed-chest and finally open-chest cardiac compression must be performed.

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Number one hundred eighty-four in a series of Clinical Anesthesia Conferences

Case Reports

Eccrine Angiomatous Hamartoma

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IN 1859 LOTZBECK[1] DESCRIBED a tumor, thought to be an angioma, on the cheek of a child. On histologic examination large channels were found, lined by cylindrical epithelium, and villi and glandular masses were seen within the tubes. The stroma was very rich in vascular elements.

Subsequently, several other cases of lesions with both eccrine and angiomatous aspects have been discussed in the European literature.[2–15] The purpose of this communication is to report a case of this rare hamartoma of eccrine and vascular elements.

Case report

A white girl was noted at birth to have two hemangiomas of the left lower extremity and one on the neck. The leg lesions were small and disappeared after one treatment with solid carbon dioxide.

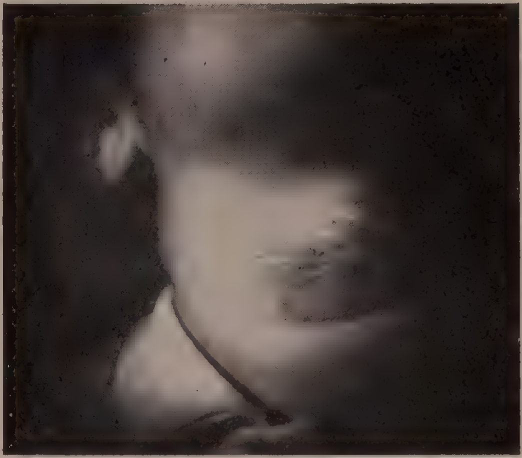

FIGURE 1. Clinical photograph showing oval plaque on neck of three-year-old girl, clinically interpreted as angioma.

When the child was three years old she was re-examined. On the anterior part of the neck there was a flat, oval, 3- by 1-cm., redundant plaque of soft tissue (Fig. 1). This was clinically interpreted as an angioma. There was no notation of tenderness or hyperhidrosis over the lesion. It was excised, and healing was uneventful.

On histologic examination, the epidermis was thin and rugose. At high levels in the cutis there were collections of eccrine sweat ducts in large numbers, particularly for the skin of the neck (Fig. 2A). The lining cells stained deeply. In one group at about the middle of the cutis the ducts were particularly anomalous, and one appeared in the shape of a diamond (Fig. 2B). Throughout the cutis, as well as in the subcutis fat trabeculae, there were rather well-defined groups of dilated thin-walled vessels in a loose, edematous, fibroblastic stroma, particularly concentrated around the sweat ducts (Fig. 3).

Related cases

Eight years after Lotzbeck's report in 1859,[1] Waldeyer[2] discussed the case of a child with a tumor on an elbow which

This material has been reviewed by the office of The Surgeon General, Department of the Army, and there is no objection to its presentation and/or publication. This review does not imply any indorsement of the opinions advanced or any recommendation of such products as may be named.

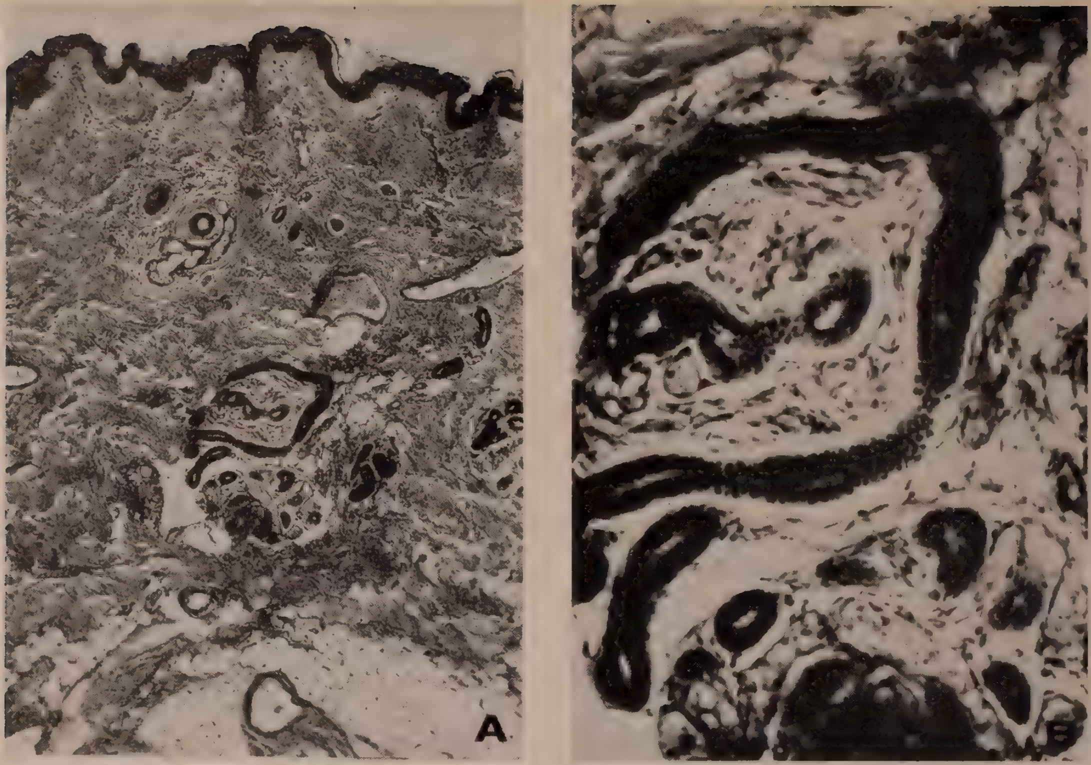

FIGURE 2. (A) Low-power magnification showing anomalous ducts in loose stroma. (B) High-power magnification of diamond-shaped sweat duct in vascular stroma.

microscopically showed glandular coils in angioma-like tissue. In 1893 Petersen[3] described a tumor on the thumb of a fifteen-year-old boy that was diagnosed as an angioma. On histologic examination it showed increased vascularity around sweat glands in the upper part of the growth. There were also numerous darkly staining epithelial strands, some with lumina which led into cystic cavities in the deeper parts of the lesion. The cysts were lined by flattened epithelium.

Unna,[4] in his text, discussed his observations of limited angioma formation around sweat coils in the neighborhood of angiomas. Beier, in 1895,[5] reported the case of a seventeen-year-old girl with a walnut-sized, tender, movable tumor on a finger. It had been present since birth and had increased in size. Large droplets of sweat appeared when pressure was applied to the lesion. Histologic examination showed the tumor located mainly in the subcutis where there was an increase in the size and number of the sweat glands, and under them there were large, cavernous blood vessels.

Kyrle,[6] in his text, described the case of a fifteen-year-old girl who had a tumor of a thigh that had elephantiasic qualities. The mass was composed of multiple pigmented nevi and a cavernous angioma and was partly covered with thick horn. Besides the vascular and pigmented elements, there was a striking increase in the number of sweat gland acini. Archer, in 1927,[7] described the case of a thirty-year-old man with widely distributed angiomas. Histologically there were very dilated vessels of capillary quality in the uppermost cutis, interpreted as being located around the upper part of the sweat ducts as they entered the epidermis.

Erdheim, in 1929,[8] reported the case of a thirty-year-old woman with a tumor on the thumb which had been present for years. It was pea-sized, firm, freely movable, and slightly tender. The overlying skin sweated profusely. The clinical diagnosis was angioma or fibroma. In the cutis and subcutis there were hypertrophic, dilated, eccrine coils in a loose connective tissue stroma, associated with an

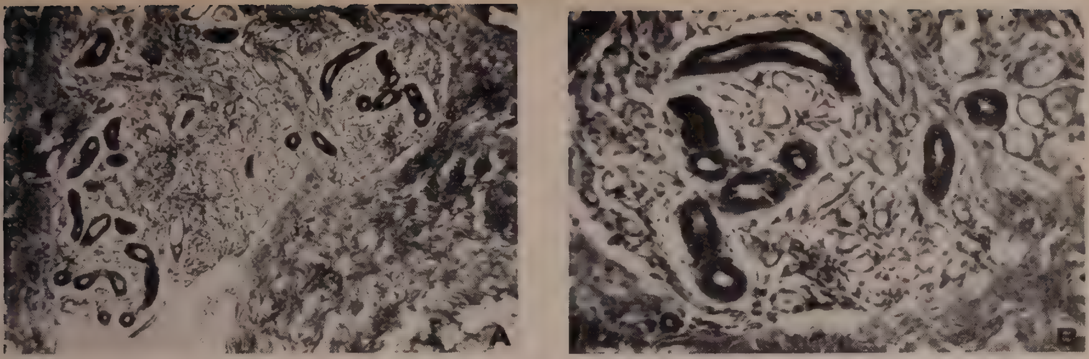

FIGURE 3. (A) Medium-power magnification showing relationship of angiomatous groups to collections of sweat ducts. (B) High-power magnification demonstrating relationship of sweat ducts to vascular channels.

increase of capillaries of varicose quality. The sweat duct lumens contained a pink homogeneous material. In the subcutaneous fat there was an angioma, largely of cavernous type. Tschernjawski[9] reported 2 cases with histologic evidence of hyperplasia of sweat glands and blood vessels. Both tumors manifested increased sweat secretion. One, the size of a hen's egg, was on the leg of a fifteen-year-old boy and had been present since birth; the other was located on the thigh of a seventeen-year-old girl and had been present for six years.

Geiger, in 1930,[10] discussed 2 cases. One was a twenty-two-year-old woman with a tumor which had angiomatous and lymphangiomatous elements as well as an increased number of sweat glands; the vascular component of the second case was less striking.

Wertheim,[11] in his chapter on hemangiomas in Jadassohn's *Handbuch der Haut und Geschlechtskrankheiten*, gives a good picture of an angioma associated with hyperplastic sweat ducts.

Gertler in 1954[12] described a tumor on the thigh of a fifteen-year-old girl, which had been present for two years and was increasing in size. Large droplets of sweat were noted on the diseased area. Histologically, in the lower part of the cutis there were many hypertrophic sweat tubes, surrounded by wide bands of connective tissue with hemangiomatous aggregates. Söltz-Szöts[13] reported a tumor on the calf of a twenty-seven-year-old patient that sweated profusely and was warmer than the corresponding area on the other leg. Microscopically, it showed increased numbers of dilated sweat ducts scattered throughout the cutis, accompanied by many dilated blood vessels.

In 1963 Vilanova, Piñol Agudé, and Castells[14] reported the case of a nodular eruption of the lower extremities of a thirteen-year-old girl, which had developed over a four-year period. Sweat appeared on the surface when the nodules were rubbed. Both eccrine and angiomatous elements were noted on microscopic examination. Most recently, Issa[15] has presented another example of a functioning hamartoma with both eccrine and angiomatous aspects. The patient was an eight-year-old boy with a tumefaction over an Achilles tendon which had been present for two years.

We have been able to find only 2 pertinent records in the American literature. Under the title "Hamartoma of the Skin," Way[16] reported an angioma with hyperplasia of sweat glands on the back of a man aged sixty. It had been present since he was ten years old and for the last eight years had sweated profusely. Fine, Derbes, and Clark[17] reported the case of a fifteen-year-old Negro boy who had had multiple lesions scattered over the body since childhood in their article on blue rubber bleb nevus. They were of angiomatous nature and tender, and the blood could partly be emptied from the "blebs" by pressure. No increase of sweat was noticed in the affected parts. Besides the wide and irregular vascular channels, there were sweat glands intimately related to many of them.

Comment

We have attempted to gather from the literature a group of cases in which hyperplasia of eccrine sweat apparatus and of vascular elements were present in the same lesion. There are certain variations in pattern within this group. As far as the sweat apparatus components are concerned, some show simply increased numbers of otherwise normal sweat glands and ducts. Others show cystic and villose features to indicate an adenomatous quality. Our case, in addition to increased numbers, showed unusual contortions of sweat ducts. The level at which the sweat gland anomalies were present also varied considerably from case to case.

As far as the vascular elements are concerned, the varieties include dilated capillary channels around the uppermost part of the sweat ducts as they enter the epidermis, vascular aggregates of capillary quality around sweat ducts and coils, and cavernous vascular channels, some perhaps of venous and/or arteriolar nature, mainly in the deeper part of the cutis or in the underlying fat layer. A review of the cases would indicate that there are various permutations and combinations of the sweat apparatus and vascular anomalies.

The clinical diagnosis in most of the cases was angioma. In some, the hyperhidrosis over the tumors might have suggested the additional diagnosis of a sweat apparatus component.

Most of the tumors were noted at birth or appeared at an early age. Both sexes have been affected. Our case most closely resembles those of Erdheim,[8] Geiger,[10] and Gertler.[12] The location of the lesion on the neck of our patient was unusual; most of the previous cases have been on the extremities.

The eccrine angiomatous tumor is one more example of hamartomas involving multiple elements of the skin.

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Surgically Irreversible Phlegmasia Cerulea Dolens Masking Disseminated Cancer

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IDIOPATHIC VENOUS THROMBOSIS, frequently migratory, at times involving the upper extremities, and associated with an unusually high incidence of pulmonary embolic episodes, is gaining deserved general medical attention as an exclusive clinical expression of an undetected or an occult malignant condition.[1] The entity, which represents a most alarming clinical manifestation of progressive venous thrombosis, namely phlegmasia cerulea dolens, usually reflects the maturation syndrome of an underlying simple phlebitis, of a disease process such as cancer or colitis, or of recent operative trauma. Phlegmasia cerulea dolens is accented herein in its relationship to idiopathic venous thrombosis and to a silent disseminated neoplastic process. The seriousness and the management of this disturbance are implicit in the course of and in the surgical approach to the patient under advisement.

Case Report

A sixty-year-old single female legal secretary was admitted to the Lenox Hill Hospital for routine management of thrombophlebitis of the left lower extremity. The right lower extremity had been involved in a phlebitic process with some spontaneous clinical resolution one week before the patient was admitted to the hospital. On examination, the general physical study was unrewarding except for extremity changes. The lower part of the left leg exhibited swelling and deep calf tenderness characteristic of thrombophlebitis. Some calf sensitivity was encountered on the right side additionally. The thighs were not edematous, and no adductor canal tenderness was detected on the admission examination. At this time the arterial circulation of both lower extremities was quite intact. The temperature elevation to 102 F. (38.9 C.) approached normal within forty-eight hours. The values for the sedimentation rate, the blood count, the fasting blood sugar, and the urine were all within normal limits. There were no abnormal features recorded on the electrocardiogram. An x-ray film of the chest was interpreted as showing a "moderate amount of stringy infiltration of the left base and blunting of the left costophrenic sulcus due to pleural thickening or fluid" (Fig. 1). The patient was started on sodium warfarin (Coumadin) three days after her admission.

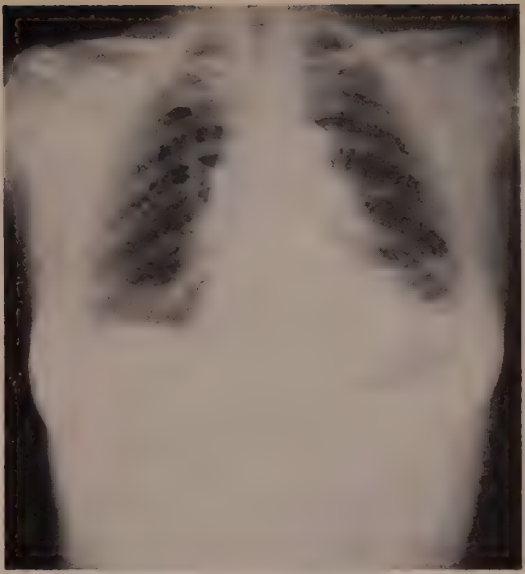
FIGURE 1. Admission chest x-ray film: stringy infiltration of left base and blunting of left costophrenic sulcus.

On the eighth hospital day the alterations of swelling, tenseness of the skin, and deep tenderness of the left calf were largely unchanged; now, however, thigh swelling was in evidence. The appearance was classically that of milk leg, phlegmasia alba dolens. The anticoagulant agent was changed to heparin sodium. By the tenth hospital day, foot duskiness and coolness were described. On the eleventh hospital day this patient was examined in surgical consultation. At this time the left lower

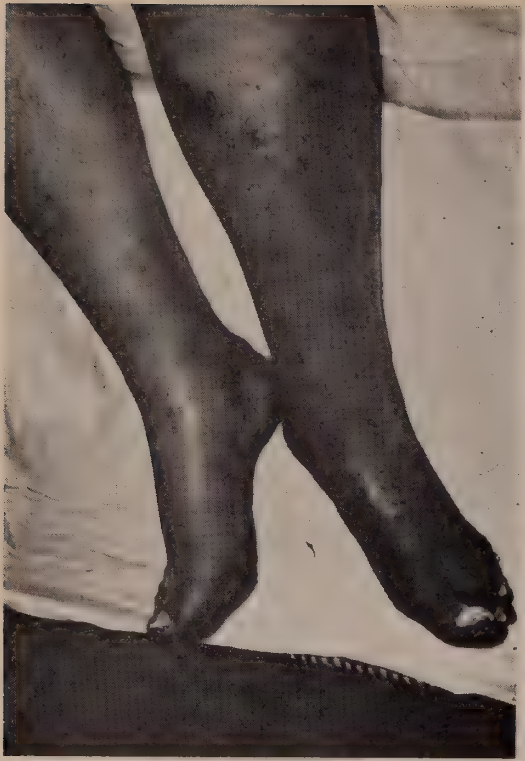

FIGURE 2. Phlegmasia cerulea dolens involving both lower extremities postoperatively.

extremity exhibited a classical purplish skin tenseness and massive edema and coldness of the digits characteristic of phlegmasia cerulea dolens with arterial insufficiency. Surgical management was advised without further delay.

The abdomen was explored through a midline incision. There was no evidence of an intra-abdominal malignant condition of the exposed organs in the general peritoneal cavity. The left iliac vein was occluded by a clot. The vena cava was patent. The lumbar vena cava was mobilized, and interruption was done with through and through fine sutures placed 3 or 4 mm. apart in the transverse diameter of the clamped cava after the fashion elaborated by Spencer *et al.*[2] Thereafter, both of the lumbar sympathetic nerve chains were resected. The left upper femoral vessels were exposed in the thigh, and a 4-cm. long venotomy incision was made over the thrombosed common femoral vein. The thrombus was partly fixed and organized. With manual compression exerted from within the abdomen on the bifurcation of the cava to prevent dislodgement of the thrombus into the right common iliac vein, thrombectomy of the left iliac and femoral veins was carried out by conventional surgical management.

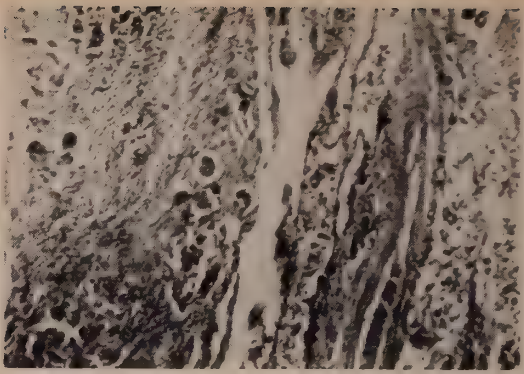

FIGURE 3. Microscopic section of left upper lobe of lung lesion, illustrating tumor and lymphatic permeations (hematoxylin and eosin stain).

Postoperatively this patient gave a poor impression. It was difficult to maintain the blood pressure. Within a very short time, the left lower extremity reverted to its disturbing preoperative appearance of extensive venous thrombosis with arterial deficit. Within twenty-four hours, the hitherto smoldering phlebitic changes in the right lower extremity likewise matured precipitously to a full-blown picture of phlegmasia cerulea dolens (Fig. 2). During the second postoperative day, the patient passed very little urine; blood electrolyte changes were conspicuous. She finally succumbed two days postoperatively. The terminal event in this instance was a massive gastrointestinal tract hemorrhage associated with the concomitant appearance of extensive soft-tissue ecchymoses and hemorrhages.

At autopsy performed on the day of death, the following were recorded. The femoro-iliac veins of both lower extremities, the pelvic veins, and the inferior vena cava were thrombosed up to the compartmentation of the cava. The cava was quite normal proximal to the site of surgical intervention. In the extreme periphery of the posterolateral aspect of the upper lobe of the left lung, there was a small nodule, and this was a primary adenocarcinoma of the lung (Fig. 3). Extensive small metastatic deposits of tumor were identified in the lung lymphatic nodes; in the hilar, cervical, and portal lymph nodes; in the diaphragmatic aspect of the right lobe of the liver corresponding to the bare area; and in the right adrenal gland. There were multiple emboli in the left lung peripherally and multiple small pulmonary infarctions, some recent and some already organized. And last, the posterior gastric wall along the greater curvature was the site of an acute benign ulcer.

Comment

In general, the diagnosis of phlegmasia cerulea dolens is not elusive. The triad of extremity pain, glairy edema, and violaceous discoloration of early gangrene of the digits are pathognomonic. Hypovolemic shock, due to a combination of events probably precipitated by red-cell sludging and by massive extremity plasma losses, is ominous particularly if seen early in the disease. Additionally, the more extensive the venous thrombosis and extremity occlusions, the less the return of venous blood to the right side of the heart, and hence further reduction in circulating blood volume occurs. In the instance of the patient whose course has been documented, we note the paradox of late severe hemorrhagic disturbances, here fatal, in a setting wherein the fundamental disease process is that of massive thrombosis. A convenient physiologic assumption has been that such terminal hemorrhagic phenomena seen in a patient with extensive thrombotic processes reflect circulating thromboplastin deficits, all of said available thromboplastin having been consumed or immobilized in the massive extremity thrombi.

Management by medical means exclusively has been disappointing since this disease process usually has not been successfully reversed by vigorous anticoagulation with heparin sodium. Sympathectomy in this area has failed to arouse any sustained enthusiasm among vascular surgeons. However, it is difficult to reject entirely the controversial role of reflex arterial vasospasm in this dramatic disease. The principle of early and aggressive thrombectomy[3,4] preceded by proximal vena cava ligation or compartmentation to reduce the threat of further embolization is cardinal in present practice.[2,5,6]

An uncommon disorder, phlegmasia cerulea dolens is nonetheless a discouraging entity in terms of the associated distressing morbidity and mortality rates.[7–9] The incidence of pulmonary embolization, understandably very high, is in the reported range of 22 to 41 per cent of patients. Among survivors, some 32 to 55 per cent with phlegmasia cerulea dolens undergo tissue loss and/or amputation. And finally the death rate ranges from 32 to 41 per cent with the latter figure very likely representing the more realistic statistic.

Conclusion

Idiopathic venous thrombosis, at times migratory, refractory to conventional treatment, and associated with an alarming incidence of pulmonary embolization, not infrequently represents the primary clinical manifestation of advanced visceral cancer, particularly of the pancreas, stomach, or lung.

Venous thrombosis maturing rapidly to phlegmasia cerulea dolens with arterial insufficiency should alert the observer to the possibility of occult visceral cancer. An undetected malignant tumor is even more suspect, should the phlegmasia cerulea dolens prove unresponsive to aggressive surgical management.

Presentation is made of the rapidly fatal course of a patient illustrating such dramatic and extreme vascular alterations as the only clinical expressions of disseminated visceral neoplasm.

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Migratory Polyarthritis Occurring with Methimazole Therapy

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As reports began appearing about the side-effects of propylthiouracil for the treatment of hyperthyroidism, a search began for other therapeutic agents. Methimazole (Tapazole) was introduced in 1949; however, it was found that in about 5 per cent of the patients in whom it was used there were side-effects not unlike those seen with propylthiouracil. The reactions with both these drugs have been skin rashes, fever, arthralgia, headache, dizziness, neuritis, myalgia, anorexia, nausea, vomiting, abdominal cramps, diarrhea, cholestatic jaundice, drowsiness, and psychotic behavior. Most attention has centered about the agranulocytosis seen with these drugs, since this reaction can be fatal and most of the other side-effects do not require hospitalization. A case of migratory polyarthritis secondary to methimazole therapy that was first suspected to be rheumatic fever is reported.

Case report

A twenty-six-year-old white female was first seen on July 21, 1965, because of an inability to gain weight, irritability, and irregular menstrual periods. The patient's appetite was good, and she had no gastrointestinal complaints. The past history and family history were not helpful. There was no knowledge of rheumatic fever. Physical examination showed a well-developed but thin female who was 5 feet tall and weighed 100 pounds. There was no exophthalmos or other ocular findings. There was a generalized hypertrophy of the thyroid. The patient had a regular sinus rhythm with a rate of 90, and there were no cardiac murmurs. The blood pressure was 140/80. There were no tremors or muscle weakness, and the reflexes were all brisk. The remainder of the physical examination was unremarkable. The protein-bound iodine was 12.6 and 14.3 on separate occasions. The triiodothyronine-3 resin uptake was 47.3 per cent, and the iodine-131 uptake was 77 per cent. Clinical blood studies showed a hemoglobin of 12.1 Gm. per 100 ml., a hematocrit of 36, and a white cell count of 7,300 with 10 per cent bands, 58 per cent filaments, 27 per cent lymphocytes, 4 per cent monocytes, and 1 per cent eosinophils. The urine had no protein, cells, or glucose. A two-hour postprandial blood sugar was 100 mg. per 100 ml.

Propylthiouracil was started at a dose of 150 mg. every six hours. Twelve days after starting therapy, the patient developed a sore throat, minimal cervical lymphadenopathy, and a temperature of 100 F. orally. There was no change in her white count or differential, and after withdrawing all medication for two days the patient felt better. Again propylthiouracil was started, but in two days she developed a pruritic macular rash and a temperature of 100 F. The rash and temperature rapidly abated after the drug was stopped. On August 18, 1965, methimazole was started, 15 mg. every six hours. Fifteen days later the patient noted some stiffness in her left hand. Within seven hours she complained that every joint in her body ached. She again had a temperature of 100 F. orally. Methimazole was stopped, and aspirin did not give her any relief that evening. The next day she noted that her throat was sore, and the pain and swelling in her joints became migratory. She was admitted to the hospital two days later and was an acutely ill female with exquisite pain in her left knee. The knee was warm and erythematous and appeared to have fluid in it, but the joint was not aspirated. For the next five days, the patient had a migratory polyarthritis involving the ankles, knees, elbows, shoulders, and the metacarpal and interphalangeal joints of both hands. None of the joint pains appeared as severe as the pain in the left knee had on admission. The antistreptolysin type O titer was less than 12 Todd units. The C-reactive protein was 3 plus. Two protein electrophoretic patterns were normal. The Wassermann and Kahn tests and two lupus erythematosus preparations gave negative results. The throat culture grew out normal flora. Two latex preparations were negative, and antinuclear antibody and antithyroid antibody studies were not found. X-ray films of the chest and involved joints showed normal findings. The erythrocyte sedimentation rate (Westergren) on admission was 33 mm. per hour and went up to 54 mm. per hour. The urinalysis was unremarkable, and the uric acid was 3.6 mg. per 100 ml. The hemoglobin ranged between 11.8 and 12.1. Through the eleven days of hospitalization, the white count was between 7,400 and 10,000 with normal differentials. The patient was treated with large doses of aspirin and gradually showed some improvement; however, even on discharge, she still had some ankle stiffness and an elevated sedimentation rate of 47 mm. per hour. The patient was readmitted on October 23, 1965, for a thyroidectomy after having been treated with reserpine and Lugol's solution. She had no joint complaints at this time, and all her blood studies gave normal results. She had an uneventful recovery from surgery, and pathologic specimens showed thyroid hyperplasia with features of regression and focal thyroiditis. She takes 90 mg. of thyroid daily and has had no arthritic symptoms.

Comment

Migratory polyarthritis can be seen in several diseases. It is a common feature in serum sickness and serum sickness-like reactions. In this report, a case is presented of a serum sickness-like reaction to methimazole after having had a reaction to propylthiouracil. Vanderlaan and Storrie[1] reported that with 831 cases receiving methimazole there were 59 reactions, and in only 6 was arthralgia seen. Many other reports never mention arthralgia as a side reaction to the drug, and the occurrence of a migratory polyarthritis is even more uncommon.

Fraser *et al.*[2] describe a case in which there was pyrexia, maculopapular rash, and fleeting swelling and pain of the joints simulating rheumatic fever. In only one other study by Bartels[3] was there mention of severe arthralgia or joint pains that required hospitalization because of its severity.

Summary

A patient with hyperthyroidism who developed a serum sickness-like reaction to propylthiouracil was changed to methimazole therapy. After fifteen days on 60 mg. of methimazole daily, the patient developed a severe migratory polyarthritis.

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Capillary Tube Test for Minor Salivary Gland Secretion in Cystic Fibrosis of Pancreas

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Although it has been well established that the viscosity of certain secretions, for instance, bronchial, is increased in patients suffering from cystic fibrosis of the pancreas, and although it can be hypothesized that the viscosity of certain oral salivary gland secretions might also be increased, documentation of the latter finding has not been described.

In an effort to test the hypothesis that the viscosity of the secretion of and/or the output of the minor salivary glands may be altered in patients with cystic fibrosis, the following investigation was conducted.

Methods

Fifty-three patients, six to twenty-one years of age, 23 males and 30 females, each with a documented history of cystic fibrosis of the pancreas, were included in this study.

For control purposes, 76 essentially normal subjects, six to forty years of age, 43 males and 33 females, were similarly studied.

For further control purposes, a group of 10 patients, nine to twelve years of age, 7 males and 3 females, each of whom was under care in the pediatric asthma clinic of the Presbyterian Hospital, were also studied.

In this procedure, the patient retracts his lower lip downward with the thumb and forefinger of each hand so that the labial mucosa is considerably distended. The reflected labial mucosa is then gently dried with a cotton roll or gauze pad. The test technic further consists of placing the tip of unheparinized capillary tubes* at the sites of and in contact with droplets of secretions of the mucous glands of the labial mucosa of the lower lip as they are elaborated. During the course of the succeeding fifteen-minute collection period, repeated efforts are made to draw up the secretion from the mucous glands through the use of and into first 1-lambda (five-minute collection period), then 5-lambda (five-minute collection period), and then 10-lambda (five-minute collection period) precisely calibrated (plus or minus 1 per cent) capillary tubes according to the technic being reported in detail in a separate communication.† No attempt was made to encourage minor salivary gland secretion through the use of mechanical manipulation,

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* Kensington Scientific Corp., Oakland, California.

† Kutscher, A. H., *et al.*: A technique for collecting the secretion of minor salivary glands: I. Use of capillary tubes, J. Oral Therap. & Pharmacol. 3: 391 (Mar.) 1967.

TABLE I. Results of minor salivary gland secretion studied in patients with cystic fibrosis of the pancreas, patients with bronchial asthma, and normal control subjects

Group	Number of Subjects	Total Collection of Minor Salivary Gland Secretion (in Lambda) Range	Mean	Median	Test Procedures Positive for Cystic Fibrosis (Volume Less than 1.05 Lambda)	Test Procedures Negative for Cystic Fibrosis (Volume 1.05 Lambda or More)
Cystic fibrosis of the pancreas clinic	53	0.00 to 2.14*	0.31	0.12	51	2
Normal control subjects under twenty-one years of age; total collection with 1-, 5-, and 10-lambda tubes (five minutes each)	45	0.25 to 16.00†	5.28	3.91	3	42
Normal control subjects under twenty-one years of age; total collection with 10-lambda tube only**	22	2.68 to 10.00	7.59	10.00	0	22
Normal control subjects age twenty-one and over; total collection with 1-, 5-, and 10-lambda tubes	9	1.05 to 6.32	2.95	2.08	0	9
Pediatric asthma clinic (control patients)	10	1.78 to 8.56	3.85	2.74	0	10

* Only 2 patients secreted a volume (1.80, 2.14 lambda) greater than 1.05 lambda.

† Only 3 patients secreted a volume (0.25, 0.56, 0.69 lambda) less than 1.05 lambda.

** In 22 of the control subjects studied, after ascertaining that minor salivary gland saliva would rise in the 1- and 5-lambda tubes, a metered collection was taken only with the 10-lambda tube, the quantity obtainable being in all instances more than 1.05 in this five-minute period (test negative for cystic fibrosis) alone.

pilocarpine or other pharmacologic agents, or gustatory stimulation.

Findings

As is indicated in Table I and under the aforementioned conditions of study, a total volume of at least 1.05 lambda of mucous secretion was obtained from 83 of 86 control subjects with the vast majority secreting volumes far above this level. On the other hand, the volume of mucous secretion collected from a cystic fibrosis patient was less than 1.05 lambda in all except 2 of 53 instances with all the other collection test volumes ranging downwardly to 0.

Comment

Although no attempt was made to measure the degree of viscosity of the minor salivary gland secretion of cystic fibrosis and control patients, the failure of the labial secretions of cystic fibrosis patients to appreciably accumulate (move) in a capillary tube may be a reflection of an increased viscosity. It may also indicate some inability of the acinar cells of the minor salivary glands of cystic fibrosis patients to produce and secrete a product.

Conclusion

It is concluded from the data thus obtained that: (1) the physical properties and/or total output of mucous secretions of the minor salivary glands of patients with cystic fibrosis of the pancreas are different from those found in normal control subjects and asthmatic control subjects as determined in these capillary tube tests; (2) if, indeed, the physical properties of the secretions are altered, this may be caused by changes in biochemical composition; and (3) the variations in the collection test findings in cystic fibrosis patients and control subjects are sufficiently distinctive to merit further investigation of this procedure as a diagnostic test for cystic fibrosis of the pancreas.

BILLSBORD

Chaff from the Bedside Table of an Insomniac. XI

I have my own, my private Hell
A product of A. T. and Tel.

There is the case of a lady of indeterminate age who, eversolicitous about her health, was wont to suffer an exacerbation of her feeling of insecurity relative to her physical well-being in the middle of the night. So it was that on a certain morning sometime after the late show, beset by acute apprehension, she sought reassurance from her usual source, her family doctor. He listened patiently to the litany of complaints and then said, "Now, Mrs. Brown, I'll tell you what we are going to do. You hang up and I'll hang up; then I will take two aspirin tablets, and don't call me in the morning."

* * *

While I have no serious complaint about the assorted and somewhat constant verbiage emanating from court, columnist, commentator, and protest leader about the first, fifth, twelfth, thirteenth, fourteenth, and fifteenth amendments to the constitution, I do find myself rather wistfully wishing that someone would quote from the preamble of that historic document which, after all, provides its reason for being, to wit: ". . .in order to form a more perfect union, establish justice, insure domestic tranquility . . . ."

* * *

I suppose, that among the new social attitudes and changes appearing on the American scene in the nineteen sixties none has caused more hostile bewilderment, hysterical criticism, or caustic comment than the trend in masculine adornment, attire, and personal appearance. It must be obvious that any discussion of this phenomenon, of necessity, requires consideration of what seems the greatest concern of a large majority of the washed and conforming male group, namely, hair.

Actually there are two distinct schools among the long-hair cultists that bear a curious resemblance to the divergent attitudes of the owners of French poodles, one group allowing their dog's hair to grow as it will without grooming, and the other group going to extraordinary lengths to clip, curl, and style their dog's hair resulting in an artificial appearance that evokes more compliments for the beautician than for the dog's obedience or breeding. One might add that both human groups affect dog collars somewhat on the loose side with dog tags of gigantic size.

As for myself, I harbor no secret animosity toward hair. I recognize it has a rightful place in the modern world, as for instance in mattresses or on male chests; and I see no more reason to discriminate against a man that has too much of it anymore than a man who has too little. As a matter of fact, I delight and would do anything possible to encourage the older group with their luxuriant sideburns and elaborate coiffures. Why?

Well, a long time ago but still within the memory of living man there was in this America of ours an establishment known as a barber shop. In general, it was a plain, unpretentious sort of a place, chiefly utilitarian, and its decorative scheme was limited to a revolving red and white barber pole on the outside and the shocking pink of the *Police Gazette* on the inside. There were large tonsorial parlors located chiefly in hotels, terminals, and the central cities that were veritable temples of ascetic sterility, but I am thinking about the small neighborhood shops with their lingering odor reminiscent of a gym rubbing room and featuring conversation singularly male and lusty in character. There was no concern about waiting. As a matter of fact, one planned his periodic visits at an early evening hour when the shop was usually crowded.

At such periods one could count on free-for-all talk usually set in an atmosphere of hostility concerned with either politics or sport and featured by fixed loyalty to one or another political party or sporting organization. There was wit, humor, and satire, and each establishment boasted a local pundit who, in most cases, had the last word whether it was a matter of fact or of opinion. It was the nineteen twenties and the short hair of the flapper age that caused the decline and disappearance of this neighborhood oasis and its conversion to a feminine salon.

Now, I am not so simple as to suppose the artistic and carefully cultivated hairdos of the present-day male will reverse the trend and bring back "the good old days," but I am vengeful enough to hope that their invasion and demands on the attention and time of the hair specialist will result in the eviction of the firmly ensconced female predators from their sacrosanct bastions of beauty.

* * *

Modern society finds itself infested by experts. Every means of communication, be it newspaper, magazine, television, or radio, boasts its own pundits who readily explain every group or individual action and reaction; blithely fix blame for every supposed error or catastrophe; explain our leaders' illnesses, foibles, and interpersonal and family relationships; foretell the future in an authoritative and cocky manner that brooks no denial; and, when they find it convenient, remember and interpret the past but can just as easily, when it suits their purposes, forget it. Their position of omniscience, in most cases, has been artificially contrived to produce an aura of infallibility and concomitantly to instill within the reader, viewer, or listener a sense of insecurity that practically makes impossible a decision about a play, a book, a proposal, whether social, political, or educational, until one or more of the oracles have advised us as to our opinion.

There have, of course, always been experts but never as numerous or as brazen. Experts in the past developed because of special knowledge and experience which caused others, aware of their particular ability, to repose confidence in these experts and to look to them in their special fields of ability. There were some who became experts by self proclamation, and many times their status was accepted, but they had to accept the responsibility for the special privilege claimed. If one claimed surgical skill and failed, he summarily lost a hand; if one made a firm forecast as to the future and was proved wrong, he became an outcast, discredited, and despised; and if his advice proved faulty, he lost his position as an advisor. Only thirty-two years ago, a magazine's prediction as to the outcome of a presidential election based on its own poll, which proved unbelievably wrong, resulted in the end of its publication.

But today firm predictions, presumably made and guaranteed by the reputation and special knowledge of a revered expert, may prove totally in error. When it happens, it is never mentioned; it is never explained either by the employer, the listener, the reader, and, least of all, by the "great man" himself. Don't get me wrong; I don't expect him to cut his throat; for that matter, I don't even demand an apology. Just a tinge of shame or a moment of chagrin would reduce the relationship to a fallible human level. You want some specifics?

On the sports side, the consensus of the experts in 1967 was that the Red Sox would finish in ninth place, a few of the more adventurous picked a higher spot but none above seventh; however, the Red Sox finished first.

The political pundits wrote and spouted thousands of words about the significance of the student riots and union strikes on the De Gaulle government. It meant ignominious defeat for the autocratic general; the best he could anticipate was to pull through the election with a marked increase of opposition in the legislature and to attempt to govern with some kind of patched-up coalition government; but De Gaulle won an overwhelming victory with a clear majority, not usual in a France of splintered parties.

How about the analysts who contemptuously predicted that the quixotic and idealistic McCarthy would be lost forever in the snows of New Hampshire?

I neither expect nor ask that they always be right. I just want them to admit when they are wrong and sprinkle a little humility on their pontifical pronouncements or, better still, just quit and go to work.

WRC

Acute cholecystitis in children

The possibility of cholecystitis should be considered when one is confronted with the problem of a child with abdominal pain of obscure origin, feel W. H. Newman, M.D., and W. B. Hall, M.D., writing in a recent issue of the *North Carolina Medical Journal*. Cholecystitis in the pediatric group is not as rare as formerly believed; the authors add a case of an acute gangrenous perforated gallbladder in a six-year-old boy who recovered uneventfully after cholecystectomy. Preoperatively, this boy was found to have intestinal parasites, and, although such infestations have been reported as the cause of biliary obstruction in both children and adults, it was thought that in this patient the presence was merely coincidental.

Acute cholecystitis is infrequently diagnosed before operation. Localization of abdominal pain in children is difficult, and the pain is usually described as periumbilical. Most often acute appendicitis is suspected with nausea and vomiting, abdominal pain, temperature, and elevated white blood cell count, muscle guarding, and rebound tenderness. Hence, during appendectomy on a child, if the appendix is normal and no other abdominal abnormality is found, palpation of the right upper quadrant should not be forgotten.

Cholecystectomy is the treatment of choice, and the principles of biliary tract surgery in adults apply to children. Records show that children tolerate this surgery very well. Once the diagnosis is made and the patient properly prepared, operation should be undertaken unhesitatingly. Common duct exploration indications exist in children as in adults, although stones are not often found. Also, jaundice in children may be due to inflammation of, but not involving the common duct, and is therefore not necessarily an indication for choledochotomy. Operative cholangiography is recommended if technically feasible.

SIXTY-SECOND
ANNUAL

District Branch Meetings

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Second District Branch

Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday,

November 10, 11, 12, 13, 14, 15, 16

Paradise Island Hotel, Nassau, Bahamas

Sunday, November 10

	Registration In Flight
7:00 P.M.	Rum Swizzle Party

Monday, November 11
Morning

9:00 A.M.	Business Meeting, Election of Officers, Proposed Plans for 1969 Annual Meeting
10:15 A.M.	Scientific Program Medico-Social-Economic Problems Mark Kenyon, Ph.D., Garden City
11:00 A.M.	Medical Ethics Joseph G. Zimring, M.D., Long Beach
11:15 A.M.	Discussion
Afternoon	At Leisure

Tuesday, November 12

9:00 A.M.	Scientific Program James A. Caddy, M.D., Levittown, *Presiding* The Disease Called Alcoholism, *Film*
9:45 A.M.	The Effect of Alcohol (Internal) on the Blood Vessels of the Eye William R. Griffin, M.D., Garden City
10:00 A.M.	The Aging Eye Arthur Merz, M.D., Garden City
10:20 A.M.	Ocular Manifestations of Toxoplasmosis, Congenital and Acquired Mary G. Bruno, M.D., Hempstead
10:40 A.M.	Report of Biomedical Engineering Advances from Republic Aviation Lindon L. Davis, M.D., Williston Park
11:00 A.M.	Ophthalmology in the Bahamas J. L. S. Steele-Perkins, L.R., C.D.E., L.R.C.S.E., D.O.M.S. (England), Nassau, Bahamas
11:30 A.M.	Discussion
Afternoon	At Leisure

Wednesday, November 13

9:00 A.M.	Scientific Program, Otho C. Hudson, M.D., Hempstead, *Presiding* Tracheotomy and Cricothyrotomy and Emergency Airways, *Film*
9:45 A.M.	Common Diseases in Otolaryngology in Office Practice Horace G. Petronella, M.D., Hempstead
10:15 A.M.	Hip Surgery Otho C. Hudson, M.D., Hempstead
11:00 A.M.	Psychocutaneous Medicine Zoltan Rubin, M.D., Long Island City
11:20 A.M.	Anesthesiology Now and Tomorrow Lee S. Binder, M.D., Valley Stream
11:40 A.M.	Discussion
Afternoon	At Leisure
9:00 P.M.	Night Club Tour

Thursday, November 14

9:00 A.M. Scientific Program

John A. Billows, M.D., Hempstead, *Presiding*

9:00 A.M. Atrial Septal Defect: Diagnosis and Repair, *Film*

9:40 A.M. X-Ray Quiz: True or False?

John A. Billows, M.D., Hempstead

10:00 A.M. Some Aspects of Obstetrics and Gynecology in the Bahamas Cecil Alexander, M.B., M.R.C.O.G., Nassau, Bahamas

10:30 A.M. Medical Hazards of Skin Diving

Grahame Barry, B.A., M.B.B.S., D.C.H., Nassau, Bahamas

11:00 A.M. Discussion: Obstetrics and Gynecologic Practice

Cecil Alexander, M.B., M.R.C.O.G., Nassau, Bahamas

John H. Malfetano, M.D., Williston Park

William G. McGuinness, M.D., Freeport

Eugene Mickiewicz, M.D., Wantagh

Afternoon At Leisure

Friday, November 15

9:00 A.M. Scientific Program

James A. Caddy, M.D., Levittown, *Presiding*

Nephrosis in Children, *Film*

9:30 A.M. Lymphoangiosarcoma (Postmastectomy)

Robert L. Fardelmann, M.D., Garden City

9:45 A.M. Treatment of Accidental Poisonings

A. W. Freireich, M.D., Malverne

10:15 A.M. The Bahamas in Pictures: Clinical and Radiologic

Richard C. Morgan, M.R.C.S., L.R.C.P., D.M.R.D., Nassau, Bahamas

10:40 A.M. Reflections on Management of Diabetes

Franklin W. Fry, M.D., Garden City

11:15 A.M. Hematology (subject to be announced)

Louis Weisfuse, M.D., Garden City

11:45 A.M. Discussion

Afternoon At Leisure

Evening

7:00 P.M. Cocktail Party, Honoring Edward C. Hughes, M.D., Syracuse, *President*, Medical Society of the State of New York, and Doctors of the Bahamas Medical Society

8:00 P.M. Banquet—Introduction of Officers, Reginald R. Steen, M.D., Hempstead, *President*, Second District Branch

Presentation of Prizes, Franklin W. Fry, M.D., Garden City, and Albert V. Jessen, M.D., Wantagh

Greetings, Mrs. Albert M. Biglan, Brightwaters, *President*, Woman's Auxiliary to the Medical Society of the State of New York

Address, Edward C. Hughes, M.D., Syracuse, *President*, Medical Society of the State of New York

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Treasurer	Otho C. Hudson, M.D., Hempstead

Presidents—Component County Societies

Nassau	John A. Billows, M.D., Hempstead
Suffolk	Daniel Friedman, M.D., Bay Shore

Necrology

Jacob Abramow, M.D., of Rochester, died on August 26 at the age of sixty-five. Dr. Abramow graduated in 1929 from the University of Buffalo School of Medicine. He was a member of the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Franz Altmann, M.D., of New York City, died on August 26 at the age of sixty-seven. Dr. Altmann received his medical degree from the University of Vienna in 1925. He was a consulting otolaryngologist at Presbyterian, Harlem Eye and Ear, and Veterans Administration (The Bronx) Hospitals. Until his retirement in 1966, he also had been a clinical professor of otolaryngology at the Columbia-Presbyterian Medical Center and after retiring continued as a special lecturer at Columbia University College of Physicians and Surgeons. Dr. Altmann was a Diplomate of the American Board of Otolaryngology and a member of the American Academy of Ophthalmology and Otolaryngology, the American Otological Society, Inc., the American Laryngological, Rhinological and Otological Society, the New York Academy of Medicine, the New York Otological Society, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Alfred Joseph Angelico, M.D., of Rochester, died on August 23 at the age of fifty-four. Dr. Angelico graduated in 1950 from the University of Rochester School of Medicine and Dentistry. He was an assistant attending anesthesiologist at St. Mary's Hospital and an attending anesthesiologist at Rochester State Hospital. Dr. Angelico was a member of the American Society of Anesthesiologists, Inc., the Rochester Academy of Medicine, the New York State Society of Anesthesiologists, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Frederick Randolph Bailey, M.D., of New York City, died on September 20 at the age of sixty-five. Dr. Bailey graduated in 1928 from Johns Hopkins University School of Medicine. Until July he had been a clinical professor of medicine at Columbia University College of Physicians and Surgeons and an attending physician at Presbyterian Hospital. Dr. Bailey was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Valentine Vincent Bourke, M.D., of Brooklyn, died on September 2 at the age of eighty-three. Dr. Bourke graduated in 1910 from Long Island College Hospital. He had been an attending physician at the Evangelical Deaconess Hospital. Dr. Bourke was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Harry William Bowman, M.D., of Utica, died on September 11 at the age of fifty-five. Dr. Bowman graduated in 1941 from Syracuse University College of Medicine. He was an associate attending anesthesiologist at Children's Hospital Home of Utica, an attending anesthesiologist at Faxton Hospital, and a consulting anesthesiologist at Marcy State Hospital. Dr. Bowman was a member of the American Society of Anesthesiologists, Inc., the New York State Society of Anesthesiologists, the Oneida County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Charles Philip Catalano, M.D., of New York City, died on September 16 at the age of fifty-nine. Dr. Catalano graduated in 1935 from Rush Medical College. He was an assistant attending physician at St. Vincent's Hospital of the City of New York. Dr. Catalano was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Joanne L.-J. Cheek, M.D., of New York City, died on August 9 at the age of forty. Dr. Cheek graduated in 1953 from Columbia University College of Physicians and Surgeons. At the time of her death she was a psychiatric consultant at Barrett House of the Florence Crittenton League. Dr. Cheek was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

J. Ramser Crawford, M.D., of Augusta, Maine, formerly of Flushing, died on June 10 at the age of seventy-nine. Dr. Crawford graduated in 1912 from Memphis Medical College and in 1922 from University and Bellevue Hospital Medical College. He had been a Diplomate of the American Board of Radiology

(Diagnostic Roentgenology) and a Member of the American College of Radiology.

John Henry Erhardt, M.D., of Glendale, died on April 24 at the age of seventy. Dr. Erhardt graduated in 1924 from Eclectic Medical College, Cincinnati. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Karl Ferdinand Eschelman, M.D., of Buffalo, died on June 12 at the age of eighty-six. Dr. Eschelman graduated in 1908 from the University of Buffalo School of Medicine. He was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the Radiological Society of North America, Inc., the American Association for Cancer Research, the Buffalo Academy of Medicine, the Erie County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter Gerhard Fuchs, M.D., of Monticello, died on April 18 at the age of seventy-six. Dr. Fuchs received his medical degree from the University of Freiburg in 1916. He was a member of the medical staff at Monticello Hospital. Dr. Fuchs was a member of the Sullivan County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

George William Herlitz, M.D., of Corona, was killed in an automobile accident on September 22 at the age of sixty-four. Dr. Herlitz graduated in 1930 from New York Homeopathic Medical College and Flower Hospital. He was an assistant attending cardiologist at Flushing Hospital and Dispensary Outpatient Department. Dr. Herlitz was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Eugene John Rosenthal Jeno, M.D., of New York City, died on April 19 at the age of eighty-one. Dr. Jeno received his medical degree from the University of Budapest in 1912. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hiram Ralph Leshin, M.D., of White Plains, died on April 18 at the age of seventy-five. Dr. Leshin graduated in 1915 from University and Bellevue Hospital Medical College. He was a Diplomate of the American Board of Otolaryngology.

Nathan L. Levine, M.D., of New York City, died on September 9 at the age of sixty-four. Dr. Levine graduated in 1928 from Eclectic Medical College, Cincinnati. He was an assistant adjunct surgeon at the Hospital for Joint Diseases and an assistant attending surgeon at Trafalgar Hospital. Dr. Levine was a Fellow of the International College of Surgeons and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Camella A. Losada, M.D., of New York City, died on January 30 at the age of eighty-two. Dr. Losada graduated in 1915 from Woman's Medical College of Pennsylvania. She was a member of the American Medical Women's Association and the American Psychiatric Association.

Joseph Neuburger, M.D., of New York City, died on May 21 at the age of seventy-two. Dr. Neuburger received his medical degree from the University of Munich in 1923. He was a senior clinical assistant attending physician at The Mount Sinai Hospital. Dr. Neuburger was a member of the American Academy of General Practice, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William F. Newcomb, M.D., of Homer, died on August 31 at the age of sixty-one. Dr. Newcomb graduated in 1933 from Syracuse University College of Medicine. He was a member of the Cortland County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Irving A. Oberlander, M.D., of Syracuse, died on May 7 at the age of sixty-eight. Dr. Oberlander graduated in 1924 from Long Island College Hospital.

Aaron Plachta, M.D., of Fresh Meadows, died on May 4 at the age of sixty-two. Dr. Plachta received his medical degree from the University of Warsaw in 1930. He was a pathologist for the laboratory service at the Veterans Administration Hospital in Brooklyn. Dr. Plachta was a Diplomate of the American Board of Pathology (Pathologic Anatomy), a Fellow of the American College of Angiology, a Fellow of the American College of Cardiology, a Fellow of the American College of Chest Physicians, a Fellow of the College of American Pathologists, and a member of the American Society of Clinical Pathologists, the American Geriatrics Society, the American Association of Pathologists and Bacteriologists, the International Academy of Pathology, the International Society of Hematology, the American Thoracic Society, the New York Academy of Medicine, the Westchester Academy of Medicine, the New York Pathological Society, the New York State Society of Pathologists, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Affleck Sharp, M.D., of Hinsdale, Illinois, formerly of Buffalo, died on July 17 at the age of ninety-two. Dr. Sharp graduated in 1898 from the University of Buffalo School of Medicine. He was a consulting neurologist at Buffalo State and Buffalo General Hospitals and Craig Colony and Hospital (Sonyea), and a consulting psychiatrist at the Edward J. Meyer Memorial Hospital. Dr. Sharp was a Diplomate of the American Board of Psychiatry and Neurology and a member of the American Psychiatric Association, the American Academy of Neurology, the American Neurological Association, the Association for Research in Nervous and Mental Disease, the Buffalo Academy of Medicine, the New York Academy of Medicine, the New York Neurological Society, the Erie County Medical Society (president in 1933), the Medical Society of the State of New York, and the American Medical Association.

Cornelius Horace Traeger, M.D., of New York City, died on September 24 at the age of seventy-two. Dr. Traeger graduated in 1927 from Columbia University College of Physicians and Surgeons. He was a consulting physician and emeritus chief of the rheumatism clinic at the Hospital for Special Surgery and a consulting physician in internal medicine and arthritis at the Roosevelt Hospital. Dr. Traeger was a Fellow of the American College of Physicians and a member of the American Academy of Neurology, the American Geriatrics Society, the American Rheumatism Association, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Isidore Yasuna, M.D., of The Bronx, died on September 24 at the age of eighty-two. Dr. Yasuna graduated in 1911 from University and Bellevue Hospital Medical College. He was medical director of Mount Eden General Hospital. Dr. Yasuna was a member of the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Sleep regimen for acute myocardial infarction

In an intensive care unit for heart cases, a regimen to reduce pain and fear was tried in 59 patients with myocardial infarction. The central feature was the maintenance of the patient in a light sleep induced by pethidine hydrochloride and promethazine hydrochloride for one to seven days. Three to five days after the end of the sleep regimen the patients were transferred to the general wards. As long as the patients were in the intensive care unit, only 1 death occurred. Although arrhythmias did develop, none were refractory. After transfer to the regular hospital service, 8 of the 59 patients died (14 per cent). The rationale of this treatment, according to P. G. F. Nixon, M.B., D. J. E. Taylor, M.D., S. D. Morton, and M. Bromfield, writing in a recent issue of *Lancet*, is based on the premise that pain and fear predispose the patient to cardiac arrest in myocardial infarction, perhaps by increasing the risk of ventricular fibrillation by promoting secretion of catecholamines. The risk of death from myocardial infarction is greatest at onset, and about half of the deaths among patients reaching a hospital are caused by arrhythmias. Since these are seldom the result of irrevocable heart damage, their prevention is a major objective of intensive care units.

The 2 patients admitted with multiple episodes of ventricular fibrillation returned to their jobs. In the intensive care unit, bradycardia responding to atropine developed in 13, heart block required pacemaking in 2 patients, and frequent ectopic beats required procainamide hydrochloride or lignocaine hydrochloride in 17. Preliminary observations suggest that this regimen seems safe and practicable in an intensive care unit where, in the absence of twenty-four-hour attendants, nursing staff members are put in charge of the treatment.

MSSNY PRIZE ESSAYS

The Lucien Howe Prize and the Merit H. Cash Prize for original, unpublished essays will be open for competition at the next Annual Convention of the Medical Society of the State of New York. Competition for both prizes is limited to Interns, Residents and Fellows in hospitals in the State of New York.

The Lucien Howe Prize of $200 will be presented for the best original contribution on some branch of surgery, preferably ophthalmology.

The Merit H. Cash Prize of $200 will be given to the author of the best original essay on some medical or surgical subject.

Essays shall be typewritten or printed with the name of the prize for which the essay is submitted, and the only means of identification of the author shall be a motto or other device. The essay shall be accompanied by a sealed envelope having on the outside the same motto or device and containing the name and address of the writer. If the committee considers that no essay or contribution is worthy of a prize, it will not be awarded.

Any essay that may win a prize automatically becomes the property of the Medical Society of the State of New York, "to be published as it may direct." All essays must be sent not later than December 1, 1968, to Alfred A. Angrist, M.D., Chairman of the Committee on Prize Essays, Medical Society of the State of New York, 750 Third Avenue, New York, N. Y. 10017.

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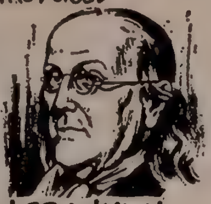

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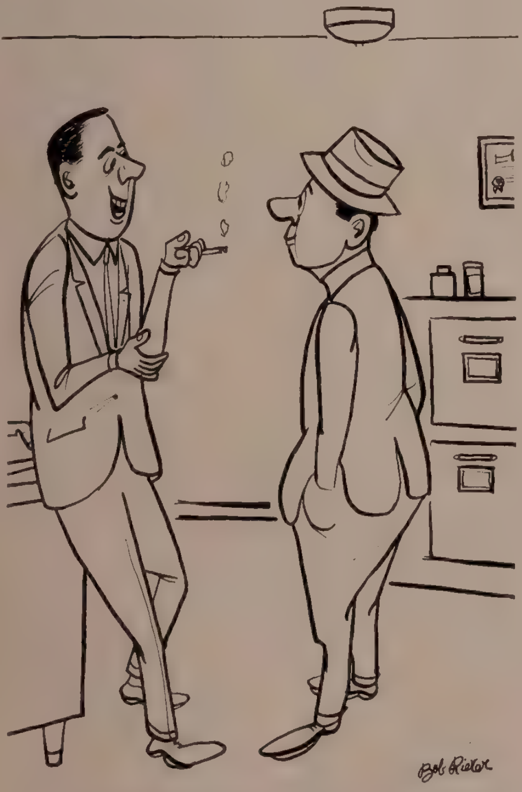

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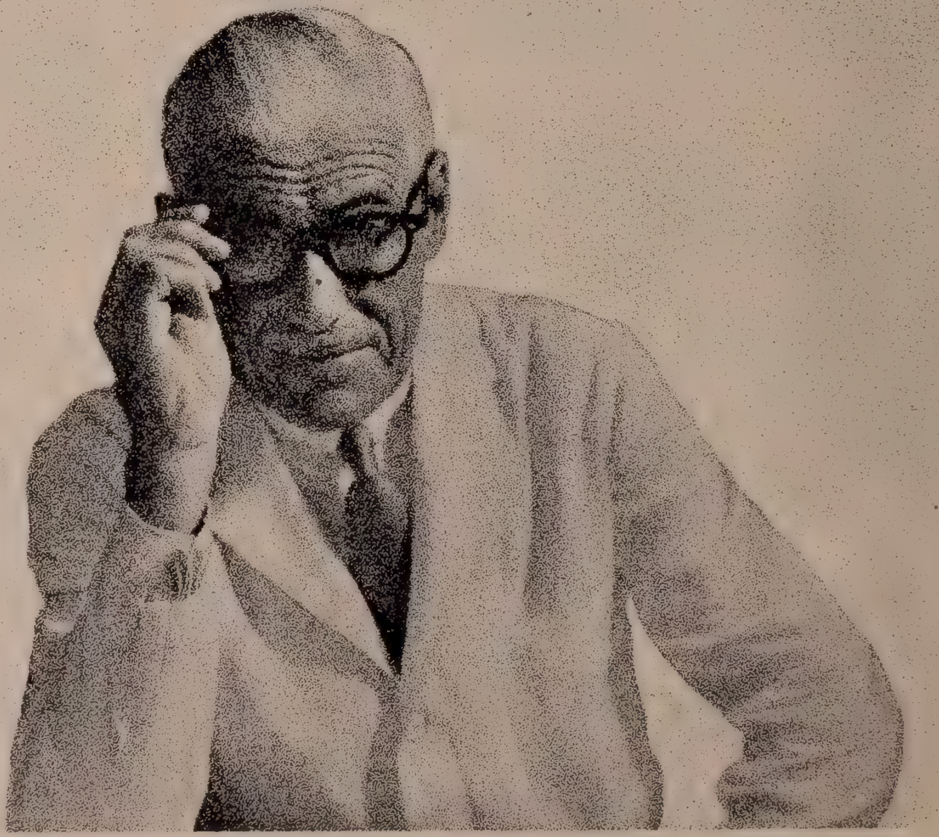

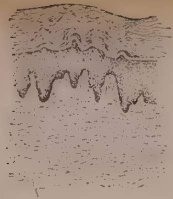

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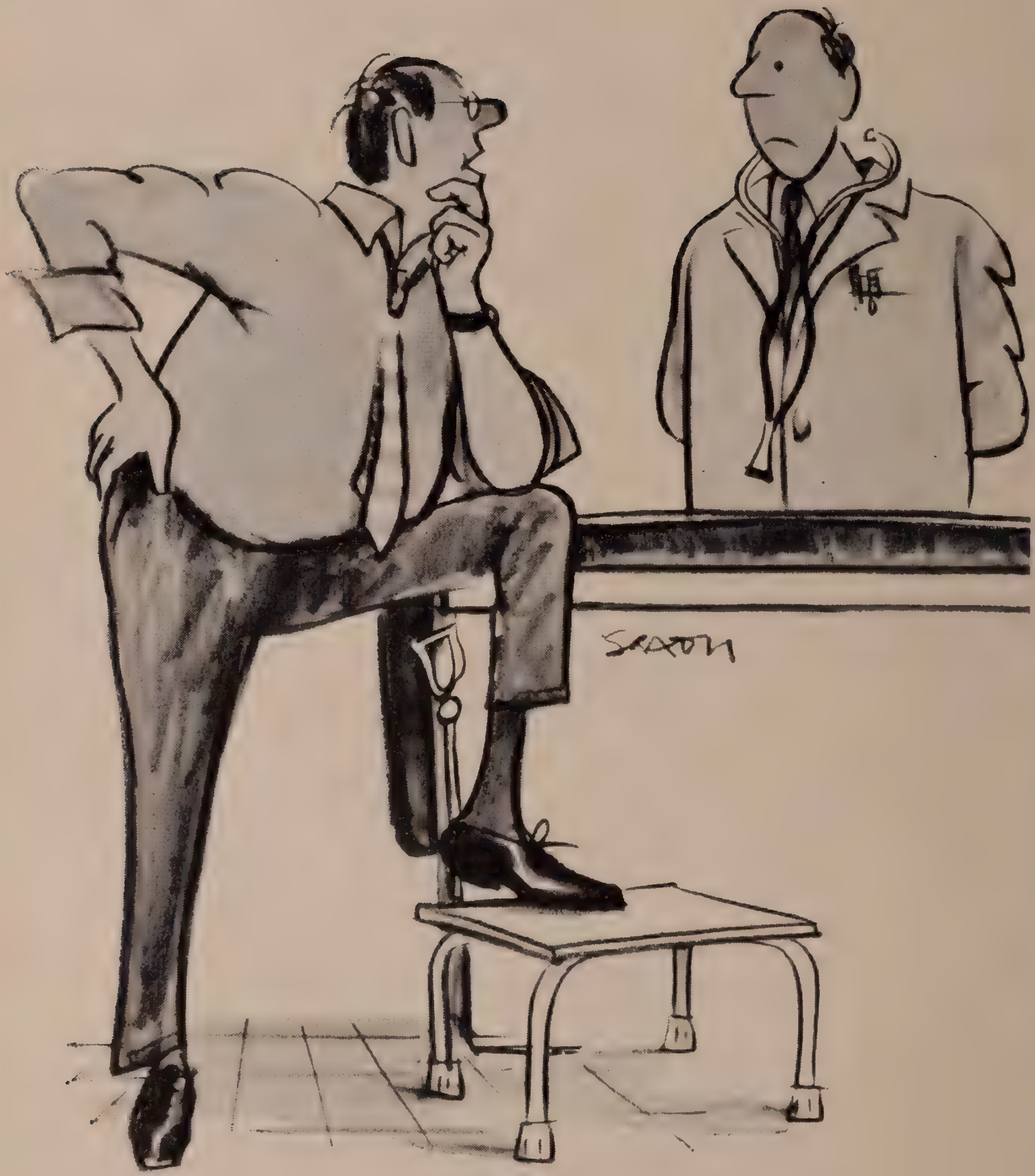

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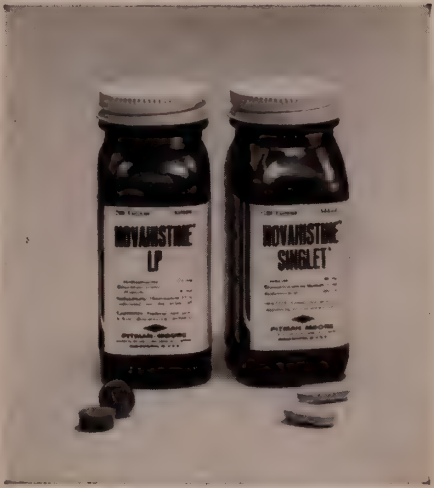

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New York State Journal of Medicine

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In the complex picture of moderate to severe anxiety...

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Precautions: There have been infrequent reports of leukopenia and/or agranulocytosis and convulsive seizures. In epileptic patients, anticonvulsant medication should also be maintained. Pigmentary retinopathy may be avoided by remaining within the recommended limits of dosage. Administer cautiously to patients participating in activities requiring complete mental alertness (e.g., driving). Orthostatic hypotension is more common in females than in males. Do not use epinephrine in treating drug-induced hypotension. Daily doses in excess of 300 mg. should be used only in severe neuropsychiatric conditions.

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41169

Month in Washington

The American Medical Association protested strongly against proposed new Medicaid regulations affecting payments to physicians and utilization review. The proposed regulations for determining physicians' reasonable charges were termed an anomaly in a protest to H.E.W. (U.S. Department of Health, Education, and Welfare) because they are based on payments received by the physician with no consideration given to the usual and customary fee charged by the physician.

Since Medicare payments made by the government are 80 per cent of the reasonable charge, this amount could become the maximum fee for services under Medicare, the AMA said. Or, were physicians to receive less than full payment and write off losses, the reduced payments could become the basis for reasonable fees under Medicaid.

The new regulations on utilization review would require a state Medicaid plan to provide for utilization review of each item of service, including services provided in a physician's office or in the patient's home. The AMA said it could lead to a set of national standards which would authorize and limit treatment for each medical condition in a manner set by regulation.

The AMA said it is not opposed to a "claims review" process which is now in operation in many areas or as conducted under Medicare. Nor, the AMA added, did it find fault with inquiring into a physician's conduct where fraud is alleged, or where it appears, on the basis of Medicare claims submitted, that there is reasonable ground for further investigation of a possible fraud.

In another development, the Advisory Commission on Intergovernmental Relations supported a Medicaid goal of comprehensive health care for the needy and medically needy by 1975 but proposed changes in the financing and operation of the Federal-state program.

The report was directed particularly to "the virtually unmanageable fiscal burden imposed on state and local governments by the program." It urged that consideration be given to "broadening the financial base of Medicaid by increasing the role of privately financed insurance through an employer-employe contributory health insurance system." If congress approved this proposal, it would be a giant step toward national compulsory government health insurance.

The commission rejected proposals to limit Federal sharing in Medicare and to establish national eligibility standards for beneficiaries.

The report was made public soon after the Senate voted a $500 million cutback in Medicaid funds and when some states already were trimming their Medicaid programs because of a financial pinch.

The commission recommended that the states "move vigorously to experiment with methods of increasing the efficiency and economy of health services under the Medicaid program," including: (1) reimbursing hospitals contingent on their operating under an acceptable standard of management efficiency, (2) expanding prior authorization for elective surgical procedures, (3) paying for physicians' services on a basis other than usual and customary charges, (4) using copayments for the purchase of specified health care services, and (5) improving technics of utilization review.

The 26-member commission is a bipartisan committee established by Federal law in 1959 to maintain continuing review of the relations among Federal, state, and local governments. Its membership consists of governors, mayors, county officials, state legislators, and representatives of both houses of Congress, the Federal executive branch, and the general public. The chairman is Farris Bryant, former governor of Florida.

* * *

Congress approved a two-year extension of the regional medical programs and a one-year extension of the Hill-Burton program of Federal aid for construction of hospitals and other health care facilities.

The legislation authorizes the appropriation of $65 million in this fiscal year, ending next June 30, and $120 million for the next year for the regional medical programs. The Senate had voted a three-year extension, but it was dropped by a House-Senate committee which worked out the compromise.

House of Representative conferees, however, emphasized that "this program, although a newly established one, has already proved its value and should be considered as a permanent program." They said they accepted the two-year extension to give the next Congress an opportunity to review the program.

The Hill-Burton program was granted $195 million for hospitals and $100 million for other health care facilities. The conferees abandoned Senate provisions for a new three-year program to grant Federal loans of $200 million a year for hospital modernization and a guaranteed loan program in the same amount with interest rates subsidized by the Federal government. These provisions also were left for further consideration by the next Congress.

A total of $40 million was authorized for two

continued on page 2838

Prepared by the Washington, D.C., Office of the American Medical Association.

In peptic ulcer:

the antacid puzzle

solved by Mylanta®

aluminum and magnesium hydroxides *plus* simethicone

"will it ease the pain?"

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will it help "my gassy stomach"?

Mylanta *also* contains simethicone: for concomitant relief of G.I. gas distress.

"will this one taste O. K.?"

The *prolonged* acceptance of Mylanta was recently confirmed in 87.5% of 104 patients—after a total of 20,459 documented days of therapy.* *Danhof, I. E.: Report on file.

Composition: Each Mylanta chewable tablet or teaspoonful (5 ml.) contains: magnesium hydroxide, 200 mg.; aluminum hydroxide, dried gel, 200 mg.; simethicone, 20 mg. *Dosage:* One or two tablets (well chewed or allowed to dissolve in the mouth) or one or two teaspoonfuls to be taken between meals and at bedtime.

Stuart Division/Pasadena, Calif.
ATLAS CHEMICAL INDUSTRIES, INC.

continued from page 2836

years for construction and staffing of rehabilitation facilities for treatment of both narcotics and alcoholic addicts. As a declaration of Congress, the measure states: "Alcoholism is a major health and social problem afflicting a significant proportion of the public and much more needs to be done by public and private agencies to develop effective prevention and control."

Grants for family health service clinics for migratory agricultural workers was extended for two years with $9 million authorized for the current fiscal year and $15 million for the next year.

* * *

Congress approved legislation designating November 17 to 23 as "National Family Health Week." The legislation termed the week "as a means of focusing national attention during the year on the accomplishments of the American health care system and the central role played by the family physician in the maintenance of superior medical care for Americans of all ages and from all walks of life."

* * *

The Committee on Emergency Medical Services of the National Research Council has recommended establishment of a nationwide program for the training of ambulance personnel.

The committee proposed guidelines for such training, stating that there is at present "no uniformity in the course of instruction and . . . no generally accepted standards of proficiency to be used by those empowered to certify ambulance personnel."

The committee's recommended guidelines cover: the use of either the standard or advanced first-aid courses of the American National Red Cross as a prerequisite; the operation of emergency vehicles; safety precautions at the accident scene; priorities of care; maintaining records; the use of communication systems; the use of equipment and supplies; medicolegal problems; and rescue procedures.

The levels of proficiency designed to result from the course proposed in the report are attainable in most areas of the country within a reasonable time, the committee said. However, to realize the greatest life-saving potential, the ambulance attendant of the future should be trained to the same level as nonmedical assistants in emergency departments or medical corpsmen in combat areas; ideally he should be qualified to carry out, either independently or through voice communication with a physician, such procedures as tracheostomy, defibrillation, and mechanical external cardiac compression, the committee said.

To attain these goals, the committee said, accredited hospital training programs must be established that will produce professionally trained ambulance attendants and emergency department assistants of the caliber of certified medical technicians, such as x-ray, laboratory, physical therapy, and others.

The ambulance attendant, it added, must be fully engaged in emergency care in an established career pattern that provides attractive compensation, prestige, and recognition deserving of his services as a member of the emergency medical care team. Where the needs for ambulance services are low so that he is not fully occupied, such as in small communities, he should be an employe of a hospital where he can maintain his interest and proficiency as an assistant in the emergency department, intensive care unit, or operating room, the committee said.

* * *

The President's Committee on Mental Retardation reported that three fourths of the nation's six million mentally retarded children live in urban ghettos and rural slums and were unwanted and unplanned children.

The committee's second annual report, entitled "The Edge of Change," dealt with the high incidence of retarded development among the poor, the shortage of manpower to serve the retarded child, and the low quality of residential care available to most of them. The committee's recommendations called for:

—Education and health services to be made available to every child from birth.

—An insurance system to give parents a free choice in selecting needed services.

—Development of national accreditation standards for residential facilities for the retarded child.

—Voluntary family planning services to be made available to all Americans.

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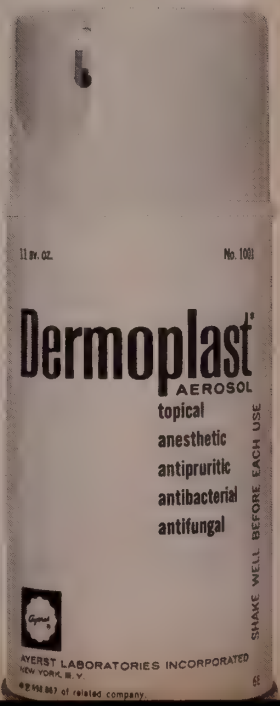
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Medical News

Physicians' Home to hold annual meeting

The annual meeting of the members of the Physicians' Home is to be held November 19, at 4:00 P.M., at the Irving Trust Company, 45 West 51st Street, New York City. Anyone who has contributed $10 or more during the fiscal year is a member and is entitled to vote at this meeting.

Air and water pollution board established

Mayor John F. Lindsay announced the formation of a 5-man Environmental Control Board which will help guide the Environmental Protection Administration, a new superagency responsible for air, water, and sanitation in New York City. He also appointed George James, M.D., former city health commissioner who is now dean of the Mount Sinai School of Medicine, and Dr. George M. Woodwell, an ecologist at Brookhaven National Laboratory, to serve on the board.

The board has authority to change existing rules and regulations for the control of air and water pollution and adopt new regulations that will have the force of law.

Health planning commission moves to new quarters

After September 30, the offices of The New York State Health Planning Commission will be located at 800 Second Avenue, New York, New York 10017. The new telephone number will be 212-661-7620.

Personalities

Appointed. Stanley Stark, M.D., Kings County, as editor of the *Bulletin of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn*...Daniel S. Martin, M.D., formerly of Miami, Florida, as chairman of surgery for the Catholic Medical Center of Brooklyn and Queens...Alexander Thomas, M.D., New York City, as director of the psychiatric division, Bellevue Hospital Center...William D. Voorhees, Jr., M.D., Albany, as first deputy commissioner of the New York State Department of Mental Hygiene.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

TAO® (triacetyloleandomycin)

Brief Summary

INDICATIONS: Include staphylococci, streptococci, pneumococci and gonococci. Recommended for acute, severe infections where adequate sensitivity testing has demonstrated susceptibility to this antibiotic and resistance to less toxic agents.

CONTRAINDICATIONS: Contraindicated in pre-existing liver disease or dysfunction, and in individuals hypersensitive to the drug.

PRECAUTIONS: **CAUTION: USE OF THIS DRUG MAY PRODUCE ALTERATIONS IN LIVER FUNCTION TESTS AND JAUNDICE. CLINICAL EXPERIENCE AVAILABLE THUS FAR INDICATES THAT THESE LIVER CHANGES WERE REVERSIBLE FOLLOWING DISCONTINUATION OF THE DRUG.**

Not recommended for prophylaxis or in the treatment of infectious processes, which may require more than ten days continuous therapy. In view of the possible hepatotoxicity of this drug when therapy beyond ten days proves necessary, other less toxic agents should be used. If clinical judgment dictates continuation of therapy for longer periods, serial monitoring of liver profile is recommended, and the drug should be discontinued at the first evidence of any form of liver abnormality. When treating gonorrhea in which lesions of primary or secondary syphilis are suspected, proper diagnostic procedures, including dark-field examinations, should be followed. In other cases in which concomitant syphilis is suspected, monthly serological tests should be made for at least four months. When used in streptococcal infections, therapy should be continued for ten days to prevent the development of rheumatic fever or glomerulonephritis. The use of antibiotics may occasionally permit overgrowth of nonsusceptible organisms. A resistant infection or superinfection requires reevaluation of the patient's therapy. In the event such occurs with this drug the medication should be discontinued, and specific antibacterial and supportive therapy instituted.

ADVERSE REACTIONS: Although reactions of an allergic nature are infrequent and seldom severe, those of the anaphylactoid type have occurred on rare occasions.

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In vitro
susceptibility results
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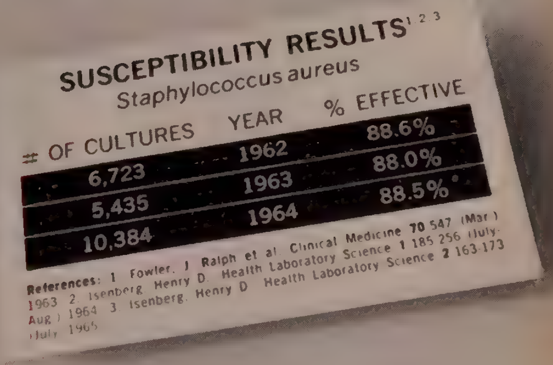
in *Staphylococcus aureus* cultures,
as shown in
studies of
antibiotics.



SUSCEPTIBILITY RESULTS[1,2,3]
Staphylococcus aureus

# OF CULTURES	YEAR	% EFFECTIVE
6,723	1962	88.6%
5,435	1963	88.0%
10,384	1964	88.5%

References: 1. Fowler, J. Ralph et al. Clinical Medicine **70** 547 (Mar.) 1963 2. Isenberg, Henry D. Health Laboratory Science **1** 185 256 (July-Aug.) 1964 3. Isenberg, Henry D. Health Laboratory Science **2** 163-173 (July) 1965

TAO® (triacetyl-oleandomycin)
is a macrolide antibiotic, for use only in
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to this antibiotic and resistance
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"Had a fine home and family."

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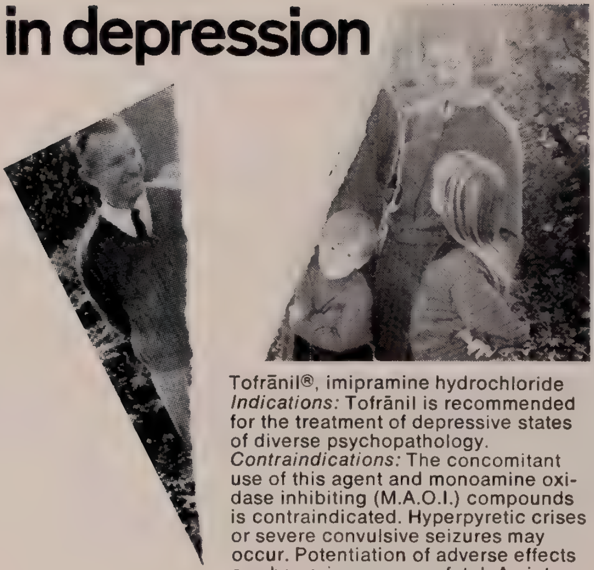
Toxic reactions severe enough to require discontinuation of Tofrānil are uncommon. However, for complete details, please refer to the complete Prescribing Information.

Turn page for brief summary of Prescribing Information.

in depression **Tofrānil**® imipramine hydrochloride

Geigy

in depression



Tofrānil® Geigy

imipramine
hydrochloride

Tofrānil®, imipramine hydrochloride
Indications: Tofrānil is recommended for the treatment of depressive states of diverse psychopathology.
Contraindications: The concomitant use of this agent and monoamine oxidase inhibiting (M.A.O.I.) compounds is contraindicated. Hyperpyretic crises or severe convulsive seizures may occur. Potentiation of adverse effects can be serious or even fatal. An interval of at least 7 days after M.A.O.I. therapy has been discontinued should be allowed before this drug may be substituted. Initial dosage should be low, increases should be gradual, and the patient's progress should be carefully observed.
Warning: Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician, the potential benefits outweigh the possible risks, it should not be used during the first trimester of pregnancy. Cardiovascular complications, including myocardial infarction and arrhythmias, have occasionally occurred in susceptible individuals. Patients with cardiovascular disease should be given the drug only under careful observation and in low dosage.
Precautions: Since suicide is always a possibility in severely depressed patients and one which may persist until significant remission occurs, such patients should be carefully supervised during early treatment. Some severely depressed patients may also require hospitalization and/or concomitant electroconvulsive therapy. Because of its anticholinergic effect, caution should be observed in prescribing the drug for patients with increased intraocular pressure.
In rare instances, transient cardiac arrhythmias have occurred in hyperthyroid patients and in patients receiving thyroid medication when this compound was added to the regimen. Imipramine may block the pharmacologic activity of guanethidine and other related adrenergic neuron-blocking agents.
The drug is not recommended at the present time in patients under 12 years of age.
Adverse Reactions: Dryness of the mouth, tachycardia, constipation, disturbances of accommodation, sweating, dizziness, weight gain, urinary frequency or retention, nausea and vomiting, peripheral neuritis, mild parkinson-like syndrome, tremors, rare cases of falling in elderly patients, confusional states (with such symptoms as hallucinations and disorientation), activation of psychosis in schizophrenics and agitation (including hypomanic and manic episodes) which may require dosage reduction and/or addition of a tranquilizer or temporary discontinuation of the drug, epileptiform seizures, orthostatic hypotension and substantial blood pressure fall in hypertensive patients, purpura, transient jaundice, bone marrow depression including agranulocytosis, sensitization and skin rash including photosensitization, eosinophilia, and mild withdrawal symptoms on sudden discontinuation after prolonged treatment with high doses. Occasional hormonal effects (impotence, decreased libido, and estrogenic effects) may be observed. Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those using anticholinergic agents (including antiparkinsonism drugs).
Outpatient Adult Dosage: Initially, 75 mg. daily, increased, if necessary, to 150 or 200 mg. Maintenance dosage may be lower, 50 to 150 mg. daily, if possible.
Geriatric and Adolescent Dosage: Initially, 30 or 40 mg. daily, which may be increased according to response and tolerance. It is usually unnecessary to exceed 100 mg. daily.
A lag in therapeutic response, lasting from a few days to a few weeks, should be expected. When dosage recommendations are already being followed, increasing the dosage does not normally shorten this latency period and may increase the incidence of adverse reactions.
Availability: Round tablets of 25 and 50 mg.; triangular tablets of 10 mg. for geriatric and adolescent use; and ampuls, each containing 25 mg. in 2 cc. for I.M. administration.
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Medical Meetings

Immune mechanisms topic of lecture

The Adam M. Miller Memorial Lecture is to be held November 25, at 4:00 P.M., in the first floor lecture hall of the Basic Sciences Building, at Downstate Medical Center, 450 Clarkson Avenue, Brooklyn. The topic of the lecture is "The Embryology of Immune Mechanisms" and will be given by Robert Auerbach, professor of zoology, University of Wisconsin.

Eye and Ear Infirmary offers lectures in ophthalmology

The Post-Graduate Institute of the New York Eye and Ear Infirmary is sponsoring a series of 5 lectures to be given by Professor Alfred Huber of Zurich, Switzerland, on February 10 through 14, 1969, from 3:00 to 6:00 P.M., at the New York Eye and Ear Infirmary. The topics and dates are as follows: February 10, Papilledema: Diagnosis and Differential Diagnosis; February 11, Angiography and Phlebography of the Orbit; February 12, X-Ray Pathology of the Orbit; February 13, Visual Field Alterations in Brain Tumors; and February 14, Secondary Glaucoma.

Registration fee is $20 per lecture. For further information and registration contact: Jane Stark, registrar, Post-Graduate Institute of the New York Eye and Ear Infirmary, 310 East 14th Street, New York, New York 10003.

Course offered in use of radioactive isotopes

The nuclear medicine division of the Long Island Jewish Hospital-Queens Hospital Center Affiliation is sponsoring a four-month course in the medical uses of radioactive isotopes. The course will begin on Tuesday, February 4, 1969, and continue through May 27, 1969, and will consist of weekly five-hour sessions covering lectures, laboratory exercises, and clinical management of patients.

Tuition fee is $275. For further information and registration write to: division of nuclear medicine, radioisotope course, The Long Island Jewish Hospital-Queens Hospital Center Affiliation, 82-68 164th Street, Jamaica, New York 11432.

Symposium on pediatrics offered by Maimonides Medical Center

The Maimonides Medical Center and Coney Island Hospital Affiliate, in cooperation with the State University of New York Downstate Medical Center and the Kings County Chapter of the American Academy of General Practice, are sponsoring the Eighth Annual Pediatric Postgraduate Symposium to be held May 25 through 27, 1969, at Maimonides Medical Center.

The dates and topics of the program are as follows:

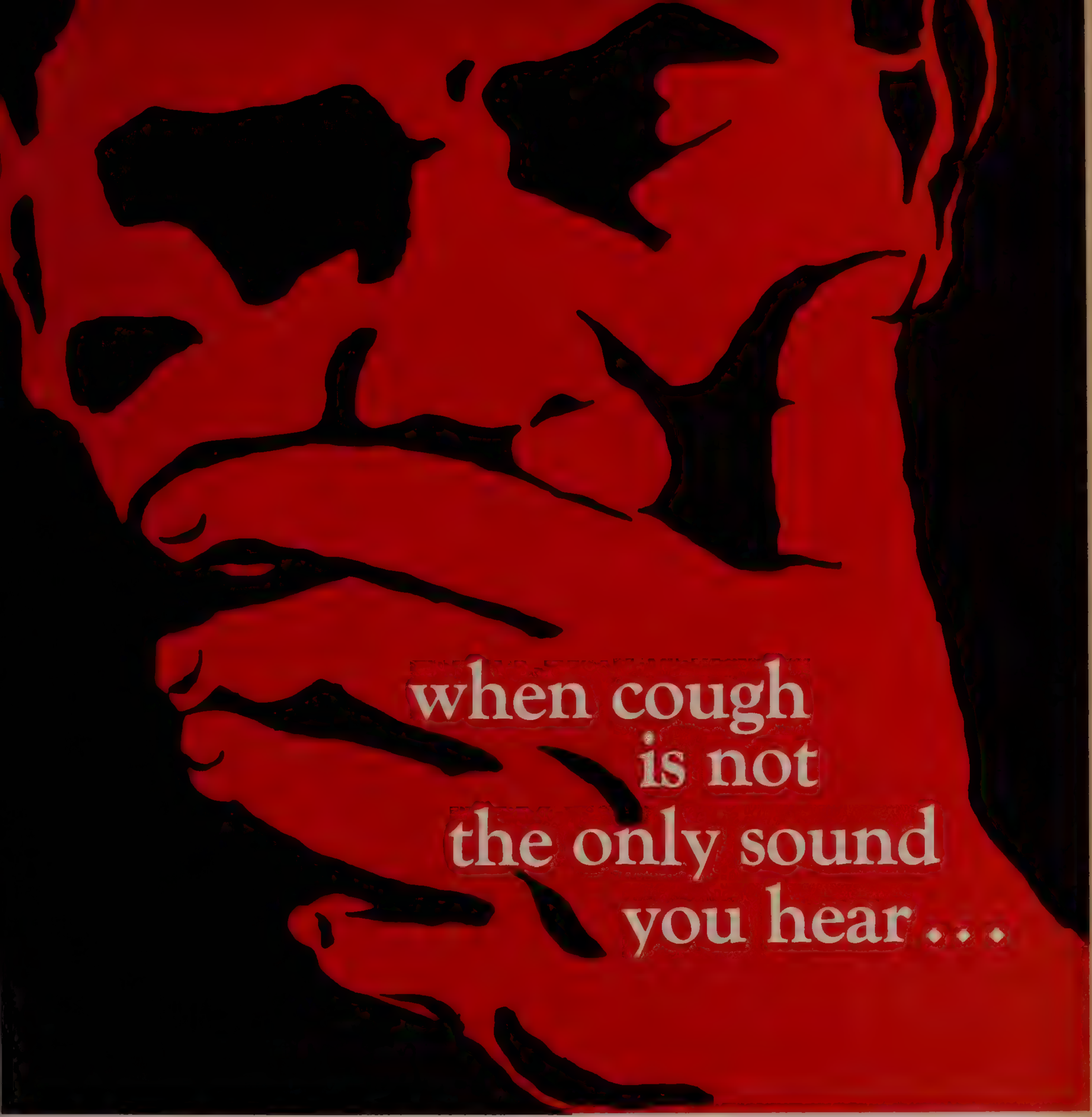
May 25—"Perinatal Intensive Care," Nathan Rudolph, M.D., moderator; Edward J. Quilligan, M.D., Abraham Rudolph, M.D., and Louis Gluck, M.D. "Neonatal Cardiology," Lawrence Kuskin, M.D., moderator; Abraham Rudolph, M.D., and Norman S. Talner, M.D.

May 26—"The Unconscious Child," Oscar Schwartz, M.D., moderator; Howard Freedman, M.D., Hart Peterson, M.D., and Laurence Finberg, M.D. "Antibiotics in Therapy," Howard A. Joos, M.D., moderator; Charles V. Pryles, M.D., Andrew M. Margileth, M.D., Paul F. Wehrle, M.D., and Harvey E. Bardmore, M.D.

May 27—"Malabsorption," Julian Deren, M.D., moderator; Murray Davidson, M.D., O. Dhodanand Kowlessar, M.D., and Theodore M. Bayless, M.D. "Organ Transplantation," Adrian Kantrowitz, M.D., moderator; John H. Githens, M.D., Marilino Fotino, M.D., and Lawrence Brettschneider, M.D.

Attendance is limited. Registration fee is $75. For further information and reservations write to: Mrs. Shirley Lasky, registrar, Maimonides Hospital Medical Center, 4802 Tenth Avenue, Brooklyn, New York 11219.

Material for inclusion in the medical meetings section must be received six weeks prior to publication date.



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Dosage: *Adults:* 1 teaspoonful (5 cc.) q12h.
Children (6-12 *years*): ½ teaspoonful q12h.

Side Effects: Minimal, but when encountered may include jitteriness, nausea, drying of mouth, insomnia, constipation, which disappear upon adjustment of the dose or discontinuance of treatment.

Precautions and Contraindications: For complete detailed information, refer to package insert or official brochure.

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Caution: With use of DIA-quel Liquid observe the usual precautions associated with opium derivatives and anticholinergics.

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How Supplied: In 4 fl. oz. (118 ml.) band-sealed bottles.

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Films Reviewed

*These Films are available to physicians, hospitals, medical schools, and others, from the Film Library of the State of New York Department of Health**

Diagnosis and Management of Cystic Fibrosis. Sound, color, 16 mm., thirty minutes.

This film has been prepared for the use of all professional groups and schools of medicine, nursing, and physical therapy. It emphasizes the variations in clinical manifestations of the disease, offers a guide to diagnostic tests, and explains the rationale of current therapy.

Source and producer: National Cystic Fibrosis Research Foundation, 521 Fifth Avenue, New York, New York 10017.

Voice Production: the Vibrating Larynx. Sound, 16 mm., forty-two minutes.

A male larynx is built up, part by part, starting with the trachea and proceeding to the point where the specimen is ready to phonate. The function of the various components is demonstrated and explained. This film is recommended for professional use.

Source and producer: Netherlands Information Service, 711 Third Avenue, New York, New York 10017.

The Embattled Cell. Sound, color, 16 mm., twenty-one and a half minutes.

The film shows on the screen the actual behavior of living cells, both normal and cancerous, within the human lung. In time-lapse photography and other sequences the viewer sees with startling vividness the struggling of the body's defensive cells against individual cells, the cleansing mechanism of the lung in action, and the lung's blood supply and drainage systems. The air sacs and their delicate capillaries are shown as these structures are affected by air pollutants such as cigaret smoke. The film has unique educational values for schools and colleges as well as for medical students and other paramedical groups.

Source and producer: American Cancer Society, 1010 James Street, Syracuse, New York.

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* Film evaluations provided by the Committee on Audio Visual Aids of the Commission on Public Health and Education: Kenneth B. Olson, M.D., Albany, *Chairman;* Wilbur M. Dixon, M.D., Binghamton; and James J. Quinlivan, M.D., Albany.

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A. Head and Neck Injuries
B. The Trainer's Role in High School Athletics
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Luncheon—12:30 p.m. Guest Speaker: "Sleepy" Jim Crowley
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Books Reviewed

Hernia. Edited by Lloyd M. Nyhus, M.D., and Henry N. Harkins, M.D. Quarto of 836 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1964. Cloth, $28.50.

The editors are professors in the Department of Surgery, University of Washington School of Medicine, as well as active teachers at the University Hospital, Seattle, Washington, and elsewhere. They are also surgical consultants at the Army and Naval Hospitals of Washington State. Both are well-qualified by background and interest for the task of correlating older and newer concepts, and discussing each of the 59 chapters in an "Editorial Comment," a most enlightening feature of the work.

The aim of the editors is to present a source for a contemporary, critical look at the various interpretations of the anatomy of all types of hernia and an evaluation of the older and newer concepts for their repair. The "Special Comments" by the editors are most unique and effectual in accomplishing these tasks.

More recent knowledge of etiology and anatomy of hernias and their variations has created a need for such an encompassing source of reference, as have the existing controversies over the technic of repair, bilateral exploration in juvenile patients, and the proper place of the preperitoneal approach.

The clear assessment of such extensive knowledge concerning hernia recommends this work to all students of the problem.—WARD CEILLY, M.D.

The Palms and Soles in Medicine. By Maurice J. Costello, M.D., and Richard C. Gibbs, M.D. Quarto of 686 pages, illustrated. Springfield, Ill., Charles C Thomas, 1967. Cloth, $47.50.

Objective changes in the palms and soles are frequently significant clues in generalized disorders. The authors have explored comprehensively these areas from this viewpoint.

There is an excellent introductory chapter on basic morphology and physiology with some interesting discussion of dermatoglyphics. The main body of the book has been divided appropriately into chapters dealing with disorders involving the palms and/or soles exclusively, those disorders which are part of more generalized cutaneous disturbance, and those which are frequently associated with systemic disease. Many of these conditions are quite rare and belong properly in a book of this type.

The illustrations are of excellent quality and placed effectively in a clear format so that there is no difficulty in referring from the photographs to the corresponding text and vice versa.

By collecting this material into one volume the authors have presented a very useful monograph which should serve as a definitive reference book, particularly for dermatologists. It certainly should be helpful in other fields, e.g., pediatrics, general medicine, podiatry, and so forth; particularly because of the large number of illustrations.

This book is highly recommended for its contents and quality of presentation.—IRVING N. HOLTZMAN, M.D.

Studies of the Development and Decay of the Human Frame. By Joseph Trueta, M.D. Quarto of 389 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $18.

To those physicians already familiar with the work of Professor Trueta on his studies of the renal circulation and, subsequently, on the circulation as related to the skeleton, this book should prove an exciting experience as a recapitulation of the major advances in the biology of bones and joints. The title itself is an intriguing one and represents a combination of basic studies in embryology, growth, and development of the skeletal apparatus from birth through the years of growth and development into adult life and then into the aging processes as well as the effects of specific clinical entities.

Rarely does one encounter such a wealth of detail in research studies as pursued by a distinguished clinician who is, thereby, able to correlate the clinical problems to the basic physiology and pathology underlying them. Throughout the book emphasis is placed on the effects of blood supply on pathologic changes. The author introduces the term epiphyseal anemia as opposed to ischemia to describe newer concepts and effect a more accurate terminology. As applied specifically to such problems as Perthes' disease, epiphysiolysis, and "congenital" hip disease, these interpretations are especially illuminating.

A wide experience in the Spanish Civil War presented extraordinary opportunities to study the effects of trauma and infection in bone disease. A refreshing reappraisal of the etiology of scoliosis, and the behavior of cartilage in osteoarthritis, with special reference to the chronic hip, are additional highlights.

Profusely and beautifully illustrated, with an extensive bibliography, this book undoubtedly will find its way into the library of every orthopedic surgeon and, in the reviewer's opinion, will probably become a classic in

continued on page 2856

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orthopedic surgery. It has been a rare privilege and pleasure to review Professor Trueta's book. Max S. Rabinowitz, M.D.

Thyrotoxicosis. Proceedings of an International Symposium, Edinburgh, May, 1967. Edited by W. James Irvine, M.B. Octavo of 259 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1967. Cloth, $9.75.

The interesting, well-written proceedings of the international symposium held in Edinburgh on May 26 and 27, 1967, are edited in a finished fashion. The foreign participants included Dr. E. B. Astwood who pioneered in the clinical use of antithyroid drugs; Drs. J. M. McKenzie and D. S. Munro whose efforts have led to the present view of LATS (long-acting thyroid stimulator) as a provocative agent in hyperthyroidism; Dr. T. Lemarchand-Beraud whose immunoassay of TSH demonstrated that the pituitary thyroid axis in thyrotoxicosis is normal; Dr. P. J. der Kinderen whose bioassays of EPS (exophthalmos producing substances) were evaluated with LATS and the clinical course of exophthalmos; Dr. P. Heimann who carried out the first detailed study of ultra structure of the human thyrotoxic gland. Other authors discussed the kindred subjects of probable genetic chromosome abnormalities; the role of the reticulo-endothelial, plasma and lymph cells; the breakdown of LATS into L and H forms, Fab and Fc products; T_3 suppression tests as a prognostic aid; exophthalmic "hot" nodules, therapeutic hypothyroidism, thyrocalcitonin and parathyroid function. The clinician as well as the experimentalist will find it a valuable asset to his collection. Bernard Seligman, M.D.

Manual of Preoperative and Postoperative Care. By the Committee on Pre- and Postoperative Care. American College of Surgeons. Editorial Subcommittee, Henry T. Randall, M.D., *Chairman*, James D. Hardy, M.D., and Francis D. Moore, M.D. Octavo of 506 pages, illustrated. Philadelphia, W. B. Saunders Company, 1967. Cloth, $8.50.

This manual, written by 29 outstanding contributors, covers the very broad and complicated field of modern pre- and postoperative care. It is not only a guide for the younger surgeon, but it will present to the experienced surgeon new approaches of handling normal conditions and also how to face unusual complications.

It can not be expected that all the advice will be accepted. In particular this may concern the wide range of fluid and electrolyte balance in the postoperative stage. We may see different handlings of the antibiotic postoperative therapy and in the often desperate condition of hemorrhagic and traumatic shock. Other ways also may lead to overcome this condition.

Altogether, this book is an absolute must for the active surgeon who is not able to follow each new development by special studies. The contents of the book are well concentrated and the writing is clear and very understandable. Terminologic explanations and both physical and biologic factors are well described. Helmuth Nathan, M.D.

Advanced Techniques of Hypnosis and Therapy. Selected Papers of Milton H. Erickson, M.D. Edited by Jay Haley. Quarto of 557 pages, illustrated. New York, Grune & Stratton, 1967. Cloth, $14.75.

Milton Erickson is universally acclaimed as the dean of modern scientific hypnosis. He has contributed a greater number of scientific articles on hypnosis to the medical and psychologic literature over the past forty years than any of his contemporaries. Dr. Erickson has pioneered in the fields of clinical and of experimental hypnotic induction and therapy and this is reflected in the caliber of his professional literary contributions.

Jay Haley compares Erickson to Sigmund Freud and to Harry Stack Sullivan. The former because both Freud and Erickson derived their major ideas from the field of hypnosis. The reference to the latter involves the great emphasis both Sullivan and Erickson place on the interpersonal relationships rather than on the individual. Haley eminently succeeds in presenting a word picture of hypnosis experimentation by offering the reader the choice of several papers on the experimental approach to the investigation of the limits of interpersonal influence over a subject's sensory apparatus and behavior. Hypnotic deafness (1938), induction of color blindness (1939), and hallucinatory color vision (1938) are typical of this category.

Haley and Erickson have provided us with a variegated group of articles on three broad aspects of hypnosis, i.e. induction technics, experimentation with hypnosis, and technics of therapy. The tyro, as well as the sophisticated user of hypnosis, will benefit by reading any of these essays. *Advanced Techniques of Hypnosis and Therapy* is strongly recommended for all who use hypnosis as well as for those who contemplate its use in their practices. Leo Wollman, M.D.

An Atlas of Advanced Surgical Techniques. By Edward J. Beattie, Jr., M.D., and Steven G. Economou, M.D. Quarto of 422 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $20.

This atlas is written for the trained surgeon. It fulfills the need for depicting difficult, established surgical technics which are performed less frequently. The book strives to present how, in the opinion of the authors, the procedure should be performed. There are no

continued on page 2857

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alternate methods outlined. Throughout the text surgical principles are outlined.

The illustrations are the heart of the book. The drawings are extremely well visualized by the artist. Each chapter is preceded by a short section on anatomy and principles for the care of the patient. The authors called in outstanding surgeons for assistance. Many of these surgeons are intimately connected with a procedure and often, when one of these radical procedures is named, it is usually this particular surgeon who has popularized the technic.

The operations cover all the body systems. The atlas makes a very convenient place to find all these difficult procedures without having to go to many sources. There are excellent references. The book is well printed and the illustrations are sharp and accurate.

This book is recommended for residents in surgery as a source book. ALAN A. KANE, M.D.

Fifth World Congress of Gynaecology and Obstetrics. Held in Sydney, Australia, September, 1967. Editor Carl Wood, M.B. Associate Editor William A. W. Walters, M.B. Quarto of 934 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $42.50.

This volume is a compilation of the 65 papers and 425 free communications read before and collected by the Fifth World Congress of Obstetrics and Gynecology held in Sydney, Australia, in September, 1967. The contributions for the most part were from university hospitals and medical schools and the majority dealt with some form of research, either clinical or laboratory. Most are written in English although a few are in other languages. Illustrations are somewhat sparse but adequate. None are in color. Approximately 40 countries from all over the world are represented. The number of contributions from Japan was somewhat surprising to this reviewer and the U.S.S.R. was also well represented. The material covered a wide variety of subjects, most of which dealt with problems of interest to most obstetricians and gynecologists in all parts of the world. Of the contributors themselves it must be said that if those from other countries are of the same caliber, and it is certainly logical to assume that they are, as those from this country, they indeed must be very high. The collection will serve not only as good source material but as a good index of what goes on throughout the world in this specialty today. J. THORNTON WALLACE, M.D.

Nephrology. Volume I and II. By Jean Hamburger, G. Richet, J. Crosnier, J. L. Funck-Brentano, B. Antoine, H. Ducrot, J. P. Mery, and H. de Montera. With the collaboration of P. Royer in the chapters on pediatrics. Translated by Anthony Walsh, F.R.C.S.I.

continued on page 2858

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continued from page 2857

Quarto of 1,312 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $50 the set.

These 2 volumes comprise a most comprehensive survey of nephrology. They not only contain a well-integrated compilation of the experiences of Professor Hamburger and his associates but also a much needed review and bibliography of the non-English literature.

The well-organized volumes begin with chapters which detail renal anatomy and physiology and then continue with symptomatology and renal function tests. These are followed by descriptions of renal pathophysiologic disturbances and then the various organic nephropathies. Where possible each chapter concludes with a summary of the indicated therapy.

This set is invaluable not only to the nephrologist, internist, pediatrician, and urologist but also as a ready reference for the student and house staff. It should make an excellent addition to every medical library. Isaac S. Friedman, M.D.

Surgery of the Aged and Debilitated Patient. Edited by John H. Powers, M.D. Quarto of 611 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $20.55.

Why is a book devoted to surgery of the aged and the debilitated? There are important variables in the management of the elderly surgical patient. Generally these variables are both qualitative and quantitative. The management must take into consideration the diminished functional capacity that renders the elderly vulnerable to disturbances of all the regulatory systems of the body.

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Abrupt discontinuance following excessive use of parenteral Talwin has resulted in symptoms such as abdominal cramps, elevated temperature, rhinorrhea, restlessness, anxiety, and lacrimation. These have occurred primarily in patients with a history of narcotic drug abuse. In prescribing parenteral Talwin for chronic use, particularly if the drug is to be self-administered, the physician should take precautions to prevent increases in dose and frequency of injection by the patient and to prevent the use of the drug in anticipation of pain rather than for the relief of pain.

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the duration of the pain
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(For details of Adverse Reactions to Talwin see Brief Summary, below.)

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requently occurring reactions are — *respiratory:* respiratory de-
ssion, dyspnea, transient apnea in a small number of newborn
ants whose mothers received Talwin during labor; *cardiovascular:*
culatory depression, shock, hypertension; *psychiatric:* alteration
mood (nervousness, apprehension, depression, floating feeling),
ams; *gastrointestinal:* constipation, dry mouth; *dermatologic in-*
ding local: diaphoresis, sting on injection, flushed skin including
thora, dermatitis including pruritus; *others:* urinary retention, head-
e, paresthesia, alterations in rate or strength of uterine contrac-
ns during labor.

ely reported reactions include — *neuromuscular and psychiatric:*
scle tremor, insomnia, disorientation, hallucinations; *gastroin-*
inal: taste alteration, diarrhea and cramps; *ophthalmic:* blurred
on, nystagmus, diplopia, miosis; *others:* tachycardia, nodules and
eration at injection site, drug dependency with withdrawal symp-
ns, weakness or faintness, chills, moderate transient eosinophilia,
rgic reactions including edema of the face.

sage and Administration: *Adults, Excluding Patients In Labor.*
rage recommended single parenteral dose is 30 mg., by intra-
scular, subcutaneous, or intravenous route; may be repeated
ry three to four hours. Pain has been relieved in most patients
n not more than three doses daily. Infrequently, selected patients
e received single doses as high as 60 mg. As with most parenteral
gs, when frequent daily injections are needed over a prolonged
iod, intramuscular administration is preferable to subcutaneous.
addition, constant rotation of sites (e.g., the upper outer quad-
ts of the buttocks, midlateral aspects of the thighs, and the
toid areas) is recommended.

ients In Labor. A single, intramuscular 30 mg. dose has been
st commonly administered. An intravenous 20 mg. dose has given
quate pain relief to some patients in labor when contractions
ome regular, and this dose may be given two or three times at
- to three-hour intervals, as needed.

ldren Under 12 Years of Age. Since clinical experience in chil-
n under twelve years of age is limited, the use of Talwin (brand
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(1176AM)

Abstracts

Ayres, S. M., Giannelli, S., Jr., Hardy, W. E., Mazzara, J., Grace, W. J.: Respiratory management of critically ill patient, New York State J. Med. **68:** 2871 (Nov. 15) 1968.

In critically ill patients, the common pathways to cellular death are respiratory or circulatory collapse or both. Patients usually die of either respiratory or cardiorenal failure. Decreased deep breathing and decreased antiatelectatic property of the lung interact to produce alveolar collapse. Therapy directed to support of the collapsing vascular system is frequently unsatisfactory, whereas therapy directed to the support of the lungs is almost always successful. The physiology, consequences, and therapy of respiratory failure are reviewed. Technics are described that return arterial blood gases to normal.

Wang, M. K. H., Labow, S. S., and Marchionne, A. M.: Plastic surgery for prisoners, New York State J. Med. **68:** 2908 (Nov. 15) 1968.

The premise that a criminal is handicapped either mentally or physically led to the use of plastic surgery as part of a rehabilitation program. Surgery was done to revise facial scars, correct nasal deformities and protruding ears, remove tattoos, and restore the use of hands. Although the short-term evaluation has been satisfactory, long-term analysis is difficult. To use the recidivism rate as the only yardstick is not reliable since the statistics on readmission to prison are not broken down. This program is also valuable in postgraduate training in plastic surgery.

Abstracts in Interlingua

Ayres, S. M., Giannelli, S., Jr., Hardy, W. E., Mazzara, J., e Grace, W. J.: Prophylaxia respiratori in le tractamento de criticamente malade patientes (*anglese*), New York State J. Med. **68:** 2871 (15 de novembre) 1968.

In criticamente malade patientes, le mechanismos resultante in morte cellular es communmente collapso respiratori e collapso circulatori, separatemente o insimul. Le patientes mori usualmente ab insufficientia respiratori o cardiorenal. Un declino in le capacitate del patiente de respirar profundemente interage con le reducite proprietate antiatelectatic del pulmon, con le resultato de collapso alveolar. Mesuras therapeutic visante a supportar le collabente systema vascular es frequentemente pauco satisfactori. Del altere latere, mesuras visante a supportar le pulmones es quasi semper successose. Es revistate le physiologia, le consequentias, e le therapia de insufficientia respiratori. Technicas es describite que pote restaurar le stato normal del gases in le sanguine.

Wang, M. K. H., Labow, S. S., e Marchionne, A. M.: Chirurgia plastic pro prisionieros civil (*anglese*), New York State J. Med. **68:** 2908 (15 de novembre) 1968.

Le premissa que le criminal typic es handicappate mental-o physicamente ha suggestionate le uso de chirurgia plastic como parte del programma de su rehabilitation. Cicatrices facial esseva attenuate chirurgicamente, deformitates nasal e protrusion del aures esseva corrigite, tatus esseva removite, e le uso de invalide manos esseva restaurate. Le evalutation del resultatos es satisfactori in terminos brevitemporal. Le analyse a longe termino es difficile. Le uso de cifras de recidivismo como le sol mesura non es satisfacente proque le statisticas relative al readmission provide nulle information subgruppal. In plus, le programma hic describite es de valor como schola de trainamento pro juvene chirurgos plastic.

Book Notes

Modern Trends in Pharmacology and Therapeutics—1. Edited by W. F. M. Fulton, M.D. Octavo of 372 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $16.60.

This book is intended, primarily, for postgraduate students of internal medicine, clinicians, and teachers concerned with the scientific basis of therapeutics. Attention has been drawn to developments in pharmacology, as well as to the evaluation of recently introduced therapeutic agents.

The editor has, of necessity, been selective in the choice of topics. In many instances discussion has been restricted to general principles and the reader is directed elsewhere for details of practical application. Of course there are important omissions. Sometimes this has been because the topics concerned have been, or shortly will be, dealt with in other volumes of the *Modern Trends* series. Others have been omitted because there have been few advances which have been based on pharmacologic developments in recent times.

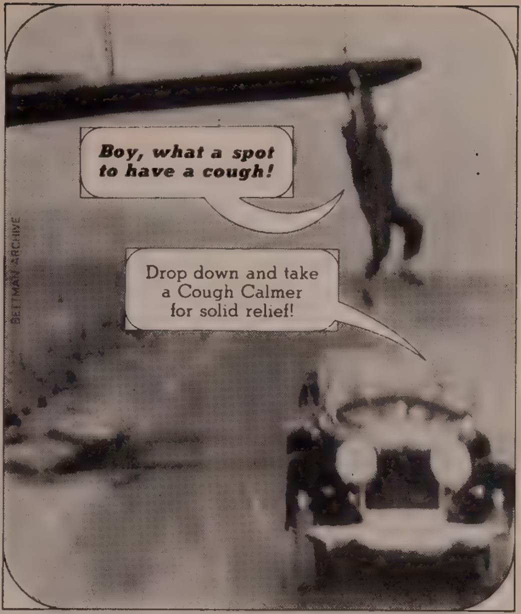
Much of the fundamental material presented is well known to the pharmacologist. Nevertheless, there is much which should be welcome to the pure pharmacologist seeking to appreciate the clinician's perspective in his subject.

Plant Toxicity and Dermatitis. By Kenneth F. Lampe, Ph.D., and Rune Fagerström, Pharm. Dr. Quarto of 231 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $9.25.

This book should be a definite aid to the physician confronted by cases of plant poisoning. Intoxications from plant ingestion are responsible for about 4 per cent of all accidental poisonings in the United States and, in most instances, the victim is a small child.

Plants selected for inclusion in this manual are restricted to those which have been reported to have produced human poisoning or, in a few instances, have, in the authors' judgment, the potential to do so.

Since many physicians have only the scantiest knowledge of botanical terminology, extensive illustrative material has been presented rather than relying solely on physical descriptions of the plants.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Precautions: Use cautiously, if at all, in a patient with a strongly positive history of allergy.

In prolonged therapy with penicillin, and particularly with high parenteral dosage schedules, frequent evaluation of the renal and hematopoietic systems is recommended.

In suspected staphylococcus infections, proper laboratory studies (including sensitivity tests) should be performed.

The use of penicillin may be associated with the overgrowth of penicillin-insensitive organisms. In such cases, discontinue administration and take appropriate measures.

Adverse Reactions: Although serious allergic reactions are much less common with oral penicillin than with intramuscular forms, manifestations of penicillin allergy may occur.

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Editorials

The overweight—weigh carefully

Excess weight is today a social liability. Many forces have zeroed in on the overweight.

The fashion industry, personnel managers and peer groups, generally frown on avoirdupois.

This sociologic problem is fundamentally a medical-psychological problem. Many of the sufferers unaware of this seek an easy way out of their difficulty.

As usual, in a situation of this sort, charlatans rush in to fill the demand.

Recent activity of the Food and Drug Administration has shown a wide-spread abuse of the use of toxic drugs in weight-reduction programs. This has been lethal in documented cases.

The safe and successful treatment of obesity involves a combination of reduced food intake and graduated exercise.

The use of digitalis and thyroid hormone has no place in the therapy of simple obesity. Diuretics cause water loss but the loss is water not fat.

Thyroid hormone administration may increase metabolism but this is offset by increased appetite. The use of this drug in an individual with normal thyroid function may produce undesirable, secondary endocrine reactions, disturbing the regulatory function of the pituitary, thereby causing a decrease and cessation of thyroid function. Myxedema on top of obesity compounds the felony.

Anorexiants, mainly the amphetamines, may be justified only on a short-term basis. They may suppress appetite and elevate mood but if long continued become an habituation.

At the present state of our knowledge there is no pharmacologic short cut in the treatment of obesity.

We know this and we should see that our patients know this.

But this, in itself, is not enough. We should seek every opportunity to let the general public, many of whom may not be our patients, know this also.

Granville W. Larimore, M.D., retires

Granville W. Larimore, M.D., retired in September as first deputy State Health Commissioner after serving the State Health Department for twenty-one years. He has been a tower of strength to the editorial board of the JOURNAL for the past fourteen years.

Dr. Larimore started with the Health Department in reorganizing their Health Education Services as well as revamping the Department's literature and publications.

A background in newspaper work and publications furnished the basis for his marvelously productive efforts.

The JOURNAL was fortunate in obtaining full measure of his expertise. He was unstinting, as are all our associate editors, in providing the JOURNAL with expert advice.

We depended on him for high level critiques on manuscripts dealing with the public health and also in matters dealing with the technics of publication and circulation.

The JOURNAL has never had an abler colleague nor a warmer friend.

Dr. Larimore has gone to Florida to live in his retirement home but not to retire. He has become director of the Florida Regional Medical Program.

It is said that old soldiers never die. Dr. Larimore will not lie fallow—he has too much to offer.

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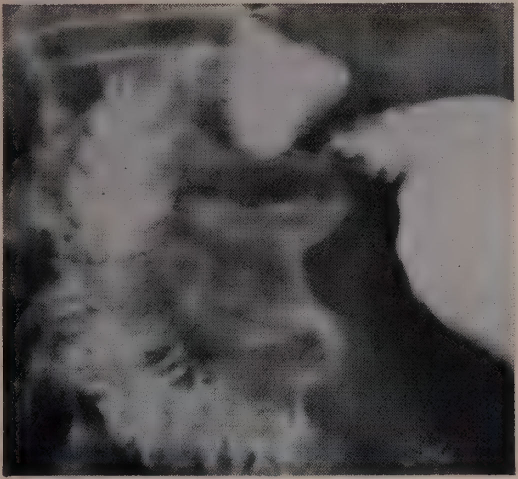

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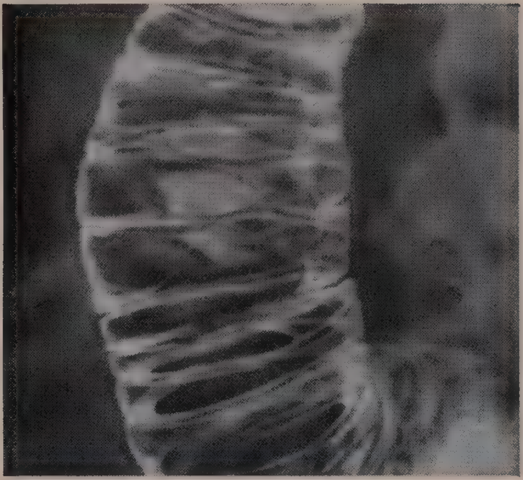

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Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

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(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology, 89:438-443 (Sept.) 1967.

(3) Cf. also, Liotta, D.: Pour le diagnostic des tumeurs du pancréas: la duodénographie hypotonique, Lyon chir. 50:445-460, (May-June) 1955.

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Scientific Articles

Respiratory Management of Critically Ill Patient*

STEPHEN M. AYRES, M.D.
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From the Departments of Medicine and Surgery,
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IN CRITICALLY ILL *patients, the common pathways to cellular death are respiratory or circulatory collapse or both. Patients usually die of either respiratory or cardiorenal failure. Decreased deep breathing and decreased antiatelectatic property of the lung interact to produce alveolar collapse. Therapy directed to support of the collapsing vascular system is frequently unsatisfactory, whereas therapy directed to the support of the lungs is almost always successful. The physiology, consequences, and therapy of respiratory failure are reviewed. Technics are described that return arterial blood gases to normal.*

THE COMMON BIOCHEMICAL DENOMINATOR in critically ill patients is mitochondrial oxidative failure with depletion of high-energy phosphates and accumulation of unmetabolized substrate and unoxidized enzymes. Cellular death progresses inexorably unless causal factors are removed. While acute blood loss, fluid and electrolyte imbalance, myocardial infarction, sepsis, severe pulmonary infection, and trauma may all lead to collapse of cellular respiration, the "common final pathways" almost always include either respiratory or circulatory collapse, or both. Stated another way, patients generally die because of either respiratory or cardiorenal failure, regardless of specific antecedent cause. Therapy directed to support of the collapsing vascular system is frequently unsatisfactory, whereas therapy directed to the support of the lungs is almost always successful, leading to the somewhat dogmatic axiom that "patients should not be allowed to die with abnormal blood gases." This essay briefly reviews the physiology, consequences, and therapy of respiratory failure in the critically ill patient.

The frequency of abnormal arterial oxygen and carbon dioxide tensions in critically ill patients was not appreciated until rapid membrane technics replaced laborious bubble equilibration technics for their analysis. Today, analysis of arterial blood gases must be considered of equal importance to analysis of serum electrolytes or to a complete blood count. In fact, abnormal oxygen tensions are often more common than abnormal blood glucose concentrations in hospital patients. The flow of information to the clinician is accelerated by the development of a computer program which processes blood gas information, computes bicarbonate concentration and oxyhemoglobin saturation from appropriate equations, and selects a diagnosis from 16 categories stored within the program. Figure 1 shows a typical print-out which is delivered to the patient's bedside within several hours after blood sampling. Since the computer program has a provision for totaling the number of blood gas determinations falling in each diagnostic category, it can be used to study the frequency

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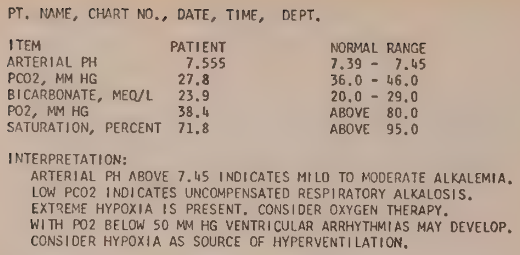
* This investigation was supported by Public Health Service Research Grant HE-08074 and Public Health Service Training Grant 5-TO1 HE-05686 from the National Heart Institute.



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PT. NAME, CHART NO., DATE, TIME,  DEPT.

ITEM                     PATIENT              NORMAL RANGE
ARTERIAL PH               7.555               7.39 -  7.45
PCO2, MM HG              27.8                 36.0 - 46.0
BICARBONATE, MEQ/L       23.9                 20.0 - 29.0
PO2, MM HG               38.4                 ABOVE  80.0
SATURATION, PERCENT      71.8                 ABOVE  95.0

INTERPRETATION:
   ARTERIAL PH ABOVE 7.45 INDICATES MILD TO MODERATE ALKALEMIA.
   LOW PCO2 INDICATES UNCOMPENSATED RESPIRATORY ALKALOSIS.
   EXTREME HYPOXIA IS PRESENT. CONSIDER OXYGEN THERAPY.
   WITH PO2 BELOW 50 MM HG VENTRICULAR ARRHYTHMIAS MAY DEVELOP.
   CONSIDER HYPOXIA AS SOURCE OF HYPERVENTILATION.
```

FIGURE 1. Sample computer print-out of blood gas analysis report for patient chart.

of various abnormalities in critically ill patients. Table I shows the abnormalities observed in a continuous series of arterial studies and demonstrates that less than 10 per cent of the determinations were completely normal. The most commonly observed abnormalities were hypoxemia and respiratory alkalosis.

TABLE I. Incidence of blood gas abnormalities

Abnormalities	Number	Per Cent
Hypoxemia (50 to 70 mm. Hg)	342	22.8
Extreme hypoxemia (under 50 mm. Hg)	259	17.3
Alkalosis		
Respiratory	657	43.8
Metabolic	124	8.3
Acidosis		
Respiratory	174	11.6
Metabolic	112	7.4
Within normal limits	134	8.9
TOTAL STUDIES	1,500	

Causes of abnormal respiratory blood gases

Hypoxemia, respiratory alkalosis with hypocapnia, and respiratory acidosis with hypercapnia are all observed in the critically ill patient. Hypoxemia is generally due to the progressive development of diffuse atelectasis, although occasionally interstitial edema may produce a true diffusion defect; alterations in blood carbon dioxide tension are due to a rate of alveolar ventilation that is inappropriate to the patient's metabolic needs.

The failure of alveolar integrity and the development of atelectasis is extremely common in critically ill patients. The first several breaths of life serve to expand the newborn infant's lung which was airless during intra-uterine existence. Unless the lung becomes diseased, it will remain in this expanded state until death. Both the surface lining of the alveoli and the pulmonary vascular framework serve an antiatelectatic function.

The lung may be likened to a fine foam in which the dispersed bubbles represent the alveoli, the bubble wall the alveolar lining, and the material between the bubbles the pulmonary stroma. Figure 2 shows the application of the LaPlace law to bubbles. As the radius of the bubble grows smaller, the pressure exerted within the cavity increases, and at a critical radius the bubble collapses. The alveolus of the lung is similar, and during expiration with decrease in alveolar radius there is a marked tendency to collapse. This tendency would create an almost insurmountable problem if the mammalian lung was not lined by a complex lipoprotein (surfactant) secreted by the alveolar cells which has the property of decreasing surface tension as it decreases its surface area.[1] In consequence, pressure does not increase as radius decreases, and the tendency to collapse is minimized. Another mechanism preventing alveolar collapse is the alveolar scaffolding function of the pulmonary vascular bed which exerts tension on the terminal air sacs keeping them open.[2]

In spite of these two defensive mechanisms there is a steady tendency toward alveolar collapse. If an anesthetized animal or human subject is allowed to breathe at a constant tidal volume for several hours, there is progressive collapse of certain alveoli with direct shunting of venous blood through these collapsed alveoli to the arterial circulation.[3] Figure 3 demonstrates this phenomenon in a conscious human patient whose chest had been strapped with bandages preventing deep breathing. Oxygen saturation gradually decreases because of the veno-arterial shunt, but a sudden maximal inflation after removal of chest strapping opens collapsed alveoli and restores oxygen saturation to normal.

Normal individuals interrupt the cycle of progressive collapse by sighing every five to fifteen minutes. The brief deep

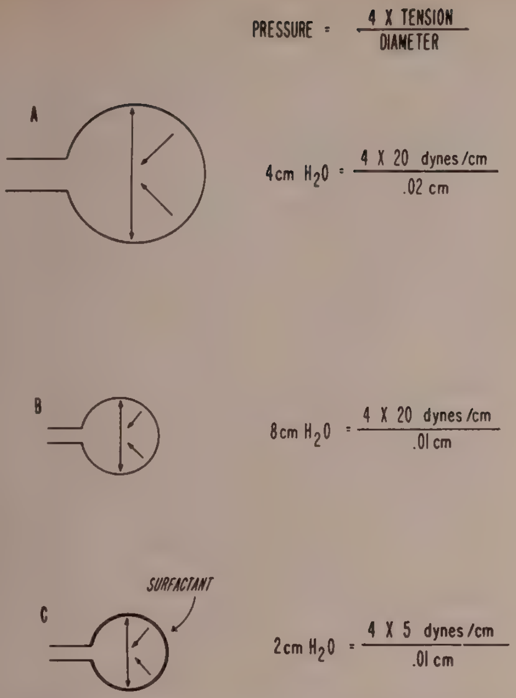
PRESSURE = 4 X TENSION / DIAMETER
A
4cm H2O = 4 X 20 dynes/cm / .02 cm
B
8cm H2O = 4 X 20 dynes/cm / .01 cm
SURFACTANT
C
2cm H2O = 4 X 5 dynes/cm / .01 cm

FIGURE 2. LaPlace law states that pressure exerted by membrane of an elastic sphere is directly proportional to wall tension and inversely proportional to diameter. If diameter of bubble is reduced by 50 per cent, A to B, without change in surface tension of bubble wall, pressure within the bubble will double. In lung, surface tension of alveoli decreases as they deflate because surface tension of lipoprotein-lining material, surfactant, decreases as its area decreases. Therefore reducing diameter by 50 per cent may actually decrease pressure exerted by membrane. This reduces pressure needed to keep alveoli open and minimizes tendency toward alveolar collapse. (Courtesy of Appleton-Century-Crofts.[7])

inspirations open collapsed alveoli. General anesthesia, sedation, the pain associated with recent surgery, general debility, and the shock state decrease the frequency of sighing. Many of these same situations decrease the production of surfactant by the alveolar cells and also interfere with the function of the vascular scaffold, thus increasing the need for frequent deep breaths. These two factors, decreased deep breathing and decreased antiatelectatic property of the lung, interact to produce alveolar collapse in most critically ill patients.

Hypoxemia is due primarily to atelectasis with veno-arterial shunting and is relatively independent of total alveolar ventilation. In the normal individual ventilation is closely adjusted to metabolic requirements so that arterial carbon dioxide tension is maintained within close limits. In contrast, in the critically ill patient ventilation is frequently inappropriate to metabolic needs so that carbon dioxide tension may be either reduced or elevated.

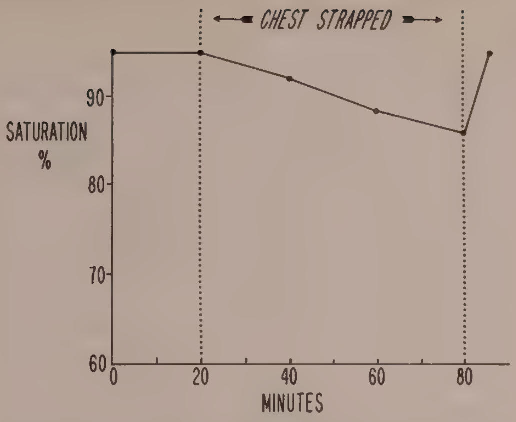

FIGURE 3. Arterial oxyhemoglobin saturation progressively falls as alveolar collapse is produced in normal individual by chest strapping. Sudden maximal inflation following release of chest straps restores saturation to normal. (Courtesy of Appleton-Century-Crofts.[7])

Hyperventilation with decrease in arterial carbon dioxide tension and increase pH (respiratory alkalosis) is extremely common in the critically ill patient. While hypoxemia with stimulation of carotid chemoreceptors is certainly an important factor in producing hyperventilation, other factors, such as anxiety, pain, pulmonary congestion, and increased carbon dioxide tension in cerebral venous blood, also appear to stimulate respiration. Hyperventilation with decrease in arterial carbon dioxide tension but a decrease in pH is also seen in patients with metabolic acidosis. In this situation, hyperventilation is an attempt to decrease carbon dioxide tension proportionately to the decrease in bicarbonate concentration and thus minimize the decrease in pH.

Hypoventilation with increase in arterial carbon dioxide tensions and decrease in pH (respiratory acidosis) is usually due to ischemic brain damage or injudicious use of sedation. It is commonly seen in the hours following successful cardiac resuscitation and is a clear indication for mechanically assisted ventilation.

Consequences of abnormal respiratory blood gases

Arterial hypoxemia lowers capillary and cellular oxygen tension, decreasing the energy production of certain cells, and killing those located most distant from a capillary. While hypoxemia initially enhances myocardial contractility in the intact animal because of adrenergic sympathetic stimulation, persistent hypoxemia produces myocardial damage particularly in areas supplied by diseased coronary arteries.

Hypoxemia alters cell membrane permeability, sensitizes the myocardial muscle cell to the action of digitalis, and generally increases ventricular irritability. Conduction defects with second or third degree atrioventricular block are common hallmarks of myocardial hypoxemia.

The effects of alkalemia are as profound as those of hypoxemia. Marked electrolyte shifts between intra- and extracellular compartments lower serum potassium and raise serum lactate concentration presumably in an effort to decrease total extracellular buffer capacity.[4] The total amount of calcium may be unchanged, but the ionized fraction decreases causing general muscular irritability. While acidosis has traditionally been considered extremely harmful to cellular integrity, recent studies of intracellular hydrogen ion concentration indicate that the cell is actually less able to compensate for alkalosis than it is for acidosis.[5]

Recent studies have convinced us that many of the arrhythmias commonly seen in the critically ill patient are due to the combined effects of hypoxemia and alkalemia on a previously irritable myocardium. Hypoxemia, hypokalemia, and decreases in ionized calcium have a similar effect on the membrane of pacemaker cells increasing the rate of diastolic depolarization and thus increasing their intrinsic automatic rate.[6] Many arrhythmias in patients with acute myocardial infarction, for example, may be reversed by the administration of oxygen. While administration of lidocaine or diphenylhydantoin produces temporary amelioration of the abnormal rhythm, serious arrhythmias will recur unless the underlying metabolic defects are corrected.

Treatment of abnormal respiratory blood gases

The treatment of arterial hypoxemia depends on the associated ventilatory status. The following outline describes a suggested sequence of therapy based on these physiologic principles. A more detailed description of these treatment principles has been published recently.[7] Obviously, intelligent therapy is impossible unless blood gas analysis is initially obtained.

Normocapnic hypoxemia (carbon dioxide tension 35 to 45 mm. Hg)

1. Administer humidified, warmed oxygen
2. Pulmonary physiotherapy to expand alveoli
3. Avoid sedation, chest strapping
4. Intermittent positive pressure breathing, nasotracheal suctioning, bronchoscopy may be necessary
5. If unresponsive to simple measures:
   Intermittent positive pressure breathing, nasotracheal suctioning, bronchoscopy
   Oral endotracheal intubation with assisted ventilation

Hypocapnic hypoxemia (carbon dioxide tension below 35 mm. Hg)

1. Administer humidified, warmed oxygen
2. All other measures advised for normocapnic hypoxemia
3. If hypocapnia persists, may need heavy sedation or curare

Hypercapnic hypoxemia (carbon dioxide tension above 45 mm. Hg)

1. Administer humidified, warmed oxygen at 4 L. per minute
2. If saturation not increased to normal, or if carbon dioxide tension rises, or if patient becomes comatose, he should be intubated and placed on respirator

Oxygen administration is indicated whenever hypoxemia is suspected or confirmed. Since oxygen in high concentrations may damage the alveolar lining and produce additional atelectasis (oxygen toxicity), the concentration of inspired oxygen should only be as high as is necessary to raise arterial saturation to normal. If saturation cannot be raised to normal using 100 per cent oxygen and a face mask, additional sources of oxygen, such as one or two nasal catheters, should be used in conjunction with the face mask. Dry, cold oxygen is extremely irritating and may increase atelectasis. Oxygen should always be humidified in a bubbler as a minimum; a better way to administer the gas is by the Puritan heated nebulizer which both warms and humidifies the inspired gas mixture and allows variation of its oxygen concentration.

Pulmonary physiotherapy is a much neglected, relatively simple technic designed to prevent atelectasis and enhance oxygenation. Patients are instructed to take frequent deep breaths and cough. Postural drainage does not mean the head-down jackknife position but should involve the careful positioning of the patient in a number of positions in bed which are designed to drain a specific bronchopulmonary segment by gravity. For example, leaning 30 degrees forward drains the posterior upper lobe segments while leaning 30 degrees backward drains the anterior segments. The bed is then latched in the center, or two pillows are placed under the patients' hips so that his head is about 30 degrees from the general body axis. Lying in this position on the abdomen drains the posterior lower lobe segments, lying on the back drains the anterior lower lobe segments, and lying on either side drains the uppermost lateral segments.

Patients should be encouraged to breathe deeply or be passively inflated with either a breathing bag or intermittent positive pressure breathing. They are then placed in each position while a nurse or therapist firmly strikes the segments to be drained with cupped hands. The percussion generally loosens secretions, gravity moves them to the trachea, and coughing brings them to the exterior.

Nasotracheal suctioning with a disposable plastic catheter is indicated if secretions cannot be cleared by simple technics. The patient sits upright with tongue extended and the catheter is passed through the glottis via the largest nostril. It is generally possible to enter both mainstem bronchi with this technic.

Bronchoscopy should be performed at the bedside whenever suctioning is inadequate, and blood gas studies or physical findings suggest persistent airway obstruction. It is simple, relatively safe, and should be performed as soon as considered rather than after several hours of time-wasting discussion.

An abnormal airway is a frequent cause of hypoxemia. Whenever persistent hypoxemia is observed, an artificial airway should be considered. The old-fashioned bloody and contaminated emergency tracheostomy should never be performed in an effort to provide an adequate airway, and the term "slash tracheostomy" should be stricken from the vocabulary of physicians. Instead, a trained physician should intubate the patient with a cuffed oral tube, perform adequate suctioning, and place the patient either on constant oxygen therapy or on a respirator. An efficient way of performing tracheal clearing with an endotracheal tube is to instill 10 drops of saline into the trachea and maximally inflate the lungs several times with a breathing bag. The subsequent catheter suctioning is usually extremely productive.

The oral endotracheal tube may be left in place from forty-eight to seventy-two hours but should then be replaced by a nasotracheal tube which is tolerated for longer periods of time, perhaps even one to two weeks. Should prolonged airway management be necessary, a careful, aseptic tracheostomy should be performed by a skilled surgeon, with the endotracheal tube remaining in place until the trachea has been isolated and a suture placed on the inferior margin of the tracheostomy incision.

Ventilator therapy is indicated for either hypoventilation or hyperventilation. A volume-cycled respirator such as the Engstrom, Air Shields, or Emerson is recommended.[8] An adequate respirator should be reliable, durable, have provision for maximal inflation of the patient, possess a good humidification system, and permit variation of the duration of inspiration and expiration. An alarm system signaling the accidental disconnection of the patient from the respirator is an excellent safety measure.

Most patients, certainly all hypoventilating patients, rapidly adjust to the respirator and little sedation is necessary. Diazepam (Valium), 5 to 10 mg. intravenously, or intravenous meperedine (Demerol), 5 to 25 mg. each hour, supplemented by promethazine (Phenergan), 10 to 20 mg. intramuscularly, may be used when indicated. An occasional hyperventilating patient cannot be controlled with ordinary sedation, and consideration should be given to total paralysis with curare. This has proved necessary in patients with severe pneumonia, tetanus, or salicylate intoxication.

Experience has shown that these technics will permit normalization of arterial blood gases in most patients. The so-called "intensive care lung" is probably a congested atelectatic lung producing massive veno-arterial shunting. Atelectasis rather than a true diffusion block is generally the cause of hypoxemia unresponsive to oxygenation since the breathing of 100 per cent oxygen raises oxygen saturation to normal even in the presence of extremely severe diffusion blocks. Careful attention to oxygen administration, clearance of secretions, and frequent maximal inflations supplemented by frequent bronchoscopy should be effective in almost every situation.

Hyperbaric oxygen is probably never indicated in this situation since it leads to further damage to alveolar lining and increases atelectasis.

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Estrogen-progestin control of acne in girls

Cyclical administration of anovulatory drugs, given for oral contraception, brought mild to severe acne under control in 86 per cent of a series of 137 women, 18 of whom were adolescents. In this study, reported in a recent issue of *Clinical Medicine* by L. L. Palitz, M.D., Ph.D., it was found that although in early investigations of anovulatory drug therapy for acne the main goal was to eliminate progesterone, physiologic doses of progesterone did not significantly increase sebum production. Consequently, it was deduced that the sebum inhibition by the progestin-estrogen drug was probably due to the estrogen rather than the elimination of progesterone.

The patients in this series all had acne ranging in degree from mild to severe. Norethynodrel with mestranol (Enovid), which shows no androgenic properties, was the drug selected for use in this therapeutic trial. The drug was given cyclically daily for twenty days. While the 5-mg. dose contains 0.075 mg. of mestranol, sufficient to suppress ovulation, a larger dose containing 0.150 mg. of mestranol appeared to be more effective when the control of acne was the objective.

Maximum results in acne control were obtained within 3 to 5 cycles. Lesions already existing are not necessarily affected by this therapy; consequently, healing takes some time. For this reason, the usual local measures were continued during the first few months of the hormone treatment. In a few of the patients there was an initial flare-up of the skin condition during the latter part of the first cycle. As for side-effects, these were usually minor in nature and transitory: nausea, distention of the breasts, and breakthrough bleeding. Chloasma, minimal in this series, is apparently limited to patients excessively exposed to the sun.

Scientific Sessions held at
Memorial Hospital
New York City
December 1, 1967
and
May 16, 1968

ABSTRACTS AND REPORTS OF PROCEEDINGS

New York Society for Thoracic Surgery

ALLAN ELLIA BLOOMBERG, M.D., Editor

Introduction

The fifty-first annual meeting of the Society was held on December 1, 1967, at Memorial Hospital. Abstracts of the morning reports follow.

A second session of the proceedings, held on May 16, 1968, is represented by abstracts, officers elected, and an article by Adrian Kantrowitz, M.D. and his associates.

Vascular Response to Heart-Lung Bypass

Canine Versus Human

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There is very little information regarding the behavior of the human vascular bed during heart-lung bypass. Data from canine perfusions cannot be applied to the human subject. The dog responds to the receipt of homologous blood with an anaphylactic-like reaction that has been studied by several groups. Portal pressure rises, and there is uptake of blood from the extracorporeal circuit by the dog. Vascular volume was measured during bypass in 8 dogs in which indicator dilution technics were used, and there was no change in vascular volume associated with continuing uptake of blood by the animal. This indicates that there is continual loss of fluid from the vascular to extravascular spaces, presumably due to altered capillary permeability or elevated splanchnic capillary pressure.

Portal pressure has been measured by wedging the hepatic vein, and the pressure does not rise during perfusion in the human subject. Indicator dilution curves have been obtained in 12 human subjects at the beginning and just prior to the termination of heart-lung bypass, at constant flow and venous pressures, using simultaneous injections of radioactively labelled red cells and albumin. The volumes of distribution of each indicator were calculated by means of the Hamilton-Stewart method. Vascular volume measured by red cells was not significantly different at the beginning and end of bypass.

The albumin was always distributed into a larger volume than the red cells, and the ratio of red cell to albumin distribution volumes was the same at the beginning and end of bypass.

The red cell distribution volume probably measures the intraendothelial space and indicates that vascular compliance remained the same. The ratio of albumin to red cell volumes reflects events in the microcirculation, and its stability suggests that there is no major alteration of the human microcirculation during heart-lung bypass.

Thoracic Echinococcosis

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Brooklyn, New York
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Brooklyn, New York

From Maimonides Medical Center and
Downstate Medical Center

Two cases of thoracic echinococcosis were presented. The first patient was a ten-year-old Greek boy who arrived in the United States recently from Turkey. He was admitted to Coney Island Hospital with a history of purulent bloody sputum, spiking temperature, and a diagnosis of pneumonia of the left lower lobe. One year previously in Turkey, an Echinococcus cyst of the left upper lobe was treated by marsupialization. Work-up, including bronchogram, hemagglutination, complement fixation, and Casoni tests, was carried out. Lobectomy of the left lower lobe was required to remove a lobe severely damaged by an infected Echinococcus cyst with irreversible parenchymatous lesions.

The second patient was a fifty-four-year-old female who came from Iran and was admitted to Kings County Hospital with fever, chills, and cough, with purulent sputum of two months' duration. Microscopic examination of the sputum revealed hooklets of Echinococcus, and the x-ray studies, including celiac artery angiogram, demonstrated a cyst of the right lobe of the liver with intrathoracic complications. This patient was treated by thoracotomy with closure of a biliary-bronchial fistula and drainage of the hepatic cyst through an abdominal incision.

The pathologic process and symptoms of echinococcosis of the lung and the intrathoracic complications of hydatid cyst of the liver were discussed.

The various surgical technics available for treatment of this condition were presented.

Cardiac Arrest Caused by Malignant Tumor in Lung

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ALFRED KALTMAN, M.D.
New York City

From the Cardiovascular Service, Lenox Hill Hospital

Recent experience has demonstrated that a significant number of pulmonary tumors produce metabolic and hormonal effects because they produce a variety of substances. Aside from the clinical problems which such tumors may present, a detailed investigation of such cases may contribute to cancer research and therefore merit discussion.

Marked bradycardia as the first manifestation of a malignant tumor in the lung is very rare. The management of such a case can present special problems. When anesthesia was induced in one of our patients, frequent periods of asystole occurred. Following pneumonectomy, performed with the aid of a temporary pacemaker to maintain cardiac action, the preoperative bradycardia disappeared. No pericardial involvement was found at operation. After pneumonectomy no similar bradycardia or episodes of asystole occurred, and the patient was able to engage in his usual activities until half a year later when neoplastic tissue was again evident in the pleural space. Then periods of cardiac arrest recurred with increasing frequency and required the insertion of a permanent pacemaker.

Since it was considered likely that the disturbances in cardiocirculatory function in our patient were due to a substance produced by the neoplasm, chemical analysis of this tumor in the lung, which presented some unusual pathologic characteristics, was undertaken.

Traumatic Diaphragmatic Hernia

PAUL A. KIRSCHNER, M.D.
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A thirty-seven-year-old white male sustained a blunt injury to the left side of the chest in an automobile collision. Chest roentgenograms showed multiple fractured ribs on the left, with the stomach and colon in the left pleural cavity. Only a small amount of aerated lung was visible at the apex. No subcutaneous emphysema and no pneumothorax were present. The patient was not in shock and, surprisingly, had minimal respiratory and digestive complaints.

Left thoracotomy and repair of traumatic rupture of the left leaf of the diaphragm were carried out eleven days after injury. The stomach, splenic flexure, omentum, and spleen were found in the left pleural cavity and were replaced in the abdomen. The patient made an uneventful recovery.

The report was illustrated by color slides and a review of recent literature.

Pulmonary Resection for Massive Hemoptysis

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Three years ago, prompted by a 50 per cent mortality rate encountered with nonoperative management of massive hemoptysis, a 600-ml. blood loss or more in twenty-four hours, we started to perform emergency pulmonary resection for massive hemoptysis. The bleeding site was localized by roentgenographic and bronchoscopic examination during active bleeding.

Twenty-five patients had been operated on up to May, 1967. There were 18 cases of tuberculosis, 12 of which were active, 3 lung abscesses, 3 bronchiectasis, and 1 bronchogenic carcinoma. Twenty lobectomies were performed with only 2 deaths. Five pneumonectomies for massive bleeding had a 60 per cent mortality rate.

Our experience indicated that when the lesion causing the massive bleeding can be removed by lobectomy, pulmonary resection is the treatment of choice for massive hemoptysis.

The management of bleeding during resection, postoperative complications, indications for operation in patients requiring pneumonectomy, and details of the clinical data were presented.

Elective Cardiac Arrest for Intracranial Surgery

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Surgical treatment of aneurysms of the basilar artery has a high mortality rate in the event they rupture at operation. The obvious advantages of elective circulatory arrest for these and other intracranial vascular conditions have been recognized for some time. The use of extracorporeal circulation with deep hypothermia allows extended periods of circulatory arrest but introduces other problems, most notably that of increased bleeding from heparinization.

At the Columbia-Presbyterian Medical Center a technic of elective circulatory arrest for the intracranial clipping of basilar artery aneurysms has been used in 3 patients. Open thoracotomy, induced ventricular fibrillation, and intermittent manual systole at moderate hypothermia have provided ideal conditions for the neurosurgeon in this extremely hazardous operation.

Afternoon Session

ROBERT H. WYLIE, M.D.
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President, New York Society for Thoracic Surgery

The afternoon session will be devoted to a discussion on trauma to the chest. The oldest form of medicine was probably the treatment of trauma. Primitive man initiated the therapeutic approach by licking his brother's wounds. Trauma to the chest is not decreasing, and little is being done to control it.

Members of the panel included Karl Karlson, M.D., H. Harlan Stone, M.D., Stuart Sullivan, M.D., and Emil A. Naclerio, M.D. The guest of honor was C. Walton Lillehei, M.D., professor of surgery and chairman of that department at the Cornell Medical Center—The New York Hospital. Dr. Lillehei acted as moderator of the discussion.

Physiologic Changes in Crushed Chest Injuries

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THE MOST SERIOUS chest injuries require the cooperative efforts of surgeons, anesthesiologists, internists, and others. To illustrate the physiologic derangements which accompany chest injuries, a spectrum of injuries from the simplest to the most complex will be discussed.

Two fractured ribs

Patients with two fractured ribs on one side without any evident pleural or parenchymal injury were found to have depression of their vital capacity and maximum voluntary ventilation. This would be expected as a result of inhibition to breathing associated with chest pain. Although these abnormalities are not severe, it is important to emphasize that arterial oxygen desaturation developed in these patients. The majority with one or two fractured ribs had arterial oxygen saturations below 89 per cent. This illustrates graphically that, although the chest injury is slight, the ventilation of the patient and distribution of pulmonary blood flow have been altered significantly so that arterial oxygen desaturation is present.

Several fractured ribs

As one progresses to greater chest injury, we have studies on patients who had five to eight ribs fractured on one side, again with no pleural or parenchymal involvement evident on physical examination or roentgenogram. Studies of the mechanics of breathing in these patients indicated that the compliance of the lung and nonelastic resistance were normal in most patients, only 1 patient having significantly low compliance and increased resistance. This particular patient was asthmatic with concomitant bronchial spasm and chest injury. These measurements of the mechanics of breathing suggest that the mechanical properties of the lung are not significantly disturbed early after rib fractures. The arterial oxygen desaturation which we observed in the previous group of patients is probably a result of a ventilation perfusion abnormality rather than disturbances in the mechanical properties of the lung.

Hemopneumothorax

A group of patients with hemopneumothorax with collapse of the lung of 50 per cent or greater were studied from the point of view of ventilation and arterial oxygen saturation. In general, these patients have diminished vital capacity, as would be expected. Perhaps somewhat surprisingly, a number of these patients hyperventilated despite the collapse of the lung and diminished vital capacity. This was a result of tachypnea. Significant arterial oxygen desaturation accompanied hyperventilation in these patients. This again points to the probability of ventilation perfusion derangements in the lung which result in pulmonary venous to arterial shunts. We see, therefore, that patients with chest injuries may have the physical capacity to breathe at greater minute volumes than normal in an attempt to compensate for the physiologic defect which is reflected in arterial oxygen desaturation.

Crushed chest

The most serious chest injuries, usually resulting from automobile accidents, are those with multiple, bilateral rib fractures. These injuries, commonly termed crushed chest, are accompanied by pleural and pericardial injury, hemothorax, contusion of the lung, and contusion of the heart. Any combination of these injuries, unilaterally or bilaterally, may occur in crushed chest. In addition to the injuries as a direct result of the trauma, atelectasis and pneumonia frequently develop during the course of several days after injury.

We have done physiologic studies on 12 patients with crushed chest. Four of these patients died as a result of their injuries; 2 from head injuries, 1 from pancreatitis, and 1 from complications of a temporarily blocked tracheostomy tube.

When these patients were breathing spontaneously, the tidal volume was normal or only slightly decreased. The normal or only slightly depressed tidal volume, coupled with an increased frequency of breathing, resulted in hyperventilation for most of these patients. Despite the fact that they had severe thoracic wall injury, they were able to move air in and out of their lungs.

The work which these patients were required to do to move the air is demonstrated from compliance and nonelastic resistance data obtained from pressure volume loops. The lung compliance was considerably subnormal. Normal compliance is 0.18 L. per centimeter of water, and these patients had an average compliance of 0.05 L. per centimeter of water. The nonelastic pulmonary resistance was also distinctly abnormal, being between three and four times normal. This high airway resistance occurred despite the presence of a tracheostomy, which reduces the airway resistance to about one half of normal. The high resistance, coupled with very low compliance, results in a pulmonary work of breathing of five times normal. The average pulmonary work of breathing per minute in these patients is about 2.5 Kg.-M. per minute, contrasted to a normal of about 0.5 Kg.-M. per minute. Therefore, each minute these patients do five times the amount of pulmonary work as a normal patient. The work per liter of ventilation, however, is only three times normal. The higher value for work per minute is a reflection of the hyperventilation which these patients were undertaking to compensate for their pulmonary insufficiency.

Because these patients were required to expend so much work ventilating their lungs spontaneously, they were ventilated mechanically with an intermittent positive pressure apparatus. Breathing room air through this mechanical ventilator the arterial carbon dioxide tension is less than the normal 40 mm. Hg. This is a reflection of the slight hyperventilation to which the ventilator is adjusted. Despite this hyperventilation, the arterial oxygen tension is subnormal, being less than 60 mm. Hg during the first two or three days. This indicates that the patient has a significant ventilation perfusion abnormality, since the normal oxygen pressure would be approximately 90 mm. Hg.

The existence of a pulmonary venous to arterial shunt is demonstrated by ventilating the patient with 100 per cent oxygen. After breathing 100 per cent oxygen for thirty minutes, the arterial blood oxygen tension rises in these patients to a range of 300 to 350 mm. Hg. This is considerably subnormal and demonstrates that there is a venous to arterial shunt. A considerable proportion of the cardiac output is being shunted around the alveoli without being exposed to oxygen. Normal pulmonary venous to arterial shunting is 4 per cent or less, and these patients had an average 20 per cent shunt during the first few days after injury.

A significant lesson to be learned from the demonstration of pulmonary venous to arterial shunting is that it would be impossible to raise the arterial oxygen tension to normal even with 100 per cent oxygen breathing. We, therefore, cannot expect an entirely normal response to oxygen administration. On the other hand, it is unnecessary to raise the oxygen tension in the arterial blood above that which a patient normally experiences breathing air, about 90 mm. Hg. If a patient has subnormal oxygen tension in the arterial blood, the addition of a small amount of oxygen to the inspired gas may raise the oxygen tension to acceptable levels. If it requires more than 40 per cent oxygen in the inspired gas to raise the oxygen tension to 90 mm. Hg, a lower oxygen tension in the arterial blood is acceptable. Arterial oxygen tension of 60 mm. Hg will yield a hemoglobin saturation of 89 per cent in a patient with normal hemoglobin concentration. Therefore, if 40 per cent oxygen in the inspired gas will yield an arterial oxygen tension of 60 mm. Hg or higher, greater concentrations of oxygen should not be administered to the patient. Oxygen in greater concentrations than 40 per cent may well be toxic to the lungs, resulting in pathologic changes which will increase respiratory difficulties after a few days.

Pulmonary gas diffusion in these patients with crush injury was studied with the technic of fractional carbon monoxide uptake. Normal fractional carbon monoxide uptake in our laboratory is 47 per cent, whereas these patients averaged 37 per cent. The pulmonary diffusion was significantly decreased in every patient.

A typical patient with chest injury of this extent is admitted to the hospital with the physiologic findings just described. The patient has more severe pulmonary parenchymal abnormalties after two or three days because some atelectasis and pneumonia have developed. In four or five days the patient begins to improve after careful aspiration of tracheobronchial secretions, antibiotics, and mechanical ventilation with appropriate gas mixtures. After a week or ten days mechanical ventilation is no longer necessary, and the tracheostomy tube may be removed after two or three weeks.

Summary

We have demonstrated that the patients frequently are able to move sufficient amounts of air in and out of their lungs to ventilate even after severe chest injuries. However, the work necessary to accomplish this is so high that they must have the relief which accompanies tracheostomy and, usually, mechanical ventilation. In addition to the abnormal mechanical properties of the lung resulting in increased work of breathing, ventilation perfusion abnormalities result in decreased pulmonary diffusion and pulmonary venous to arterial shunting. Significant hypoxemia is present which must be corrected with appropriate addition of oxygen to the gas in the mechanical ventilator. Here the warning is reiterated to use only sufficient amounts of oxygen in the ventilator to raise the arterial oxygen tension to tolerable levels rather than to normal levels to guard against oxygen toxicity.

Frequently, tracheostomy, with or without additional mechanical fixation of the chest wall, will decrease paradoxical respiration. However, the abnormalities of the underlying lung must be kept in mind. Hyperventilation from retained carbon dioxide or anoxemia must be corrected either with administration of oxygen alone or the application of mechanical ventilation. In most cases, the problems in the lungs will continue to be severe for several days before they gradually improve, and the patient may breathe comfortably spontaneously.

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Pulmonary Burns

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To discuss pulmonary burns, one must first describe the changes that can be noted pathologically. In the early phases, there is congestion within the capillaries of the lung, edema, and varying amounts of disruption of the alveolar septa. Edema may also be present in the bronchi and rarely in the glottis. However, the injury is primarily to the pulmonary parenchyma and not to the bronchi, trachea, or larynx.

Etiologic agents

The type of injury is determined to some degree by the inflicting agent. By the time that inspired gas has reached the depths of the lung, the temperature of the gas has been readjusted by exposure to the lining of the air passages, so that the gas is at the same temperature as the body. Thus, the temperature of the inhaled air is of minor importance. Nevertheless, in the laboratory animal, survival time is shortened when there is exposure to air or gas at high temperatures. If the inspired gas is humid, the specific heat of the gas becomes greater; therefore, more damage is done to the lung.

In the experimental burn produced by heat alone, the injury is not confined to the lung. Moderate edema can be noted in the glottis, trachea, and larger bronchi. Thus, heat appears to be most important with respect to an upper respiratory injury, whereas noxious gases and chemicals, such as smoke, seem to be the major factors producing parenchymal damage.

By adding smoke to the experimental conditions, the severity of the pulmonary burn is significantly increased. At a given temperature, the animal can tolerate only a brief exposure to an atmosphere containing smoke. Thus, noxious gases are mainly responsible for the damage to lung parenchyma. As a general rule, heat injures the upper airway, whereas chemicals in the air produce lower respiratory damage.

Diagnosis

The diagnosis of a pulmonary burn cannot be made initially by inspection of the chest roentgenogram, by physical examination, or by endoscopy. Intuition is probably as important as anything else. A cough is always a suspicious sign. By two or three days after injury, the chest film may show some infiltrate or consolidation, while auscultatory findings will usually include the presence of scattered coarse rales. Prior to this time, there are few, if any, helpful signs.

Generally, the diagnosis is made by fulfilling three arbitrary criteria: (1) flame burns around the face, mouth, and nose; (2) seared nasal vibrissae or mucosal burns within the oropharynx; and (3) the fact that the patient sustained the burn in a closed space. If all three criteria are present, a pulmonary burn is definite; if only two are present, there is a strong probability that a pulmonary burn has occurred.

Stages

Intelligent treatment demands that each of the three phases of the pulmonary burn be understood and recognized. Respiratory insufficiency develops only in the very severe pulmonary burn and occurs within the first six to twenty-four hours after injury. Few patients survive this phase. On auscultation, the chest may be relatively clear, or there may be no breath sounds at all. These patients appear similar to children with croup and exhibit the same severe respiratory distress syndrome.

Pulmonary edema is the next phase and occurs approximately six hours to two days following burn. It may be the result of excessive fluid administration in a mild burn or due to the pulmonary burn alone. In addition, pulmonary edema frequently develops immediately after the performance of a tracheotomy when the glottic barrier has been removed.

The third and final phase is pneumonia. It appears anywhere from two to twelve days after injury. The earlier the onset of pneumonia, the more severe the lung sepsis becomes.

The mortality rate for each of the complicating phases of the pulmonary burn diminishes as the third stage is reached. If the patient fails to manifest either of the first two phases, he has a mild pulmonary burn and will demonstrate findings only of pneumonia.

Treatment

With respect to the treatment of pulmonary insufficiency, oxygen is most important. In the laboratory animal, there is a considerable improvement in mortality rate when the oxygen content of inspired air is increased. Humidity is another critical factor. Many patients with respiratory distress show a dramatic response when placed in a croupette or oxygen tent with high flows of oxygen and a humidity that approximates 100 per cent.

Tracheotomy is of benefit only to the rare individual who has laryngeal edema alone. For the deep lung burn produced by noxious gases, tracheotomy is useless. Quite often, the procedure precipitates an episode of pulmonary edema. If a tracheotomy must be performed, a cuff should be placed on the cannula and a positive pressure ventilator should be available; these are the only means of controlling the complicating pulmonary edema.

Steroids are very important but must be used wisely. A majority of patients who fail to respond to high flows of oxygen and 100 per cent humidity will have severe bronchospasm. The single intravenous administration of a massive dose of corticosteroid will usually break the bronchospasm and result in immediate improvement. There is no need to wean the patient from or maintain him on the steroid. Maintenance doses will almost assure the development of a lethal pneumonia, especially if the positive pressure ventilator has been used.

The so-called one-shot dose of corticosteroid has proved to be quite valuable. Patients who fail to respond, and this represents almost half of those with respiratory insufficiency, are not improved by tracheotomy or any other measure. Death usually results within a few hours from an almost totally destroyed lung. In the laboratory animal, maintenance steroids significantly increase the mortality rate especially if an anti-inflammatory type is used. The incidence of septicemia is also increased by the development of multiple pulmonary abscesses.

With respect to the positive pressure ventilator, every effort should be made to avoid use of this machine; for it is usually contaminated with the most virulent of hospital pathogens. Careful and frequent cleaning will certainly reduce the amount of contamination although sterilization of the ventilator in an ethylene-oxide chamber is the ideal. The burned or damaged lung provides a most receptive culture medium; therefore, the respirator should be changed to a clean or preferably sterile one every six to eight hours.

If the pulmonary burn is severe, fluid therapy is best monitored by central venous pressure measurements. However, the venous catheter should be removed within forty-eight hours because a majority of these tubes have become contaminated by that time and thus will produce unwarranted septicemia. Many catheters also have clots on their tips and become a source of pulmonary emboli. In a personal series of 127 patients in whom intravenous tubing was left in place for longer than forty-eight hours, these complications were common and significant.

Pulmonary edema due principally to respiratory burn can be reversed only by use of a positive pressure ventilator. In the elderly patient or in the patient who has heart disease, fluid restriction, diuretics, and various cardiac drugs may prove helpful. However, it must be remembered that the individual with a large surface burn will efficiently sequestrate excessive fluid into the superficial burn wound and thus temporarily rid himself of any unnecessary volume. Although pulmonary edema usually develops as a consequence of an untimely tracheotomy or of too aggressive fluid therapy, lung edema occasionally is produced by the pulmonary burn alone.

Prophylactic antibiotics are of no value in the prevention of bacterial pneumonia. The sputum should be cultured every day; and, if a severe pneumonia develops, appropriate antibiotics can then be instituted. Usually the pneumonia does not appear until the fourth or fifth day after burn injury. By the seventh or eighth day, bronchorrhea may become profuse and troublesome. At that time, tracheotomy is always indicated and may even become an absolute necessity for removal of the voluminous secretions. Positive pressure ventilation also becomes an important supportive measure. In the laboratory animal there is no change in mortality rate with the use of prophylactic antibiotics. The incidence of septicemia and pulmonary abscess are likewise the same.

A word of caution should be inserted in regard to ventilators and humidifiers. These machines frequently contain Pseudomonas and hemolytic Staphylococcus as endemic flora within tubing and connectors. Accordingly, cultures should be taken routinely both before and after cleaning the removable parts. Never should the machine be used by another patient without being thoroughly cleansed beforehand.

Summary

It is important that the various phases of a pulmonary burn be understood and recognized. For teatment to be appropriate, therapy must be specific for the individual phase of the burn. Measures that seem to be beneficial for one particular phase may prove to be an indirect cause of death at a later stage.

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Respirators in Treatment of Increased Work of Breathing

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The value of artificial ventilation in the treatment of respiratory failure is widely recognized. There is also an increasing recognition of the value of artificial ventilation as a preventive measure in certain groups of postoperative patients. There seems to be little doubt that artificial breathing during the immediate period after open-heart surgery is a worth-while aspect of management. The application of this preventive approach to other groups of postoperative patients, such as those with marked obesity and those with extensive pulmonary resections or pulmonary trauma, has in many instances led to remarkable recoveries. The use of assisted breathing in patients with various types of pulmonary and thoracic trauma is gaining a wider acceptance throughout the medical world. I am going to confine my remarks to a particular group of patients, but the general considerations apply to all who have increased work of breathing.

At Presbyterian Hospital we have had a particular interest in this preventive approach to the management of the patient following cardiopulmonary bypass. In addition to disturbances that may develop during bypass, many patients come to surgery with pre-existing pulmonary changes which require an increased expenditure of energy for breathing. Patients with mitral stenosis and pulmonary hypertension are known to have an increase in the work of breathing. Our interest in this problem is not only in the existing predisposition to pulmonary complications but also in the fact that an increased work of breathing also means an increased oxygen cost of breathing. If this increase in the oxygen cost of breathing is sufficient to cause a decrease in the oxygen content of arterial blood, the use of respirators becomes essential in preventing this disturbance. It is to this single question that the remainder of this brief discussion will be directed.

Fritts *et al.*[1] demonstrated the relationship between ventilation in liters per minute versus work done per minute. When one of their patients with stiff lungs increased his ventilation by a few liters per minute, there was a marked increase in the amount of work he had to do to move a relatively small amount of additional air, as compared with a normal subject who can move relatively large quantities of air with considerably less expenditure of energy. As the subject increases his ventilation by a few liters per minute, there is a prompt and sharp rise in the amount of oxygen consumed compared with less consumption in the normal subject for a similar increase in ventilation.

Cournand *et al.*[2] reported on a patient with mitral stenosis in whom there was a sharp increase in the amount of oxygen consumed because of the energy expended for ventilation.

In patients with emphysema, obesity, and congestive heart failure more energy is required to move air than in normal conditions, hence there is a marked increase in the amount of oxygen consumed.

An attempt was made to predict in a 70-Kg. man, with a relatively normal cardiac output of 5 L. per minute and a normal blood oxygen capacity, what may happen to arterial blood oxygen saturation when the oxygen cost of breathing increases. With venous admixture constant, there is a progressive decrease in the arterial oxygen saturation as the oxygen consumption of the body increases. For example, in a postoperative patient with 20 per cent of his cardiac output passing through pulmonary shunts, as he increases his oxygen uptake by doing more work of breathing, we expect that the arterial oxygen saturation will decrease without change in the magnitude of the shunt.

Conclusion

We believe that under certain conditions, such as the ones mentioned, relatively small increases in the oxygen consumption of the body will result in an obligatory arterial hypoxia.

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Penetrating Wounds of the Heart

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Patients with penetrating wounds of the heart can be divided into three groups: (1) those with extensive lacerations or large-caliber gunshot wounds of the heart who die almost immediately as a result of rapid and voluminous blood loss (Fig. 1A); (2) those with small wounds of the heart caused by icepicks, knives, or other small agents measuring from several millimeters to 2.5 cm. in length in whom cardiac tamponade develops; by bringing pressure to bear on the bleeding heart wall tamponade plays an important role in controlling hemorrhage and makes it possible for these patients to reach the hospital alive (Fig. 1B); and (3) those with associated serious injuries in the chest and/or elsewhere in the body which, in themselves, often contribute to death.*

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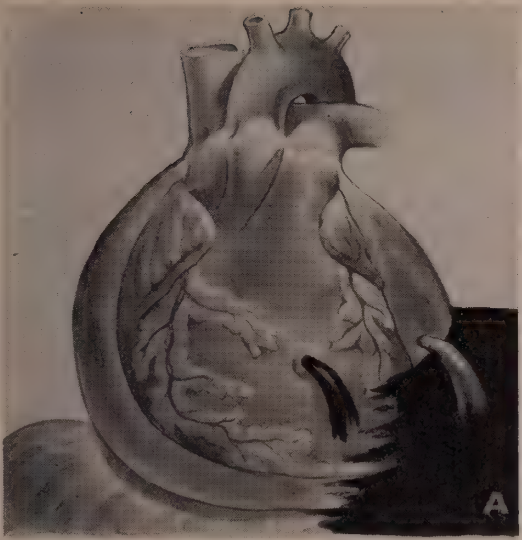
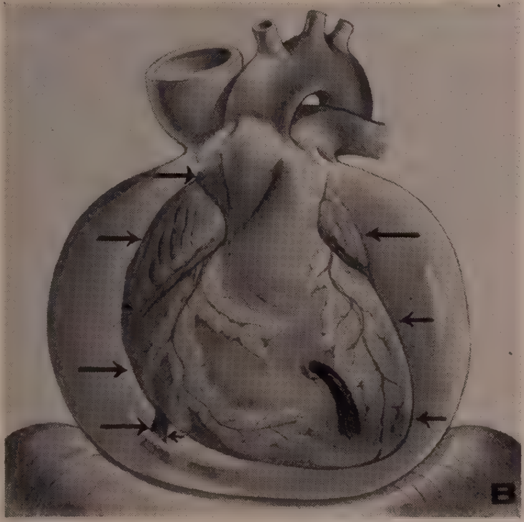




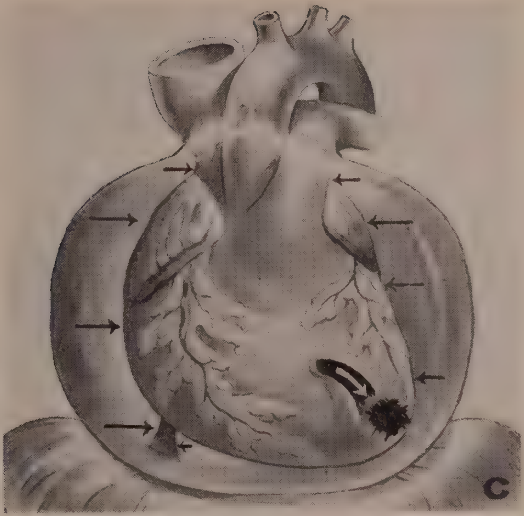


FIGURE 1. (A) Voluminous blood loss; (B) early tamponade; and (C) early stabilization with delayed tamponade. Final outcome depends on interplay of three variables: cardiac wound, pericardial wound, and hemopericardium. The unpredictable behavior of these wounds supports operative therapy as the method of choice. (Permission Dis. Chest **46:** 1.)

Cardiac tamponade—a two-edged sword

Acute hemopericardium of sufficient quantity to cause cardiac tamponade constitutes the basic pathologic condition of heart wounds due to penetrating trauma. Tamponade is both lethal and life-saving. Up to a point, it contributes to the reduction or cessation of hemorrhage from the cardiac wound, but beyond that point a continuance of its action produces profound shock which proves fatal unless promptly relieved (Fig. 1B).

The effects of small quantities of blood in the pericardial sac are negligible; but when the volume reaches 150 to 200 ml., severe shock may develop, often abruptly because the pericardium cannot be stretched. At this critical point, the addition or removal of as little as 10 to 20 ml. of blood may spell the difference between life and death.

In some patients the myocardial wound closes itself off with clot formation, bleeding stops, and the problem is that of acute hemopericardium. If blood escapes from the pericardial wound, effective cardiac action occurs, and the patient does well. On occasion, however, hours or days after injury the clot retracts and dislodges, and lethal tamponade develops rapidly (Fig. 1C).

Diagnosis

Diagnosis is easy if the physician has a high degree of suspicion of cardiac injury in every chest wound. Shock weighs heavily in favor of the diagnosis of cardiac injury when it seems out of proportion to the severity of the wound or the loss of blood.

Tamponade can be recognized easily by physical examination alone. The major clinical features are classic; they are muffled and distant heart tones, a falling or absent blood pressure, and a rising or elevated venous pressure. The aspiration of blood from the pericardial sac confirms the diagnosis of hemopericardium.

The reduced cardiac output initially leads to generalized vasoconstriction; this, in turn, causes an increase in peripheral vascular resistance. This factor may be responsible for the maintenance of a near normal or even higher than normal blood pressure during the early stage of tamponade despite a progressively falling cardiac output and a progressively rising venous pressure. Hence, one may observe a progressive rise in blood pressure as high as 160 mm. Hg or higher during the early hours after injury. I have observed this phenomenon in 3 patients in whom at operation bleeding cardiac wounds, significant hemopericardium, and intrapericardial clot formation were encountered (Fig. 2).

Roentgenography, fluoroscopy, venous pressure readings, and electrocardiographic studies may be helpful but are not absolutely necessary in establishing a diagnosis.

Venous pressure readings are pathognomonic when increased, but they may be normal or even below normal when moderate to severe intrathoracic bleeding is present. Venous pressure constitutes an excellent means of differentiating shock due to cardiac tamponade from shock due to hemorrhage. A venous pressure of 12 cm. or higher suggests cardiac tamponade, and 5 cm. or lower indicates significant blood loss.

Immediate treatment

With prompt pericardiocentesis and thoracotomy, any patient who lives long enough to reach the hospital has an 80 to 90 per cent chance of recovery. Immediate definitive therapy consists of the following:

Antishock therapy. The patient is immediately placed in moderate Trendelenburg position, oxygen is administered, and a rapid intravenous infusion of physiologic saline solution, plasma, or both is started. As soon as blood is available, it is substituted for these solutions.

When narcotics are necessary, then narcotics should be used judiciously since restlessness is usually a reflection of cerebral hypoxia, and further depression of the cardiorespiratory centers may prove fatal.

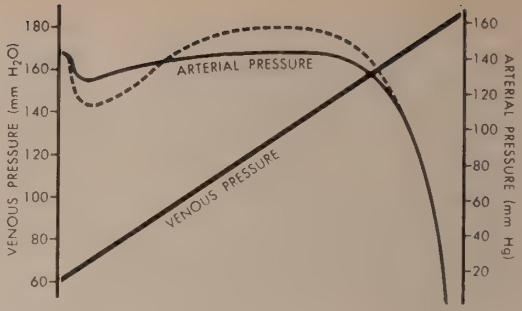


FIGURE 2. In early cardiac tamponade venous pressure rises progressively and linearly. Arterial pressure may be normal or elevated, therefore, it is diagnostically unreliable.

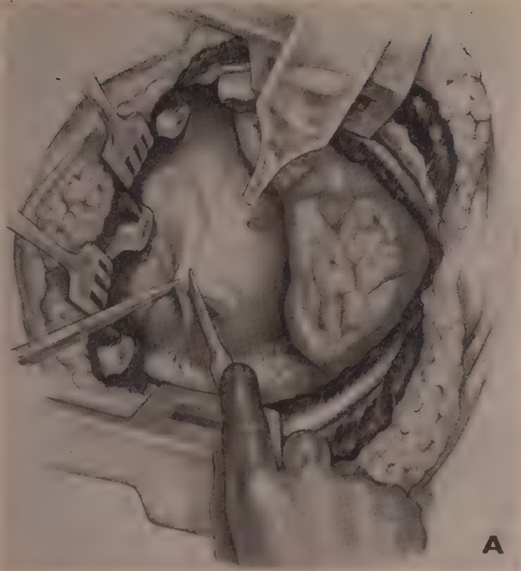
Pericardiocentesis. With tamponade, immediate aspiration is mandatory if life is to be saved. Many surgeons advocate pericardial aspiration as definitive treatment and operate only when several aspirations fail to relieve tamponade, or when tamponade rapidly occurs following aspiration. I, on the other hand, am convinced and can offer a number of reasons why prompt pericardiocentesis and immediate surgical intervention is preferable to conservative management by aspiration.

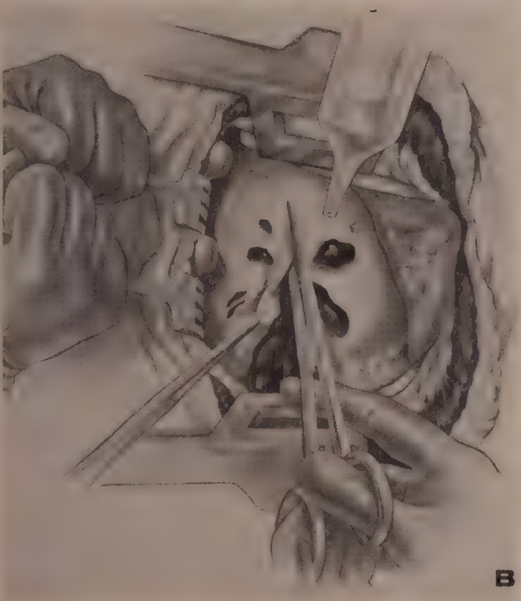
Thoracotomy with pericardiotomy and suture of the wound. All surgeons agree that when the cardiac wound is complicated by persistent hemorrhage, open operation is mandatory.

Operative methods

Cardiac wounds, regardless of location, are best dealt with through a left transpleural thoracotomy, planned to afford maximum exposure. The right-sided approach may be necessary when the wound of entrance indicates an injury through the right side of the chest.

The most crucial point of the operation is the moment when cardiac compression is released. Just as the pericardial sac is opened, uncontrollable brisk bleeding and clot formation are frequently encountered, with blood welling up in the wounds, gushing forth in all directions, and often spurting several feet or more into the air. Therefore, before the peri-





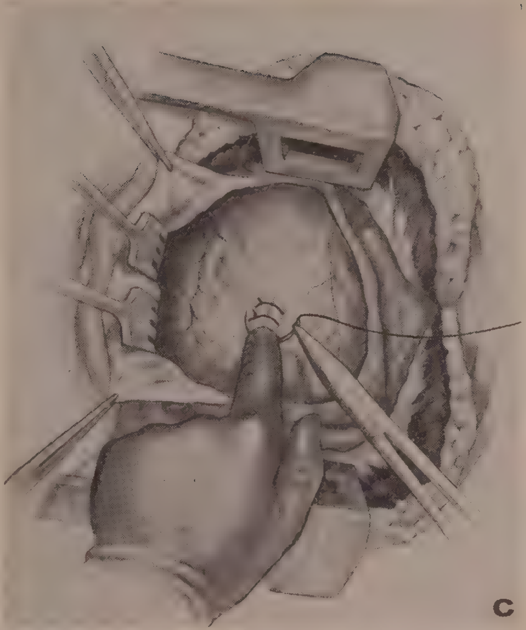


FIGURE 3. Diagrammatic sketches of three all-important crucial maneuvers: (A) pericardial; (B) sternal; and (C) cardiac. (Permission Dis. Chest **46:** 1.)

cardium is incised, it is essential to have adequate exposure, a preconceived plan of action, and sufficient amounts of blood or blood substitutes. Attention to these three factors often makes the management of a most complex and potentially lethal situation appear simple and logical.

Three crucial maneuvers often spell the difference between life and death (Fig. 3). The first one consists of grasping the pericardium with a Kocher clamp and incising it. The second consists of opening the pericardium wide, at which time blood and clots gush out, and the wound is irrigated with saline solution. The third step consists of exposing the right side of the heart by traction on the pericardium with Kocher clamps, retracting of the pericardium and sternum with rakes, and digitally controlling the bleeding point.

These steps are performed in rapid succession and require only a few seconds. At this point, the heart promptly resumes its normal activity, and the surgeon can then pause, take inventory, and proceed without undue haste in the placement of sutures in the myocardium. Suturing of the heart is best done without assistants.

Conclusion

In closing, I wish to state that thoracotomy with pericardiotomy and direct repair of the cardiac wound constitute effective definitive treatment. Pericardiocentesis is to be employed as definitive treatment only in special situations; it is not to be regarded as a recommended procedure.

For the occasional operator confronted by a solitary heart wound complicated solely by tamponade, nonoperative intervention with pericardiocentesis may be safer since some of these patients do survive with aspiration alone and even without aspiration. Nevertheless, when the problem is continuing exsanguinating hemorrhage, thoracotomy with pericardiotomy and suture offer the only chance for survival.

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Question and Answer Period

Dr. Wylie: Now we would like to have questions from the floor directed toward this panel; and I wonder if people, as they ask their question, would give their names to Dr. Lillehei.

C. Walton Lillehei, M.D.: I am very pleased to be here today. I came from a place where most of the trauma of heart and lungs was man-made by the surgeon engaged in corrective endeavors rather than on the highway or in some barroom. Thus, these articles have been of more than passing interest to me.

I had previously thought that cardiovascular and thoracic surgeons could repair almost anything except, perhaps, a broken heart, but I notice in some of the discussions that the mortality rates for traumatic injuries are still quite high. This observation is of significance, I believe, because it indicates that there is room for a great deal of improvement in the management of chest wall, lung, and heart trauma.

The format of this panel is to be very informal; and now for those who may have questions, I would appreciate your rising when you speak and giving your name, so that our recorder can get down your words for posterity. I will start by asking Dr. Naclerio one question which was not quite clear to me from his presentation.

In most cases you obviously favor operating immediately on these patients with penetrating wounds of the chest. Do you ever use the needle aspiration technic and, if so, when?

Dr. Naclerio: Any patient with a chest wound, who reaches the hospital in shock and in whom there is a high suspicion of cardiac injury complicated by tamponade, is subjected to immediate needle aspiration of the pericardial sac. This is routine.

Dr. Lillehei: Is your technic any different from what they have advocated in Houston in their series of reports? I believe that the Houston surgeons have favored needle aspiration initially in every patient followed by thoracotomy only in those who do not respond or who respond and later deteriorate.

Dr. Karlson: We differ in this respect. If a patient has cardiac tamponade, we do a needle aspiration and then take him right to the operating room and operate regardless.

Dr. Lillehei: Even if they respond well?

Dr. Karlson: Even if they respond well.

Dr. Wylie: I would like to direct a question to Dr. Stone in reference to the burns of the lung. Is there any pathologic difference between the burn which is associated with smoke and one not associated with smoke? In other words, does the burn associated with smoke deliver most of its damage to the alveoli and not to the bronchus or vice versa? As I understand, in most of these burns that you have examined in animals, the burns have been in the terminal bronchioles and the alveoli and not in the bronchus. How does this vary if there is smoke or not?

Dr. Stone: That is a good question. Both in the laboratory animal and in our patients if there has been a great deal of inspired smoke, we find the damage is to the alveoli, bronchioles, and smaller bronchi. Rarely does the patient sustain a pulmonary burn from hot water or steam alone, as when an autoclave explodes. The burn is then purely on the basis of heat without smoke; these patients have laryngeal and larger bronchial edema. The alveoli are normal except when atelectasis occurs from the bronchial obstruction produced by the edema. Thus, smoke and other noxious gases appear to be the real offenders in burns that produce severe pulmonary damage. This is what we are primarily concerned with in most burns.

The chin acts as a mantlepiece, and hot noxious gases pass up around the nose and mouth. Heat is important only to a minor degree.

Dr. Lillehei: One thing I should like to ask of you, Dr. Stone. First, there does not appear to me that very much has been written about pulmonary burns, or perhaps I have missed those articles. Yet you had quite a series. It is obviously a serious condition and I suspect that the diagnosis is frequently overlooked. Do they call it pneumonia?

Dr. Stone: That is true. Autopsies of patients dying ten days postburn frequently reveal a so-called pneumonia which actually is the final stage of a pulmonary burn. In our series, over a period of approximately four years, we had 701 major burns; 12 per cent had a definite or probable pulmonary burn.

Dr. Lillehei: Ordinarily, of course, one of the major changes of a burn in the skin is a vast out-pouring of fluid, particularly in the acute phase. Yet, I assume from what you say, that probably does not occur in the lung because you say pulmonary edema occurs several days later. Second, you said humidity was really the most valuable form of treatment which seems, at first impression, a little bit paradoxical. Can you elucidate a little more on that?

Dr. Stone: First, humidity appears to improve bronchial drainage. Patients do have some bronchorrhea early but not much, and moisture seems to keep secretions loose and thus enables the patient to get rid of secretions easier. Second, as far as pulmonary edema is concerned, it may occur as early as a few hours after injury although it usually takes a day or two. Also, the edema is a bit different. It is more like a chemical burn from noxious gases than a thermal burn in which there is immediate denaturization of protein. The pulmonary injury is not complete when the patient is first seen. It is an injury that persists probably for several days.

John L. Pool, M.D.: I would like to ask Dr. Stone another question in this area. What is the recovery situation after a lung burn? Does normal pulmonary function return a few months later, or is there or can there be permanent damage?

Dr. Stone: There is permanent damage in many. Follow-up studies on these patients have been poor as at any city hospital, and usually no news has been considered good news. A few have shown some reduction in pulmonary function for as long as five or six months. They then appear to be relatively normal after that time although several have maintained a very significant reduction in pulmonary function. These, however, were primarily patients who had severe pneumonia secondary to their pulmonary burn. Unfortunately, the follow-up data are often obtained only when the patients come in with another wound or another injury.

Dr. Karlson: I should like to comment on this. We have seen a number of pulmonary burns in our hospital and have studied some objectively. There are two types: First, there are the patients who have severe burns of the mouth, pharynx, trachea, and bronchial mucosa. A cast of the bronchial mucosa may slough out after a few days. Second, there is the type of patient who has a pulmonary problem primarily.

An interesting observation has been the fact that some of these patients look as though they have very little wrong in their lungs. They may have a fairly normal-looking chest film two, three, four, or even five days afterward, but they may have very significant pulmonary insufficiency on measurement. They may have severe ventilation-perfusion deficiencies with considerable venous to arterial shunting and diffusion abnormalities. The patient may be in considerably greater physiologic difficulty than would appear from the chest film. One must keep this in mind.

Dr. Lillehei: Isn't that somewhat at odds with what you said, Dr. Stone; namely, that you believed tracheotomy and assisted respiration were not of much value in this situation?

Dr. Stone: No, I heartily agree with Dr. Karlson to this extent. The chest film is of no value until the seventh or tenth day when a definite pneumonia is often present. As far as tracheotomy is concerned, we have not found this procedure to be of benefit except in a rare patient.

Dr. Naclerio: I think we must differentiate between damage to the respiratory tract occurring down South, where people are burned more often out of doors, from that in New York City where burns usually occur in closed areas. In a closed space the products of combustion cannot escape and are, therefore, inhaled, resulting in far more serious bronchopulmonary damage and respiratory troubles.

The question of why so little appears in the literature relative to pulmonary burns can be explained by the fact that surgeons who look for Curling's ulcers invariably find them, and others who look for sepsis find sepsis. It is only in the last decade, because of our increased knowledge of bronchopulmonary diseases, that we have become mindful of pulmonary burns, and those who are cognizant of the problem will find them frequently.

During the past year I treated 4 patients, suffering from severe smoke inhalation, who had severe airway obstruction mainly in the smaller bronchi. On auscultation all of these patients had markedly prolonged expiratory breath sounds. I have seen a fair number of such patients. In 2 children, soon after sustaining lung burns, pneumomediastinum and bilateral pneumothorax developed.

In patients with tracheostomy, bronchoscopy should be performed through the tracheal stoma to see if a cast is forming or is already present. If present, it can easily be removed bronchoscopically via the stoma. This simple measure may avert disaster.

As for assisted ventilation in patients with pulmonary burns, it not only predisposes to infection in certain patients but also may do more harm than good, and may actually hasten death because of the invariable presence of an abnormally high residual lung volume.

DR. STONE: I have never seen a pneumothorax develop after a plain pulmonary burn.

DR. LILLEHEI: Where does this pneumothorax come from?

DR. NACLERIO: These patients have severe bronchiolar obstruction resulting in air trapping; the air gets into the alveoli but cannot get out. The resultant high pressure in the air sacs causes rupture of the alveoli which leads to pulmonary interstitial emphysema, pneumomediastinum, and, finally, pneumothorax.

DR. LILLEHEI: I would like to direct some questions to Dr. Karlson and Dr. Sullivan. Both of you talked about the work of respiration and the factors influencing it. You said that, by and large, you used assisted respiration, but I don't believe either of you discussed the type of respirators you are using whether it is the volume displacement or the pressure-triggered type, and exactly what determines which type of respirator you select for a particular patient.

DR. SULLIVAN: For the postoperative patient who requires assisted ventilation, particularly our open-heart patients, we ventilate all patients routinely for several hours postoperatively. The ventilator is generally a simple pressure-cycled machine, such as the Bird or Bennett type. However, in the patients requiring assisted ventilation for longer periods, we would either use a volume-cycled ventilator, such as the Engstrom, or perhaps some of the newer machines that are available here in the States; but we certainly prefer, if at all possible, to have a volume-cycled ventilator for prolonged periods of assistance.

DR. LILLEHEI: How do you feel about this, Dr. Karlson?

DR. KARLSON: I agree. I believe the important thing is to accomplish your purpose. If you have to ventilate a patient completely mechanically, it seems to me that you must know that the patient is being adequately ventilated and that the tidal volume being delivered is what you want it to be. You can do this with a pressure-cycled machine or you can do it with a volume-cycled machine. It is easier with a volume-controlled machine because that machine will deliver a predetermined volume with each breath, even in the face of some obstruction from secretions, decreased compliance, and so on.

Another important thing, of course, is that we have to know the tidal volume. Therefore, the ventilator you use should have a spirometer on the expiratory line so that you can readily measure the tidal and minute volumes.

We use an Engstrom ventilator when we want to take over the breathing of a patient for a long time. We wean them from mechanical ventilation by using a Bird apparatus which they trigger themselves. Finally, they breathe spontaneously all the time. It appears to me that you have to use the type of apparatus that will accomplish your purpose, and that is adequate ventilation. It can be done with any number of different machines if you periodically measure the important parameters, the amount of ventilation, and the blood gases.

Dr. Lillehei: What about the humidity with the Engstrom? Isn't it pretty difficult to get an adequate amount if you use it the way it is shipped? Have you made any modification?

Dr. Karlson: You have to buy the new ultrasonic nebulizer. Then it works well.

Dr. Lillehei: Any questions from the floor?

Daniel A. Mulvihill, M.D.: I should like to have Dr. Karlson outline briefly for us what he considers the optimum routine for treating a patient with a severely crushed chest, such as multiple fractures to the ribs, anterior and posterior flail chest, paradoxic respiration, and so on. What is your optimum routine from the time the patient comes into the emergency room?

Dr. Karlson: We can go over this briefly, and it will apply to almost any chest injury. Of course, the patient has to be evaluated as a whole for other injuries. If he has severe flail chest and respiratory insufficiency, an endotracheal tube is inserted immediately, and he is ventilated manually. This is the very first thing to be done. Then the patient is examined more thoroughly, and his chest is percussed to determine if he has a hemopneumothorax. Pleural drainage tubes are used when this is present. All of this time his ventilation is controlled and his lungs are re-expanded if they have collapsed.

Following this, you have time to evaluate him further. You may want to do a tracheotomy to obtain better access to his airway and allow removal of the endotracheal tube since he usually will require intubation for a prolonged period of time.

If he is not seriously incapacitated, a patient with some paradoxic chest motion can frequently be treated—after you have re-expanded his lung by inserting the appropriate chest tubes—simply by blocking the intercostal nerves so that he does not have excruciating pain. If he breathes slowly and deeply, a patient with a tremendous amount of thoracic paradox can ventilate adequately.

These are the first considerations. In a patient in whom the extent of injury is perhaps borderline, relieve him of his pain with a nerve block. If that is insufficient and if the patient has an injury that appears to be otherwise not excessively serious, some type of fixation of his chest wall might be appropriate. Actually, we have not used mechanical fixation frequently; because in patients who need more than nerve block, tracheostomy seems to be the best treatment.

If we do a tracheostomy on a patient who has so much paradox that a simple nerve block will not relieve it, the tracheostomy frequently will relieve the paradox. The decrease in airway resistance with tracheostomy results in less endothoracic pressure change with inspiration and expiration, which in turn reduces the paradoxic chest wall motion. If tracheostomy is inadequate, the patient may have to have either assisted ventilation or be ventilated completely mechanically. The routine care of these patients from this point on has been discussed already. Have I answered your question at all adequately, Dr. Mulvihill?

Dr. Mulvihill: Yes. I thought it would be good for the general group to have an outline of what you do and what most of us do who see these patients frequently, because a good many doctors do not see these patients too often. They will see one who is brought in from an automobile accident, and that may be the only one for three or four months at a time. Thus, I thought it would be good to have an outline of what you do right away to save the patient's life and then how you go on from that point.

Dr. Lillehei: The important thing is to get that endotracheal tube in immediately because that really stabilizes the chest wall.

Roy Clauss, M.D.: I wonder, Dr. Stone, whether you would define pulmonary edema. I noted that you had listed about 300 patients who received intravenous catheterization and fewer than 30 had an even central venous pressure. There has also been talk about the fact people made a mistake interpreting the large amount of flot as being consistent with overhydration, when, in fact, central venous pressure or other indicators suggest that there is hypovolemia, and perhaps the treatment ought to include giving rather than withholding fluids.

DR. STONE: This is quite true when we use central venous pressure. If the patient is elderly or has impaired cardiac function, we use the venous pressure. Otherwise, we have been very fearful of these catheters. When you pull them out and culture them, you are horrified by the adherent clots and the culture report—usually Staphylococcus—if the catheters have been in longer than forty-eight hours. There is a general tendency for the house staff to leave an intravenous catheter in until it plugs. We make every effort to get these catheters out.

We have lost patients because of venous catheters. Autopsy has revealed multiple septic emboli in the lungs, and the only focus we could find was the central venous catheter. Although it is a very helpful tool, many problems arise and eventually may lead to the death of a patient.

DR. LILLEHEI: In these severely injured patients, don't you have to use central venous pressure to tell where you are with regard to fluid and blood balance?

DR. STONE: You can determine this quite well with merely urine output, specific gravity of the urine, and frequent hematocrits. We use the central venous pressure in only 1 or 2 per cent of all our burned patients. We see 170 a year and probably lose less than 1 per cent because of hypovolemia. It is usually the person who is over eighty who dies of hypovolemic shock.

We have had no problem this year in using the urine output, "plain-old" specific gravity, and hematocrits from finger stick or vein. We preserve the veins because in many patients with burns beyond 70 or 75 per cent of the body surface the prognosis is directly related to the number of veins available for use at a later date. I think it most important not to use the veins unless you absolutely must. The venous pressure catheter is indicated for the patient who goes into a real shutdown, in whom pulmonary edema develops, whether this be from overload or a pulmonary burn, or who is a cardiac patient and extremely elderly.

DR. LILLEHEI: How could you tell if urine output fell and, if you didn't have central venous pressure, whether the patient was behind in fluid, or whether he was hypervolemic with primary renal shutdown or some mechanical interference with urine output? Also take the converse. Say that you had frothy fluids coming out of the lungs because of direct pulmonary injury unknown to you, and the urine output was average. When the central venous pressure is measured, it might be only 4 or 5 cm. of water indicating that this patient needs more volume replacement. However, with the frothy material in the lungs would you be inclined, without the central venous pressure, to consider the patient in heart failure and without fluids?

DR. STONE: Without the frothy fluid the venous pressure is helpful if the patient has a slight urine output. If the hematocrit is high, you know the patient needs colloid and more salt solution; if the hematocrit is quite low, even if you have given him enough fluid, and if the specific gravity is fixed between 1.010 and 1.014, there is renal shutdown. It is really not difficult; we have never found it to be a problem. Maybe other people have.

DR. NACLERIO: How reliable or unreliable are central venous pressure determinations in these patients with air entrapment in both lungs?

DR. STONE: It certainly can throw you off. Often you are not sure where the catheter tip is. Some one else has already put the catheter in, and you wonder whether the reading really is a central venous pressure. This can be a problem itself. I think most of the new catheters do contain a radiopaque strip so that you can tell where the catheter tip is by x-ray.

JOHN HUTCHINSON, M.D.: Dr. Sullivan, I believe it has been amply demonstrated that respirators decrease significantly the work of breathing. There have been a number of experimental reports recently that have suggested that positive pressure ventilation results in significant decrease in cardiac output.

In consideration of the advantages of the decreased work of breathing and the disadvantage of the decreased cardiac output secondary to pressure ventilation, are there some critical technics that you think important in the adjustment of the respirator in postcardiac patients?

DR. SULLIVAN: Agreed. There have been some recent studies on this, and there have also been some very old studies going back to Cournand, who demonstrated the effect of breathing patterns with positive breathing on cardiac output. As a general rule, I think if inspiration is limited to a third of the breathing cycle, exhalation is limited to two thirds of the breathing cycle. An attempt is made in every case to maintain the minimal effective airway pressure for the duration of the positive pressure breathing, so that you have caused the least disturbance possible to the venous return.

If you need assisted ventilation to maintain the patient's oxygenation, you have to use some type of positive pressure breathing device; or if you want to look back, although I don't want to think many surgical patients are put in the iron lung these days, this would be the ideal type of respirator which would maintain the venous return. The respirator acts or mimics the action of the thorax itself and actually may even aid venous return. However, I think that most people, especially those dealing with operative patients, would find it almost impossible to work with a patient in a tank. Therefore, I believe that most people, in spite of the disadvantages to airway pressure on venous return and cardiac output, would still use a positive pressure breathing device.

DR. KARLSON: Certainly there are some patients in whom we have to drive the airway pressure very high to ventilate the patient, and the patient may be somewhat hypotensive. We may not know whether this is due to hypovolemia per se, cardiac failure, or the effect of the ventilator; but if one simply increases the central venous pressure, one can frequently overcome these factors. I have been a little disturbed by some physicians who think a venous pressure of 10 or 12 cm. of water is fine, and any higher than that is bad.

In our practice we run the venous pressure up to 20 cm. of water if necessary to maintain the cardiac output adequately; and unless pulmonary edema develops under these circumstances, we don't give it a second thought. This, I think, is a help to these patients. Simply give the patient a transfusion and run the venous pressure up a little higher than you would ordinarily. If the patient is on a ventilator, they usually don't get pulmonary edema anyway.

DR. LILLEHEI: I probably could clarify that a little. I agree with what Dr. Karlson said but it might lead some astray if you don't elaborate just a little.

Many times the venous pressure has to be twice normal in particular patients. For example, in patients with mitral valve disease of long standing and severe pulmonary hypertension, in those with congenital heart disease and pulmonary hypertension, or in patients who have been in chronic left heart failure for a long period of time, successful surgery does not immediately change the filling pressure of that thickened right ventricle. If the patient has had a large ventricular septal defect, the right ventricle may be three or four times the normal thickness and the venous pressure, that is, the filling pressure of that ventricle, must be significantly greater than for a normal ventricle. That's the reason the left atrial pressure is normally higher than the right. In the immediate postoperative period the venous pressure may have to be 18, 22, or 24 cm. of water in some patients. However, that is quite different from somebody who has had normal heart and lungs in whom you gain little by pushing the venous pressure above 12 or 14 cm. of water; and, of course, you may provoke fatal pulmonary edema with venous pressures that are desirable in the aforementioned disease states. Thus the use of central venous pressure is very useful in the management of these patients but must be individualized.

I have to come back to Dr. Naclerio. He said, "You aspirate every patient and then do a thoracotomy." What is your objection to deferring thoracotomy in those who respond well and who can be carefully observed in an intensive care unit?

Dr. Naclerio: We have enumerated about eight reasons why we resort to this.

Dr. Lillehei: Give me one good one.

Dr. Naclerio: The unpredictability of the behavior of heart wounds.

Dr. Lillehei: If the patient is in an intensive care unit and vital signs are being carefully monitored, would that make a difference?

Dr. Naclerio: If the patient is in an intensive care unit with all the monitoring devices and a resident watching closely, I subscribe to needle aspiration 100 per cent, but the patient must be watched closely or death may rapidly ensue.

Dr. Lillehei: I am glad that you have clarified this because it had me bothered in the sense that I do know that some patients respond very well with aspiration alone, but I agree they cannot be aspirated and then forgotten.

Dr. Naclerio: However, we must be aware of the fact that in over 50 per cent of these patients, large intrapericardial clots are found which prevent effective withdrawal of blood from the sac. Also, incomplete evacuation of hemopericardium, on occasion, results in chronic pericardial effusion. In addition, delayed hemopericardium has occurred in a number of patients hours, days, and even weeks after injury. There are about 18 such cases in the literature.

If you have a good intensive care unit and well-trained men around ready to operate at once, conservative management is all right. However, if you are associated with a hospital in which there is not too much help and the work load is heavy, it is better by far to operate. You can then go home and sleep well that night.

Dr. Stone: Since D.C. Elkin, M.D., was chairman of our department many years ago, we have followed his principles and have continued to follow his precautions, as you outlined, to watch the patient closely after aspiration; and I do not believe that our mortality rate is any greater than anyone else's.

Dr. Lillehei: The crux of it is that the patients need very close watching by experienced personnel. There isn't any doubt about that.

Dr. Naclerio: Only a few days ago, I had occasion to speak to A.C. Beall, M.D., who admits becoming more aggressive in his therapeutic approach. If one reads Dr. Beall's more recent articles, one will find that with aspiration alone the mortality rate is in the vicinity of 5 per cent. However, in those who do not respond to pericardiocentesis, the mortality rate is about 25 per cent if cardiorrhaphy is carried out immediately. It rises to 60 per cent if cardiac action is allowed to stop before thoracotomy is employed. We, on the other hand, have reported an over-all mortality rate of only 8.6 per cent with prompt aspiration and immediate thoracotomy. I, personally, have lost only 1 patient, and this was due to an extremely mushy heart caused by prolonged myocardial hypoxia.

Dr. Lillehei: I think I would like to conclude this panel by asking each of the panelists to answer a question which I will pose as follows:

I think in my own experience the greatest problem in the management of pulmonary problems and pulmonary disease, particularly the types associated with cardiac problems in which the patients need assisted respiration, has been that of infection from the hospital surroundings or sometimes acquired from the patient himself when his resistance is low for various reasons. Also many times, I am sure, the introduction of bacteria is iatrogenic, induced by the care we give them. This has been an enormous problem and I suspect that two thirds of the late mortality in these patients is due directly to infection.

I would like to ask each of the panelists what steps they use to manage this problem if they agree that this is as important as I think.

Dr. Stone: We think it is a very big problem, and we are constantly searching to find where these bacteria come from. Regarding the staphylococci, it is easy to track them down by use of phage typing. Only recently have we been able to follow the Pseudomonas, which have given us so many problems, through a new mode of typing called pyocin typing. This gives us a 95 per cent accuracy. Thus, we have been able to incriminate the various sources of infection more directly.

As far as trying to control this problem, it rests in the hands of the anesthesiologists.

Perhaps Dr. Sullivan will be able to give us a little insight there. We have irrigated the trachea and the tubing with acid solutions and we have added antibiotics, all to no avail.

Dr. Lillehei: Irrigated the trachea?

Dr. Stone: Not routinely. The machines are what need cleansing. We do not have a large ethylene oxide unit to sterilize these machines. To do this, one must have some unit that you can put into the ethylene oxide chamber. Maintaining our own personal cleanliness is as important as maintaining the machines and equipment.

Dr. Karlson: This is a very practical problem. Everything has to be sterile that comes in contact with the patient's tracheobronchial tree. The tracheostomy has to be performed under sterile conditions; the ventilator and tubes used for aspiration must be sterile, using a sterile one each time.

The nurse or doctor who aspirates the trachea should wear sterile gloves. These precautions do not prevent infections entirely, but unless we do these things we are not doing what we can to help prevent infection.

Dr. Naclerio: In addition to the need for careful disassembling, thorough cleansing, and sterilization of all respirators and attachments, which come in contact with the patient, we must not forget the role of aspiration of gastric contents in these seriously ill patients. Pulmonary aspiration predisposes to the production of severe gram-negative pneumonias, such as Klebsiella enterobacter, Escherichia coli, and Pseudomonas which often result in rapid death.

Aspiration pneumonias may be reduced to a degree when all the known measures which prevent pulmonary aspiration are used.

Dr. Sullivan: We are doing another thing for patients who are being ventilated for prolonged periods, such as those undergoing craniotomy but not heart surgery. Many of these patients require ventilators for weeks or months. We now change the tubes on the machines every eight hours, and in each case a new set of sterile tubes in connections that have been gas sterilized is given to the patient. This is done every eight hours, three times a day, every day in an attempt to cut down this problem of contamination.

Dr. Lillehei: Do you change the endotracheal tube?

Dr. Sullivan: All the connections to the ventilator.

Dr. Lillehei: How about the ventilator itself?

Dr. Sullivan: We cannot put the ventilators in the ethylene oxide sterilizer. As far as ventilators are concerned, even in our cardiac surgical patients whom we may ventilate for only a few hours postoperatively, we change the entire tubing. Everything is gas sterilized and used again on another patient. However, we do not put the actual mechanical box of the ventilator in the gas sterilizer. I think that would probably be the ideal situation, but then you would have to have a fleet of ventilators. Nevertheless, it would be ideal as far as patient care is concerned.

Dr. Lillehei: At Minnesota where I was associated until very recently, we did very much as you and Dr. Karlson recommended, insisting that the respirators be changed completely every twenty-four hours. Even more often would be of value, but that is about the limit of practicality at this time. If you get your respirator units from a rental service, you can insist that they gas sterilize them between usages. In larger cities this type of service is readily available.

A sterile disposable catheter and sterile disposable gloves should be utilized for every suction. I know that all of these things appear to add greatly to the cost of medical care, but in some ways they don't if you prevent a prolonged pneumonia and save a life. I certainly subscribe to these measures; but, even so, you will not solve all of your problems with pulmonary infections. Some of these bacteria from the patients' own flora become invasive because of diminished resistance secondary to the serious disease or the trauma that the patients have been through. However, I know that these measures help. I think in the future rapid controlled air-change units and still other measures will help to keep bacteria from reaching the interior of the lungs.

A change in the air 600 times an hour is not practical. Most operating rooms change it only three or four times an hour or maybe six times an hour. It depends on the system. Things like that hold some hope for the future.

Obviously, antibiotics, although very important, have not been the answer to this enormous problem of infection within the lungs.

Multiple Hamartomas of the Lung

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A patient with multiple hamartomas of the lung was presented. A review of the world literature produced 6 other cases. All the patients were females. Roentgenograms of the chest and histologic studies were presented.

Pattern of Lymphatic Drainage in Carcinoma of Lung

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Scalene fat pad biopsy has been accepted as one of the tools for the diagnosis of obscure intrathoracic disease. However, the role of the scalene lymph node biopsy in diagnosis and treatment of lung cancer has remained controversial. Furthermore, the thought has been advanced that when the lymphatic drainage of the lung is affected by metastatic malignant foci, the normal channels of drainage are altered. To date this dispute as to whether this "abnormal" drainage pattern of involved pulmonary lymphatics is one of the normal conceived varieties or secondary to the pathologic affliction of the lymphatic system is as yet not settled.

We believed that a review of the neck node findings noted in our clinical experience with lung cancer in a fairly large series would shed light on the actual lymphatic pattern of spread of lung cancer to the neck.

In a total of 4,545 patients with proved carcinoma of the lung seen on the thoracic service between 1926 to 1963, 885 had cervical node biopsies or scalene fat pad excisions to establish a histologic diagnosis. This represents 19.4 per cent of the total cases. Of those operated on, 733 patients, or 78 per cent, had palpable nodes in the neck at the time of excision, and in the remaining 152 or 22 per cent palpation of the neck produced negative results. In the 733 patients with palpable cervical nodes the biopsy was diagnostic in 710 or 96.8 per cent.

Among the 733 patients who had palpable nodes in the neck, 293 or 33.2 per cent of the nodes were in the right supraclavicular region, and in 208 or 23.5 per cent the nodes were in the left supraclavicular region. There were 190 patients who had bilateral palpable nodes or 21.4 per cent. There were 42 patients who had supraclavicular nodes palpable at the time of admission, but the side of the neck was not clearly defined.

The most common histologic types of pulmonary cancer in order of their frequency were epidermoid, oat cell, adenocarcinoma, terminal bronchiolar, squamous carcinoma, unclassified, mesothelioma, and lymphoma. The site of the pulmonary lesion was in the right lung in 528 or 59.5 per cent and in the left lung in 332 or 37.5 per cent. In 12 patients the site of the primary lesion was confined to the mediastinum, in 7 cases there were bilateral pulmonary lesions, and in 8 cases the site of the primary lesion was not determined. When the primary site in the lung was studied as to its pattern of lymphatic spread, it was noted that the contralateral neck node metastasis was the same for both lower lobes. When the lymphatic spread to the neck of the different histologic types located in the same lobe were compared, there was no difference in the spread pattern except for adenocarcinoma located in the left lower lobe which had the highest incidence of spread to the left side of the neck as compared with the other histologic groups located in the same lobe.

Comparing the side of the primary lesion in the lung to the side of the cervical node involvement, one finds that almost twice as many right lung lesions metastasize to the left side of the neck as compared with the number of left lung lesions going to the right side of the neck.

This study appears to indicate that in pulmonary carcinoma cervical lymphatic spread does not follow the "normal" established patterns of drainage.

Coronary Arterial Bypass Grafts

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Bypass grafting may prove to be the most widely applicable form of direct revascularization of the ischemic left ventricle. Secondary arterial divisions, 1 to 2 mm. in diameter, are always patent and have extensive runoff via intra- and intercoronary collaterals.

A consistently successful method of end to side anastomosis of the internal mammary artery to small (0.8 to 1.0 mm.) coronary branches at the apex of the heart was developed in a series of 42 dogs. After each anastomosis was completed, the anterior descending artery was ligated at the base of the heart. Success of the anastomoses was demonstrated by serial electrocardiographic, flowmeter, and cineangiographic studies.

The essential features of the operation are cardiopulmonary bypass, cold cardioplegia, and microvascular suture technic.

There was striking lack of electrocardiographic change following anastomosis to a distal branch of the left anterior descending artery and proximal ligation of the artery. This is explained by acute and late postoperative flow studies showing sustained mean blood flows of 30 ml. per minute. One dog which weighed 25 Kg. had a six-month postoperative flow study revealing a mean flow of 90 ml. per minute. Serial cineangiograms confirm the prolonged (six months) patency of the grafts and the completeness of the proximal ligation of the anterior descending artery at the base of the heart.

A short movie illustrating the operative technic, electrocardiograms, flowmeter studies, and cineangiograms was shown.

Preservation of Lung with Replantation

Long-Term Physiologic Studies

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Medical Center

The left lung was removed from 45 dogs, irrigated, stored in a hyperbaric chamber at two atmospheres of oxygen at 4 C., and replanted. The irrigation fluid was heparinized cold Ringer's lactate solution, 6 per cent hydroxyethyl starch, 10 per cent low molecular weight dextran, or whole blood. The majority of animals were anticoagulated for three weeks after the lung was replanted. A total of 8 animals had excision of the lung, irrigation with cold heparinized Ringer's lactate solution, and immediate replantation.

Bronchospirometry, including differential ventilation, oxygen uptake, and diffusion (carbon monoxide uptake) studies, were done on the survivors weeks or months after operation. Most survivors had repeat studies.

It was found that immediate replantation was followed by a long-term decrease in function of the replanted lung to the extent that one third of the total ventilation and oxygen uptake of the two lungs occurred in the replanted lung. Lungs preserved twenty-four hours and replanted had similar distribution of ventilation and oxygen uptake (one-third to preserved lung). Carbon monoxide uptake averaged 40 per cent in the normal right lung and 36 per cent in the preserved replanted lung. Anticoagulation decreased significantly the incidence of thrombosis of the venous anastomoses. Pulmonary edema occurred in some animals immediately after replantation but not after heparinized blood had been used as the perfusate.

Preservation of the lung at 4 C. in two atmospheres of oxygen results in long-term function which appears to be similar to that following the operative procedure of replantation alone.

Pericardiectomy with Cardiopulmonary Bypass

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On August 31, 1966, during pericardiectomy for constrictive pericarditis, an inadvertent rent was made in the apex of the right ventricle. Control of hemorrhage was not possible because of inability to expose the heart as a result of pericarditis. Cardiopulmonary bypass was rapidly instituted, the rent was closed, and the pericardiectomy was completed. Ease, speed, and safety with which the pericardiectomy could be accomplished was striking, and we have since decided to perform all pericardiectomies for constrictive pericarditis with partial right heart bypass. An additional case illustrated the superiority of this technic. A sixty-one-year-old male was admitted to Montefiore Hospital and Medical Center with typical findings of constrictive pericarditis, characterized by massive ascites, extensive edema of the lower extremities, and marked elevation of the venous pressure. Cardiac catheterization confirmed the diagnosis of constrictive pericarditis.

The operation was performed on February 16, 1968, utilizing cardiopulmonary bypass, a complete pericardiectomy, including both the atria and all aspects of both ventricles, was performed without any difficulty. The patient made an uneventful recovery and was discharged from the hospital well. Details of the operative technic, emphasizing the safety and superiority of this method, were discussed and a movie of the actual operation was shown.

Orthotopic Heart Homotransplantation in Puppies*

Intraoperative and Postoperative Problems

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From Maimonides Medical Center, Brooklyn, New York

This report describes the management

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* Work supported by U.S. Public Health Service grant HE-11173.

of intraoperative and immediate postoperative problems during 40 orthotopic homotransplantations of puppy hearts performed under deep hypothermia.

Inadequate protection of the donor heart before implantation caused graft failure in some instances. Immediate cooling of the graft by immersion in cold electrolyte solution plus intraoperative flushing of the graft with the same solution helped to solve this problem. Air embolism was avoided by flushing the auricles, aorta, and pulmonary artery with the same solution prior to the closure of each anastomosis.

Problems of resuscitation were also encountered early in the series. The chief factors appeared to be the following: (1) moderate to severe metabolic acidosis as a result of the hypothermia and circulatory arrest; this was corrected by administration of sodium bicarbonate during the rewarming period; (2) poor tone and dilatation of the graft on completion of the anastomoses; transitory "overtransfusion" of blood and correction of metabolic acidosis proved to be prerequisites for effective massage with prompt recovery of myocardial tone.

Brain damage occurred relatively often early in the series. It was prevented by restricting the duration of circulatory arrest, by initiating intrathoracic rewarming as soon as adequate blood pressure was present, and by maintaining adequate blood pressure during the remainder of the rewarming period.

With the above management, 18 of the last 20 puppies and all of the last 10 survived longer than one day after operation.

See full article on this page.

The annual business meeting of the New York Society for Thoracic Surgery was held following the clinical session. The following slate of officers was elected for the coming year:

President............Adrian Lambert, M.D.
Vice-President........George Robinson, M.D.
Secretary-Treasurer...Hugh F. Fitzpatrick, M.D.
Nominating
  Committee..........Cranston W. Holman, M.D., Chairman
Membership
  Committee..........Walter A. Wichern, Jr., M.D., Chairman
Program Committee...Paul A. Kirschner, M.D., Chairman
Council.............Allan Ellia Bloomberg, M.D.
  Walter W. Fischer, M.D.
  Robert H. Wylie, M.D.

Orthotopic Cardiac Allotransplants in Puppies*

Analysis of Surgical Deaths in 40 Cases

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From the Departments of Surgery, State University of New York Downstate Medical Center and Maimonides Medical Center

THE IDENTIFICATION of the intraoperative and postoperative problems of new procedures is a major goal in experimental surgery. This presentation describes the problems leading to death in the first 40 operations in a series of heart transplants in young dogs under hypothermia and circulatory arrest.

Surgical technic

The surgical technic developed by Kondo *et al.*[1-5] in this laboratory for orthotopic heart transplantation in puppies under

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* Work supported by U.S. Public Health Service Grant HE-11173.

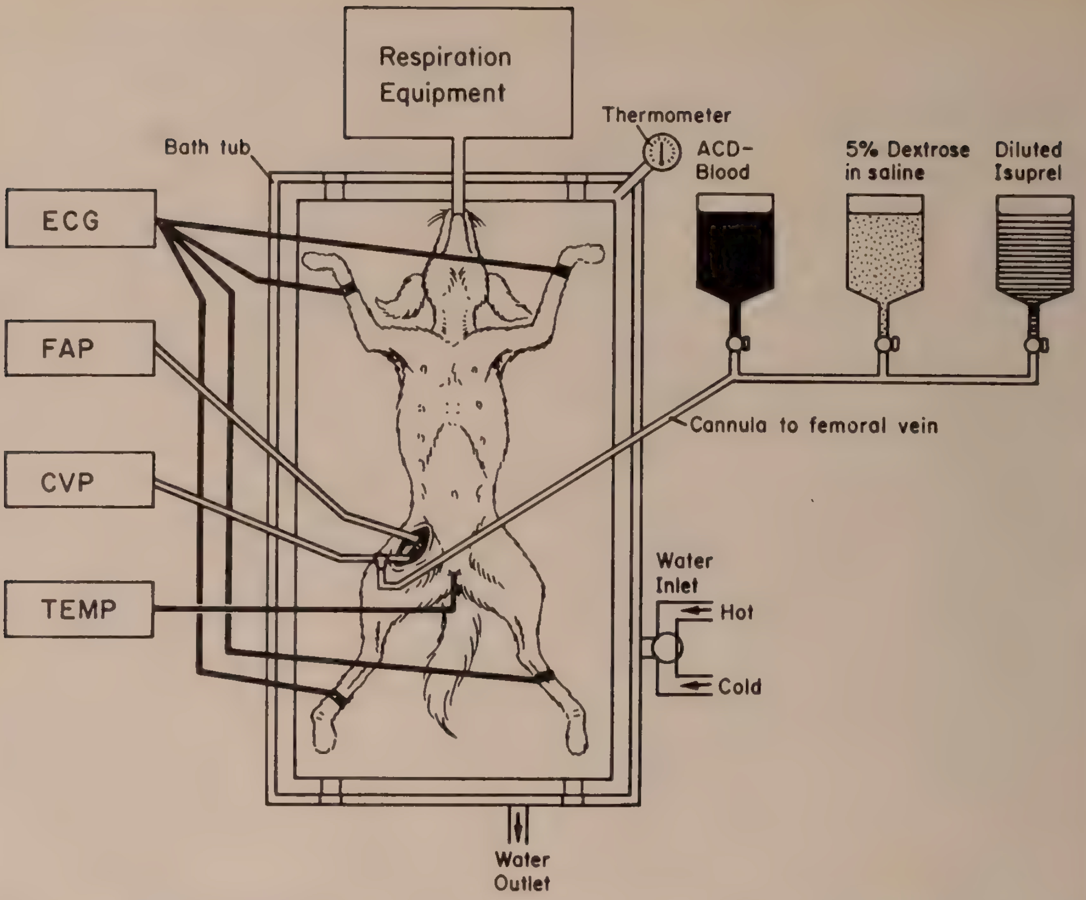

FIGURE 1. Schematic drawing of setup for puppy heart transplantation using hypothermia by means of external cooling.

profound hypothermia and circulatory arrest was used with some modifications. Forty pairs of unrelated puppies weighing 2,100 to 6,800 Gm. were selected on the basis of approximate match in weight.

In each experiment, after premedication with 0.15 mg. atropine sulfate, both puppies were anesthetized with ether, intubated, and ventilated. External cooling in a bath of ice cubes and water was continued until the recipient's rectal temperature was 20 C. and the donor's about 30 C. Femoral arterial pressure, rectal temperature, and the electrocardiogram were continuously monitored and the central venous pressure, occasionally (Fig. 1).

The recipient's chest was opened bilaterally through the fourth anterior intercostal space, and inflow-outflow occlusion of the heart was established. Artificial respiration was then stopped.

At the same time, the donor's chest cavity was opened through the fourth left intercostal space, heparin (3 to 4 mg. per kilogram) was injected into a pulmonary vein, and the heart was excised, care being taken to include the sinus node. The graft was immediately placed in 4 to 5 C. cold isotonic solution.

The graft was implanted according to a modification of Lower and Shumway's technic.[6,7] First the septa and next the right and left atrial walls were approximated with a continuous suture. Both arteries were then united with end to end anastomoses using a continuous suture. To expel air trapped during manipulations, all heart chambers were flushed with cold saline. The preparation of the excised donor heart and of the recipient atrial stump is shown schematically in Figure 2.

After discontinuation of the inflow-outflow occlusion, cardiac massage, ar-

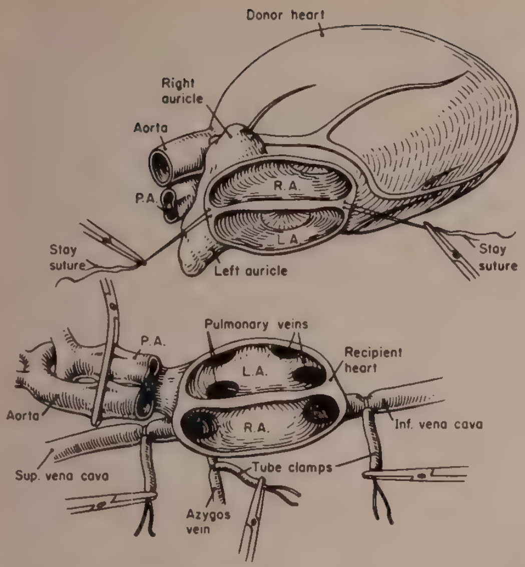

FIGURE 2. Preparation of recipient atrial stump and excised graft for orthotopic cardiac transplantation.

tificial respiration, and blood transfusion were started. In experiments in which acid-base balance was corrected, initial treatment was given immediately after the start of cardiac massage. At the same time external rewarming was begun, and the chest cavity was flushed with 40 C. normal saline. When the puppy's rectal temperature was in the range 20 to 25 C., an intraventricular injection of 100 mg. calcium chloride was given. Ventricular fibrillation was then readily converted to sinus rhythm by direct current countershock. Additional intravenous doses of calcium chloride and infusion of dilute isoproterenol hydrochloride by slow drip usually were necessary for a short time to maintain the heart rate and arterial blood pressure during the resuscitation period. The chest was then closed.

External rewarming was continued until the rectal temperature had reached 36 to 37 C. Usually the animal awakened immediately after operation. All cannulas were removed, and the animal was returned to its cage from two to four hours after operation. Figure 3 shows the sequence of events and hemodynamic parameters during an uneventful procedure.

Findings and interpretation

Thirty-eight of the 40 hearts were resuscitated and able to maintain the host's circulation. Twenty-four puppies died during the first three days after operation. Of these, 14 died during the first twenty-four hours.

CAUSES OF DEATH RELATED TO HYPOTHERMIA AND CIRCULATORY ARREST. Table I lists the causes of death in the 24 animals

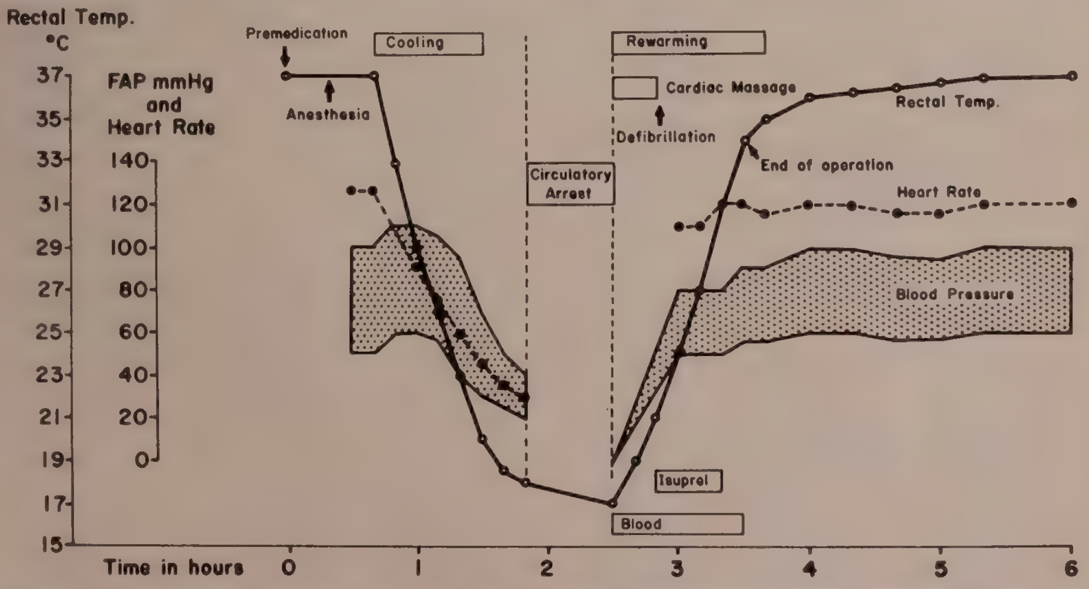

FIGURE 3. Physiologic parameters and sequence of events during puppy heart transplantation using profound hypothermia.

TABLE I. Primary causes of death in 24 puppies dying within seventy-two hours after transplantation

Cause of Death	Number of Animals	
Pulmonary complications		6
Pneumonia and atelectasis due to previous pneumonia	4	
Atelectasis	2	
Brain damage		5
Prolonged circulatory arrest	2	
Insufficient circulation during cardiac massage	3	
Early graft failure		5
Air embolism in coronary vessels	2	
Insufficient protection of graft	1	
Overtransfusion	2	
Others		8
Failure of anesthesia	1	
Faulty anastomosis	1	
Insufficient after care	2	
Hemorrhage	2	
Unknown (probably severe metabolic acidosis)	2	
TOTAL		24

dying during the first seventy-two hours after operation.

Cerebral lesions due to anoxia (*5 deaths*). Anoxic brain damage was clinically evidenced in 5 cases by opisthotonos; trismus; dilated, unreactive pupils; convulsions; abundant salivation; and absence of normal reflexes.

For comparison, data on 23 puppies that lived for more than twenty-four hours without showing clinical evidence of anoxic brain damage are presented in Table II.

Among the 5 brain-damaged puppies, the duration of circulatory arrest was markedly longer in 2 than the average of forty-five minutes in the neurologically intact group. The brain damage seen in the remaining 3 probably arose during the resuscitation phase. In these 3 animals, the blood pressure during resuscitation was markedly below the 40 to 80 mm. Hg range observed in the neurologically intact group. In the brain-damaged animals, the circulation through the brain was inadequate in relation to the temperature, especially during intrathoracic rewarming.

These observations indicate that circulatory arrest can be tolerated for at least sixty minutes without significant risk of neurologic sequelae, provided adequate circulation to the brain during resuscitation is maintained by cardiac massage.

Early graft failure (*5 deaths*). In 3 instances, the heart, although resuscitated, maintained the circulation for only a few hours. In 1 instance the excised graft was not satisfactorily cooled prior to implantation because the duration of immersion in saline was too brief. In 2 instances air embolism into the coronary vessels resulted in heart failure. In 2 other cases heart failure arose shortly after operation, probably because of overtransfusion.

OTHER CAUSES OF DEATH. *Pulmonary complications* (*6 deaths*). Two puppies died from extensive bilateral atelectasis which resulted from hemopneumothorax associated with inadequate chest drainage.

Bilateral lobar pneumonia was found on thoracotomy in 10 instances. Four puppies died during the first three postoperative days from progression of preoperative pneumonia.

Miscellaneous causes (*8 deaths*). Other

TABLE II. Intraoperative physiologic parameters in brain-damaged and neurologically intact animals

	Circulatory Arrest		Cardiac Massage		
Dog Number	Duration (Minutes)	Rectal Temperature (C.)	Duration (Minutes)	Peak Blood Pressure (Mm. Hg)	Systolic Blood Pressure After Defibrillation (Mm. Hg)
Group with brain damage (5 animals)					
4898	53	16	37	25	50
4906	63	16	22	20	15
4924	55	17	30	25	50
4981	75	18	20	50	80
5005	94	17	30	40	70
Group with no brain damage (23 animals)					
Average	45	17	21	56	94
Range	35–60	15–20	11–50	40–80	60–130

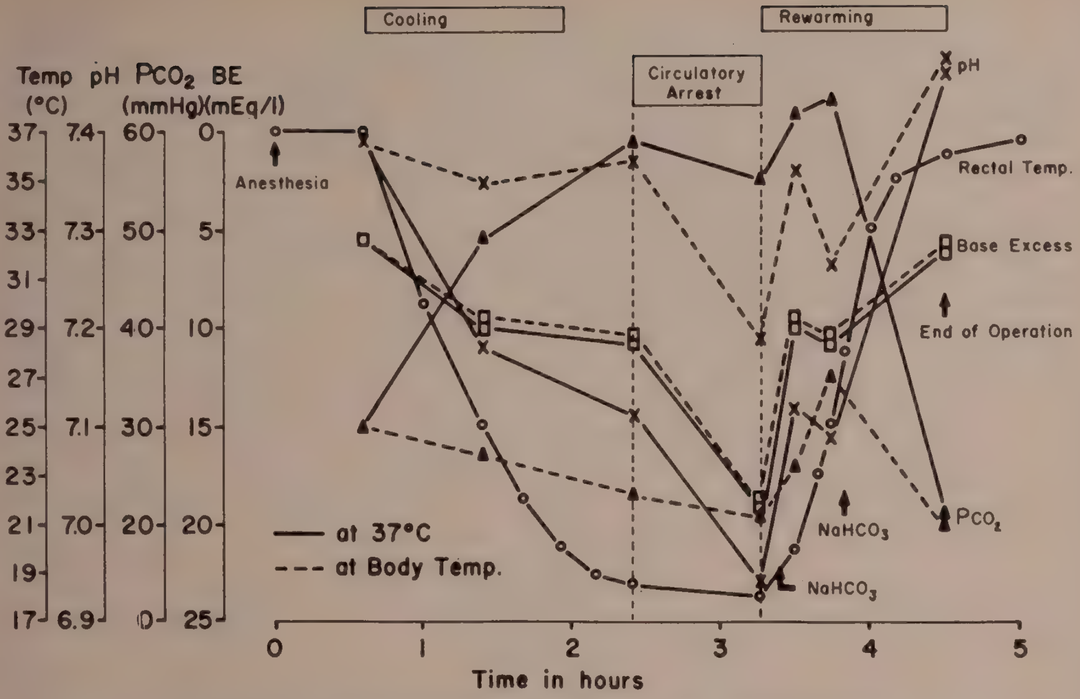

FIGURE 4. Acid-base balance during canine heart transplantation.

deaths resulted from a variety of technical failures associated with the surgical procedure, anesthesia, or postoperative care. Because of insufficiency of the aortic anastomosis, 2 puppies succumbed in hemorrhagic shock, 1 on the day of operation and the other on the first postoperative day.

In 2 cases autopsy revealed no cause of death. In these animals, whose operations were performed early in the series, acid-base balance was not studied and the acidosis was untreated.

Data obtained from operations later in the series indicated that most puppies were slightly or moderately acidotic before cooling. During cooling the temperature-corrected values of pH, carbon dioxide tension, and base excess did not change significantly. Immediately after the start of cardiac massage, before respiration was resumed, a marked metabolic acidosis, which had developed during the period of circulatory arrest, was noted. If not corrected, it was still moderate or severe at the end of the rewarming period, despite slow decrease in severity during that process. Figure 4 gives an example of acid-base changes during a procedure.

Figure 5 shows a graph of pH versus base excess at 37 C. before and after the procedure in 12 consecutive cases. In the first 6 cases acidosis was not corrected; in the remaining 6 sodium bicarbonate (5 mEq. per kilogram) was given intravenously in two doses during rewarming. Injection of bicarbonate during cardiac massage almost immediately improved myocardial tone, making it possible to obtain higher arterial pressures.

In view of these findings, it seems justified to ascribe these 2 deaths to severe metabolic acidosis, since this condition was undoubtedly present, and no significant factors were discovered at autopsy.

Comment

In cardiac surgery on infants, hypothermia offers an alternative to the use of a pump oxygenator by reducing oxygen requirements substantially. In our experience, the safe duration of circulatory arrest under hypothermia—thirty-five to sixty minutes at rectal temperatures of 15 to 20 C.—is sufficient for performing the surgery.

There are, however, limitations to the

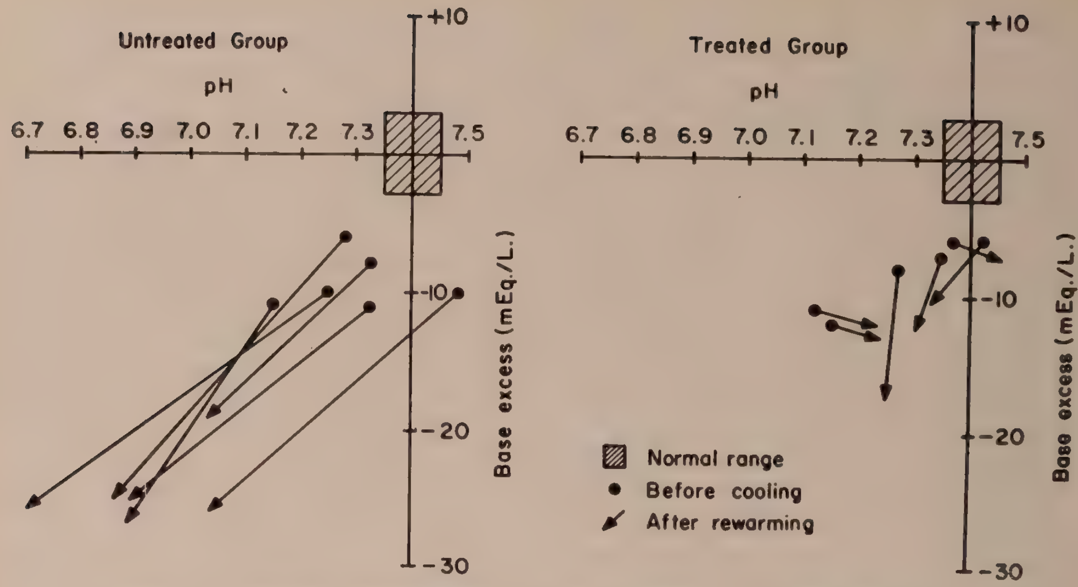

FIGURE 5. Acid-base changes before and after operation in 12 consecutive cases.

use of hypothermia. Primarily, these pertain to its duration and the management of the resuscitation phase. Early correction of metabolic acidosis is essential for safe resuscitation because it increases myocardial tone and contractility.[8] If adequate arterial pressures cannot be achieved by cardiac massage, rewarming, especially of the thoracic cavity, should be delayed and blood infused until adequate filling of the heart and satisfactory systemic arterial pressures are obtained. It must be stressed that for satisfactory rewarming, maintenance of adequate tissue perfusion and oxygenation is more important than rapidity.

With a swift surgical technic and meticulous resuscitation procedure, brain damage can be avoided. The case reported by Kantrowitz *et al.*[9] illustrates these points. A heart was implanted in a seventeen-day-old infant using deep hypothermia and circulatory arrest for forty minutes at 17 C. No evidence of brain damage was seen, but a severe postoperative metabolic acidosis was probably the primary factor accounting for the baby's death six hours after the operation.

The remaining factors described in this presentation are common to both the hypothermic technic and extracorporeal circulation.[8] Among the more important are careful, secure anastomoses, avoidance of air emboli, and protection of the graft against anoxia. In direct heart transplants, that is, procedures in which the graft is obtained at the time of death, simple cooling in fluid media seems to be the method of choice for protecting the organ. Isolated coronary perfusion is another method. Hearts removed after thirty minutes of asystole and perfused for as long as ten hours in vitro have been successfully transplanted in puppies.[10] The method has several inherent faults, of which microembolization and the development of marked myocardial interstitial edema appear to be the most significant.

The high incidence of pulmonary problems encountered in this study is inherent in the use of puppies as the experimental animals.[5] The frequent spontaneous occurrence of pneumonia among laboratory puppies and the need for bilateral thoracotomy account for this. In a clinical case, operation would be waived if there were lung infiltrations, and median sternotomy rather than bilateral thoracotomy would provide the best surgical approach.

Recognition of the factors involved and training in the hypothermic technic render the method safer than the results at first glance may indicate. Seventeen of the 24 deaths analyzed here occurred as aftermaths of the first 20 operations in the series. Among the last 10, there was only 1 death, and it resulted from late postoperative bleeding.

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Tilt test to estimate blood loss

Accident cases with a blood deficit of 1,500 cc. are not likely to survive surgery, yet the average patient who has lost that amount of blood will appear normal in the supine position with a normal pulse and good color, states D. Methang, M.D., in a recent issue of *GP*. If this patient sits up or is tilted to 75 degrees on an x-ray table, however, he will quickly become hypotensive and may faint, just as shock will develop under the stress of anesthesia and surgery. This test can indicate not only immediate needs but also the probable demands for additional blood until the bleeding has been stopped.

The blood loss as indicated by pulse and blood pressure in the tilt test is calculated as follows: first, with the patient flat on his back, the pulse and blood pressure are taken. Next, he is tilted on an x-ray table to an angle of 75 degrees. After a minute, the pulse and blood pressure are again taken. The blood requirements are calculated.

In shock due to blood loss, the patient is pale and the superficial veins are contracted and collapsed. In shock due to heart failure, the veins are filled and there is no pallor. If pulmonary congestion develops or there is cyanosis after 1 to 2 units of blood or blood substitute are given, heart failure is the probable cause. The jugular veins are swollen, and there are basal pulmonary rales. Monitoring the central venous pressure is the best way to differentiate hypovolemic shock from shock due to heart failure. Respiratory blockage or compressed lung may also cause hypotension and shock, but these patients will be cyanotic unless the hemoglobin is less than 5 per cent.

If 2,000 cc. of blood does not control hypovolemic shock, it usually means the hemorrhage is continuing. The rate of blood loss may be calculated by the interval between the time of injury and the onset of shock. If it has taken two hours for shock to develop, the rate of loss is about 1,000 cc. per hour. If it is estimated that it will take an hour and a half to get blood into the patient and stop the hemorrhage, 1,500 cc. will be needed in addition to the 2,000; that is, 3,500 cc. If major surgery is planned, perhaps another 1,000 cc. will be needed to offset blood loss during the operation.

If blood is not immediately available, any suitable fluid should be used to expand the blood volume and restore circulatory compensation. Although fluids such as Ringer's lactate and dextran are not perfect, they can be lifesaving until blood is available.

Plastic Surgery for Prisoners

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THE THEORY THAT LAW VIOLATION has a morphologic or physical basis is a carryover from the craniology of Franz Gall and John Spruzheim in the late eighteenth and early nineteenth centuries. Caesare Lombroso (1836–1909) postulated that the criminal was a born type, a degenerate form of human being whose physical makeup was atavistic. According to Lombroso, the physical characteristics of the criminal included large outstanding ears, massive eyebrow ridges housing large frontal sinuses, a square projecting chin, and thick upper lips.[1] Such observations, however, gave way in 1913 to the first scientific anthropometric study of criminals conducted in England by Charles Young, who concluded that there were no physical stigmata of crime and that there was no anthropologic criminal type. However, Hooton, in 1939, and Sheldon, in 1940, found a correlation between people with physical deformities and crime, particularly in the lower socioeconomic groups.

Over the last twenty years the rationale of treatment of crime has shifted from physical punishment and repressive custody to rehabilitation, on the premise that a criminal is an individual who is in some way handicapped, either mentally or physically. The realization of the importance of physical deformities, both congenital and acquired, in crime has logically led to the use of plastic surgery as part of a total rehabilitation program. The effect of such a program has been evaluated by a study of the recidivism rate, in which the readmission rate of prisoners who have undergone plastic surgery is compared with that of the general prison population. Connecticut State Prison reports this ratio as 1:2; Illinois reports a ratio of 17:42 per cent,[2] and Oakalla Provincial Prison in Canada, a ratio of 42:75 per cent.[3] At present there are 22 states providing plastic and reconstructive surgery as part of the criminal rehabilitation program.[4]

The Albany Medical Center-Clinton Prison program was begun in 1962. Edwin Jameson, M.D., physician in charge at the Clinton prison, with the approval of the New York State Department of Correction, approached Charles Eckert, M.D., chief of the Department of Surgery, and W. Brandon Macomber, M.D., chief of the Division of Plastic Surgery of the Albany Medical College, with a plan to inaugurate a plastic and reconstructive surgery program at the prison. Such a program would also cover male inmates in other institutions of the New York State system of correction. This proposal was readily accepted. The attending and resident staffs of the plastic surgery division volunteered their free service to the State, with the exception of transportation and incidental expenses. The first plastic surgery clinic was held at the Clinton prison in October, 1962. After the program had been under way for two years, William Holt, M.D., and A. M. Marchionne, Ph.D., of the Department of Psychiatry of the Albany Medical College were invited to make an evaluation of the plastic and reconstructive surgery program as an aid to total rehabilitation.

Hospital setup

Clinton prison is a maximum security prison with an average prison population of 2,000. The hospital, a separate unit in the prison, has a 200-bed capacity responsible for acute and chronic medical care of the inmates. There is a full range of laboratory and x-ray facilities. Whole

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TABLE I. Plastic surgery performed in Clinton Prison October, 1962 to October, 1967

Procedures	Number of Cases*
Revision for excision of facial scars	187
Dermal abrasions	34
Rhinoplasties and septal plasties	110
Submucous resections	16
Otoplasties	41
Ear reconstructions	23
Tattoo removals	31
Hand surgery: tendon grafts, tenolysis, tenodesis, bone grafts, arthrodesis, syndactyly	51
Miscellaneous: chin reconstruction, reduction of facial fractures, canthoplasties, revision cleft palate, revision columella, rib graft to skull, fascialata grafts to face, orbital reconstruction	62
TOTAL	555

* There were 438 inmates treated; some required stage procedures.

THE PREMISE THAT *a criminal is handicapped either mentally or physically led to the use of plastic surgery as part of a rehabilitation program. Surgery was done to revise facial scars, correct nasal deformities and protruding ears, remove tattoos, and restore the use of hands. Although the short-term evaluation has been satisfactory, long-term analysis is difficult. To use the recidivism rate as the only yardstick is not reliable since the statistics on readmission to prison are not broken down. This program is also valuable in postgraduate training in plastic surgery.*

blood is easily obtainable from the walking blood bank in the prison. There are two fully equipped operating rooms suitable for major surgery. Dr. Jameson is the chief medical officer with two medical assistants. General anesthesia is carried out on a fee-for-service basis by a pool of anesthetists from Plattsburgh.

Selection of patient

This program is entirely voluntary, and the privilege of having free plastic surgery includes all male prisoners in the New York State system of correction. Any inmate in the Clinton prison requesting plastic surgery or for whom plastic surgery is recommended during physical examination is referred to Dr. Jameson. If the inmate is not at the Clinton prison, a summary along with pertinent photographs is sent to Dr. Jameson before acceptance. Dr. Jameson then reviews selected cases with the group of plastic surgeons during their monthly visits. Once the case is accepted, the inmate is transferred to the Clinton prison for surgery. The candidates are then interviewed and tested by the visiting psychiatry staff. They are also informed, in detail, by the visiting plastic surgeon, of the nature of the surgery and its expected results.

The selection of the patient is guided by (1) the severity of deformity, either functional or cosmetic; (2) the chance and degree of improvement which can be effected by plastic surgery; (3) the age of the inmate. Priority is given to youthful offenders with short prison terms, but no one is refused surgery unless there are definite contraindications; and (4) the time of parole. Priority is given to those who are eligible for parole in the near future.

Prior to surgery the inmate is transferred to the prison hospital where a thorough physical examination and preoperative evaluation is carried out. Surgery is performed during a two-day period each month by a team consisting of an attending plastic surgeon and a senior resident. At the end of the first operating day's schedule, a plastic surgery clinic is held for the examination of postoperative patients and evaluation of prospective patients. A tentative schedule for surgery for the following one or two months is then decided on.

Results

SURGICAL. As the program developed, it became obvious that cases accepted for surgery fell into three main groups: (1) *Cosmetic.* Surgery was carried out to eliminate scars, chiefly facial, nose, and ear deformities. (2) *Functional.* Surgery performed for this purpose included chiefly hand cases, eyelid deformities, or cleft lip and palate. (3) *Vanity.* Inmates with minor deformities and long prison terms occasionally requested surgery. Surgery was granted hoping to improve their behavior in prison.

Revision of facial scars, as expected, headed the list (Table I). Practically all

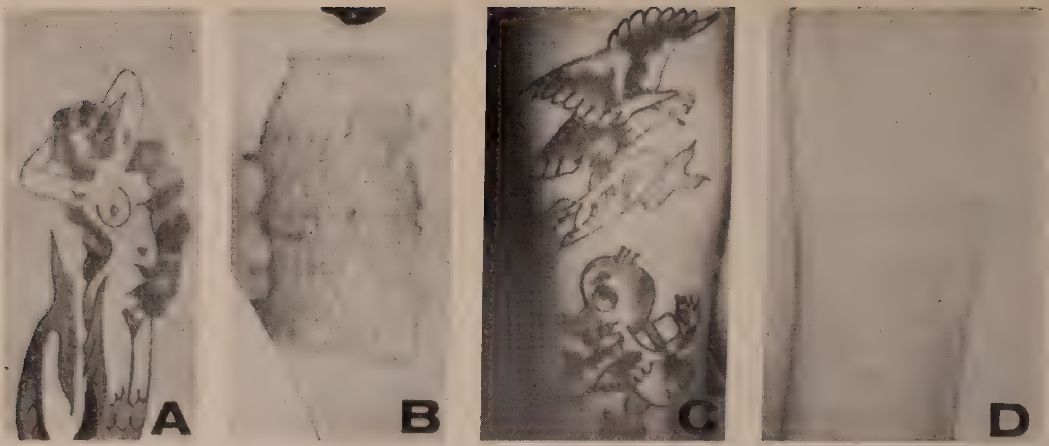

FIGURE 1. (A) Tattoo of upper arm. (B) Four months after partial-thickness excision with a dermatome. (C) Tattoo of forearm. (D) Postoperative photograph six months after excision and split-thickness skin graft.

facial scars were traumatic in origin resulting principally from knife injuries—souvenirs of a violent past. The over-all result as a whole was good. The degree of improvement was gratifying as compared with civilian practice, but the unfortunate truth that plastic surgery can not completely eradicate a scar was a frequent disappointment to the inmate. Furthermore, more than half of the patients were Negro, and a recurrence of a thickened scar is always a possibility.

Nasal deformities were the second largest group requiring plastic surgery. Again more than 90 per cent of them were traumatic in origin. Frequently the deformity was the result of repeated fractures. The asymmetry was often severe; the nasal bones were markedly thickened; and the nasal septum was crooked, thickened, and often duplicated. Nasoplasty for the correction of such cases was necessarily individualized, challenging, and difficult. The end result, therefore, was rarely perfect, although various degrees of improvement were obtained. In contrast to the results of revision of facial scars, however, nearly all patients were satisfied following surgery.

Otoplasty was used for the correction of protruding ears, all bilateral. The standardized procedure of reconstruction of the anthelix folds and lowering of the concha rim invariably gave a satisfactory result both from the surgeon's and the patient's point of view.

We have tried various methods for the removal of tattoos. Dermal abrasion and partial-thickness excision by means of a dermatome failed to obtain complete removal. Full-thickness skin excision with split-thickness skin grafting gave a more satisfactory result (Fig. 1).

The end result of hand surgery in prison is handicapped by the lack of intelligent cooperation on the part of the patient, the absence or limitation of physiotherapy facilities, and the difficulty of maintaining a prolonged and supervised postsurgical follow-up. As a whole the end results in this category fall below that in civilian practice (Fig. 2).

Psychologic. A preliminary study to compare the basic personality traits of a control group, an unselected population from the New York State prison system, and the experimental group, prisoners who have received some form of reconstructive plastic surgery, has been completed.[5] Such a study is important to demonstrate later that difference, if any, in the rate of recidivism is related primarily to the rehabilitative procedures under study and not to some extraneous factor, such as personality, age, or other social variable. In this study, the control group consisted of 115 randomly selected prisoners and the experimental group of 132 inmates who had received plastic surgery.

Each inmate in both groups was carefully studied concerning the social and personal data obtained from the records maintained in the New York State Department of Correction and his personality

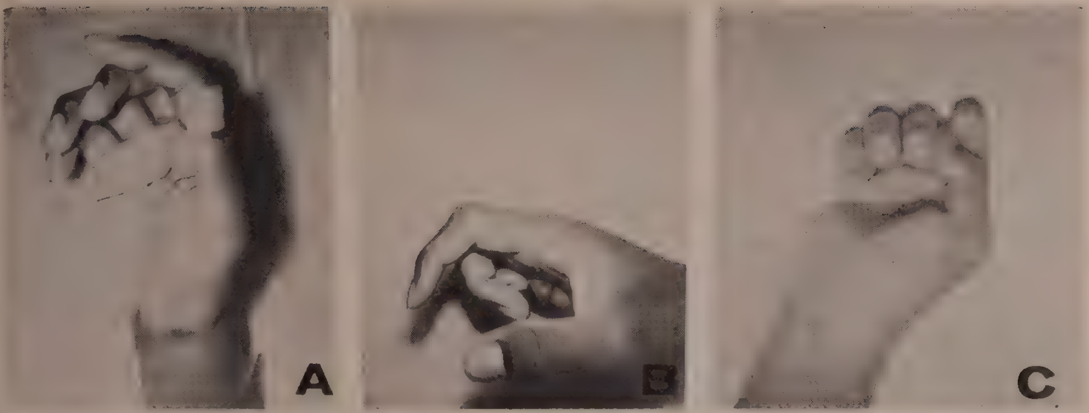

FIGURE 2. Old severance of flexor digitorum profundus tendon of index finger with severely limited flexion. (A) Preoperative picture. (B and C) Postoperative pictures one month after tendon graft. Patient now has strong pinch.

inventory obtained through various psychologic tests. The Minnesota Multiphasic Personality Inventory, the Body Cathexis Scale, which is a means of objectively evaluating the subject's attitude toward his own body and body parts, and the Draw-a-Person Test, an expressive technic designed to delineate the extent to which the subject's body concept appears as an integrated function in his own personality development, were used. All testing was administered prior to surgery. No subject was eliminated as a result of his performance in any test.

The preliminary study shows that these two groups were similar in education, intelligence, family stability, family social history, psychiatric diagnosis, and the type of offenses committed. There is an insignificant difference in age and number of past offenses which are themselves highly correlated. Thus it appears that these two groups do not differ substantially in social history data.

Psychologic test assessments demonstrated the following: (1) The control group, to our surprise, had a significantly higher body cathexis score than the surgical group. The former thus held a more negatively valued body concept and appeared more likely to exhibit a disturbed personality. (2) The experimental plastic surgery group, as a whole, showed greater cognitive confusion, hypochondriacal concern, moodiness, feelings of depression, anxiety, and inability to cope with intense feelings of aggression. Although this interpretation partly describes our control group, this group in addition showed poor judgment, lack of self awareness, and much less impulse control. (3) Both groups showed an inability to articulate the body concept. The result, as a whole, indicates that we have been successful in randomizing the personal-social characteristics of these two groups.

Plans for the near future include (1) a detailed study of the role body cognition plays in one's personal and social adjustment by direct clinical interview; (2) a study of the general role that physical structure of our subject plays as a social stimulus variable. Photographs of the subjects can be used to show their desirability as social stimulus objects when examined by peer groups, people in a position of hiring for a job, or female subjects. These studies should be repeated after plastic surgery to note any changes; (3) with the cooperation and support of the Division of Parole, an adequate follow-up of parolees from our two groups can be carried out. The incidence of returning to prison will be studied. For both those who have returned to prison through parole violation or new crime and those who remain free, an evaluation should be made to determine factors which have led to this particular behavior. Not only should statistical comparisons be made in terms of incidences of parole violation between the control and experimental groups, but also an evaluation of the role, if any, that plastic surgery has played in bringing about a more positive acceptance and positive response to the environment should be carried out.

Comment

Correction of any existing deformity or malfunction of an inmate is only a part of an over-all rehabilitation program. Because of the multiple factors involved in such a program, it is very difficult, if not impossible, to evaluate the value of plastic and reconstructive surgery alone.

The mere fact of the availability of a team of plastic surgeons and noticeable improvement in many postoperative cases certainly should have a morale-building influence on the inmates as a whole. This represents an attitude of "concern" or "care" on the part of the authorities and should facilitate the maintenance of discipline in the prison.

The gratitude of inmates who were benefited by plastic surgery is evidenced by the following quotations taken from letters written by them:

> While this correction of my physical appearance may not be the cause of my complete rehabilitation, it is definitely a great start.
>
> Since the operation I've felt a great deal less self-conscious and can breathe a lot easier. This change of appearance has had a definite effect on my personality, which I feel has improved. Although the physical change was small, I assure you, it has already given me more confidence in myself and a stronger determination to make good when I'm released.

Several reports received from superintendents of other institutions also indicated a favorable response from those inmates who have undergone plastic surgery. A report from the New York State Vocational Institute in 1966 indicated that 29 of 40 inmates who have had plastic surgery showed satisfactory adjustment. This included 18 individuals currently on parole.

Although the short-term evaluation appears to be satisfactory, long-term analysis is difficult. To use the recidivism rate as the only yardstick is not always reliable. In New York State the statistics on readmission to prison are not broken down to differentiate minor parole violations from commission of new crime. This confusion is further compounded by varying standards used for parole eligibility and varying methods of handling parole violations by states other than New York. Therefore, before a uniform standard is established, the recidivism rate can be used only as a rough measure to evaluate any rehabilitation program.

On the other hand, methods should be developed to measure the "adaptability to environment" or "rehabilitativeness" of the individual before and after the institution of any specific rehabilitation program, such as plastic and reconstructive surgery. This is the main reason for the combined effort of the Department of Psychiatry and Division of Plastic Surgery. We hope that in the future, with the cooperation and assistance of various departments of the New York State government, a long-term follow-up can be made, from which an evaluation of this project can be derived on a more reliable and scientific basis.

From a purely surgical point of view, the results were satisfactory, and the complications were few and insignificant. Lack of long-term follow-up, because of parole or transfer, necessarily prevents final evaluation on certain types of surgical cases, such as hand surgery or excision of hypertrophic or keloid scars.

The value of this program in postgraduate plastic surgery training is undeniable. With the introduction of Medicare and Medicaid programs in the State, clinical material available for postgraduate training in plastic surgery has been increasingly limited. This is especially true for certain types of cosmetic surgery, such as deformities of the ear and nose. The present program provides a nearly inexhaustible number of such cases, as evidenced in Table I. Its value in strengthening our training program is therefore obvious.

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Current Status of Cardiac Surgery*

Part III

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Treatment of acquired heart disease

HYPERTROPHIC CARDIOMYOPATHY (IDIOPATHIC HYPERTROPHIC SUBAORTIC STENOSIS). Since 1957, when Brock[153] first reported an instance of marked hypertrophy of the left ventricular musculature resulting in a functional obstruction to left ventricular outflow, numerous detailed descriptions of this interesting lesion have been published.[154-156] Much conflict has been generated by the unknown origin, the marked variation in radiologic and hemodynamic manifestations, and the numerous titles given to this lesion. Most frequently referred to as "idiopathic hypertrophic subaortic stenosis," the presenting symptoms are usually dyspnea, angina, dizziness, and syncope.[154] Pertinent physical findings are a rapidly rising arterial pulse, prominent jugular "a" waves, a double apical impulse caused by a prominent atrial contraction wave, and an ejection-type systolic murmur. Death is usually sudden, caused by rapid ventricular response to an atrial tachycardia, or a ventricular arrhythmia.

While these clinical symptoms and signs are noted by all investigators, disagreement with the interpretation of the radiologic and hemodynamic data has led to the formulation of several widely divergent concepts. Braunwald *et al.*,[154] Wigle, Heimbecker, and Gunton[155] and others believe this disease is a distinct entity which radiologically exhibits marked ventricular septal hypertrophy resulting hemodynamically in left ventricular outflow obstruction and intraventricular pressure gradients during systole. The functional nature of this disease is revealed during diastole, at which time the entire left ventricular cavity appears to be unobstructed by hypertrophied muscle. Criley *et al.*,[157] however, have opposed this view and have demonstrated the presence of intraventricular pressure gradients without subvalvular obstruction. The catheter tip will demon-

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strate regions of high pressure during systole, but the peak systolic pressures are the same just under the aortic and mitral valves. The catheter may become entrapped in areas of hypertrophied muscle, but there is no true obstruction to outflow from the left ventricle.

It is characteristic of this disease that the intraventricular pressure gradients are increased by pharmacologic agents, such as digitalis and isoproterenol, which increase myocardial contractility. We have studied several patients of each type, with and without a subvalvular location of the pressure gradient, and believe that the various lesions noted are all part of a spectrum of one disease. The determinant factor appears to be the exact location where hypertrophy occurs or predominates. If the increase in muscle mass is in the region of the septum, then outflow obstruction may predominate. If, however, the hypertrophy is more generalized, then cavity obliteration will occur resulting in pressure gradients without outflow tract obstruction. There are instances in which components of both forms of the disease present symptoms simultaneously. It should be emphasized that intraventricular pressure gradients do not occur with the left ventricular hypertrophy accompanying aortic valvular stenosis or systemic arterial hypertension. It has been shown that septal hypertrophy can also cause obstruction to right ventricular outflow, suggesting generalized myocardial disease.[158]

Since the prevailing feature of this spectrum of disease is muscle hypertrophy, the title "hypertrophic cardiomyopathy" is probably appropriate for the group as a whole. Such a title would include the various forms. It also eliminates the erroneous impression that the obstruction is necessarily in the subaortic region of the left ventricle, implied in the names "idiopathic hypertrophy subaortic stenosis" and "muscular subaortic stenosis."

There is considerable confusion in the literature regarding which patients are candidates for surgical therapy. Most published reports do not state precisely where the intraventricular pressure gradients were located. If the obstruction is primarily subvalvular, then simple myotomy incision into the hypertrophied mass seems to relieve the obstruction.[159] Most surgeons actually resect the hypertrophied muscle, entering the left ventricle via various routes: through the aortic valve,[159] directly through the left ventricular muscle,[160] or via the left atrium with retraction of the septal leaflet of the mitral valve.[161] A right ventricular approach has also been used to resect the right side of the hypertrophied septum, thinning it, and thereby relieving the bulging into the left ventricular outflow tract.[162]

Many of the patients operated on have been relieved of dyspnea and syncope, but surgical treatment is probably only palliative. Several published series of cases studied postoperatively by cardiac catheterization demonstrate that the left ventricular end-diastolic pressure does not fall, even though a subvalvular pressure gradient may have been largely eliminated.[163,164] This is striking proof that the elevated end-diastolic pressure was not a manifestation of failure due to outflow tract obstruction, but rather was due to intrinsic myocardial disease. There are sparse data concerning the effect of surgery on longevity, but sudden deaths have occurred in the late postoperative period.

The presence of a significant left intraventricular pressure gradient alone is not an indication for surgical intervention, since there is no clear relationship between symptoms and pressure gradient. Operation should not be considered unless the symptoms become life threatening. Supportive medical care and careful follow up will suffice in many cases. Digitalis and isoproterenol are contraindicated in this disease. Should myocardial failure appear in the course of the disease surgical treatment may be life saving, since digitalis cannot be employed.[165] Propranolol hydrochloride, a potent beta-adrenergic blocking agent, has been investigated and is of only limited usefulness.[166] Relief of angina following treatment with propanolol hydrochloride has been reported.[167]

We have demonstrated left intraventricular pressure gradients, either of the localized "entrapment" type or with outflow tract obstruction, in 11 patients and have thought that surgical intervention was indicated in only 1. This patient was a twenty-three-year-old female who at

TABLE I. Cardiac hemodynamics (heart catheterizations)

		Catheterizations		
Dynamics	Normal	Control	Three-weeks Post-operative	One-year Post-operative
Oxygen consumption (milliliter per minute per square meter)	134 ± 26	140	. . .	129
Arterial oxyhemoglobin saturation (per cent)	96	95	. . .	95
Arteriovenous oxygen difference (volume per cent)	4.1 ± 0.7	4.3	. . .	5.1
Cardiac index (liter per minute per square meter)	3.3 ± 0.6	3.24	. . .	2.51
Pressure (mm. Hg)				
Pulmonary wedge	3 to 8	24	. . .	24
Aorta				
Systolic/diastolic	120/75	96/64	101/61	105/67
Mean	90	78	80	80
Left ventricle				
Infundibulum	120/10	85/37	108/27	105/37
Body	120/10	210/30	169/28	128/41
Left atrium	<10	. . .	. . .	24

age nineteen was found to have cardiac murmurs, showed abnormal findings on electrocardiogram, but was asymptomatic. During the next two and one-half years, she developed progressive shortness of breath and underwent cardiac catheterization (Table I). There was an outflow obstruction in the left ventricle with a peak pressure gradient of 125 mm. Hg. She was operated on in March, 1966, through a combined aortotomy and left ventriculotomy approach, and about 5 Gm. of tissue were removed from the outflow tract.

She has been recatheterized on two occasions: sixteen days and one year following surgical intervention. The peak systolic pressure gradient across the left ventricular outflow tract decreased from the preoperative level of 125 mm. Hg to 61 and 23 mm. Hg, respectively. The left atrial pressure remained at 24 mm. Hg, while the left ventricular end-diastolic pressure rose to 41 mm. Hg one year after surgical treatment from a preoperative value of 30 mm. Hg. This increase in left ventricular end-diastolic pressure despite a marked reduction in pressure gradient must signify further hypertrophic change in the left ventricular musculature. During this period of time, the cardiac silhouette increased in size, and the preoperative symptoms of dyspnea and reduced exercise tolerance returned after a nine-month symptom-free period. The electrocardiograms also revealed progression of the left ventricular hypertrophy.

Surgical treatment of acquired valvular disease. Patients with acquired valvular disease present special problems of preoperative evaluation, because generally the myocardium is abnormal too. Operative risk and the degree of postoperative improvement depend on the amount and nature of the myocardial dysfunction and its potential improvement after valvular surgery. Several processes contribute to the myocardial damage: the rheumatic process itself, prolonged hemodynamic stress from the valvular deformity, increased pulmonary vascular resistance, and coronary artery disease.

Long-term follow-up data, more than ten years, after closed mitral commissurotomy are of limited value.[168] Many valves were severely damaged and presently would be replaced with a prosthesis, and often significant insufficiency was created at operation. However, an important fact emerging from these studies is that certain patients had remarkable, unquestioned improvement. This demonstrated that there are instances in which relief of valvular dysfunction improves cardiac function—thus separating the valvular disease from any coexisting myocardial condition contributing to the total disability.

Besides valvular involvement, rheumatic fever also damages the coronary arteries and the myocardium.[169] Histologically the fibrous tissue of the heart is more affected than the myocardial fibers themselves. Murphy,[170] however, believes that the myofibril changes are a most important feature of rheumatic carditis and that the Ashoff bodies derive directly from degenerated myocardial cells. Cell damage probably is more extensive than is suggested by the rather mild morphologic changes, because severe cardiac failure may occur during acute carditis without significant valvular dysfunction. The residual functional impairment of cardiac contractility after the acute phase has not been quantitated, but it must exist.

There are two aspects of the natural history of rheumatic fever, about which little is known, that are pertinent to surgical therapy: (1) Following an attack of rheumatic fever, does continued destruction of valve tissue mean that there is continued rheumatic activity, or can the initial damage initiate subsequent changes? (2) What is the incidence of recurrences of rheumatic activity?

Continued hemodynamic trauma to a deformed aortic valve can produce progressive, destructive calcific changes. In congenitally deformed aortic valves, there is imperfect formation of the commissures which may not produce a significant pressure gradient at birth. However, the leaflets are not able to fall completely out of the stream during systole into the sinuses of Valsalva, and thus they cause turbulence and generate a murmur. This continued trauma from turbulent flow often causes fibrosis and calcification and, ultimately, severe stenosis. At operation the degree of calcification may be so great that the original commissural configuration cannot be determined. Nonspecific thickening of the aortic valve occurs to an increasing extent with advancing age.[171] In elderly persons, without any history of rheumatic fever, severe calcific aortic stenosis may be present. The tentative interpretation is that the altered aortic valves become progressively damaged because of the high velocity of the turbulent blood flow.

The situation regarding the mitral valve is not clear. In those elderly patients early nonspecific changes were often also present in the mitral valve, but severe deformity did not occur.[171] Thus in these valves, there did not appear to be significant progressive damage due to hemodynamic stresses. However, it is well known that in rheumatic fever there is frequently progressive mitral valve deformity. The important question is the role of continued rheumatic activity. After the initial attack of rheumatic fever, mitral stenosis does not occur for at least several years and usually is not hemodynamically significant until fifteen or more years later, indicating progressive mitral valve deterioration. The most striking evidence that progressive mitral valvular deformity occurs comes from the high incidence of "restenosis" following mitral valvuloplasty. When those patients who had an inadequate initial operation are excluded, about 20 per cent redeveloped symptoms of mitral stenosis after nine years.[172] Most of these patients have not had any evidence of recurrent rheumatic fever. Pathologic examination of these restenosed valves shows that although refusion along the line of previous commissurotomy does occur, the major alteration is due to progressive, diffuse fibrous thickening and calcification of the leaflets and especially the papillary muscles and chordae tendinae.

It has been postulated that these changes can occur without continued rheumatic activity, due to progressive degenerative changes in the collagen of the valve originally damaged by rheumatic fever.[173] Platelet aggregation may also play a role.[174] The question cannot be answered until a specific method is available for determining rheumatic activity.

It is possible that for the same degree of rheumatic involvement of the mitral and aortic valves, the aortic valve may undergo more subsequent alteration due to hemodynamic stress.

There is the ever-present possibility that an exacerbation of rheumatic carditis has occurred. The decision to operate often is based on a deterioration in the clinical status, but if this is due to acute carditis, operation is contraindicated. We have operated on 6 persons, aged eighteen to thirty-seven, without laboratory suggestion of rheumatic activity, who had gross evidence of active pancarditis. The planned surgical procedure was not performed. They were treated with steroids, and their clinical status improved. Surgical correction of the valvular lesions is not indicated at the present time in 3 of these patients. Two patients underwent definitive surgery eight to ten months following initial operation, and the other is scheduled for surgical treatment. In persons beyond their teens, active carditis probably is more common than is generally thought. We are following up 2 patients with mitral and tricuspid valve replacement who did very well for many months after surgery and then developed severe failure of the right side of the heart without showing any laboratory evidence of carditis. Their symptoms gradually improved, and after about one year they felt well again. The valvular status was unchanged during this period, so that they almost certainly had transient myocardial failure due to rheumatic carditis.

We have become suspicious of rheumatic activity in young persons. In those patients scheduled for valvular surgery, in whom we suspect activity despite absence of objective findings, we initially inspect the pericardium and myocardium through a small incision in the left anterior part of the chest through the bed of the resected fifth costal cartilage. If there is any gross evidence of carditis, biopsies are taken of the pericardium and the procedure terminated at this stage.

Clinical suggestions of rheumatic activity in young persons are clinical disability out of proportion to the valvular deformities, persistently rapid heart rate, and an abrupt worsening of the patient's condition. Two processes that can be confused with rheumatic activity are bacterial endocarditis and pulmonary embolization. Both can cause deterioration in the clinical course marked by fever and tachycardia.

Valvular replacement: The development of valvular prostheses has allowed the application of open-heart surgical technics to the treatment of valvular heart disease. It is appropriate, therefore, to discuss valvular prostheses in general, before considering specific valvular lesions.

Hufnagel *et al.*[175] demonstrated that a valvular prosthesis could function many years in the human body. They inserted a ball-in-cage valve into the descending thoracic aorta for the relief of aortic insufficiency in 1954. Because of its distal position in the aorta, the valve only partially corrected the regurgitant blood flow in the aorta. Furthermore, there was significant distal embolization to the abdominal viscera and the lower extremities. Many investigators worked to develop intracardiac valvular prostheses after it was apparent that open-heart surgery could be performed. Harken *et al.*[176] successfully replaced the human aortic valve with a ball-in-cage prosthesis in 1960. Starr and Edwards[177] shortly thereafter placed their own valve, of similar design, into the mitral position. There has subsequently been a profusion of valve designs, and there will certainly be additional refinements.

The status of valvular prostheses at this time may best be discussed by considering the problems inherent in these valves and the attempts that are being made to overcome them. There are five categories of problems with valvular prostheses: hemodynamic, durability, thrombosis, infection, and destruction of formed blood elements.

Hemodynamic function of a valvular prosthesis can be evaluated in a testing chamber that simulates cardiac action. In general, under in vitro test conditions, ball-in-cage prostheses have a higher gradient pressure than prostheses in which a disk is substituted for the ball. This is especially true at higher pulsation rates because the inertia of the ball is greater than the disk.

The hemodynamic properties of the valve, as determined in a testing system, are altered when these valves are placed into the heart. The ball-in-cage design may become considerably less efficient when placed in the mitral or tricuspid positions for two reasons. If the ventricle is small, these valves may interfere both with the ventricular filling and emptying. The protruding ball-in-cage can obstruct the outflow of blood from the ventricle, or the struts of the cage may traumatize the ventricular septum, usually leading to a serious ventricular arrhythmia. The flow of blood into the ventricle during diastole may be impeded by the ventricular musculature surrounding the cage. The true orifice of the valvular prosthesis is not that of the diameter of the annulus but rather is determined by the relationship of the ball in diastole to the surrounding ventricular musculature. The disk valves, in addition to having better flow characteristics in the test chamber, also function better when placed in the mitral or tricuspid position. There is less volume of prosthesis protruding into the ventricular chamber, so that obstruction to the ventricular outflow and septal damage are not significant problems. Perhaps of greater importance is the fact that ventricular muscle does not impinge on the effective orifice of the disk prosthesis, as it does with the ball-in-cage type.

Kay *et al.*[178] measured postoperative pressures in 18 patients, 9 with his model disk valve and 9 with Starr valves of similar orifice areas. The range of left atrial mean pressures after exercise was 9 to 17 mm. Hg with the disk and 9 to 25 mm. Hg with the ball prosthesis. The average end-diastolic gradient pressure with the disk valve was 1 mm. Hg at rest and 2 mm. Hg with exercise compared with respective values of 1 and 6 mm. Hg with the Starr valve.

The ball-in-cage valve is the only type that has been extensively used in the aortic position. Because of the large pressure gradient across the valve in both systole and diastole, the inertia of the ball is less important than it is in the mitral position. A few surgeons have inserted disk valves into the aortic position, but their initial experience has been unsatisfactory, although they have not as yet detailed their findings in the literature. The major hemodynamic problem with the ball-in-cage valves in the aortic position is that, as with the mitral or tricuspid position, the effective valvular orifice may be diminished by tissue impinging on the cage. If the aortic root just distal to the annulus is small, then significant obstruction may be present as the blood flows between the ball and the aortic wall during systole. A prosthesis somewhat smaller than the largest that can be accommodated at the annulus level should be inserted to obtain better clearance between cage and aortic wall.

As for durability, mechanical failure of ball-valve prostheses was not anticipated because they withstood accelerated in vitro testing equivalent to many years of in vivo function. However, the initial models of the Starr-Edwards aortic valves have shown a tendency toward distortion of the ball. Approximately 10 to 15 per cent of Starr's[179] patients have developed significant swelling of the ball. Others have reported escape of the ball from the cage with immediate fatal aortic insufficiency.[180] The balls are made of silastic rubber, and it is postulated that there is an interaction between the rubber and the lipid products in the blood causing the distortion. There may be a specific plasma element in some patients that is not present in others.

There have been no reported changes in the ball in the more recent models of the Starr-Edwards aortic prostheses.[181] There have been modifications in the method of curing the silastic rubber, which may be important. The Cutter-Smeloff aortic valve also employs a silastic ball, and the incidence of ball variation has been under 1 per cent. The incidence of ball variation for all model mitral prostheses is essentially zero. The turbulence in the aortic region may be necessary, in addition to the plasma lipid factor, to cause ball variance. The problem of ball variance almost certainly will be solved; meanwhile, it is important to examine carefully, at regular intervals, patients with aortic valves containing silastic rubber balls. Early stages of ball variation can be determined by auscultatory changes occurring prior to hemodynamic alterations, and reoperation should be performed at this time. To overcome this problem, valves with titanium metal balls are being manufactured.*

The commercially available disk prostheses employ plastic disks, and there have been some reports of disk wear. This should be correctable with alterations in the disk cage design. Metal disks may prove to be superior.

Leakage can develop around valvular prostheses, due either to improper placement of sutures which tear out or, more commonly, to a tear developing in the cardiac tissue itself, lateral to the suture line. The former problem generally can be prevented by careful attention to surgical detail.

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* Manufactured by Edwards Laboratories, California.

The latter can be minimized if sutures are placed into strong tissue. In the aortic position they should not be placed into the remnants of valve leaflets, but rather well into annulus and aortic wall. In the mitral or tricuspid area, it is probably better not to place the prosthesis into the annulus itself but rather to leave some rim of valvular tissue, thus allowing for greater clearance between the valve and ventricular muscle. It is usually possible to leave a rim of tough valvular tissue along most of the perimeter.

Thrombus formation is the major problem associated with valvular prostheses. The resultant emboli usually are small, so that they are only recognized clinically when they lodge in the brain, while emboli to other peripheral sites generally are unnoticed. It is difficult to assess the true incidence of cerebral embolization. Unless one carefully instructs patients to notice the most minimal and transient sensory and ocular aberrations, most episodes of embolization will not be recognized.

Duvoisin, Brandenburg, and McGoon[182] reported an over-all incidence of emboli of 22 per cent in a series of 791 patients with prosthetic valve replacements. A total of 752 patients were followed up a minimum of twelve months, with an average of twenty-nine months, and 222 cases of emboli were diagnosed. They noted no difference in incidence between aortic and mitral prostheses. Sixty-seven per cent of emboli were lodged in the cerebral vessels, where 9 per cent caused death and 7 per cent left permanent disability. Emboli to the coronary arteries were seen less frequently, 15 per cent, but were more serious, resulting in a 35 per cent mortality rate. In this series no disabling embolizations occurred to any patients who received adequate anticoagulation therapy. They predict an incidence of emboli of less than 5 per cent in two years following insertion of a Starr prosthesis, providing adequate anticoagulation therapy is employed.

Yeh *et al.*[183] followed up 36 cases of aortic replacement with Starr valves for a total of 522 patient-months. No emboli were noted during 312 patient-months in those who received anticoagulant therapy and 210 patient-months in those without anticoagulant therapy. A total of 55 patients with Starr mitral prostheses were followed up for a total of 903 patient-months. Thirteen patients, 24 per cent, had one or more embolic episodes. The incidence rate of emboli was 7 in 112 patient-months in patients who received no anticoagulation therapy as against 1 embolus in 677 patient-months in those using anticoagulants; anticoagulation therapy reduced the incidence of emboli by a factor of 40.

Our experience with 25 patients with mitral replacement, 40 patients with aortic replacement, and 3 patients with double valve replacement followed up from two months to four years shows 3 per cent incidence of emboli from the mitral area and 4 per cent from the aortic area in patients maintained on adequate anticoagulation therapy. We have not seen any patient disabled from embolism who received satisfactory anticoagulation treatment.

Long-term anticoagulation therapy is best accomplished by sodium warfarin (Coumadin), or its derivatives, administered to keep the prothrombin time about twenty to twenty-five seconds.

Thrombus originates on the exposed metal surfaces of the prosthesis cage.[184] The fabric sewing ring, usually Dacron or Teflon, is ingrown by host fibrous tissue and develops a glistening surface in about three months, but even prior to this encapsulation, fibrin deposits do not build up on the fabric.

All manufacturers have modified their valves by reducing the surface of exposed metal in the cage. Experimentally, if the entire cage is encased with fabric, there is no thrombus formation, even when anticoagulants are not given.[185] Recently valves for human use have become available incorporating this principle. Palmer *et al.*[186] have designed a mitral valve allowing complete tissue encapsulation of the frame. Preliminary laboratory work and a study of a limited number of clinical cases suggest that such a design will substantially reduce the incidence of postoperative emboli.

In summary, anticoagulation therapy reduces the incidence of embolization to an acceptable value with available prostheses. Improved valve design should reduce this further.

Infection occurs at the junction of the sewing ring with the annular tissue. Almost all valve infections occur within a few months after insertion, presumably before there has been tissue ingrowth of the fabric. The incidence of prosthesis infection is low when prophylactic antibiotics are administered, as described in an earlier section. Our incidence has been less than 2 per cent with a follow-up period of from six months to four years.

As for destruction of formed blood elements, the life span of red cells is diminished in many patients with mitral and aortic valve disease and probably in all patients following insertion of a prosthetic valve.[187] In both situations this is probably caused by abnormally high turbulence as blood flows across the valves. Red cell destruction is greater with prosthetic aortic than with mitral valves, but following insertion of both types of prostheses, the rate of destruction is often less than it was prior to surgical intervention.

Some of the red cells are lysed within the vascular space, resulting in free-circulating hemoglobin. Other cells probably are damaged and subsequently phagocytized in the reticuloendothelial system, because red cell survival time may be diminished in the absence of free hemoglobin.[188,189] If there is a regurgitant jet caused by leakage around the prosthesis, then the rate of breakdown can be so great as to cause clinically significant anemia. However, if the prosthesis is functioning properly, cell breakdown is compensated for, and there is an elevated reticulocyte count and normal hematocrit. Only 5 per cent of Starr's patients required transfusion for anemia after satisfactory aortic valve replacement.[190]

Continued red cell breakdown may deplete the iron stored in the body and ultimately cause an iron-deficiency anemia. Iron-poor red cells are more fragile, thus increasing the breakdown rate. Therefore, iron should be given to those patients who have evidence of cellular hypochromia.

The hemoglobin normally liberated from lysed cells is bound by haptoglobin, and after valve replacement, serum haptoglobin is markedly reduced or is absent.[191] The haptoglobin-hemoglobin molecule is removed by the reticuloendothelial system and is not filtered by the kidneys.[192] In the absence of haptoglobin, free hemoglobin is deposited in the kidneys, and there is concern that this chronic deposition ultimately may produce functional damage. Roberts and Morrow[193] have reported 7 patients who developed severe hemolysis and renal hemosiderosis following insertion of Teflon, trileaflet aortic prostheses. These prostheses all grew stiff and ultimately fragmented within months after insertion, causing severe aortic insufficiency. In those patients, despite marked iron deposition, there was no impairment of kidney function.

These authors also report that there was considerable iron deposition in the kidneys of a patient who died four months after replacement of a Starr-Edwards aortic valve that was competent at autopsy.

Auto-immune antibodies have been reported in the early postoperative period following prosthetic aortic valve insertion and were associated with significant anemia which improved with steroid therapy.[194] The cause is not known, but since this has not been reported with other types of open-heart surgery, including mitral replacement, in some way the production of auto-immune antibodies must be related to increased trauma to the red cell following aortic replacement. Red cell destruction is not a serious problem, and available evidence suggests that functional kidney impairment will not occur from chronic hemoglobin deposition in the renal tubules.

Although the totally satisfactory valvular prosthesis has not been designed, there is reason to believe that continued improvements will correct the existing problems. However, because of these problems, some surgical groups have turned to the use of aortic valves obtained either from cadavers or from other animal species. These valves have generally been used to replace the aortic valve, but some have also been inserted into the tricuspid, mitral, and pulmonic positions. Ross and Barret-Boyes have had the largest experience with the longest follow-up time. Each of these has inserted cadaver homografts into the aortic valve position, and their follow-up periods now extend to four years. The major advantage of the homograft is that thrombosis does not occur, and it is not necessary to administer anticoagulant drugs to patients. It is difficult always to have a complete range of valve sizes available. The homograft is also somewhat more difficult to insert than are prosthetic valves. Nevertheless, this method of aortic valvular replacement would be unquestionably the preferred method, if the long-term durability of these valves was established. A disturbing feature of aortic homografts is that there is a tendency, over the first few months, for an increasing number of these patients to develop the murmur of aortic insufficiency, usually without clinical evidence of regurgitation. The incidence of aortic insufficiency murmurs probably can be reduced somewhat as experience is gained with the technical subtleties of inserting homografts.

A serious problem of the homograft noted by Ross and Barret-Boyes is an increasing incidence of calcification of the homograft three to four years after insertion. These valves were taken from cadavers and then sterilized and preserved in a fluid medium prior to insertion. Malm *et al.*[195] have utilized irradiation to sterilize freeze-dried grafts, hoping that this method of preservation would result in a more durable valve. The tensile strength of aortic tissue following this method of sterilization is greater than chemically sterilized tissue.[196] It should be noted, however, that irradiation was initially used by Meeker and Gross[197] for preparation of aortic homografts that were used to bridge coarctated segments of aorta. About 35 per cent of these irradiated grafts calcified in a follow-up period of up to ten years, some as early as twenty-four months.[198] At this time one can only hope that irradiation of aortic homografts will result in a more durable graft, but there is no evidence to expect that this will be so.

Fresh homografts have been used in the hope that they will be more durable, because they do not require preservation. This will only be determined with adequate follow-up, but the problem of obtaining these fresh valves will remain.

Heterograft aortic valves from pigs and calves have been inserted into human beings. It is easier to maintain large inventory of heterografts than homografts, but it would seem that heterograft valves should not be used clinically until the fate of homografts is determined by longer follow-up. Experimentally, heterografts break down much faster than homografts.

Our current attitude toward valvular replacement is, on the one hand, awaiting the long-term results of homograft replacement, and, on the other hand, evaluating what appear to be continuing improvements in the design of valve prostheses. Several years must elapse from the time of insertion before valid evaluations can be made, either of a new method of homograft preparation or of a new prosthetic design.

AORTIC VALVE DISEASE. Aortic valve disease often produces a combination of stenosis and insufficiency, but generally one predominates hemodynamically. Rheumatic fever and congenital deformity are two major causes of aortic stenosis, and there probably are other nonspecific degenerative valvular changes which ultimately lead to calcification and predominant stenosis. Aortic insufficiency usually is due to rheumatic fever. Cystic medial necrosis of the ascending aorta may be associated with aortic insufficiency, caused both by annular dilatation and changes in the leaflets. In the majority of cases, the other aspects of Marfan's syndrome are absent.[199] Endocarditis can cause sudden, severe insufficiency. Syphilis is an uncommon cause of aortic insufficiency today. The basic lesion in aortic stenosis is the constriction of the left ventricular outflow tract at the valvular level. Experimental studies have shown that the constriction must reduce the orifice to less than 25 per cent of normal to be of hemodynamic significance.[200] Gorlin *et al.*[201] found that the critically stenosed valve area was 0.5 $cm.^2$. At this point, pressure-flow curves showed pronounced "flattening," so that further increase in pressure yielded little extra flow. Cardiac output, therefore, is relatively fixed. At this level of constriction, a systolic pressure gradient of about 100 mm. Hg is necessary to maintain systolic flow at 200 cc. per systolic second, which is the lower limit of normal. Work done by the left ventricle under these conditions is approximately twice normal. The left ventricle becomes markedly hypertrophied, and ultimately coronary blood flow is incapable of increasing to meet this load. Friedberg and Horn[202] described 8 cases of aortic stenosis, among 37 cases of acute myocardial infarction not due to coronary artery occlusion, and postulated this mechanism to be one of the explanations for sudden death in patients with aortic stenosis.

A gradient pressure of 50 mm. Hg between left ventricle and aorta is usually regarded as an indication for operation. Studies in children with congenital aortic stenosis have shown that this is the level at which symptoms begin.[203] Braunwald *et al.*[204] studied 100 patients with aortic stenosis. Every patient with a pressure gradient above 75 mm. Hg was symptomatic, as were 8 with pressure gradients below that level. Jones *et al.*[205] reported a series of 43 patients with congenital aortic stenosis, 23 with pressure gradients above 45 mm. Hg. All patients with a pressure gradient this large showed symptoms of left ventricular hypertrophy on physical examination, electrocardiogram, x-ray examination, or all three.

Generally, patients with aortic stenosis are active, without symptoms, until there is tight stenosis and marked left ventricular hypertrophy. Sudden death occurs in 5 to 15 per cent of patients at this stage of the disease. Overt congestive heart failure, syncope, and angina are late symptoms, and clinical deterioration of the patient's condition usually ensues when these symptoms appear.

Whereas the left ventricle becomes thicker with aortic stenosis, it predominantly dilates with aortic insufficiency, and severe insufficiency may be present for many years before failure occurs, as indicated by elevated left ventricular end-diastolic pressure. Patients with predominant aortic insufficiency generally show a gradual decline physically, and sudden death is less common than in patients with aortic stenosis. We generally wait to perform surgery until there is Class III disability, and there usually is an elevated left ventricular end-diastolic pressure at this stage.

We do not routinely obtain preoperative coronary arteriograms, even if we suspect coronary artery disease. Coronary flow is improved by correcting the valvular lesion, and the oxygen requirements of the left ventricle are reduced when the hemodynamic stress is corrected.

Except for rare instances when no reconstruction is feasible, complete replacement is done for all aortic lesions in the adult. Debridement of calcified cusps has been abandoned. There is a disagreement regarding the necessity of, and the means for, protecting the myocardium during the period that the aorta is cross clamped and the valve is exposed. Theoretically, continuous pulsatile perfusion of both coronary arteries should be preferable. Experimental studies have shown a progressive depression of ventricular performance with increasing periods of ischemia; the duration of ischemia can be lengthened by hypothermia.[206] The available pumps do not deliver a pulsatile flow to the coronaries, but many groups do perfuse at normothermia. At the other extreme, Cooley *et al.*[207] claim that the myocardium will recover after one hour without any coronary blood flow at normothermia, and they neither perfuse nor cool the heart. Some groups rely entirely on packing the heart in iced saline.

Many methods of perfusion with or without hypothermia are used and appear to be equally satisfactory, as judged by clinical results. The probable advantages of one method over another, if any, are subtle and will only be discovered by clinical studies of myocardial metabolism and ventricular function curves in the operating room.

We believe strongly that the heart should be supported in some reasonable manner; this is especially important for the more diseased myocardiums. We continuously perfuse both coronary ostia with 100 ml. of blood per minute at 20 C. The perfusion can be safely interrupted at this temperature, when necessary, to facilitate placing the sutures.

The mortality rate from aortic valve replacement in good-risk patients should be about 10 per cent. McGoon, Pestana, and Moffitt[208] reported 100 consecutive cases of aortic valve replacements with ball-valve prostheses without a patient dying in the hospital. They employed continuous hypothermic coronary artery perfusion. Others have reported mortality rates of less than 10 per cent in large series. We have performed 46 isolated aortic valve replacements. During this period, no patient with isolated aortic valve disease who was seen by the authors was refused because the disease was too far advanced. One patient, who had suffered cardiac arrest the night before surgery, was essentially moribund when operated on and died when heart-lung bypass could not be terminated after replacement of the valve. This is the only person in whom myocardial contractility was inadequate after bypass. One patient died of wound infection on the tenth postoperative day, another died of unexplained brain damage on the fifth postoperative day, and a third died suddenly of a myocardial infarction on the sixth postoperative day.

Included in the survivors were 3 patients who had associated aneurysms of the ascending aorta that were resected; several patients had intractable angina while at rest; blood urea nitrogen elevations above 40 mg. per 100 ml. were present in 5; and left ventricular end-diastolic pressures were above 40 mm. Hg in 4 patients.

Several factors probably contribute to the excellent response to valve replacement in severely ill patients. There may not be significant rheumatic myocardial damage as discussed. The myocardium prior to surgical intervention is at least adequate to maintain life, and then there is a sudden relief of its hemodynamic burden, improved coronary blood flow, and diminished myocardial oxygen requirements. These salutary results must more than compensate for the temporary deleterious effects of heart-lung bypass on myocardial metabolism, which were described in the first section of this article: diminished coronary blood flow and anaerobic metabolism induced by isoproterenol.

A special situation regarding aortic valve surgery occurs when aortic insufficiency is caused by valve infection. Occasionally there is rapid development of massive regurgitation, and the myocardial failure is uncontrollable. The only hope then is to replace the valve, even though the infection has not been adequately treated. There have been several reports of patients who have survived replacement of actively infected valves.[209,210] The mortality rate is considerably higher than when myocardial function can be maintained long enough for intensive preoperative antibiotic therapy.

MITRAL VALVE DISEASE. Mitral valve disease produces a greater variety of cardiorespiratory manifestations than isolated aortic valve disease since it may affect left atrium, pulmonary vascular bed, right side of the heart, and venous circulation, while aortic disease, in its early stages, affects only the left ventricle. In addition, the rheumatic process appears to be more extensive in patients with mitral disease so that left ventricular myocarditis and fibrosis may further complicate the clinical symptoms. Although mitral stenosis and insufficiency commonly coexist, separate consideration of pure stenosis and pure insufficiency is helpful in presenting the relationship between abnormal hemodynamics and the progression of cardiorespiratory difficulty.

Two separate levels of mechanical obstruction, mitral valvular and pulmonary arteriolar, dominate the pathologic processes of mitral stenosis. Mechanical valvular obstruction increases the resistance to blood flow from left atrium to left ventricle during diastole, and left atrial pressure must rise to maintain blood flow. The transmitral diastolic pressure gradient thereby created is the basis for the hemodynamic diagnosis of mitral stenosis. Pulmonary venous hypertension and pulmonary congestion make the lung more rigid (decreased compliance) producing dyspnea, while blood flow inadequate for metabolic needs produces exertional fatigue. Shortness of breath is caused by mechanical mitral valve obstruction, not left ventricular failure.

The left atrium dilates with increasing pressure, leading to the development of atrial fibrillation. Tachycardia markedly reduces cardiac output because diastolic filling time is reduced, but even if the ventricular rate is slowed with digitalis, cardiac output is lower in atrial fibrillation than in sinus rhythm because synchronous atrial-ventricular contraction is lost. Atrial contraction causes a sudden additional presystolic filling of the ventricles and stretches the myocardial fibers. This so-called "atrial kick" is reflected in the presystolic rise in ventricular end-diastolic pressure and results in increased stroke volume.

Pulmonary capillary blood pressure reaches and then exceeds the level of colloid osmotic pressure as left atrial pressure approaches 25 mm. Hg, leading to a net loss of plasma water to the pulmonary interstitial space and producing pulmonary edema. Araujo and Lukas[211] have shown that pulmonary capillary pressure may be higher than colloid osmotic pressure in long-standing mitral stenosis without pulmonary edema formation. This may be due to a decrease in pulmonary capillary permeability, more efficient fluid removal by pulmonary lymphatics, or to the associated decrease in pulmonary blood flow.

The relationships between pressure, flow, and resistance in the pulmonary vascular bed follow the Pouseille hydrodynamic equation which may be written crudely as:

$$\text{Pulmonary blood flow} = \frac{\text{pulmonary arterial-left atrial pressure}}{\text{pulmonary vascular resistance}}$$

Inspection of this relationship indicates that pulmonary arterial pressure must rise parallel to a rise in left atrial pressure if pulmonary blood flow is to be maintained. In acute experimental situations, pulmonary vascular resistance actually falls with increasing left atrial pressure, because the increased intravascular pressure dilates the vascular bed. In certain patients with mitral stenosis, however, a second mechanical block is superimposed on the original mitral valvular block, as pulmonary vascular resistance rises. The equation indicates that increasing resistance must be balanced by either an increase in the pulmonary arterial-left atrial pressure gradient or a decrease in pulmonary blood flow. In general both occur.

Mechanisms responsible for the development of increased pulmonary vascular resistance are not clearly understood. Increased resistance correlates well with decreases in cardiac output but does not correlate with left atrial pressure; some patients with extremely high left atrial pressures have normal or slightly elevated pulmonary vascular resistances. Progressive morphologic changes similar to those seen in patients with congenital heart disease and pulmonary hypertension are seen with increasing resistance. Early in the development of vascular changes oxygen inhalation or acetylcholine lower resistance, but the resistance appears fixed in more advanced stages of the disease.

Data are not available correlating either the morphology of pulmonary vascular changes or the response to oxygen or drugs with the fall in pulmonary resistance following successful mitral valve surgery.

The rise in pulmonary artery pressure, due to both increased left atrial pressure and increased pulmonary arteriolar resistance, imposes a pressure load on the right ventricle causing hypertrophy and dilatation. Tricuspid insufficiency is commonly observed in patients with pulmonary arterial hypertension, particularly if atrial fibrillation is also present. Several factors contribute to the development of tricuspid insufficiency in patients with mitral stenosis. Right ventricular dilatation causes tricuspid annular dilatation and valvular insufficiency. These changes may be more marked in patients with associated rheumatic changes in the tricuspid valve and some degree of organic tricuspid insufficiency. In addition, atrial fibrillation causes regurgitation in the normal tricuspid valve and to a lesser degree in the mitral valve because a properly timed atrial systole initiates valve closure. A valve, slightly damaged by rheumatic fever, subjected to high right ventricular pressure in a fibrillating heart may, therefore, become markedly regurgitant.

Pure mitral insufficiency initially imposes a burden only on the left ventricle. Left atrial pressure does not rise much in the early stages of rheumatic mitral insufficiency; the left atrium gradually enlarges; being distensible, it is able to accept the regurgitant flow without marked pressure rise. Occasionally chronic mitral insufficiency is associated with a noncompliant left auricle and presents symptoms of pulmonary hypertension and right ventricular hypertrophy. By contrast, with sudden development of mitral insufficiency, caused by a ruptured papillary muscle, the left atrial chamber does not have time to dilate, left atrial pressure rises abruptly, and pulmonary hypertension develops.

Thrombi often form in the left atrium in mitral valve disease. The incidence is markedly increased in the presence of fibrillation. A total of 64 per cent of all of Szekely's[212] patients with emboli had auricular fibrillation. The incidence with fibrillation was seven times that observed with sinus rhythm. One embolic episode is likely to be followed by another. In Cosgriff's[213] series, 60 per cent of emboli were multiple incidents. The incidence of emboli was reduced from 103 in 275 patient-months to 13 in 625 patient-months by the use of anticoagulants. Szekely found the incidence of emboli reduced from 9.6 per cent per patient-year to 3.4 per cent per patient-year with the use of anticoagulants. It is not definitely established that commissurotomy lessens the incidence of embolization. Ellis and Harken[214] report an incidence of late emboli after closed mitral commissurotomy of 0.59 per cent per patient-year of follow-up study and conclude that operation does reduce the incidence of late emboli, but Szekely[212] was unable to demonstrate such a reduction in his series.

Surgical decisions should be based on a knowledge of the natural history of mitral valve disease, but little information is available concerning the course of the disease in comparable groups of patients treated nonsurgically or surgically. As has been noted in the section on congenital heart disease, the advent of successful surgery for this condition came about almost simultaneously with the development of cardiac catheterization. The information available on the natural history of mitral valve disease is chiefly retrospective and largely undocumented by catheterization studies. Its application to current problems, therefore, must be carefully weighed.

Wilson and Greenwood[215] traced 171 patients with mitral stenosis admitted to their hospital from 1937 to 1941. They found that symptoms of congestive heart failure progressed to death of the patient in three years in 50 per cent of the group. The onset of auricular fibrillation produced similar findings.

Olesen and Baden[216] reviewed 271 cases of mitral stenosis treated nonsurgically and 165 cases treated with mitral commissurotomy. All cases were followed up to nine years. In the Class II patients, the nine-year survival rate was about 80 per cent, equal in the two groups. In the Class III cases, the survival rate at the end of nine years was 72 per cent in those treated surgically and 38 per cent in those managed nonsurgically. Ellis and Harken[214] reviewed 1,571 patients treated with closed mitral commissurotomy and followed up to twelve years. They classified their patients according to the New York Heart Association classification. They found the ten-year survival rate of the Class II and Class III patients to be about 77 per cent and the Class IV patients to be about 37 per cent.

Despite the paucity of catheterization data to buttress the clinical impression, it may be concluded that the onset of congestive heart failure, auricular fibrillation, or systemic embolization marks a late stage in the disease. It also appears established that mitral commissurotomy does favorably influence the course of mitral stenosis.

If data on the natural history of mitral stenosis are incomplete, data on the natural history of mitral insufficiency are fragmentary. It is probable that many patients classified as having stenosis, on the one hand, or insufficiency, on the other, actually have both lesions present to some degree. The onset of mitral insufficiency is usually dated from the appearance of an apical systolic murmur, while the onset of mitral stenosis is commonly dated from the onset of symptoms.

Jhaveri *et al.*[217] studied 61 patients with clinically "pure" mitral insufficiency, who were seventeen years of age or older, and added 13 cases from information obtained from autopsy material. Five of the 61 living patients had subacute bacterial endocarditis. The group of 56 patients with uncomplicated mitral insufficiency was followed for a mean of eighteen and a median of nineteen years. All remained asymptomatic; all enjoyed unrestricted activity. Deaths were related to recurrent rheumatic activity or bacterial endocarditis. None of these patients was catheterized.

Brigden and Leatham[218] followed up 30 patients with mitral insufficiency due to endocarditis. Sixteen were between fifty and sixty years of age; the oldest was seventy-five. Heart failure occurred in 9 patients, 8 of whom died, 6 within a year. In the absence of heart failure or endocarditis, the group did well. They concluded that the natural history of mitral insufficiency was longer and more benign than of mitral stenosis unless complicated by endocarditis. None of their patients was catheterized.

The conclusion that mitral insufficiency is better tolerated than mitral stenosis was the basis for the fenestration operation for mitral stenosis described by Cutler, Levine, and Beck in 1923,[219] where part of the stenotic valve leaflet was removed blindly with a valvulotome. Six of 7 patients operated on in this manner did not survive the operation; 1 lived four and one-half years.[220]

Patients with mitral stenosis are usually first considered for surgery when they are Class II or early Class III, or after embolization. Of course, others are almost at the terminal stages of their disease when seen by the surgeons. The factors that enter into the decision of whether or not surgical intervention is indicated can better be presented after discussing the various surgical procedures, the associated mortality rate, and postoperative hemodynamic findings.

Mitral insufficiency due to rheumatic fever, especially in adults, usually is associated with stenosis and marked deformity of the valve. It is uncommon to find pure insufficiency with flexible leaflets and relatively normal chordae tendineae and papillary muscles. The former type valve deformities can only be corrected by valvular replacement. Reconstructive procedures have been proposed to restore competence to less damaged valves; reducing the circumference of the annulus by reefing sutures and enlarging the area of a leaflet by insertion of pericardium or fabric are the principal methods. Insufficiency frequently recurs after these reconstructive procedures, and they have been abandoned by most groups in favor of prosthetic replacement.

In some instances insufficiency is caused by bacterial infection with perforation of a leaflet or rupture of a chorda or papillary muscle. The latter can also be caused by myocardial infarction. There have been reports of successful repair of these valves, but we have had to replace the two valves in patients we have operated on because of insufficiency caused by bacterial endocarditis.

Mitral stenosis was originally treated by closed commissurotomy; and when the only deformity was fusion of the leaflet edges, and the remaining tissue was normal, excellent results were obtained. The development of a mechanical dilator by Tubbs,[221] introduced through the ventricular apex, allowed even some of the fibrotic valves to be opened, and this method largely replaced cutting the valve with a knife blade affixed to the finger. The production of significant insufficiency is reported to be only 5 per cent with the dilator.[222] The mortality rate from closed commissurotomy in primary cases was 5 per cent; most of the deaths were caused by emboli liberated from the left atrium.

A considerable debate concerning open versus closed operative approach for mitral stenosis has followed the availability of heart-lung bypass procedures. There is no doubt that almost all stenotic valves can be more widely opened and better relief obtained from the subvalvular fusion with the open approach. The danger of embolization caused by thrombus or calcium is also minimized. The disadvantage of bypass is that there is a mortality rate associated with bypass itself, due to the increased technical complexity of the open procedure, the somewhat greater problems of bleeding, and the greater over-all surgical trauma, including the deleterious effects of bypass on the myocardium, as discussed in the first section of this article. We believe that these factors are outweighed by the prevention of death from peripheral embolization and the fact that a better valve result can be expected.

We operate on almost all stenotic valves with heart-lung bypass, and a closed approach is planned only in young people with "pure" stenosis without a history of embolization and a good opening snap, indicating a flexible anterior leaflet. Ultrasound scanning of the mitral valve has recently been used to determine mitral leaflet mobility.[223] The heart-lung machine should always be available so that an open procedure may be performed if the operative findings prevent a safe and adequate closed procedure. The very situations in which a closed procedure would be desirable, such as extremely sick older persons with pulmonary hypertension to avoid the deleterious effects of bypass, are usually the cases in which the valve is so damaged that it cannot be improved by a closed approach.

The argument is often advanced that the direct approach to the mitral valve, by allowing a better opening, will reduce the incidence of restenosis. There is no proof that this is true because there has not been time for long-term follow-up. Many patients who redeveloped their original symptoms following closed commissurotomy did not have true "refusion" of the incised commissures.[224] In certain patients there was diffuse valvular damage involving the subvalvular mechanism as well as the incised commissures, and this type of progressive destruction may occur without evidence of refusion of the incised commissures. In some instances the destructive process in the subvalvular tissues seemed to have been accelerated by the scar formation caused by freeing up these structures. Other patients with restenosis had heavily damaged or insufficient valves that would now be replaced. Therefore, while patients undoubtedly will have better early postoperative hemodynamic results if the valve can be repaired by the open approach, it cannot be said with any certainty to what extent the return of symptoms will be prevented or delayed.

In patients with mitral stenosis, the mitral valve tissue should be preserved rather than replaced whenever possible. If there is pure fusion of the cusps, without very much involvement of the chordae tendineae and papillary muscles, then separating the line of fusion will restore excellent valve function. At the other extreme are the stenotic heavily calcified or fibrotic valves, with subvalvular fusion of the chordae and papillary muscles. These cannot be repaired and must be replaced. With the intermediate degrees of deformity, one should try to open the orifice and free up the subvalvular structures to obtain the maximum orifice and leaflet mobility. At the present time, we would accept something less than an excellent hemodynamic result in order not to replace the valve.

The enthusiasm for valve replacement in the future will be governed by several factors: the incidence of restenosis after open valvuloplasty, the operative mortality rate of valve replacement, and the continuing experiences with improvements in valve design.

If the appearance of restenosis is not delayed or if it is in fact hastened by the more extensive procedures done under direct vision, then valvular replacement will be performed more frequently.

The mortality rate for isolated mitral valve replacement had been high, up to 40 per cent, but survival rate has improved over the past few years, as the factors responsible for death have been appreciated. Undoubtedly many deaths occurred because a ball valve interfered with left ventricular action, as discussed. The use of a small-sized ball valve, smaller than the maximum diameter that can be placed into the mitral annulus, or the use of disk valves, have largely eliminated this problem.

Lillehei, Levy, and Bonnabeau[225] reported that the incidence of operative deaths was reduced from 39 to 14 per cent when the prosthesis was sewn to the posterior leaflet of the mitral valve which was left in place. This is in contrast to most reported technics of insertion, which remove all the papillary muscles. Rastelli *et al.*[226] inserted ball valves in dogs and found no difference in postoperative ventricular function or exercise tolerance whether or not the posterior leaflet was left in place. They also demonstrated that the insertion of a rigid ring into the mitral annulus of dogs, leaving the valve intact, did not affect left ventricular performance.[227] These two studies suggest that the better results reported by Lillehei, Levy, and Bonnabeau[225] probably are largely due to the fact that in the more severely damaged valves, the posterior leaflet cannot be preserved. Therefore, those patients had less cardiorespiratory dysfunction and were better operative risks. In turn, those patients requiring valve replacement generally have a more advanced stage of their disease than those who can be treated by valvuloplasty, and we believe this is the major reason for the higher mortality rate in valve replacement versus valvuloplasty. In our own series, pulmonary vascular resistance averaged 165 dynes · centimeter · second^{-5} in the mitral valvuloplasty group versus 750 in those who had a replacement.

There have been several studies of the early hemodynamic response to mitral valve replacement. Rastelli and Kirklin[228] studied 14 patients during the first hours and days following replacement of the mitral valve with a Starr-Edwards caged ball prosthesis. They found cardiac output was depressed following operation, was lowest from three to six hours after operation, increasing toward normal over the next three days. They deliberately maintained high left atrial pressures in the immediate postoperative period, ranging around 20 mm. Hg.

Cardiac index averaged 1.7 L. per minute per square meter, three to six hours after operation.

During the first few days after open-heart surgery, coronary blood flow was decreased, and there were alterations in myocardial metabolism, referred to in the first section of this article, in all patients we have studied. Cardiac output was consistently decreased in those patients who had undergone mitral valve surgery, whereas it was in the normal range in those patients who had had aortic valve replacement or closure of an atrial septal defect. The reason for this difference in cardiac output, between the mitral valves and the others, in the presence of similar metabolic and coronary flow alterations is not known.

Austen *et al.*[229] studied cardiac hemodynamics in 30 patients following mitral valve surgery. Eight patients with mitral stenosis had closed mitral commissurotomy performed. Twelve more patients with mitral stenosis had mitral valve replacement with a Starr-Edwards caged ball prosthesis. A total of 10 patients with mitral regurgitation had their mitral valves replaced with a Starr-Edwards prosthesis. Cardiac parameters were measured preoperatively and at two, twenty-four, and forty-eight hours postoperatively. Considering the group as a whole, mean values of left atrial pressure and pulmonary artery pressure demonstrated a rapid fall toward normal in the immediate postoperative period with little further change over the next two days. These changes were slightly more marked in the valve replacement group than in the closed mitral commissurotomy group. The cardiac index usually rose slightly following operation. If the cardiac index was depressed preoperatively, it tended to remain depressed in the immediate postoperative period.

The early response of cardiac output and pulmonary vascular resistance to replacement of the mitral valve with a disk prosthesis was studied in 5 patients with pulmonary hypertension by Dalen *et al.*[230] They found a rapid fall in left atrial pressure to from 7 to 13 mm. Hg within twenty-four hours, with increase of cardiac index, and lowering of pulmonary vascular resistance from an average of from 2,067 to 1,002 dynes · second · centimeter $^{-5}$. They do not state the level of right atrial pressure nor the transfusion status of the patients. They postulate a superior hemodynamic performance of the disk valve and perhaps a relieving of reflex pulmonary vasoconstriction. Ten days after surgery, the pulmonary vascular resistance of all 5 patients was still abnormally high.

Morrow *et al.*[231] have described the late follow-up postoperate catheterization results in 76 survivors of 100 patients with mitral valve replacement. In both mitral stenosis and mitral insufficiency, left atrial pressure fell, but 13 of 32 patients with mitral stenosis were still abnormal. Pulmonary vascular resistance fell in all cases but remained in abnormal ranges. Of 24 patients studied postoperatively, 23 had abnormal response of left atrial pressure to exercise. Clinically, this group did extremely well. Postoperatively, 47 patients were Class I, 26 were Class II, and only 3 were Class III. Of 17 deaths in the immediate postoperative period, 8 were in patients with mitral stenosis and a small left ventricle who seemed unable to accommodate a ball-valve prosthesis.

Herr *et al.*[232] reported on the problem of late leaks around a mitral prosthesis. They stressed that auscultation may fail to demonstrate this complication and that cardiac catheterization with left ventricular angiography is necessary to establish the diagnosis. In their opinion, a patient with a poor clinical result following mitral valve replacement should be studied with dehiscence of the valve in mind.

TRICUSPID VALVE DISEASE. Tricuspid valve disease rarely assumes hemodynamic importance requiring surgical intervention in the absence of severe mitral valve disease. Frequently the patient with predominant mitral valve disease has coexisting tricuspid disease, usually insufficiency. If the insufficiency is severe preoperatively, it may not be possible to discontinue bypass unless the tricuspid valve is replaced. Annuloplasty is not a satisfactory procedure to correct tricuspid insufficiency. There is considerable disagreement regarding the necessity or the desirability of replacing the tricuspid valve for less severe degrees of insufficiency associated with mitral disease.

If the patient survives correction of mitral valve deformity, several factors operate to lessen the degree of tricuspid insufficiency. Pulmonary artery and right ventricular pressure will fall as left atrial pressure declines, and any diminution of pulmonary vascular resistance will further lower the pressures on the right side. With lowered right ventricular systolic pressure, there will be less regurgitation for the same degree of valvular deformity, and the diameter of the tricuspid annulus may decrease. In some of the patients with preoperative atrial fibrillation, sinus rhythm may be maintained postoperatively, lessening tricuspid insufficiency.

The question that usually must be answered is whether or not the patient will survive the postoperative period without replacement of the tricuspid valve. We have replaced the valve when there was severe tricuspid insufficiency preoperatively. In those patients who have less severe insufficiency, we rely primarily on the behavior of the heart when bypass is discontinued after mitral valve replacement.

Braunwald, Ross, and Morrow[233] reported a series of 28 patients with tricuspid regurgitation selected from a consecutive series of 100 patients with mitral valve replacement. In 25 of these patients no surgical procedure was done on the tricuspid valve; 3 patients had tricuspid annuloplasty. They noted no increase in mortality rate with such conservative treatment of the tricuspid valve. They concluded that most tricuspid regurgitation seen in association with mitral valve disease was of a functional nature, secondary to right ventricular hypertension and dilatation of the tricuspid annulus, and would improve or disappear following correction of the mitral valve disease. They rely on preoperative demonstration of tricuspid stenosis as their main indication for tricuspid valve replacement.

An alternative view is presented by Starr, Herr, and Wood[234] who stress operative palpation of tricuspid regurgitation as the most valid indication for tricuspid valve replacement. They reported on 31 patients with tricuspid valve replacement, 8 coupled with mitral valve replacement, and 23 with mitral and aortic valve replacements as well. In one third of the group, the diagnosis of tricuspid disease was not established prior to palpation of the valve. They believe tricuspid valve replacement is superior to valvuloplasty. If the regurgitant jet is "very large," their experience shows it will persist or increase after cardiopulmonary bypass is discontinued. They view replacement of the tricuspid valve as essential and lifesaving in this situation.

These two groups of patients are not comparable and point up the difficulty in comparing operative results between groups with differing criteria for valve replacement.

In "pure" tricuspid stenosis, the superiority of valvuloplasty over valve replacement has yet to be established. We have accomplished tricuspid valvuloplasty for tricuspid stenosis successfully in 2 cases. Our tendency is, however, to replace the valve rather than accept a compromise repair.

Indications for surgical intervention in mitral valve disease. Decision making in mitral valve disease is one of the most difficult problems facing the thoughtful physician. Ideally he would like to know the natural history of the untreated disease process, the type of surgical procedure necessary (commissurotomy or valve replacement), the operative risk of the selected procedure, and the long-term prospects of those patients surviving surgery. Unfortunately, little information exists on which to base such decisions. A patient may be relatively asymptomatic and suddenly die from peripheral or pulmonary embolization. Another may be severely debilitated but may survive for years. The surgical risk may vary from under 5 per cent for a mitral commissurotomy to between 10 and 30 per cent for mitral valve replacement in good-risk patients and be over 50 per cent in high-risk patients.

A conscious decision, either to recommend surgical intervention or to continue nonsurgical treatment, must be made in each patient, regardless of deficiencies in our present information. We have been particularly impressed with patients who have died while awaiting surgery either through unavoidable delay in scheduling operation or frank procrastination. Sins of omission are certainly as serious as sins of commission.

Three general categories of patients considered for surgery are as follows: (1) the good-risk patient who probably will survive the operative procedure—the main concern is that surgery is not performed too early; (2) the extremely sick patient who almost certainly will not survive surgery; and (3) the sick patient in whom it must be decided to what extent valvular versus myocardial dysfunction is responsible for the clinical deterioration.

The ideal patient for mitral valve surgery is between thirty and fifty years of age, with relatively "pure" mitral stenosis, absent valve calcification, relatively small heart, and progressive symptoms existing for at least two years. Such a patient can be improved by mitral commissurotomy with little risk. In general, if it appears that the valve can be adequately treated by open commissurotomy, surgery should be recommended for any patient who is symptomatic with ordinary physical activity. Patients who were asymptomatic, and have become progressively symptomatic with ordinary activity, should especially be considered for surgical intervention.

Several modifying factors may complicate the decision in the Class II (New York Heart Association classification) patient. Most important is the recent onset of symptoms, the presence of an elevated sedimentation rate and acute phase reactants, or other suspicion of active rheumatic fever. Should there be reasonable evidence pointing toward activity, the patient should be observed for from three to six months and then operated on. The presence of other diseases, such as pulmonary emphysema, cancer, or coronary artery disease, may also complicate the decision; each factor should be weighed separately.

A more difficult decision to make is the recommendation of a patient for mitral valve replacement. Patients with heavily calcified mitral valves with or without associated evidence of mitral regurgitation may well require valve replacement. They should be somewhat more symptomatic than patients in whom a commissurotomy appears adequate, because of the uncertainty of the long-term fate of patients with valvular prostheses and the continuous improvement of valve design. The indications differ for mitral stenosis and mitral insufficiency.

Patients with predominant mitral stenosis who may require valve replacement should be recommended for surgery when they begin to develop persistent symptoms with less than normal activity. This is obviously a subtle value judgment, but when patients begin to alter their way of life significantly, begin to spend more and more time resting, and find they cannot perform expected tasks, surgical intervention should be advised. The man who can no longer function at work, or the housewife who can no longer care for her family are obvious examples of patients who need surgery.

Dyspnea and fatigue are uncommon with mitral insufficiency until marked left ventricular dilatation develops. Since the risk of mitral replacement appears to be somewhat less in the patient with relatively pure mitral insufficiency than in the patient with pure mitral stenosis, surgery should be performed earlier in the natural history of the disease. Rather than wait until evidence of severe left ventricular decompensation occurs, surgery is indicated when increasing cardiac size is noted, left ventricular ischemic pattern is shown on the electrocardiogram, in the presence of an early diastolic gallop, or because of a significantly elevated left ventricular end-diastolic pressure.

Peripheral embolization is probably not an indication for surgery of itself. Other requirements may be somewhat less rigorous, however, if the patient has previously had an embolus.

The asymptomatic patient with markedly abnormal hemodynamic findings occasionally presents a difficult problem. Certain hemodynamic abnormalities, such as left atrial pressure above 25 mm. Hg or resting pulmonary artery systolic pressure above 60 mm. Hg, probably serve as surgical indications even if the patient appears relatively asymptomatic.

The pregnant patient with mitral disease should be admitted to a hospital at the first evidence of symptoms. If pulmonary edema, severe dyspnea, or failure of the right side of the heart are observed early in the course of pregnancy, surgical intervention is indicated since the increasing fluid volume and cardiac output of the last trimester will most certainly accentuate these abnormalities. Closed mitral surgery is preferable, but severely ill patients can undergo an open-heart surgical procedure with maternal survival and the subsequent delivery of a normal child.[235]

Many older, Class IV patients with far-advanced disease will not survive the surgical procedure. These chronically debilitated persons with lung symptoms, elevated pulmonary vascular resistance, and failure of the right side of the heart probably also have severe myocardial changes. Two attitudes often are expressed concerning these patients, neither of which is accurate. The first is that the patient should have been seen by the surgeons earlier. The patient with essentially pure mitral stenosis, treatable by valvuloplasty, unquestionably should have undergone surgery earlier. However, it must be remembered that these patients have been alive during the several years they passed from Class II to IV. Since the long-term prognosis of prostheses is not known, one cannot say with assurance that these patients' lives would have been prolonged by valve replacement, although they would have been more productive and comfortable following surgery. The other opinion frequently stated is that at this terminal stage surgical intervention is the only hope and should be performed irrespective of the risk. We have saved about 10 to 20 per cent of patients in this group, and we have become extremely reluctant to operate.

The postoperative management problems are many, and the ultimate level of improvement usually has been no better than in that of a Class III patient, presumably due to irreversible myocardial disease.

The sick patients with mitral disease represent the greatest challenge in the management of acquired heart disease. The basic problem is evaluating myocardial disabilities and then projecting myocardial function after surgery. The measures, still imprecise, which were discussed should be applied to determine myocardial function. Until myocardial cellular contractility can be quantitated, clinical acumen, reaching back to previous experiences, will play a major role in selecting these candidates for surgery. The mortality rate will always be higher than in the first group.

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Part IV will appear in the December 1 issue of the JOURNAL

Diabetic neuropathy of upper extremities

Although diabetic neuropathy is generally thought of as being principally associated with the lower extremities, involvement of the hands and arms is relatively frequent. Discussing a series of 35 patients seen over a five-year period, M. Ellenberg, M.D., writing in a recent issue of *Journal of the Mount Sinai Hospital*, observes that the chief manifestations of diabetic neuropathy of the upper extremity result from both sensory and motor neural impairment. Predominating in males and diabetic patients in the older-age groups, the manifestations include amyotrophy of the small muscles of the hand, asthenia, sensory loss, and radiculitis. The amyotrophy is most marked in the first interosseous space. Diabetic neuropathy of the upper extremities is not necessarily related to the control or duration of the diabetic condition. Usually it is associated with other manifestations of neuropathy, both somatic and visceral. Its presence may be, in fact, a clue for the initial diagnosis of diabetes, since the neuropathy may appear before overt evidences of faulty carbohydrate metabolism. It is a part of a more generalized neuropathic involvement in the diabetic syndrome. Ten of the patients reported in this series were controlled with diet alone. Of the other 25, oral agents were used in 3. The rest required insulin in dosages ranging from 10 to 100 units daily.

When symmetrical bilateral atrophy of the interosseous hand muscles is seen which is not readily identifiable as due to some other neurologic entity, diabetic neuropathy must be suspected. In this series, this was the most readily identifiable manifestation of diabetic neuropathy, present in 24 of the 35 cases. Loss of strength in the upper extremities was a major clinical complaint in 4 of these patients. Burns and other painless trauma are a characteristic feature, simulating the phenomena of tabes. Because of this similarity, special care should be exercised in eliminating syphilis as a possibility by appropriate history and serologic studies of blood and spinal fluid. In this series, such differential indices were firmly established in 5 patients. Three cases of cervical neuritis were observed, 2 unilateral in distribution and 1 bilateral. In the lower extremity this has been described as mononeuritis or monoradiculoneuritis. This can also occur in the upper extremity.

Clinicopathologic Conference

MICHAEL S. BRUNO, M.D., and
WILLIAM B. OBER, M.D., Editors

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Conducted by ZELMA WESSELY, M.D.

Discussed by FRANK LAMBERTA, M.D.

Acute Fulminant Hepatic Failure with Bilateral Tuberculous Cavitation

Case history

Benjamin G. Lazo, M.D.: A seventy-four-year-old white male was admitted with complaints of hemoptysis, fever, chills, and sweats of about six weeks' duration. In 1942 he had been treated by pneumothorax for pulmonary tuberculosis at another hospital. A chest x-ray film taken on the present admission revealed infiltration in the lower lobe of the left lung and a cavity in the upper lobe of the right lung. A sputum test showed positive results for acid fast bacilli. He was treated with penicillin 600,000 units four times a day, then given medication with isoniazid hydrazine or INH 100 mg. three times a day and para-aminosalicylic acid or PAS 4 Gm. three times a day, together with vitamins and codeine sulphate 0.5 Gm. twice a day. The patient presented no unusual problems for three weeks when dysuria developed, and an enlarged prostate was found on examination. He was treated with sulfisoxazole (Gantrisin) for three weeks.

Three weeks after urinary symptoms began sulfisoxazole was given, the patient was noted to be icteric, the urine was dark, and the stools were clay-colored. PAS was discontinued and replaced by streptomycin 1 Gm. three times a week. A diet high in protein and carbohydrate but low in fat was given. Three days later jaundice was more intense, and a pruritic maculopapular rash appeared. Within a day or two the maculopapular rash was transformed into a generalized vesicular eruption.

A surgical consultant's opinion was that the patient had carcinoma of the head of the pancreas, but a medical consultant felt strongly that the patient had some form of hepatitis. Surgical exploration was deferred, and the patient received vitamin K and prednisone 5 mg. three times a day. Over the next six days his course was rapidly downhill; he vomited coffee-ground material and died fifty-two days after he entered Triboro Hospital, about three months after his terminal illness began. Terminal laboratory examinations revealed a serum bilirubin of 9.5 mg. per 100 ml. with 7.7 direct-reacting bilirubin. The alkaline phosphatase was 32 Bodansky units, the lactic acid dehydrogenase 330 and 700 units, serum glutamic oxaloacetic transaminase 760 units, and serum glutamic pyruvic transaminase 460 units. The prothrombin time was 23.5 seconds (control 14 seconds). The blood ammonia level was 53 micrograms per 100 ml. three days prior to death.

Discussion

Frank Lamberta, M.D.*: The simplest approach is to examine the chest x-ray films taken on admission to Triboro Hospital. There is a $3\frac{1}{2}$-cm. cavity in the upper lobe of the right lung and what appears to be exudative spread in the lower lobe of the left lung. The remaining lung fields show a chronic bronchitic process. The history of pneumothorax twenty-five years previously and the demonstration now of acid-fast bacilli made the diagnosis of pulmonary tuberculosis quite obvious, and standard therapy was begun. The first complication began on March 21, when he developed urinary retention and a Foley catheter was inserted. On April 2, the catheter slipped out, and the patient tried to reinsert it; the nurses' notes show that he had blood-tinged urine the rest of that day. It was following this incident that icterus and fever developed, accompanied by abdominal pain. How do we account for the sudden deterioration of the patient's condition, and what will the pathologist tell us?

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The first item in differential diagnosis has to be tuberculous infection of the liver itself. Hepatic involvement in miliary tuberculosis is no novelty; small caseating granulomas are not uncommon at autopsy or on liver biopsy. But hepatic tuberculosis rarely attains the size of a gross tuberculoma except in children with primary tuberculosis or occasionally in members of an inherently susceptible ethnic group. I cannot explain a short course of acute liver failure on this basis.

The possibility that this patient had a surgical condition in the abdomen was not so readily excluded. The combination of pain in the abdomen, a high alkaline phosphatase, and a high direct serum bilirubin makes a suggestive picture. But a "true" peritonitis or a subphrenic abscess were unlikely because the vomiting was never severe enough to require intubation, nor did a flat film of the abdomen show air under the diaphragm, nor were loops of bowel shown to be distended on roentgenogram. Also, the total picture suggested a rapid and diffuse process involving the liver.

A variety of other conditions might be considered. Skin eruptions are not uncommon in terminal cases of Hodgkin's disease and other lymphomas, but I have nothing beyond that vague suggestion. Usually the progress of such diseases is slow, and anemia and debilitation develop long before jaundice. Carcinoma of the stomach with extensive hepatic spread might give a similar picture, but again such a diagnosis would be conjecture.

The strongest presumption in this patient is that he suffered from acute liver damage as the result of either an infection or from an hepatotoxic drug. Since it is virtually impossible to distinguish viral hepatitis from drug-induced hepatitis, let us consider the evidence for the latter. Isoniazid hydrazine therapy was begun on March 14 and continued through May 7, a period of fifty-four days; a total of 16.2 Gm. of para-aminosalicylic acid was given for forty-five days, a total dose of 540 Gm. Iproniazid, a drug closely related to isoniazid, has been known to cause acute yellow atrophy.[1] Isoniazid can also produce a pellagra-like skin eruption, and a fatal case of hepatic necrosis following isoniazid therapy has been reported.[2] Para-aminosalicylic acid has been reported to cause jaundice, exfoliative dermatitis, coma, and death.[3] I shall not go further into the patient's record, but he did receive chlordiazepoxide hydrochloride (Librium), not stated in the protocol, which has been reported to cause cholestatic jaundice,[4] nor shall I devote attention to the streptomycin which, when toxic, affects the kidney, nor does there seem to be any reason to discuss the reactions from aqueous penicillin or neomycin.

Scrutiny of the nurses' notes not summarized in the protocol, show that the patient received chloramphenicol (Chloromycetin) for three or four days and prochlorperazine (Compazine) for a month; this latter drug can provoke cholestatic jaundice. In addition we are informed that he received sulfisoxazole, a drug which has been known rarely to produce a Stevens-Johnson syndrome as well as hepatogenic jaundice. With all these drugs to choose from, I am suffering from an embarrassment of riches. The patient was poorly nourished and debilitated when admitted to the hospital. In spite of this, the results of his liver function tests at the time of his admission were within normal limits, and he was considered a safe candidate for the various drugs he received. Assuming that I am correct in deciding that this patient died because of drug-induced liver damage, how can we distinguish these symptoms from those of obstructive jaundice?

Before discussing this point, I would like to distinguish between the terms toxic and hypersensitive as applied to drugs. Toxic means that a certain drug will produce predictable damage to an organ, say, the liver, in all people if given in quantities above a certain "safe" dose. Hypersensitivity implies that such a reaction or such damage, will not occur in all people, is not predictable, and is not related to dosage. Davis[5] claims that the sulfobromophthalein retention can be measured accurately in the presence of hyperbilirubinemia and is the most valuable tool in distinguishing between "medical" and "surgical" jaundice. In the same article the following question was put to Bagenstoss: "Is the biopsy histology in drug-induced jaundice sufficiently specific to rule out other surgical or medical conditions?"[5] His reply was, "No, I have been misled too frequently to say anything else. Drug-induced jaundice has many features of obstructive extrahepatic jaundice. Also, I am unable to distinguish between a viral hepatitis and a drug hepatitis." The result of this colloquy is that during life, clinical laboratory tests and clinical judgment are more likely to be of value than needle biopsy of the liver.

Popper[6] advances the suggestion that drugs or their metabolites may bind with liver or serum proteins, interfering with intrahepatic enzyme systems and cofactors. If and when such reactions occur, it is not difficult to conceive that essential metabolic pathways may be blocked and that alternative pathways may be enhanced. Exceptionally, a critical substrate may be exhausted, for instance, in bromobenzine intoxication, where the amino acids used for detoxification are neutralized by the toxin.

The results from most liver function tests are not specific. For the most part, they give us a general impression of liver cell damage without localizing the site or nature of damage. Elevated transaminase values, as in this case, are a good example of this nonspecificity, and we must also keep in mind that a single elevated transaminase value may reflect response of a sensitive liver injury to bone marrow, kidney, or the circulatory system. In the absence of animal model experiments, it is difficult to evaluate the hidden effects of cumulative action of long-term use of potentially hepatotoxic agents, such as phenylbutazone (Butazolidin), diphenylhydantoin (Dilantin), sulfonylurea preparations, or even contraceptive steroids. Even newer technics, such as electron microscopy, pose as many questions as they answer. For example, what is an adverse effect? There is evidence that drugs such as ethanol have a "toxic" effect on the endoplasmic reticulum which stimulates it to produce those enzymes needed to detoxify the drug.[7] A similar change in endoplasmic reticulum has been reported in viral hepatitis. The electron microscopist must ask himself whether the alteration he sees is irreversible damage or an adaptive change.

Cholestasis is another form of adverse reaction by hepatocytes which may be related to microsomal enzyme inducers and suppressors. Cholestasis is an important side-effect caused by drugs which are sometimes dependent on dosage and predictable when induced by anabolic steroids, yet sometimes erratic and unpredictable when produced by phenothiazine and contraceptive steroids. Cholestasis is usually associated with an increase in direct-reacting bilirubin, as in this case. Transport of bilirubin through liver cells is impaired, and the bile canaliculi become dilated. Their normally regular microvilli become swollen, stunted, and are often missing. Other changes occur within the cytoplasm, such as widening of the pericanalicular zone or enlargement of the Golgi apparatus. Tests showing the activity of the alkaline phosphatase group are not helpful in such situations, but the dyes, rose bengal and sulfobromophthalein, are sometimes more useful.

Another example of the dilemma in separating toxic from adaptive responses in experimental situations lies in demonstrating increase in lysosomes. These subcellular structures are the site of hydrolytic enzymes, often regarded as organelles of cell self-destruction. But they may equally well represent devices for metabolic turnover in surviving cells, that is preserving cells which have been selectively damaged. In effect, lysosomal increase may represent a form of internal house cleaning.

Having thus digressed, let us return to the patient. The evidence is strong that this debilitated, malnourished man died chiefly of the toxic effects of INH and PAS, with liver necrosis dominating the anatomic changes. However, the course was so rapid and the final episode of shock so distinct that we must think of additional factors. The incident of the catheter provides an opportunity for the entrance of infection, bacterial, fungal, or mixed. Gram-negative urinary tract sepsis is almost omnipresent in obstructive prostate disease, and this is entirely probable. But, in patients whose host resistance is modified by therapy, a large variety of opportunistic fungi may gain access to his tissues and then into his blood stream.[8] Candida is the one most frequently seen, but patients with diabetes are particularly prone to infections with Mucor, and the number of cases of aspergillosis, cryptococcosis, nocardiosis, and so on, complicating the condition of debilitated patients with leukemia, lymphoma, and other forms of cancer, has reached a vast proportion. The skin eruption which was a terminal event may indicate a viral infection, possibly a cytomegalic inclusion. However, this is all speculation. I have no bacteriologic, viral, or mycologic studies to support this guess.

My final diagnosis is that the patient died of liver necrosis caused by a drug-induced hepatitis and that terminally he suffered from either gram-negative septicemia or a fungus infection.

ALBERT H. DOUGLAS, M.D.: Can we consider Addison's disease in this case?

DR. LAMBERTA: It should be considered. However, clinical evidence for this diagnosis is not sufficient. Low serum sodium is more likely due to vomiting and loss of gastric contents.

HARRY H. EPSTEIN, M.D.: We usually see two types of tuberculosis, the cavitary and the hematogenous type. We rarely see Addison's disease associated with cavitary tuberculosis of this extent.

DR. DOUGLAS: What was the patient's platelet count?

DR. LAMBERTA: It was not recorded.

DR. DOUGLAS: How do you explain the skin lesion?

DR. LAMBERTA: It most probably is a direct effect of drug reaction, less likely a complication of terminal sepsis.

WILLIAM D'ANGELO, M.D.: Tests for aldolase and isocitric dehydrogenase are occasionally useful in distinguishing surgical jaundice from cholestatic jaundice.

Clinical diagnoses

1. Pulmonary tuberculosis, bilateral, active

2. Drug-induced hepatitis

Dr. Lamberta's diagnoses

1. Bilateral active pulmonary tuberculosis

2. Drug-induced hepatitis

3. Terminal septicemia, (?) gram-negative bacteremia, (?) mycosis

Pathologic report

ZELMA WESSELY, M.D.*: As Dr. Lamberta predicted, the principal organ of interest was the liver which was diminished in size, had a wrinkled capsule, a greenish color, and a flabby, friable consistency (Fig. 1A). The cut surface showed a blurred architecture with minute depressed foci suggesting loss of parenchyma. Other gross observations were also interesting: The kidneys were flabby, yellowish-green, and showed surfaces with both finely granular and U-shaped scars. Banal arteriosclerotic changes were seen in the heart. The lungs showed caseocalcific nodules in both apical and subapical regions; the roentgenogram demonstrated a 3-cm. cavity in the apex of the upper lobe of the right lung. There were numerous excoriated areas on the skin of the face, neck, arms, back, and lower extremities, varying from 1 to 5 cm. in size as well as thin-walled bullae up to 3 cm. in size

Microscopic examination of the liver showed a relatively intact architecture but diminution in size of the lobules, due to necrosis of the liver cells with collapse of the reticulum framework (Fig. 1B). The liver cells varied in size and staining qualities, and many large and double nuclei were seen. Fat vacuoles were negligible. Between the liver cells anuclear ghost cells and scavenger cells were noted with pigment granules, coarse granules, and numerous lymphocytes and showed a positive reaction to PAS. The hepatic veins were free of inflammatory infiltration. The portal triads were enlarged, with sharp demarcation from the adjacent hepatic lobules. Pseudoductules (proliferated liver cells in ductular arrangement) and slight proliferation of bile ductules were noted, surrounded by predominantly mononuclear inflamma-

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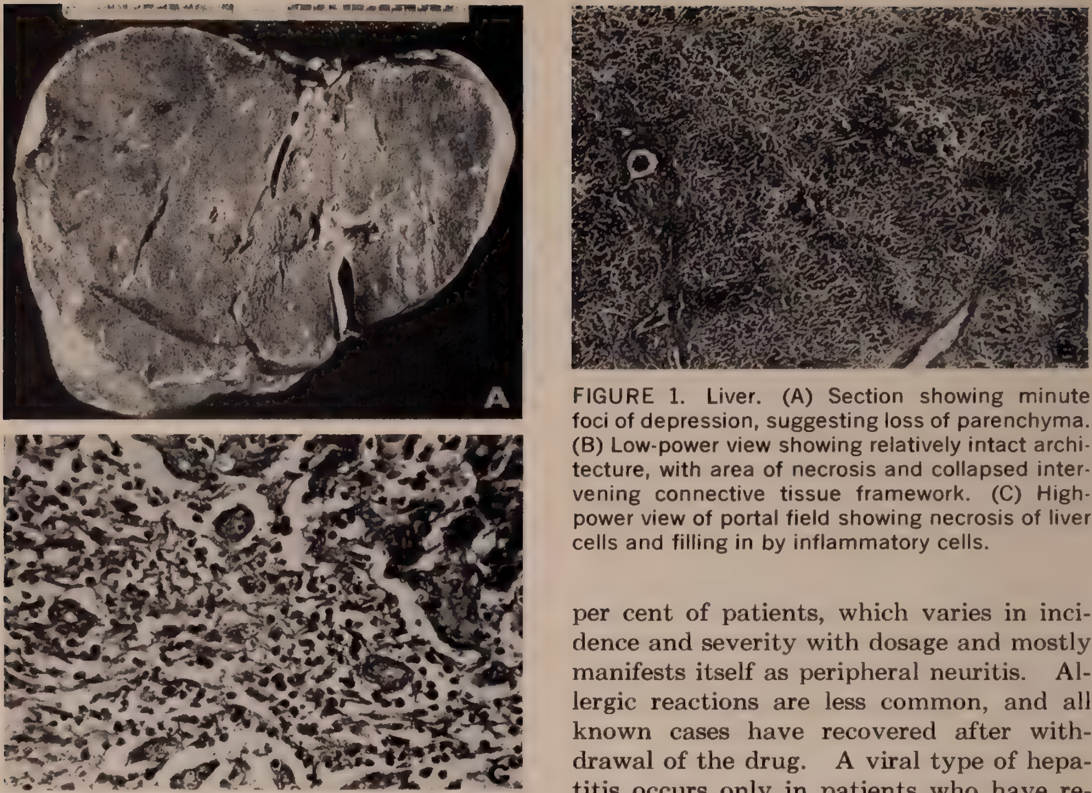

FIGURE 1. Liver. (A) Section showing minute foci of depression, suggesting loss of parenchyma. (B) Low-power view showing relatively intact architecture, with area of necrosis and collapsed intervening connective tissue framework. (C) High-power view of portal field showing necrosis of liver cells and filling in by inflammatory cells.

tory cells, but there was no extension of the inflammation into bile ducts or portal veins (Fig. 1C). The kidney showed bile nephrosis.

After consultation with Hans Popper, M.D., Mt. Sinai School of Medicine, these findings were interpreted as showing drug-induced fulminant hepatitis, which could have resulted from his intake of either INH or PAS, chlordiazepoxide hydrochloride, sulfisoxazole, and/or prochlorperazine.

The patient developed jaundice ten days prior to death, associated with marked deviation of bilirubin, alkaline phosphatase, the transaminases, and lactic dehydrogenase, finally leading to coma. Shortly before death a significant leukocytosis set in. At that time the patient developed a maculopapular rash, with considerable itching, leading to a vesicular eruption and terminal hemorrhagic tendency.

The symptoms of maculopapular rash and itching suggest drug-induced hepatic injury rather than viral hepatitis as the cause. Of the drugs taken by the patient, prochlorperazine produces cholestatic jaundice. INH produces a toxic reaction in about 5 per cent of patients, which varies in incidence and severity with dosage and mostly manifests itself as peripheral neuritis. Allergic reactions are less common, and all known cases have recovered after withdrawal of the drug. A viral type of hepatitis occurs only in patients who have received other sensitizing drugs, particularly PAS. Sulphonamides can imitate any skin rash, but hepatitis is exceedingly rare with the use of the newer drugs, especially the short-acting sulfisoxazole, and usually occurs in individuals previously exposed to this drug. PAS on the other hand produces both toxic and allergic reactions, and since fatal cases with massive hepatic necrosis are not too uncommon it was felt that PAS was the drug responsible for the fatal liver injury in our patient. Fibrocaseous and cavitary tuberculosis were confirmed at autopsy and the use of these drugs thus justified.

Perhaps the most interesting, because unsuspected, finding in this case, was a fungemia, which resulted in multiple abscesses in the myocardium and in the kidney around budding yeast-like structures, which were identified as strains of Candida (Fig. 2). This is obviously a case of an extremely debilitated patient with opportunistic fungi infection, which probably gained access to the blood stream through the genitourinary tract.

An additional factor of importance might have been a riboflavin deficiency induced by INH, which enhances Candida infections.

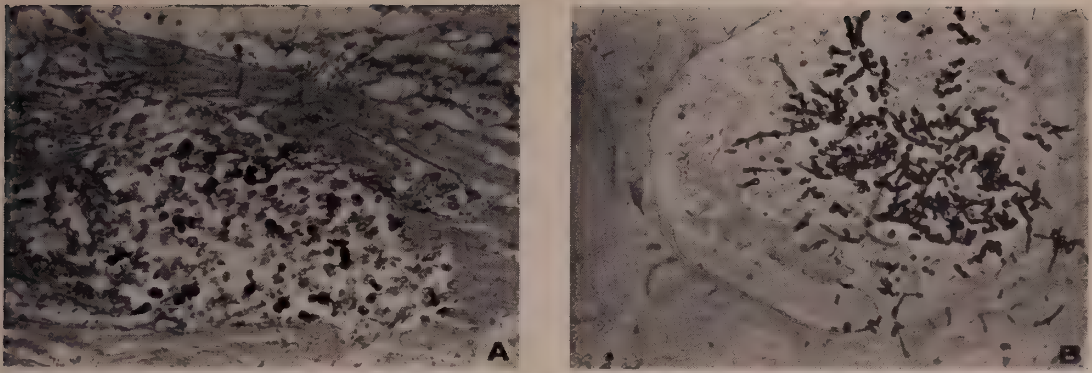

FIGURE 2. Sections showing (A) high-power view of myocardial abscess around Monilia spores (Silver methenamine stain), and (B) high-power view of glomerulus with Monilia spores (Silver methenamine stain).

Anatomic diagnosis

1. Fulminant drug-induced hepatitis; biliary nephrosis; and icterus

2. Status post-treatment with streptomycin, INH, PAS, and sulfisoxazole; and bullous drug eruption

3. Fibrocaseous tuberculosis, bilateral (upper lobe of right lung and lower lobe of left lung; cavity in upper lobe of right lung; adhesive pleuritis, bilateral; and emaciation

4. Bronchopneumonia, focal

5. Fungemia, Monilia; multiple abscesses in myocardium and in kidney; and fungi in hair follicles, no inflammatory reaction

6. Bleeding acute superficial stomach ulcers (stress ulcers); and status post-treatment with prednisone

7. Arteriosclerotic cardiovascular disease; advanced coronary sclerosis; focal fresh myocardial necrosis, insufficiency changes; left ventricular hypertrophy; arterio-arteriolonephrosclerosis; and aortic atheromatosis

8. Acute and chronic pyelonephritis; and active chronic cystitis

9. Cause of death, hepatic failure

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Correlation Conferences in Radiology and Pathology

St. Luke's Hospital Center
New York City

Editors
NATHANIEL FINBY, M.D.
Director of Radiology
CHARLES F. BEGG, M.D.
Director of Laboratories

Pneumocyst of Colon

Case history

A FIFTY-EIGHT-YEAR-OLD WOMAN was admitted to the hospital because of an abdominal mass present for five months. During this interval there had been two episodes of cramping, abdominal pain associated with nausea, and constipation. The most recent episode occurred one week before admission and lasted four days. The patient stated that the mass was about the size of an egg when it appeared five months before admission.

Examination disclosed a large, freely movable, midline mass, 7 by 10 inches, in the lower part of the abdomen. The mass was compressible, tympanitic, and nontender. Bowel sounds were normal. Pelvic examination showed no evidence of abnormality. There was no melena, fever, or anemia.

During observation in the hospital, severe abdominal pain developed in the right lower quadrant without change in the mass, except for tenderness in the area. Signs of peritoneal irritation were present.

Radiographic discussion

NATHANIEL FINBY, M.D.: Radiographic examination of the chest revealed normal findings. The abdomen showed a

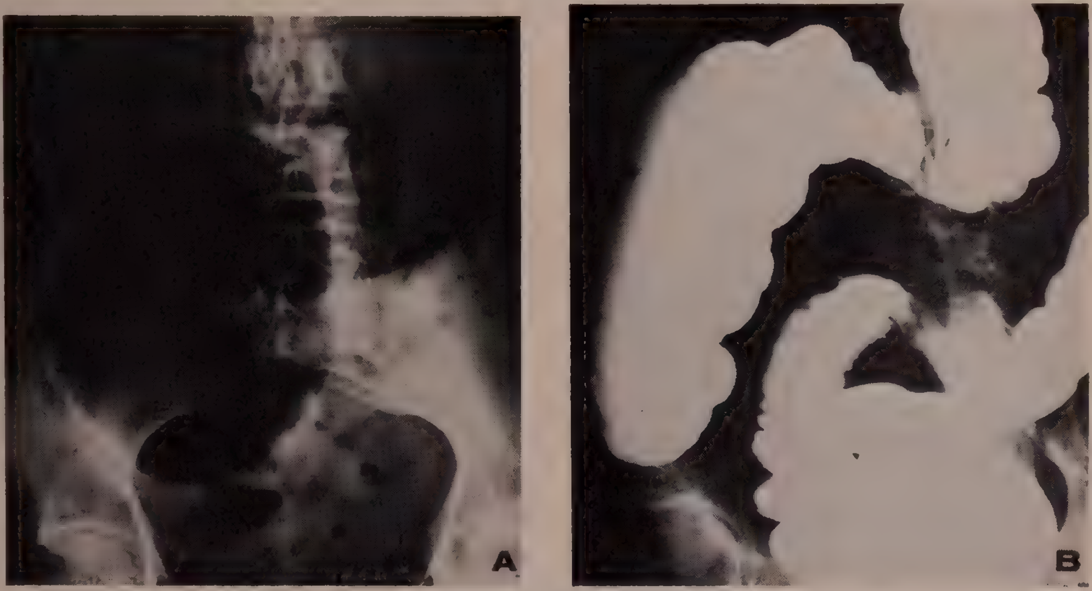

FIGURE 1. (A) Abdominal roentgenogram shows large, gas-containing, rounded shadow in right lower quadrant. (B) Barium enema showing displacement of cecum and ascending colon by gas-containing mass. Note its related to sigmoid colon.

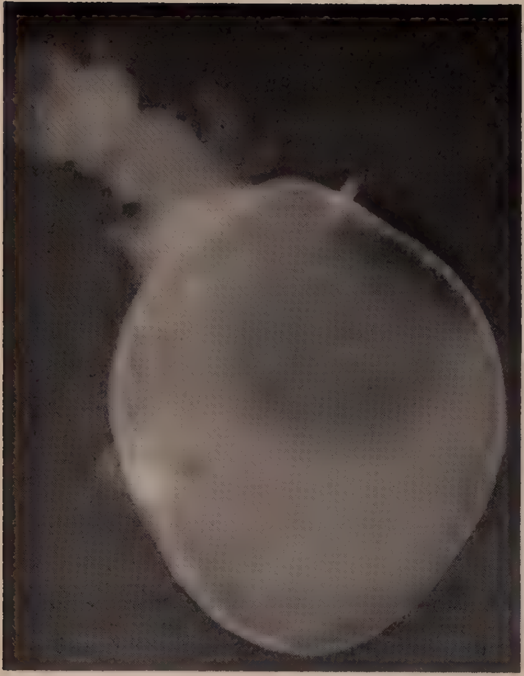

FIGURE 2. Radiograph of specimen showing smooth outer wall. Attached to cyst is resected sigmoid.

large, gas-containing rounded shadow overlying the right lower abdominal quadrant (Fig. 1A). This measured 18 by 14 cm. in diameter. Barium enema study showed displacement of the adjacent normal colon by this large mass which appeared to be closely related to the sigmoid and ascending colon (Fig. 1B). Diverticula were seen in the descending colon and sigmoid.

Exploration of the abdomen revealed a large, air-filled, cystic structure about 20 cm. in its greatest diameter on the antimesenteric border of the sigmoid and intimately attached to it. The sigmoidal vessels appeared to extend over the surface of the cystic mass. A roentgenogram of the specimen is shown in Figure 2.

Pathologic discussion

Charles F. Begg, M.D.: A segment of sigmoid colon, 17 cm. long, was removed from this patient. Beneath the serosa was a cyst 16 cm. in diameter (Fig. 3A). It contained gas and about 60 cc. of creamy fluid. Its lining was smooth. In the sigmoid mucosa, overlying the cyst, there was a dimple 0.5 cm. in diameter, which was the opening of a tract less than 1 mm. in diameter, leading into the lumen of the cyst (Fig. 3B). No cyst contents could be expressed into the sigmoid by pressure on the cyst. Microscopic examination gave an indication of the pathogenesis of the lesion. The tract leading into the cyst was lined at the bowel end by colonic mucosa which was gradually replaced by inflammatory tissue that lined the remainder of the tract and cyst (Fig. 4A). Within the inflammatory tissue there were fragments of refractile material and plant fiber, indicating that intestinal contents were present in the cyst cavity at one time (Fig. 4B). Several diverticula were found in the remaining portion of the sigmoid.

Comment

Dr. Finby: This patient presents the unusual problem of a single large "gas-containing" abdominal cyst with the differen-

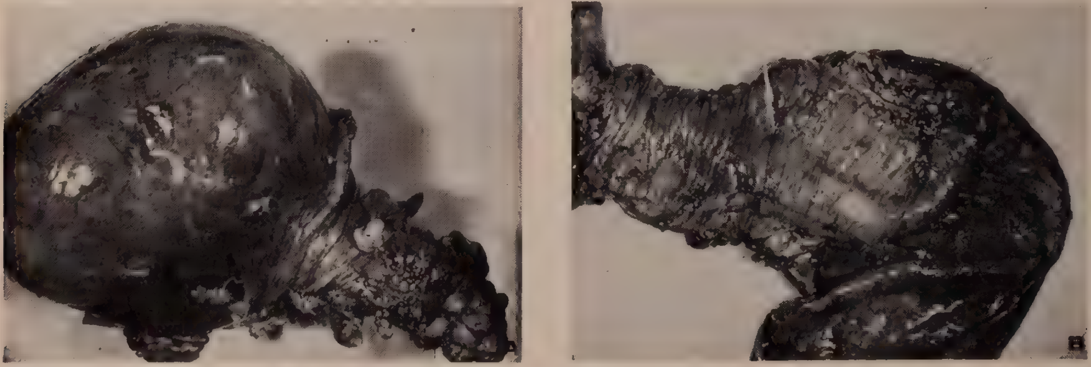

FIGURE 3. (A) Segment of sigmoid with attached cyst. Serosa of cyst continuous with serosa of sigmoid colon. (B) Opened sigmoid with collapsed cyst lying beneath it. Probe is in tract connecting lumens of sigmoid and cyst.

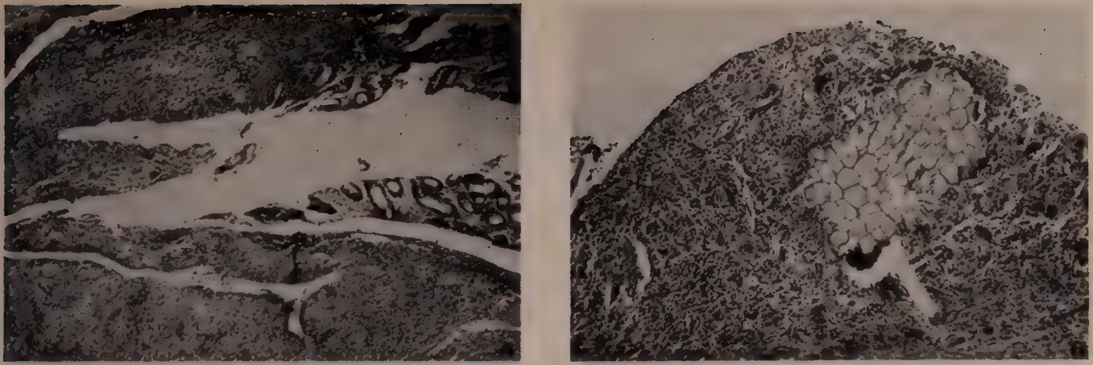

FIGURE 4. (A) Tract connecting sigmoid and cyst. Sigmoid end of tract lined by colonic mucosa, cyst end by granulation tissue. (B) Lining of cyst. Fragment of vegetable fiber embedded in granulation tissue.

tial diagnosis of pneumatosis coli, giant colonic diverticulum, cecal volvulus, loculated pneumoperitoneum or abscess, and a large lipoma.

The gas density on the roentgenogram ruled out lipoma, and the smooth, rounded appearance of the mass, as well as the barium study of the colon, indicated that cecal volvulus and loculated pneumoperitoneum or abscess were unlikely diagnoses. It was our impression that an unusual localized manifestation of pneumatosis coli was a more likely diagnosis than a giant colonic diverticulum because of the lack of fluid levels, the absence of a history of gas insufflation, and the air density of the cyst on radiographic study without the demonstration of colonic communication on barium enema study.

Pneumatosis cystoides intestinalis is an uncommon disease which may manifest itself by submucosal or subserosal collections of air distributed throughout the intestinal tract.[1–3] Rarely does pneumatosis limit itself to the colon (pneumatosis coli);[3] it may appear as a single, large, air cyst within the abdomen[1] as in the present patient.

The excised specimen proved to be an unusual "cystic" diverticulum of the sigmoid colon. (A report of this patient appeared previously.[4]) These giant diverticula of the colon are rare and, strangely, allow contrast filling occasionally during a barium enema roentgen study.[5,6] They must be differentiated from duplications of the alimentary tract usually found in young patients.[7]

Dr. Begg: We believe the pathogenesis of this cyst to be as follows: A diverticulum became inflamed, and a small rupture into the subserosa occurred. The patient's tissues responded adequately to prevent spread of infection and formed a wall of inflammatory material around the area of rupture. Since the tract into the area of rupture remained open, it was possible for intestinal gas to be expressed from the lumen of the sigmoid into the pocket formed by the rupture. Because of the yielding nature of the fibrous tissue forming the cyst wall, and because the intraluminal pressure of the sigmoid was greater than the pressure within the pocket, the cyst gradually enlarged to its present size.

This is not the same process which has been described as pneumatosis coli or pneumatosis cystoides intestinalis. These latter conditions are thought to be the result of trapping of gas in dilated lymphatic spaces.[8] The demonstration in this case of a tract lined partly by mucosa and partly by granulation tissue shows beyond reasonable doubt that this pneumocyst is derived from a diverticulum.

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Letters to the Editor

Problems in ethics

To the Editor: The code of medical ethics is a series of guidelines for the physician to use in resolving both ethical and moral problems he may encounter during his professional career. These guidelines tend to encourage physicians to keep and resolve any differences within, rather than outside, the medical profession and also tend to make ethics more relevant and meaningful in the physician's professional life in order that he may exemplify the finest traditions of the medical profession.

The *Principles of Medical Ethics* of the American Medical Association, which embody the basic ethical concepts of medicine, have been changed very little since they were first conceived around 2250 B.C., at which time they were known as the Code of Hammurabi. In New York State, the code is known as the *Principles of Professional Conduct.*

Today's problems in ethics are created by physicians who belong to any one of the following groups:

1. The physicians and nonphysicians who, under the guise of modernizing the principles of medical ethics, are interested only in the financial benefits that they may derive from any change;
2. The uninformed, especially those who have not even read the code of ethics—these can be educated;
3. The pathologic group, who have a warped attitude concerning the code of ethics and should be exorcised from our profession; and
4. The problems that have arisen from the recent advances in organ transplantation, especially the heart.

Problems arising in groups 1 and 3 can be corrected by stricter enforcement of our code of ethics after a complete review of the code and reinforcement of any weak points.

The education of the physicians in group 2 was proposed by the American Medical Association's House of Delegates in 1961. It proposed that each medical school develop and present a required course in ethics. To date only a few schools have started such a course, but this is not enough. I believe that our State Society should stimulate the interest of the medical schools in our State in this field of medicine and urge them to have formal lectures covering the codes of ethics of our State Society and of the AMA. These schools could utilize visiting lecturers from our State Society who have had first-hand experience and can illustrate their talks with case reports and thus more effectively present the material. I say visiting lecturers because so many faculty members serve as full-time teachers that they are unaware of the ethical problems which will confront the student after he has become a practicing physician. Therefore, these lecturers should be practicing physicians who are members of the Medical Society of the State of New York and who are in the private practice of medicine. Another stimulant to the medical schools would be the inclusion of questions on ethics by the State Board of Medical Examiners in their examination.

On the question of organ transplants, we in medicine must concern ourselves with Sections 1 and 2 of the *Principles of Medical Ethics* of the AMA which states the following:

> Section 1. The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion.
>
> Section 2. Physicians should strive continually to improve medical knowledge and skill, and should make available to their patients and colleagues the benefits of their professional attainments.

However, these sections do not authorize the extreme, dramatic publicity that was used during the past few months, both here and abroad, to release the information on the medical progress or research made in organ transplants. We should still be aware that this type of publicity, while it might satisfy the ego, abuses the patient's right of privacy. This carnival type of publicity will not only confuse the public but also will cause patients to lose confidence in the integrity of physicians.

In conclusion, I would like to quote from the *Opinions and Reports* of the Judicial Council of the AMA as follows:

> There is but one code of ethics for all, be they group, clinic, or individual and be they great and prominent or small and unknown.

Joseph G. Zimring, M.D.

222 Riverside Boulevard
Long Beach, New York 11561

Necrology

Ruth Achs, M.D., of Brooklyn, died on September 27 at the age of forty-eight. Dr. Achs graduated in 1945 from Long Island College of Medicine. She was an adjunct pediatrician at Jewish Hospital of Brooklyn, an assistant attending pediatrician at Kings County Hospital Center, director of pediatrics at Kings County Hospital Medical Center (Outpatient Department), and an associate professor of pediatrics at Downstate Medical Center. Dr. Achs was a Diplomate of the American Board of Pediatrics and a member of the American Academy of Pediatrics.

Walter Bruck, M.D., of New York City, died on July 18 at the age of seventy-nine. Dr. Bruck received his medical degree from the University of Munich in 1914. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

John Carfagna, M.D., of Buffalo, died on August 3 at the age of seventy-three. Dr. Carfagna graduated in 1920 from the University of Buffalo School of Medicine. He was a member of the Buffalo Academy of Medicine.

Richard Dann, M.D., of Jackson Heights, died on December 28, 1967, at the age of eighty-five. Dr. Dann received his medical degree from the University of Berlin in 1908. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Benjamin Dinerman, M.D., of Brooklyn, died on August 15 at the age of sixty-eight. Dr. Dinerman graduated in 1926 from George Washington University School of Medicine. He was a member of the American Academy of General Practice, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

David Ennis, M.D., of Lyons, died on September 19 at the age of fifty-eight. Dr. Ennis graduated in 1936 from Harvard University Medical School. He had been a coroner for Wayne County since 1962 and, since 1952, the health officer for the Town and Village of Lyons and school physician for the Lyons Central School. Dr. Ennis was a member of the American Academy of General Practice, the Wayne County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Michael Jay Fisher, M.D., of Brooklyn, died on July 18 at the age of sixty-two. Dr. Fisher graduated in 1932 from New York Homeopathic Medical College and Flower Hospital. He was chief proctologic surgeon at Maimonides Hospital of Brooklyn Outpatient Department, surgeon-in-charge of proctology at Maimonides Hospital of Brooklyn, and an associate attending surgeon at Caledonian Hospital. Dr. Fisher was a member of the American Proctologic Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Nathan Freeman, M.D., of Brooklyn, died on September 6 at the age of sixty-three. Dr. Freeman graduated in 1930 from Long Island College Hospital. He was a member of the Academy of Psychoanalysis, the American Psychiatric Association, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Benjamin Ginn, M.D., of Brooklyn, died on August 22 at the age of sixty. Dr. Ginn received his medical degree from the University of Innsbruck in 1935. He was an attending surgeon at Brooklyn State Hospital. Dr. Ginn was a Fellow of the International College of Surgeons, and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Saul S. Hauser, M.D., of Brooklyn, died on August 12 at the age of fifty-seven. Dr. Hauser received his medical degree from the University of Berlin in 1937. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Barnet Jacobs, M.D., of Brooklyn, died on September 10 at the age of sixty-one. Dr. Jacobs graduated in 1930 from Long Island College Hospital.

Gustav Kohlhagen, M.D., of Brooklyn, died on September 5 at the age of seventy-two. Dr. Kohlhagen received his medical degree from the University of Marburg in 1923. He was an adjunct physician in orthopedics at Jewish Hospital of Brooklyn. Dr. Kohlhagen was a member of the American Academy of General Practice, the American Geriatrics Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Joseph Irwin Kones, M.D., of Yonkers, died on September 30 at the age of fifty-eight. Dr. Kones received his medical degree from the University of Vienna in 1936. He was an attending physician (off service) at Bronx-Lebanon Hospital Center. Dr. Kones was a member of the American Academy of General Practice, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Leo L. Kranzer, M.D., of Brooklyn, died on August 28 at the age of seventy. Dr. Kranzer graduated in 1912 from University and Bellevue Hospital Medical College. He was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Donald J. Magilligan, M.D., of Brooklyn, died on August 19 at the age of sixty-five. Dr. Magilligan graduated in 1929 from Long Island College Hospital. He was an orthopedic surgeon and chief of orthopedic surgery at St. Charles Hospital and Orthopedic Clinic, an attending orthopedic surgeon at Long Island College and Veterans Administration Hospitals, and the Hospital of the Holy Family, and a consulting orthopedic surgeon at St. Mary's Hospital. Dr. Magilligan was a Diplomate of the American Board of Orthopedic Surgery, a Fellow of the American College of Surgeons, and a member of the American Academy of Compensation Medicine, the American Academy of Orthopaedic Surgeons, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Charles A. McCarthy, M.D., of Bayport, died on October 5 at the age of eighty-four. Dr. McCarthy graduated in 1908 from Columbia University College of Physicians and Surgeons. Until 1965 he had been an attending physician in internal medicine at the New York Foundling Hospital where he had also served as president of the medical board for more than twenty-five years. In 1961 he was awarded the Papal Laetare Award of the Roman Catholic Church in recognition of his service to foundlings. Dr. McCarthy was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Judah Minkin, M.D., of Putnam Valley, died on September 7 at the age of seventy-five. Dr. Minkin received his medical degree from the University of Berlin in 1923. He was a member of the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Ashley Baker Morrill, M.D., of Bronxville, retired, died on September 28 at the age of eighty-four. Dr. Morrill graduated in 1911 from Harvard University Medical School. He was an honorary member of the medical staff at Lawrence Hospital. Dr. Morrill was a member of the New York Academy of Medicine, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

R. Sterling Mueller, M.D., of New York City, died on September 29 at the age of sixty-seven. Dr. Mueller graduated in 1926 from Columbia University College of Physicians and Surgeons. He was a consulting surgeon at Roosevelt Hospital. Dr. Mueller was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the New York Surgical Society, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Peter Travers F. Neyland, M.D., of Ridgewood, died on March 14 at the age of sixty-eight. Dr. Neyland graduated in 1928 from Columbia University College of Physicians and Surgeons. He was a clinical assistant attending general practitioner at Wyckoff Heights Hospital. Dr. Neyland was a member of the American Academy of General Practice, the American Geriatrics Society, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Laurence Louis Palitz, M.D., of Manhasset and The Bronx, died on September 19 at the age of fifty-six. Dr. Palitz graduated in 1940 from Rush Medical College. He was an attending dermatologist at Long Island Jewish Hospital, an associate attending pathologist and an associate attending physician-in-charge of dermatology at Montefiore Hospital, and a staff physician at North Shore Hospital. Dr. Palitz was a Diplomate of the American Board of Dermatology, Inc., and a member of the American Academy of Dermatology, the Society for Investigative Dermatology, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Morris Pernikoff, M.D., of Brooklyn, died on April 27 at the age of sixty-four. Dr. Pernikoff graduated in 1928 from Long Island College Hospital. He was an adjunct in surgery at Jewish Hospital of Brooklyn. Dr. Pernikoff was a member of the Medical Society of the County of Kings, the Medical Society of the

State of New York, and the American Medical Association.

Anthony Joseph Profita, M.D., of Rockville Centre, died on September 19 at the age of sixty-five. Dr. Profita graduated in 1928 from George Washington University School of Medicine. He was a consulting psychiatrist at South Oaks Psychiatric Hospital-The Long Island Home (Amityville) and an assistant attending psychiatrist at the Hospital of the Holy Family (Brooklyn). Dr. Profita was a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Elaine Pandia Ralli, M.D., of New York City, died on October 6 at the age of seventy-four. Dr. Ralli graduated in 1925 from University and Bellevue Hospital Medical College. She was a consulting physician at Goldwater Memorial Hospital and an attending physician at Bellevue Hospital. Formerly an associate professor of medicine at New York University School of Medicine, from 1950 to 1961 she directed outpatient services for the New York City Department of Hospitals. Dr. Ralli was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the American Physiological Society, the Endocrine Society, the Society for Experimental Biology and Medicine, the New York Academy of Medicine, the Clinical Society, New York Diabetes Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur Wallace Rupert, M.D., of Albany, died on September 15 at the age of fifty-five. Dr. Rupert graduated in 1938 from Queen's University Faculty of Medicine, Kingston, Ontario. He was an attending anesthesiologist at St. Peter's Hospital. Dr. Rupert was a member of the American Society of Anesthesiologists, Inc., the New York State Society of Anesthesiologists, the Albany County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Franz Schachter, M.D., of The Bronx, died on May 17 at the age of sixty. Dr. Schachter received his medical degree from the University of Vienna in 1933. He was a clinical assistant physician at Bronx-Lebanon Hospital Center and Lincoln Hospital. Dr. Schachter was a member of the American Academy of General Practice, the New York Cardiological Society, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Shaftel, M.D., of Long Beach, died on July 1 at the age of eighty-eight. Dr. Shaftel graduated in 1904 from University and Bellevue Hospital Medical College. He was a consulting physician emeritus at Maimonides Hospital of Brooklyn. Dr. Shaftel was a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Frederick Keeler Shaw, M.D., of Waverly, died on July 21 at the age of sixty. Dr. Shaw graduated in 1934 from Columbia University College of Physicians and Surgeons.

I. Jerome Silverman, M.D., of The Bronx, died on September 2 at the age of seventy. Dr. Silverman graduated in 1927 from University and Bellevue Hospital Medical College. He was a Diplomate of the American Board of Pathology and a member of the American Society of Clinical Pathologists, the New York Pathological Society, the Bronx County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Georges Soroko, M.D., of Brentwood, died on July 29 at the age of fifty-six. Dr. Soroko received his medical degree from the University of Paris in 1943. He was a supervising psychiatrist at Central Islip State Hospital. Dr. Soroko was a member of the American Psychiatric Association, the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hiram Symons, M.D., of Westbury, died on September 29 at the age of fifty-seven. Dr. Symons graduated in 1936 from Wayne University College of Medicine, Detroit. He was a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Aaron Robert Tolk, M.D., of Brooklyn, died on September 15 at the age of sixty-five. Dr. Tolk graduated in 1926 from University and Bellevue Hospital Medical College. He was an attending radiologist at Bellevue Hospital. Dr. Tolk was a Diplomate of the American Board of Radiology and a member of the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

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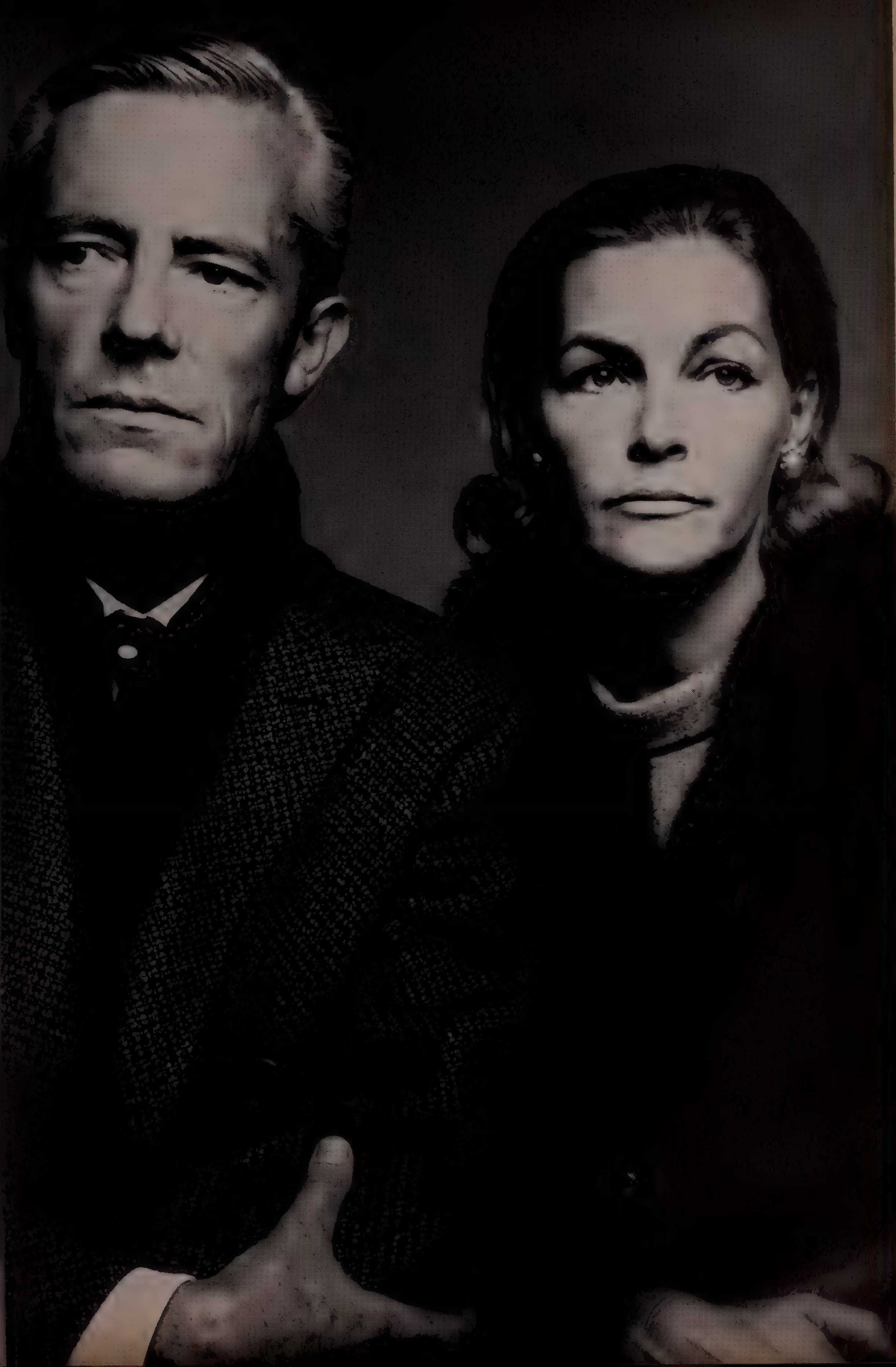

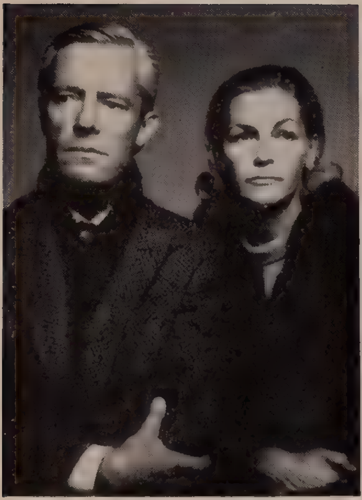

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Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

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Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

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Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Patients receiving a tricyclic antidepressant (e.g., nortriptyline) may respond poorly to hypotensive agents such as guanethidine.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily
Pulvules: 25 mg.—1 Pulvule one to four times daily
10 mg.—1 or 2 Pulvules one to four times daily
Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily
CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily
Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily
10 mg.—Ages three to six, 1 Pulvule one to three times daily
Ages seven to twelve, 1 or 2 Pulvules one to three times daily.
Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily
Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

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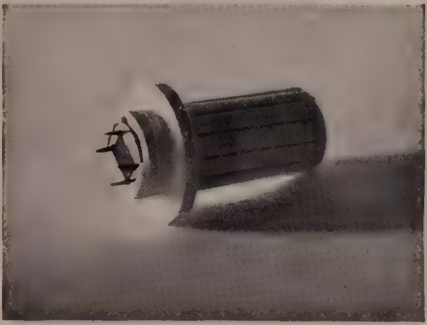

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The Lucien Howe Prize of $200 will be presented for the best original contribution on some branch of surgery, preferably ophthalmology.

The Merit H. Cash Prize of $200 will be given to the author of the best original essay on some medical or surgical subject.

Essays shall be typewritten or printed with the name of the prize for which the essay is submitted, and the only means of identification of the author shall be a motto or other device. The essay shall be accompanied by a sealed envelope having on the outside the same motto or device and containing the name and address of the writer. If the committee considers that no essay or contribution is worthy of a prize, it will not be awarded.

Any essay that may win a prize automatically becomes the property of the Medical Society of the State of New York, "to be published as it may direct." All essays must be sent not later than December 1, 1968, to Alfred A. Angrist, M.D., Chairman of the Committee on Prize Essays, Medical Society of the State of New York, 750 Third Avenue, New York, N. Y. 10017.

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Precautions: In the elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, oversedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

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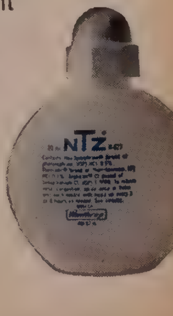

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LOW-BACK PAIN

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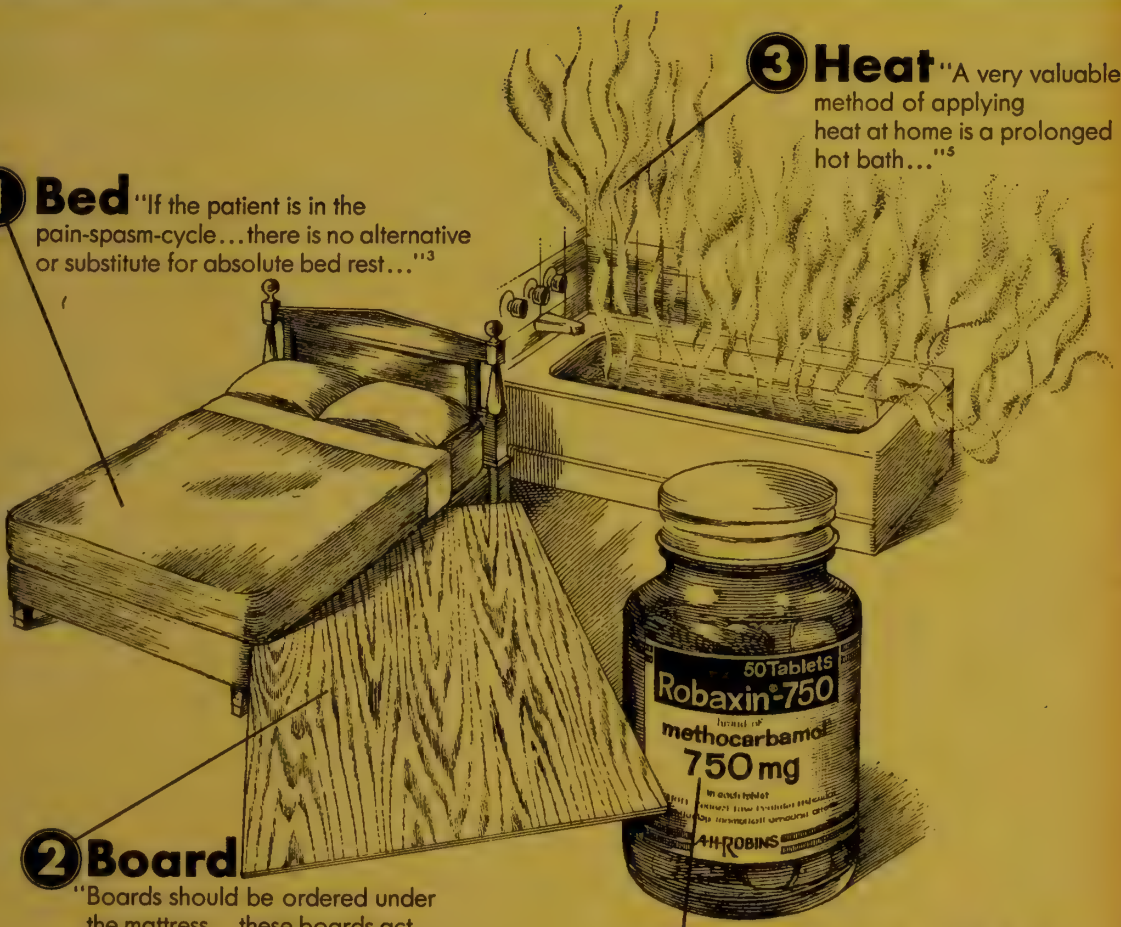

① Bed "If the patient is in the pain-spasm-cycle...there is no alternative or substitute for absolute bed rest..."[3]

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A recent NCME hospital telecast presented Philip N. Sawyer, M.D., Professor of Surgery and Head of the Vascular Surgical Service at Downstate Medical Center, Brooklyn, N.Y., in a demonstration and evaluation of "Gas Endarterectomy."

In this program, Dr. Sawyer performs the operation on a patient with gross occlusion of the right iliac, femoral and popliteal arteries.

In Dr. Sawyer's view, gas endarterectomy has several advantages over mechanical methods: the operation can be completed faster, causes less damage to the arteries and offers a more successful outcome.

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Medical News

Study of patients with chronic myelocytic leukemia

Because survival of patients with chronic myelocytic leukemia has not been significantly improved by conventional chemotherapy with busulfan (Myleran), two alternative approaches to treatment of this disease have been under investigation at the Roswell Park Memorial Institute during the past three years:

1. Combination chemotherapy with two or more antileukemic drugs, administered concurrently.
2. Conventional chemotherapy (usually regulated by the patient's own physician) plus immunization against myeloblasts of human origin, in the hope that the latter will offer protection against transformation to myeloblastic leukemia—the usual cause of death in patients treated with busulfan.

Experience to date in both of these cases is encouraging. Patients have been treated principally on an outpatient basis, without suffering from significant side effects or toxicity from the drugs. The initial clinical results are favorable.

Additional patients can now be accepted for these programs. Physicians wishing to refer patients for either type of treatment should contact: Joseph E. Sokal, M.D., or C. William Aungst, M.D., Medicine B, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, New York, 14203. Toll-free telephone calls may be made by dialing 800–462–1877.

Study nuclear energy as power source for artificial heart

Scientists at Cornell University's Laboratory of Radiation Biology are seeking to determine what effect a nuclear energy source might have if it were implanted in a human body to supply power for an artificial heart. Cyril L. Comar, director of the laboratory, said interest in artificial hearts has heightened in recent months and engineering developments have increased the possibility of their use.

Medical researchers now are considering radioactive sources, rechargeable batteries, and biologic fuel cells to provide power for artificial hearts. Comar said his group feels radioactive sources appear now to be a feasible method of powering the heart device.

Material for inclusion in the medical news section must be received six weeks prior to publication date.

"Our goal is to have a source that can be implanted and left in the body to provide power for at least ten years," Comar said. "Before such power sources can be used in human beings, it is necessary to know that there will be no danger to the individual from them. Virtually no information is available on the biologic effects of chronic radiation from implanted radioactive sources for powering the heart. The primary objective of the study is to obtain information as rapidly as possible on the biologic effects of implanted sources which produce both neutron and gamma radiation."

There are two possible sources of danger from a radioactive source, heat and radiation, Comar said. The Cornell research team will investigate only the dangers involved with radiation. Eventually, however, both the problems of heat and radiation must be studied together, Comar said.

In initial experiments, a device containing a specially selected radioisotope will be implanted. This device will have the same size, weight, volume, and radiation characteristics of the ultimate power source. Simulated power sources are being used because they are more easily obtained in large numbers and because the presence of heat from an actual power source will complicate the experiment which will concentrate on radiation hazards. In experiments on animals the simulated power source will be implanted in the lower abdominal cavity of animals, since that is where it is expected to be implanted in human beings.

"Any deleterious effects that may result from exposure to radiation over several years will be studied," Comar said. "This information will then be used as a guideline in the production of a usable power source for an artificial heart."

The project is funded by a portion of a $291,000 grant for one year's work from the Atomic Energy Commission.

Personalities

Named. C. Joseph Delaney, M.D., New York City, as senior physician on the staff of the Maritime College of the State University of New York at Fort Schuyler . . . Jacob B. Glenn, M.D., Brooklyn, as the winner of the 1968 Maimonides Award, given annually by Michael Reese Hospital and Medical Center and the College of Jewish Studies.

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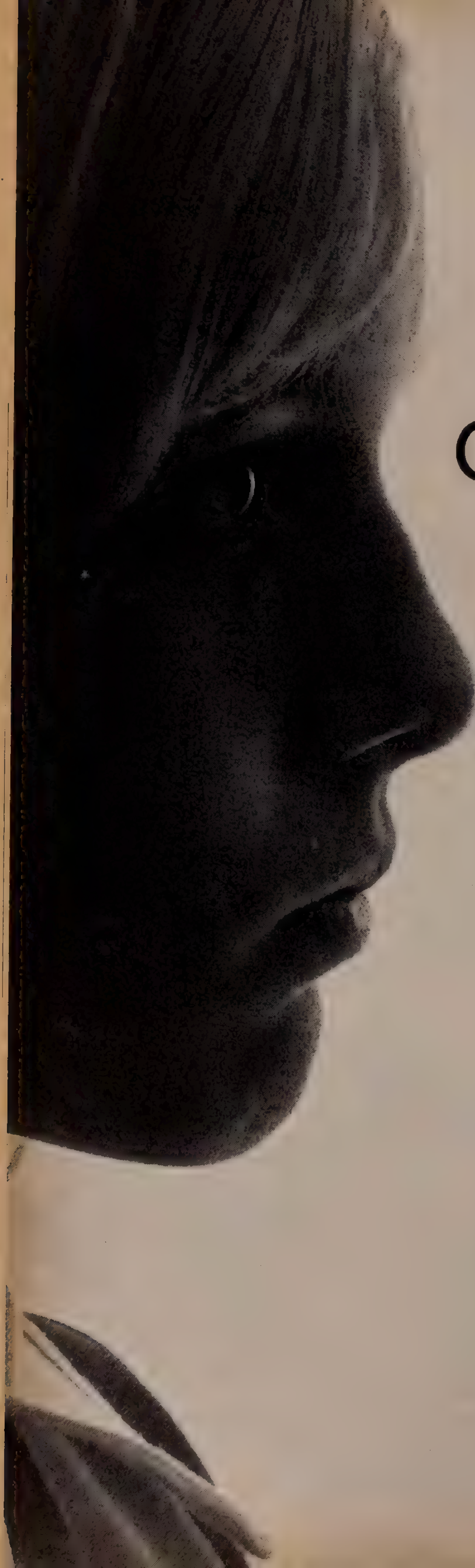

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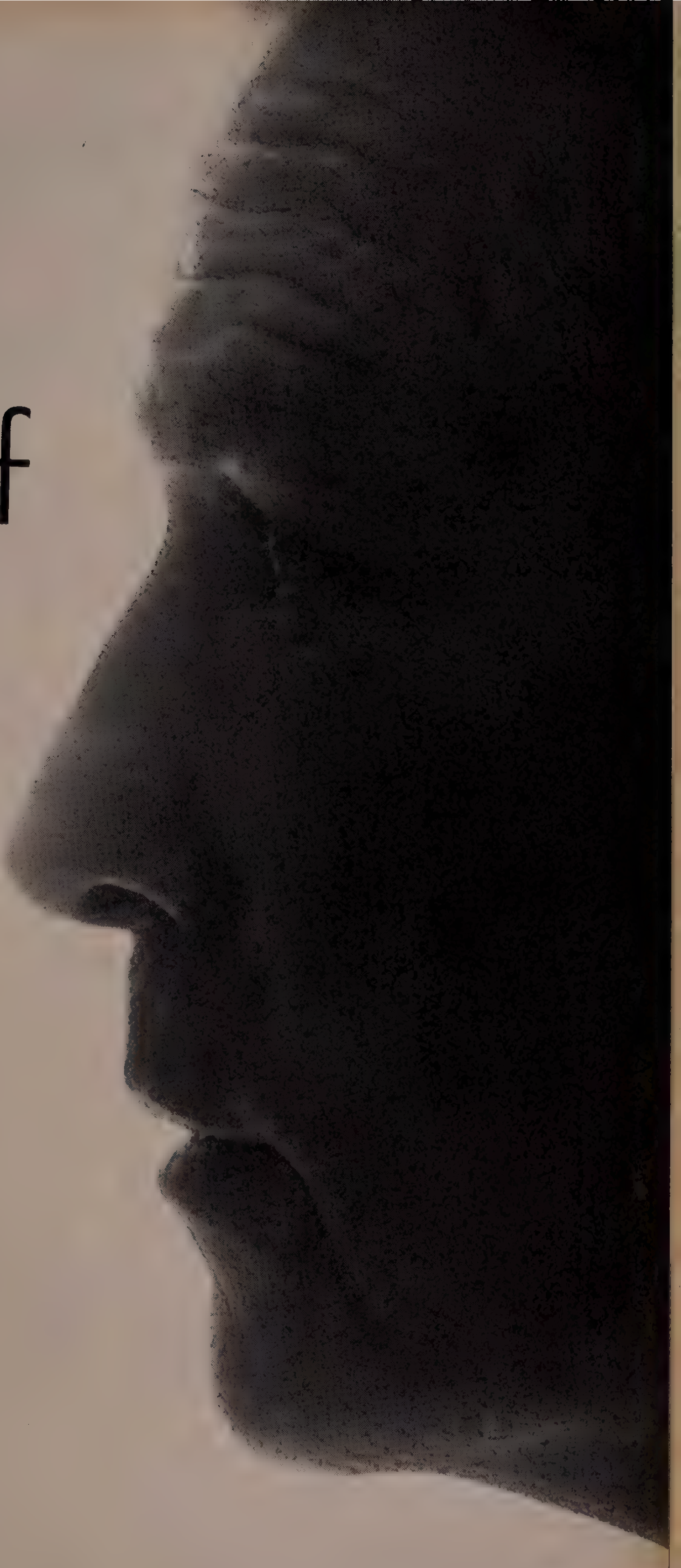

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eruptions with or without fever. Rarely, dermatitis goes on to exfoliation with hepatitis, and further dosage is contraindicated. Gingival hypertrophy, hirsutism, and excessive motor activity are occasionally encountered. During initial treatment, side effects may include gastric distress, nausea, weight loss, nervousness, sleeplessness, feeling of unsteadiness. Macrocytosis, megaloblastic anemia, leukopenia, granulocytopenia, thrombocytopenia, pancytopenia, agranulocytosis, and aplastic anemia have been reported. Nystagmus, lymphadenopathy, lupus erythematosus, erythema multiforme (Stevens-Johnson syndrome), and a syndrome resembling infectious mononucleosis with jaundice, have occurred.

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Team Physician, *Cornell University*

A. Head and Neck Injuries
B. The Trainer's Role in High School Athletics
C. Rehabilitation of the Injured Athlete
D. Highlights of the Olympics

Luncheon—12:30 p.m. Guest Speaker: "Sleepy" Jim Crowley
Quarterback 'The Four Horsemen of Notre Dame'

Program—Afternoon Session—2:00 p.m. Moderator, M. Laurens Rowe, M.D.
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F. Training and Conditioning for Baseball
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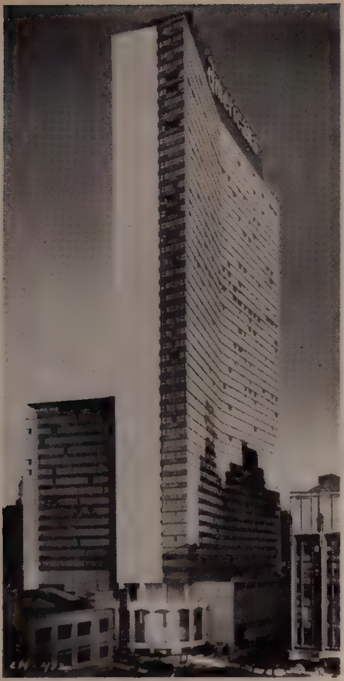

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MEDICAL SOCIETY OF THE STATE OF NEW YORK

February 9-13, 1969

Abstracts

Zinsser, H. H., Seneca, H., Light, I., Mayer, G., Karp, F., McGeoy, G., and Tarrasoli, H.: Management of infected stones with acidifying agents, NEW YORK STATE J. MED. **68:** 3001 (Dec. 1) 1968.

Calculus formation can be blamed on obstruction and infection in stones formed by urea splitting by urease-positive organisms, resulting in struvite formation, and those producing a "putty"-like stone associated with persistent staphylococcal infections. Unexpected components present new and unsolved problems. A successful regimen in treating infected calculi over periods as long as ten years utilized urinary acidification with chlormerodrin, ammonium chloride, and cranberry juice.

Phelan, J. T.: Cancer and pregnancy, NEW YORK STATE J. MED. **68:** 3011 (Dec. 1) 1968.

Of 52 patients with cancer and associated pregnancy whose records were reviewed, 41 delivered normal infants, and there was no evidence of fetal involvement by the mother's malignant condition. Clinical and experimental evidence indicates that most cancers are not aggravated by pregnancy and that abortion is not indicated. There is some evidence that breast-feeding by mothers with malignant conditions is not advisable. Almost every known malignant condition has been associated with pregnancy; in this series, carcinoma of the cervix accounted for the largest number, followed by carcinoma of the breast and melanoma.

Abstracts in Interlingua

Zinsser, H. H., Seneca, H., Light, I., Mayer, G., Karp, F., McGeoy, G., e Tarrasoli, H.: Le therapia de inficite calculos con agentes de acidification (*anglese*), NEW YORK STATE J. MED. **68:** 3001 (1 de decembre) 1968.

Le formation de calculos pote esser attribuite al obstruction e infection in calculos formate per le fissura de urea per organismos positive a urease, con le resultato del formation de struvite, e illos producente calculos "malleabile" associate con persistente infectiones staphylococcal. Inexpectate componentes presenta nove problemas que remane a resolver. Un successose regimine in le tractamento de inficite calculos durante periodos usque ad dece annos utilisava acidification urinari con chlormerodrina, chloruro de ammonium, e succo de oxycocco.

Phelan, J. T.: Cancere e graviditate (*anglese*), NEW YORK STATE J. MED. **68:** 3011 (1 de decembre) 1968.

Ex un gruppo de 52 gravidas con cancere, in cuje casos le documentation clinic poteva esser revistate, 41 parturiva infantes normal, monstrante nulle evidentia de repercussiones in le fetos del maligne condition del matres. Evidentia clinic e experimental indica que le majoritate del canceres non es aggravate per pregnantia e que aborto a induction artificial non es indicate. Certe datos supporta le these que lactation natural per matres con conditiones maligne non es a recommendar. Quasi omne cognoscite formas de malignitate ha essite associate con pregnantia. In le presente serie, carcinoma del cervice esseva le diagnose le plus frequente, sequite de carcinoma del mammas e de melanoma.

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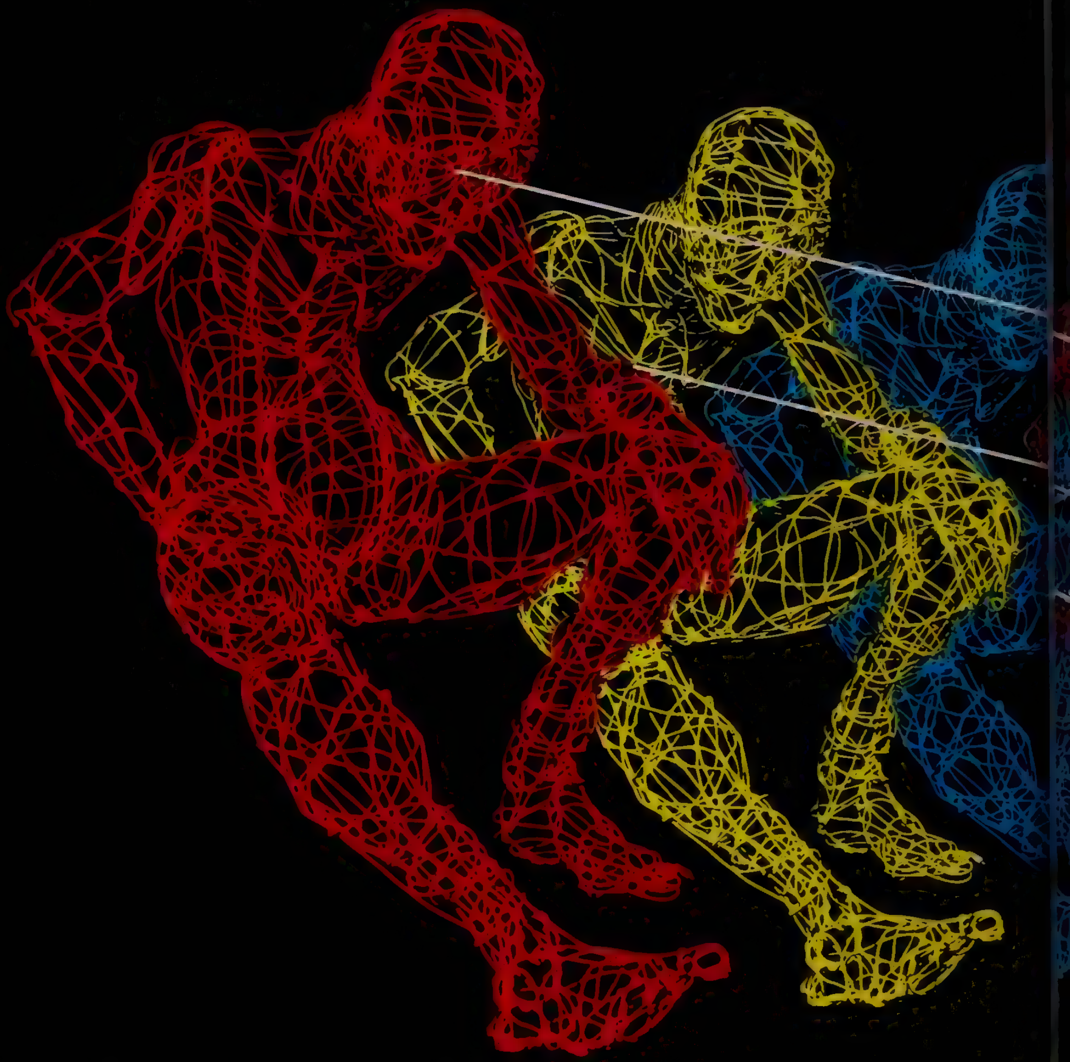

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Iron, Elemental (as Ferrous Fumarate)	110	mg.
Ascorbic Acid (Vitamin C)	75	mg.
Folic Acid	1	mg.

Indications: Trinsicon® (hematinic concentrate with intrinsic factor, Lilly) is a multifactor preparation effective in the treatment of anemias that respond to oral hematinics, including pernicious anemia and other megaloblastic anemias and also iron-deficiency anemia.

Contraindications: Hemochromatosis and hemosiderosis.

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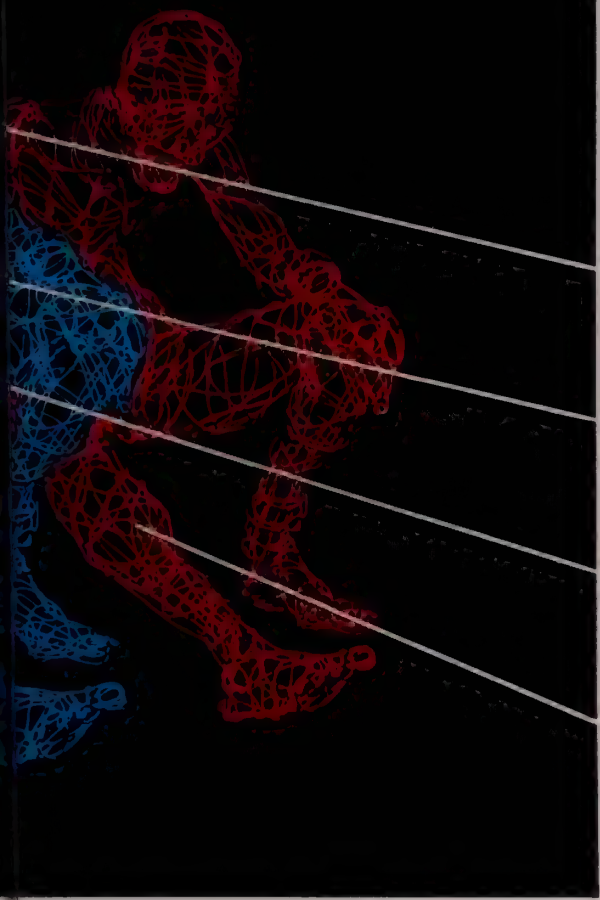

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studies are considered essential and are recommended.

Adverse Reactions: In rare instances, iron in therapeutic doses produces gastro-intestinal reactions, such as diarrhea or constipation. Reducing the dose and administering it with meals will minimize these effects.

In extremely rare instances, skin rash suggesting allergy has followed oral administration of liver-stomach material. Instances of apparent allergic sensitization have also been reported after oral administration of folic acid.

Dosage: One Pulvule twice a day. (Two Pulvules daily produce a standard response in the average uncomplicated case of pernicious anemia.)

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Medical Meetings

Teaching days offered by Albany Medical College

Teaching days in "Birth Defects and Medical Genetics" and in "Surgical Treatment of Mammary Cancer," sponsored by the Department of Postgraduate Medicine of Albany Medical College, will be held on December 5 and December 12, respectively, in Huyck Auditorium. The topics and speakers are as follows:

December 5, "The Role of Sex Chromosomes in Sexual Development," Kurt Hirschhorn, M.D., Mount Sinai School of Medicine; "Female Pseudohermaphroditism," Maria New, M.D., Cornell Medical College; "Disorders of Gonadal Development," Daniel Federman, M.D., Massachusetts General Hospital; and "Psychological Disorders Associated with Genital Defects," John Money, Ph.D., The Johns Hopkins University School of Medicine.

December 12, "Use of Radiation Therapy in Breast Cancer," Ruth Guttman, M.D., Columbia-Presbyterian Medical Center; "Surgical Treatment of Breast Cancer," John S. Spratt, Jr., M.D., Ellis Fischel State Cancer Hospital; "Role of Endocrine Therapy for Breast Cancer," O. H. Pearson, M.D., Case-Western Reserve University; and "Chemotherapy for Breast Cancer," Kenneth Olson, M.D., Albany Medical College.

Tuition is $20 for each session, and registration is limited to 135 persons. For further information contact: Department of Postgraduate Medicine, Albany Medical College, 47 New Scotland Avenue, Albany, New York 12208.

Review course for general practitioners offered

A medical review course for general practitioners will be given at the New York Polyclinic Medical School and Hospital from February 4 through May 1, 1969. The course consists of fifty hours of lectures and demonstration on medical and surgical topics, as well as special lectures on preventive and community medicine.

This course is designed to meet the certification requirements for participation in the Medical Assistance Program and is approved by the New York City Health Services Administration. It is also acceptable for fifty hours of Category I credit from the American Academy of General Practice.

For further information contact: dean, New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York, New York 10019.

Occupational medicine topic of postgraduate course

Columbia University School of Public Health and Administrative Medicine is sponsoring the Twelfth Annual Institute for Physicians in Industry, a one-week course in occupational medicine which will be held at the Columbia-Presbyterian Medical Center, New York City, from March 3 through 7, 1969.

This program is designed to be an intensive refresher course relating to those subject areas of specific interest to physicians practicing in the field of occupational medicine. In addition, several sessions will be devoted to basic public health subjects. Physicians preparing to take examinations for specialty boards should find this course particularly helpful.

For further information and applications write to Eric R. Osterberg, M.D., director, public health, Program of Continuation Education, Suite 305, 21 Audubon Avenue, New York, New York 10032.

AMA rural health conference to be held in Philadelphia

The twenty-second National Conference on Rural Health, sponsored by the Council on Rural Health of the American Medical Association, is to be held March 21 and 22, 1969, at the Philadelphia Marriott Motor Hotel, Philadelphia, Pennsylvania.

"Meeting Rural Health Needs in our Changing Times" will be the theme of the conference, covering the following topics: Planning for Health Services in Rural Areas; Health Education for Healthful Living; Systematic Approach to Emergency Medical Services; Health Manpower; Changing Role of the Nurse; Migrant Health Program; Mental Health Facilities; and The New Family Physician.

For further information write to: Department of Health Education, Division of Health Service, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

Pediatric neoplastic diseases topic of postgraduate course

A postgraduate course on "Newer Aspects of Pediatric Neoplastic Diseases," sponsored

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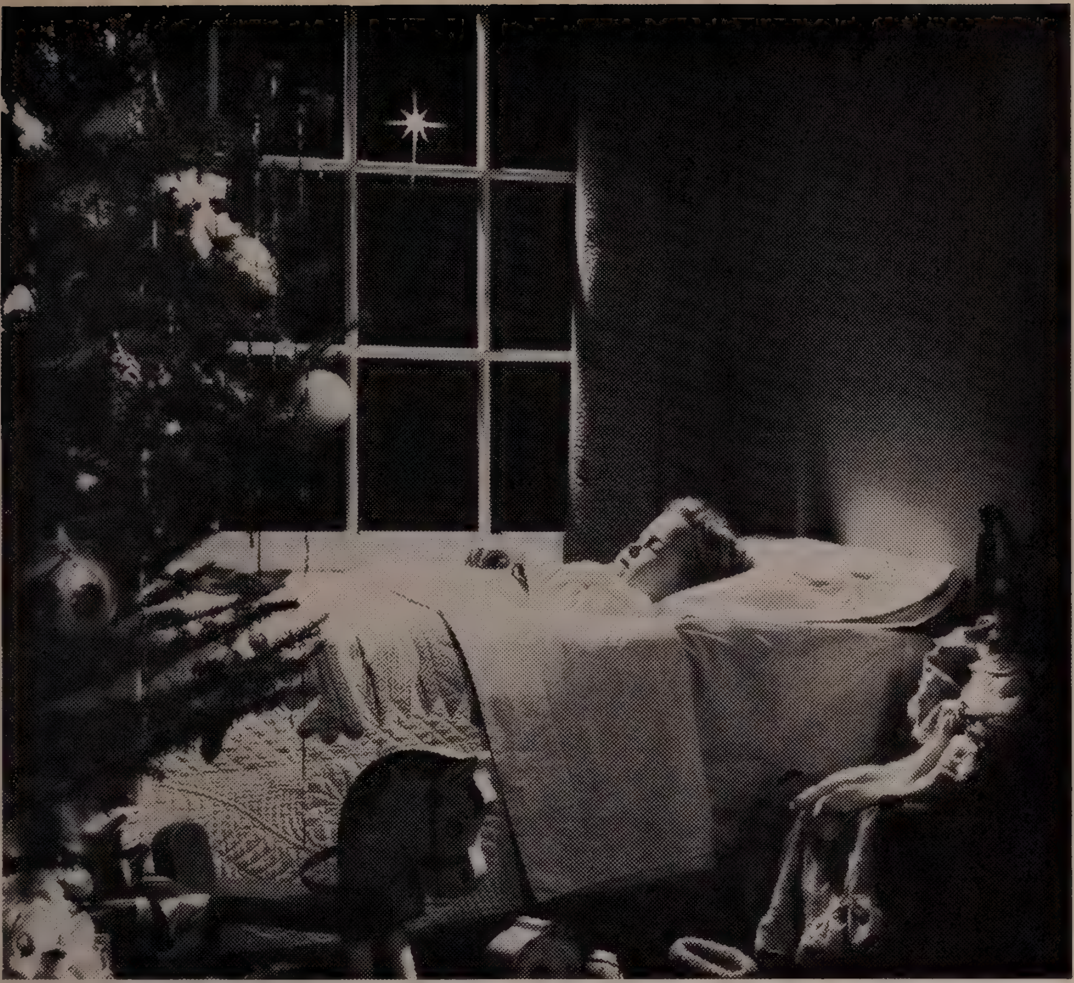
Material for inclusion in the medical meetings section must be received six weeks prior to publication date.



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INDICATIONS: Mild to severe hypertension.
CONTRAINDICATIONS: Anuria; increasing azotemia and oliguria during treatment of severe progressive renal disease. Known sensitivity to hydrochlorothiazide or reserpine. Active peptic ulcer and ulcerative colitis. Nursing mothers. If drug is essential, patient should stop nursing. Active mental depression, especially with suicidal tendencies. Electroshock therapy; discontinue drug at least 7 days before initiating electroshock therapy.
WARNINGS: May precipitate or increase azotemia. Use special caution in impaired renal function. Minor alterations of fluid and electrolyte balance may precipitate coma in hepatic cirrhosis. Dosage of other antihypertensive drugs, especially ganglion blockers, must be reduced by at least 50 percent because HYDROPRES potentiates their action. A further reduction in dosage or even discontinuation of the other antihypertensive drugs may be necessary as blood pressure falls. Stenosis and ulceration of the small bowel causing obstruction, hemorrhage, and perforation have been reported with the use of enteric-coated potassium tablets, either alone or with nonenteric-coated thiazides. Surgery frequently required and deaths have occurred. Such formulations should be used only when indicated and when dietary supplementation is impractical. Discontinue immediately if abdominal pain, distention, nausea, vomiting, or gastrointestinal bleeding occurs. Consider possibility of sensitivity reactions in patients with history of allergy or bronchial asthma. The possibility of exacerbation or activation of systemic lupus erythematosus has been reported for sulfonamide derivatives (including thiazides) and reserpine. Discontinue at first sign of depression. Nasal congestion, lethargy, depressed Moro reflex, and bradycardia may appear in infants born of reserpine-treated mothers. Thiazides cross placenta and appear in cord blood. In women of childbearing age potential benefits must be weighed against possible hazards to fetus. These hazards include fetal or neonatal jaundice, thrombocytopenia, and possibly other adverse reactions which have occurred in the adult.
PRECAUTIONS: Hydrochlorothiazide: Check for signs of fluid and electrolyte imbalance, particularly if vomiting is excessive, or patient is receiving parenteral fluids. Warning signs, irrespective of cause, are dryness of mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Hypokalemia may develop, especially with brisk diuresis, in severe cirrhosis, with concomitant steroid or ACTH therapy, or with inadequate electrolyte intake. Digitalis therapy may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Hypochloremic alkalosis occurs infrequently and is rarely severe. If dietary salt is unduly restricted, especially during hot weather, in severely edematous patients with congestive failure or renal disease, a low salt syndrome may occur. Hypokalemia may be avoided or treated by use of potassium chloride or giving foods with a high potassium content. Similarly, any chloride deficit may be corrected by use of ammonium chloride (except in patients with hepatic disease) and largely prevented by a near normal salt intake. Thiazides may increase responsiveness to tubocurarine. The antihypertensive effect of the drug may be enhanced in the postsympathectomy patient. Arterial responsiveness to norepinephrine is decreased, necessitating care in surgical patients. Discontinue drug 48 hours before elective surgery. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Use cautiously in hyperuricemic or gouty patients; gout may be precipitated. Insulin requirements in diabetics may be altered. May produce hyperglycemia and glycosuria in latent diabetics. **Reserpine:** Since reserpine may increase gastric secretion and motility, it should be used cautiously in patients with history of peptic ulcer, ulcerative colitis, or other GI disorders. May precipitate biliary colic in patients with gallstones, or bronchial asthma in susceptible patients. May cause hypotension, including orthostatic hypotension. Since significant hypotension and bradycardia may develop during anesthesia, discontinue two weeks prior to surgery. For emergency surgery, vagal blocking agents parenterally may be needed. Anxiety, depression, or psychosis may develop. Preexisting depression may be aggravated. Discontinue at first sign of mental depression. Use with extreme caution in patients with history of mental depression, noting possibility of suicide. Use caution when treating hypertensive patients with renal insufficiency, as they adjust poorly to lowered blood pressure levels. Use cautiously with digitalis and quinidine; cardiac arrhythmias have occurred with reserpine preparations.
ADVERSE REACTIONS: Hydrochlorothiazide: Rare reactions include thrombocytopenia, leukopenia, agranulocytosis, aplastic anemia, jaundice. Nausea, vomiting, diarrhea, dizziness, vertigo, and paresthesias may occur. Purpura, rash, urticaria, photosensitivity, or other hypersensitivity reactions have been reported. Also, cutaneous vasculitis in elderly patients on repeated and continuing exposure to several drugs. Scattered instances of pancreatitis, xanthopsia, neonatal thrombocytopenia, and neonatal jaundice have been reported. With moderate or severe reactions, thiazide dosage should be reduced or therapy withdrawn. **Reserpine:** Reactions most often reported include excessive sedation, nightmares, nasal congestion, conjunctival injection, enhanced susceptibility to colds, muscular aches, headache, dizziness, dyspnea, anorexia, nausea, increased intestinal motility, diarrhea, weight gain, dryness of mouth, blurred vision, flushing of skin, pruritus. Skin rash, dysuria, syncope, nonpuerperal lactation, impotence or decreased libido, increased salivation, vomiting, bradycardia, mental depression, nervousness, paradoxical anxiety, epistaxis, purpura due to thrombocytopenia, angina pectoris, other direct cardiac effects (e.g., premature ventricular contractions, fluid retention, congestive failure), and CNS sensitization manifested by dull sensorium, deafness, glaucoma, uveitis, and optic atrophy have also been noted. A Parkinson's disease-like syndrome, usually reversible with decreased dosage or discontinuance of therapy, has been observed. Use cautiously in hypertensive patients with coexistent coronary artery disease to avoid precipitous drop in blood pressure.
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continued from page 2976

by The New York Hospital-Cornell Medical Center, will be held May 1 through 3, 1969, at Cornell University Medical College, 1300 York Avenue, New York City.

Guest faculty members are as follows: David Baker, M.D., Sidney Carter, M.D., and Walter Berdon, M.D., Columbia University; Harry Bishop, M.D., University of Pennsylvania School of Medicine; Amos Christi, M.D., Vanderbilt University School of Medicine; J. S. Dunbar, M.D., McGill University Medical School; Robert Good, M.D., University of Minnesota; Robert W. Miller, M.D., National Cancer Institute; Laurance Picket, M.D., Yale University School of Medicine; Edward B. Singleton, M.D., Baylor University College of Medicine; and Melvin Tefft, M.D., Boston Children's Medical Center.

Tuition is $75. For further information contact: Herman Grossman, M.D., Department of Radiology, New York Hospital-Cornell Medical Center, 525 East 68th Street, New York, New York 10021.

Surgery of the cornea topic of course

A three-day practical course in surgery of the cornea, under the direction of A. Benedict Rizzuti, M.D., will be given May 7 through 9, 1969, at the Brooklyn Eye and Ear Hospital.

Highlights of surgical keratoplasty technics will be demonstrated on patients. Special instrumentation, microscopic surgery, keratoprosthesis, and related ancillary subjects will be discussed. Matriculants, under supervision, will perform corneal grafting procedures on animal eyes.

The course is limited to 10 persons, and tuition is $150. For information and application forms contact: F. C. Upton, administrator, Brooklyn Eye and Ear Hospital, 29 Greene Avenue, Brooklyn, New York 11238.

Conference on breast cancer

The American Cancer Society and the Cancer Control Program of the U.S. Public Health Service is sponsoring a national Conference on Breast Cancer to be held May 8 through 10, 1969, at the Shoreham Hotel, Washington, D.C. The dates and topics are as follows:

May 8—Epidemiology, Causation, and Pathogenesis; Current Control Measures and Their Effectiveness.

May 9—Changing Concepts in Detection and Diagnosis; Research, Resources, and Possible Developments for the Control of Breast Cancer.

May 10—Management of Operable Cases; Management of Inoperable Cases.

For further information contact: Roald N. Grant, M.D., National Conference on Breast Cancer, American Cancer Society, 219 East 42nd Street, New York, New York 10017.

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February 9-13

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Books Received

*The following books were received during the month of September, 1968.**

Eugene Wolff's Anatomy of the Eye and Orbit. Revised by R. J. Last, M.B. Sixth edition. Quarto of 529 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $19.

Hypersensitivity: Mechanisms and Management. By William B. Sherman, M.D. Quarto of 443 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $18.

Christopher's Textbook of Surgery. Edited by Loyal Davis, M.D. Ninth edition. Quarto of 1,493 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $21.50.

Immunohematology. By Chester M. Zmijewski, Ph.D., with the assistance of June L. Fletcher, B.S., and Ronald L. St. Pierre, Ph.D. Quarto of 300 pages, illustrated. New York, Appleton-Century-Crofts, 1968. Cloth, $13.75.

Principles of Drug Action: The Basis of Pharmacology. By Avram Goldstein, M.D., Lewis Aronow, Ph.D., and Sumner M. Kalman, M.D. Quarto of 884 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $18.50.

Radiographic Positioning and Related Anatomy. By Isadore Meschan, M.D., with the assistance of R. M. F. Farrer-Meschan, M.D. Duodecimo of 388 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $13.50.

P-Q-R-S-T: A Guide to Electrocardiogram Interpretation. By Joseph E. F. Riseman, M.D. Fifth edition. Duodecimo of 321 pages, illustrated. New York, The Macmillan Company, 1968. Cloth, $9.95.

Textbook of Microbiology. By William Burrows, Ph.D. Nineteenth edition. Quarto of 974 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $21.

Orr's Operations of General Surgery. By George A. Higgins, M.D. Fourth edition. Quarto of 861 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $27.

Tumors of the Large Bowel. By Raymond J. Jackman, M.D., and Oliver H. Beahrs, M.D. **Major Problems in Clinical Surgery—Volume VIII.** Octavo of 379 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $13.50.

Tobacco: Experimental and Clinical Studies. Supplement I. By P. S. Larson, Ph.D., and H. Silvette, Ph.D. Quarto of 803 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $20.

Social Psychiatry. Edited by Joseph Zubin, Ph.D., and Fritz A. Freyhan, M.D. Octavo of 382 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $14.50.

Clinical Hypnotherapy. By David B. Cheek, M.D., and Leslie M. LeCron, B.A. Octavo of 242 pages. New York, Grune & Stratton, 1968. Cloth, $7.50.

Selected Papers on Direct Psychoanalysis. Volume II. By John N. Rosen, M.D. Octavo of 172 pages. New York, Grune & Stratton, 1968. Cloth, $6.50.

Face-Lift Operation. By John Conley, M.D. Quarto of 122 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $19.75.

Harold G. Wolff's Stress and Disease. Revised and Edited by Stewart Wolf, M.D., and Helen Goodell, B.S. Second edition, Octavo of 277 pages, illustrated. Springfield, Ill., Charles C Thomas, 1968. Cloth, $10.

Spare-Part Surgery: The Surgical Practice of the Future. By Donald Longmore. Octavo of 192 pages, illustrated. Garden City, N. Y., Doubleday & Company, Inc., 1968. Cloth, $5.95.

Teaching Psychosocial Aspects of Patient Care. Edited by Bernard Schoenberg, Helen F. Pettit, & Arthur C. Carr. Octavo of 420 pages. New York, Columbia University Press, 1968. Cloth, $8.50.

Endocrine Pathology. Edited by J. M. B. Bloodworth, Jr., M.D. Quarto of 750 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $32.75.

Laboratory Manual of Pediatric Micro-Biochemical Techniques. By Donough O'Brien, M.D., Frank A. Ibbott, Ph.D., and Denis O. Rodgerson, M.S. Fourth edition. Octavo of 367 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $11.90.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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Books Reviewed

Textbook of Gynecologic Endocrinology. Edited by Jay J. Gold, M.D. Quarto of 682 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $23.50.

This is a new work by 36 authors, compiled by Jay J. Gold, M.D., who also wrote four of the 32 chapters. He, along with approximately a third of his coauthors, is an internist. Possibly a chapter on "Conception Control" would have been more accurate if written by a gynecologist rather than internists. For example, in the discussion of chloasma (more properly, melasma) it was stated that it is responsive to administration of B complex vitamins whereas the latest reports state that nothing specific affects this condition.

The subjects covered range from the most complex, such as the discussion of the new concepts of gonadotropic and steroid feedback control mechanisms, to the simplest. The latter is the weakness in the book since this would be an excellent all-round endocrinology reference for the sophisticated gynecologist were it not for such space-wasting discussions as a page for the use of condoms, diaphragms, and jellies for contraception control. There are several excellent chapters. The rest include "Diagnosing the Amenorrheas" and "Evaluation of Endocrinologic Condition by Exfoliative Cytology." Most of the advances in the gynecologic-endocrinology field have been well and fully covered. The illustrations are generally good. Jerome G. Davis, M.D.

The Doctor and the Athlete. By Isao Hirata, Jr., M.D. Octavo of 282 pages, illustrated. Philadelphia, J. B. Lippincott Company, 1968. Cloth, $11.

The number of participants in athletic activities is increasing all the time. It is estimated that 20,000 physicians are involved in treating these athletes. It is extremely important that early treatment should be started to prevent further damage. There is an increasing demand for specialized medical care in this field.

The number of publications has been growing. This text helps to fill a part of the gap. The author is well qualified because of twelve years of experience as team physician at Yale. He highlights the real problems in caring for athletes; he delineates the problems of athletic disability. Much of the material is basic. The problems encountered on the field of an athletic contest are unique, and require this special clinical skill to handle them properly.

The author guides his discussion to the care of the young amateur athlete. The decisions that are made in the care of these overzealous youngsters are paramount to their well being throughout life. The author fulfills this need well.

The text is divided into two sections. In the first, he discusses general principles. These include not only medical management, but also the basis for evaluation of athletes, general conditioning, diet, supervision of playing conditions, and equipment. In the second section, the author discusses the management of specific injuries by systems and regions. He focuses his attention on the many subclinical conditions which the team physician must face every day. Disability standards, treatment methods, and rehabilitation programs are outlined.

This is an excellent book for the team physician and any physician who will be called on to treat the injured amateur athlete. Alan A. Kane, M.D.

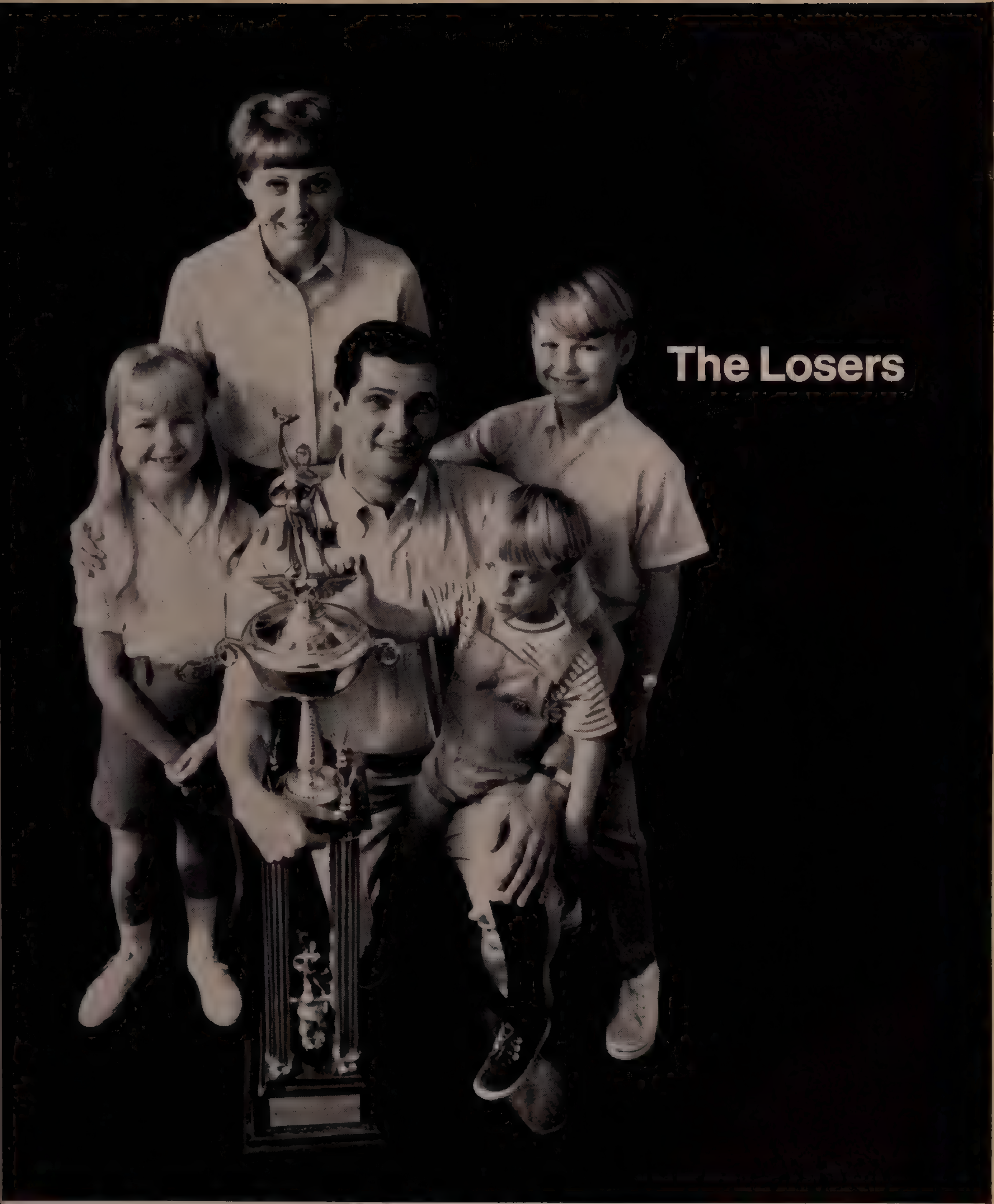
Collected Works on Rheumatic Fever. By Leo M. Taran, M.D. Quarto of 276 pages, illustrated. Flushing, N. Y., International Professional Publications, Inc., 1967. Cloth.

Leo M. Taran, M.D., was a pioneer worker in the field of rheumatic fever in children. Over the course of his long and distinguished career he contributed much to our knowledge, particularly the influence of this disease on the heart. He recognized early the role of abnormal immunologic proteins, and not long before his death contributed much to our knowledge of the importance of the QT interval on the electrocardiogram. For those concerned with acute rheumatic fever, this collection of reprints from 1941 through 1954 plus added material from his unpublished monograph on rheumatic fever should be of considerable interest. Charles M. Plotz, M.D.

continued from page 2982

July 1968. Treatment of Fluid and Electrolyte Imbalance. Guest Editor David D. Thompson, M.D. **Special Article, Current Treatment of Clinical Tetanus.** By Norman A. Christensen, M.D., and Deloran L. Thurber, M.D. Octavo. Illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Published Bi-Monthly (six numbers a year). Paper, $16 per year.

The Medical Clinics of North America. Nationwide Number. September, 1968. Recent Advances in Cardiovascular Disease. Lewis E. January, M.D., and David C. Funk, M.D., Guest Editors. Octavo. Philadelphia, W. B. Saunders Company, 1968. Boards, $21 per year.



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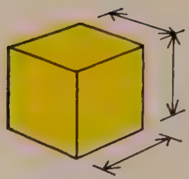

100,000 reasons for Thiosulfil® Forte

(sulfamethizole 0.5 Gm.)

specific for urinary tract infections

A widely accepted rule of thumb for diagnosing urinary tract infection is the presence of more than 100,000 organisms in 1 cubic centimeter of urine.[1,2] The importance of promptly treating urinary infections, even when asymptomatic, is generally recognized.[3]

But in any patient, whether infection is asymptomatic, or appears to be chronic or acute cystitis, prostatitis, urethritis, pyelitis, or, more seriously, pyelonephritis, one effective therapeutic answer has long been THIOSULFIL Forte (sulfamethizole). Here are the reasons: ▪ **rapid absorption:** peak serum concentrations in one to two hours ▪ **effective:** negligible penetration into red blood cells; high concentration in plasma to fight infection; lowest degree of inactivation of all sulfonamides ▪ **no "loading":** nor "priming" doses necessary ▪ **rapidly excreted; noncumulative:** a safeguard against toxic buildup, even in long term therapy ▪ **high solubility:** the most soluble sulfonamide in general use; hazards of crystalluria and hematuria virtually eliminated ▪ **prolonged use:** permits virtually unlimited duration of therapy, thus helping to prevent relapse and progressive kidney damage ▪ **well tolerated:** rarely produces side effects; when noted, they are usually transient, seldom requiring discontinuation of therapy; no hematuria, anuria or agranulocytosis reported

Record of safety proved in clinical practice

specific for urinary tract infections

THIOSULFIL® FORTE
(sulfamethizole 0.5 Gm.)

Advantages: 1) high concentration of free sulfa rapidly achieved at site of infection; 2) rapid excretion (noncumulative); 3) outstandingly free from side reactions; 4) high degree of clinical effectiveness.

In a composite group of 3,600 patients receiving THIOSULFIL (sulfamethizole), only 1.4 per cent showed side reactions—none serious (gastric distress, pruritus, nausea, fatigue, anorexia, eye discomfort, and 2 cases of transient crystalluria). No hematuria, anuria, agranulocytosis reported.

Indications: Treatment of cystitis, urethritis, pyelitis, pyelonephritis, and prostatitis due to bacterial infection amenable to sulfonamide therapy; prior to and following genitourinary surgery and instrumentation; prophylactically, in patients with indwelling catheters, ureterostomies, urinary stasis, and cord bladders.

THIOSULFIL (sulfamethizole) has been found effective against the following urinary tract pathogens: *Proteus vulgaris, Pseudomonas aeruginosa, Escherichia coli, Streptococcus fecalis, Escherichia intermedium,* and *Aerobacter aerogenes.* In individual cases, sensitivity of the organisms may vary. Sensitivity tests, preferably by the tube dilution method, should be done first, for guidance as to alternate therapy in case THIOSULFIL Forte (sulfamethizole) does not control the infection.

Contraindication: A history of sulfonamide sensitivity.

Warning: Because of the high solubility in body fluids of sulfamethizole in its free and acetyl forms, the hazards of renal tubule obstruction are minimized. The usual precautions generally exercised with sulfonamides should, however, be observed. In those rare instances where exanthemata, urticaria, nausea, emesis, fever, hemolytic anemia, or significant hematuria are encountered, administration should be discontinued.

Suggested Dosages: Suggested range of dosage—Adults: 1 or 2 tablets (0.5 Gm.—1.0 Gm.) three or four times daily.

An initial dosage of 3 Gm./day for two weeks will usually bring the infection under control. Where longer therapy is necessary, 2 Gm./day has been successfully employed. Patients with incurable chronic infections may require only 0.5 Gm./day to remain indefinitely symptom-free.

Supplied: No. 786—Each tablet contains sulfamethizole 0.5 Gm. (scored), in bottles of 100 and 1,000.

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part of the problem

Thiosulfil®-A Forte

Each tablet contains:

Sulfamethizole	0.5 Gm.
Phenazopyridine HCl	50.0 mg.

Contraindications: (1) A history of sulfonamide sensitivity and (2) due to the phenazopyridine HCl component, renal and hepatic failure, glomerulonephritis, and pyelonephritis of pregnancy with gastrointestinal disturbances.

Warning: See THIOSULFIL Forte (sulfamethizole).

Suggested Dosages: Usual dosage: Adults: 2 tablets, four times daily. *Children* (9 to 12 years): 1 tablet, four times daily.

Supplied: No. 783—THIOSULFIL-A Forte Tablets—Each tablet contains sulfamethizole 0.5 Gm. and phenazopyridine HCl 50.0 mg., in bottles of 100 and 1,000.

References: 1. Kincaid-Smith, P., and Bullen, M.: Lancet *i*:395 (Feb. 20) 1965. 2. Sacks, T. G., and Abramson, J. H.: J.A.M.A. *201*:79 (July 3) 1967. 3. Kass, E. H.: Practitioner *188*:22 (Jan.) 1962.

Thiosulfil® Forte
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sulfamethizole 0.5 Gm.

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6816

Medical Schools

Albany Medical College

Named chief of neurology. Marvin W. Woodruff, M.D., acting director of the New York State Health Department's Kidney Disease Institute, has been appointed professor of surgery and head, Division of Urology. He succeeds William A. Milner, M.D., who has been head of urology since 1957 and who will continue to practice and teach.

Cornell University Medical College

Professorship established. The Barklie McKee Henry Professorship of Psychiatry has been established. William T. Lhamon, M.D., has been appointed to fill the chair. He will continue to serve as chairman, Department of Psychiatry, and as psychiatrist-in-chief of both the Payne Whitney Clinic of The New York Hospital and the Westchester Division of The New York Hospital-Cornell Medical Center. The professorship is named for the late Barklie McKee Henry who was president of The Society of the New York Hospital in 1940.

Downstate Medical Center

1968 enrollment. The enrollment on September 9 was 201 freshmen, 176 were men and 25 were women; 190 in the second-year class; and 193 in the third-year class.

Psychiatric services for children head appointed. John P. Kemph, M.D., has been appointed to the joint position of professor of psychiatry and director of the Division of Child and Adolescent Psychiatry at Kings County Hospital Center.

Visiting scholar. Dr. Joshua Lederberg, professor of genetics, Stanford University School of Medicine, who was awarded the Nobel Prize in Medicine in 1958 for his work on the organization of the genetic material in bacteria, was the first Visiting Scholar of the academic year. Dr. Lederberg spoke on "The Human Use of Genetics" on September 16 and on September 17 he conducted a discussion on this subject.

Grants. A total of $1,799,972 was received during July, August, and September for 56 research and training grants. These grants provide for 15 new studies, renewal of 30 studies already in progress, 10 supplements, and 1 emergency grant from the American Heart Association. The U.S. Public Health Service is sponsoring 32 of the grants.

Promotions. Recent faculty promotions include: To professor, Stanley L. Lee, M.D., medicine; to clinical professor, James I. Berkman, M.D., Harold Fink, M.D., and Abraham R. Kantrowitz, M.D., pathology; Sidney Fierst, M.D., and Stanley L. Wallace, M.D., medicine; to clinical associate professor, William S. Calem, M.D., and George A. Degenshein, M.D., surgery; Harold Cohn, M.D., Seymour M. Glick, M.D., Leon L. Wiesel, M.D., and Seymour Zuckerman, M.D., medicine; Victor Ginsberg, M.D., and Fidelio Jiminez, M.D., pathology; Morton H. Hand, M.D., neurology; Peter G. Herman, M.D., radiology; Jerome E. Maisel, M.D., Peter Scaglione, M.D., and Oscar Schwartz, M.D., pediatrics. To assistant professor: Donald E. McMillan, M.D., pharmacology; Tatsuji Namba, M.D., and Donald Snyder, M.D., medicine. To clinical assistant professor: Morrell M. Avram, M.D., Arthur L. Pinchuck, M.D., Austin A. Schlecker, M.D., Joel M. Schwartz, M.D., Nathan H. Shackman, M.D., Harry Spiera, M.D., Charles M. Termine, M.D., and Gerald E. Thomson, M.D., medicine; Philip A. Barenfeld, M.D., and Martin S. Weseley, M.D., orthopedic surgery; Nicholas J. Chiara, M.D., Franklin Desposito, M.D., Michael Gabriel-Yazitzis, M.D., Herbert I. Goldman, M.D., Herbert H. Pomerance, M.D., Mohamad Pourfar, M.D., Harold Ratner, M.D., Bernard Redner, M.D., Allan M. Rothenberg, M.D., Allan A. Rubenstein, M.D., John H. Shelley, M.D., I. Ronald Shenker, M.D., Richard D. Snyder, M.D., S. David Sternberg, M.D., Lloyd A. Thomas, M.D., James R. Toppin, M.D., and Ellyn M. Wallace, M.D., pediatrics; Philip Novina, M.D., psychiatry; Roland D. Paegle, M.D., and Janis V. Sika, M.D., pathology; and Robert M. Richter, M.D., surgery. To clinical instructor: Dinu Ganea, M.D., Bert Rosenberg, M.D., and Violet Stephenson, M.D., psychiatry; and Irving Lustrin, M.D., orthopedic surgery.

New faculty appointments announced recently are. John W. Fox, M.D., assistant professor in anesthesiology; Edward A. Alexander, M.D., and Walter Feder, M.D., assistant professors in medicine; Vincent DeLuca, M.D., and Alfred Lapin, M.D., clinical instructors in obstetrics and gynecology; Abraham Lapidot, M.D., head, Otorhinolaryngology Division of the Department of Surgery; Adalbert B. Guttman, M.D., Bayard S. Herr, Jr., M.D., and William D. Johnson, M.D., clinical assistant professors, and Allen F. Reid, M.D., clinical professor in pathology; Qutubuddin H. Qazi, M.B.B.S., instructor, pediatrics; H. Omar Gutierrez, M.D., clinical assistant professor, and Ira A. Kishner, M.D., clinical in-

continued on page 2990

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Each fluidounce contains: 80 mg. Benadryl® (diphenhydramine hydrochloride, Parke-Davis); 12 grains ammonium chloride; 5 grains sodium citrate; 2 grains chloroform; 1/10 grain menthol; and 5% alcohol.
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ADVERSE REACTIONS: *Side reactions may affect the nervous, gastrointestinal, and cardiovascular systems. Drowsiness, dizziness, dryness of mouth, nausea, nervousness, palpitation, and blurring of vision have been reported. Allergic reactions may occur.*
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41168

continued from page 2988

structor, psychiatry; and Roland Girardet, M.D., and Martin Seidenstein, M.D., assistant professors in surgery.

New York Medical College

New appointments. Harold F. Bishop, M.D., has been appointed professor and chairman, Department of Anesthesiology. Since 1938, he has been director of anesthesiology at Grasslands Hospital, Valhalla, New York, in Westchester County. Dr. Bishop is responsible for the Department of Anesthesiology at the College which plans to move to Grasslands where a new center is to be built. Sheldon G. Gaylin, M.D., currently chief of the Section on Program Development of the Division of Community and Social Psychiatry, Columbia University College of Physicians and Surgeons, has been appointed to the faculty of the Department of Psychiatry at the College and to the post of director of psychiatry, Grasslands Hospital. Dr. Gaylin will begin his association with the College and Grasslands Psychiatric Division on January 1, 1969, and will devote full time to these responsibilities beginning July 1, 1969.

New York University School of Medicine

Promotions. Alexander S. Wiener, M.D., has been promoted to professor of forensic medicine. A codiscoverer of the Rh factor, Dr. Wiener is a serologist in the office of the chief medical examiner, New York City. Edward C. Franklin, M.D., has been promoted from associate professor to professor of medicine. Dr. Franklin is chairman of the Rheumatic Disease Study Group of the Medical Center and has been a member of the faculty since 1958. Samuel Gershon, M.D., director of the Neuropsychopharmacology Research Unit, has been promoted to professor of psychiatry.

State University of New York at Buffalo

New graduate training program. The University has been named one of the four centers in the nation to initiate a new graduate training program for preparing superior scientists for careers in clinical settings. The Department of Biochemistry has received a grant of $489,000 from the National Institutes of Health, over the next five years, to offer beginning graduate students in biochemistry and post-doctorate fellows (with either Ph.D. or M.D. degrees) a unique opportunity for clinical investigations. This will be a two-year post-doctorate program.

Visiting research worker. James F. Mohn, M.D., professor of microbiology, has been named Visiting Research Worker, Department of Pathology, Cambridge University. Since his sabbatical in 1963 to 1964, Dr. Mohn has returned to Cambridge for a short time each year to do collaborative research in the field of blood group immunology. He will return again in May/June, 1969, to continue with this project. Dr. Mohn is the only faculty member of the Department to receive this permanent faculty rank and privileges.

Book Notes

Modern Trends in Immunology 2. Edited by Robert Cruickshank, M.D., and D. M. Weir, M.D. Octavo of 342 pages, illustrated. New York, Appleton-Century-Crofts, 1967. Cloth, $12.75.

This second volume in the *Modern Trends* series aims, like its predecessor, to provide a series of critical essays on some of the recent developments in immunology. The selection of subjects has, of necessity, been handicapped by the wide ramifications of immunology and immunochemistry within the last few years and their increasing significance in a great variety of biologic disciplines ranging from cell biology to public health.

This text not only emphasizes fundamental immunologic processes but important new medical aspects of immunology, including hypersensitivity, thymic abnormalities and autoimmunity, tissue transplantation and immunosuppression, and the role of white cells and platelets in transfusion immunology, also are included.

Major's Physical Diagnosis. Edited by Mahlon H. Delp, M.D., and Robert T. Manning, M.D. Seventh edition. Quarto of 356 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $9.50.

The latest edition of this classic work has been completely revised and several new features have been introduced. These include a chapter entitled "The History of Physical Diagnosis," which replaces and amplifies the original introductory chapter. A new chapter dealing with the intricacies of the process of diagnosis has been added. A brief chapter dealing with very basic and fundamental items in the diagnosis of diseases of the skin has been included. There

continued on page 2992

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your patient can feel better while he's getting better

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Each tablet contains: ACHROMYCIN® Tetracycline HCl 125 mg.; Phenacetin 120 mg.; Caffeine 30 mg.; Salicylamide 150 mg.; Chlorothen citrate 25 mg.

In tetracycline-sensitive bacterial infection complicating respiratory allergy, ACHROCIDIN brings the treatment together in a single prescription—prompt relief of headache and congestion together with effective control of the organisms frequently responsible for complications leading to prolonged disability in the susceptible patient.

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Contraindications: Hypersensitivity to any component.

Warning: In renal impairment, since liver toxicity is possible, lower doses are indicated; during prolonged therapy consider serum level determinations. Photodynamic reaction to sunlight may occur in hypersensitive persons. Photosensitive individuals should avoid exposure; discontinue treatment if skin discomfort occurs.

Precautions: Drowsiness, anorexia, slight gastric distress can occur. In excessive drowsiness, consider longer dosage intervals. Persons on full dosage should not operate vehicles. Nonsusceptible organisms may overgrow; treat superinfection appropriately. Treat beta-hemolytic streptococcal infections at least 10 days to help prevent rheumatic fever or acute glomerulonephritis. Tetracycline may form a stable calcium complex in bone-forming tissue and may cause dental staining during tooth development (last half of pregnancy, neonatal period, infancy, early childhood).

Adverse Reactions: *Gastrointestinal*—anorexia, nausea, vomiting, diarrhea, stomatitis, glossitis, enterocolitis, pruritus ani. *Skin*—maculopapular and erythematous rashes; exfoliative dermatitis; photosensitivity; onycholysis, nail discoloration. *Kidney*—dose-related rise in BUN. *Hypersensitivity* reactions—urticaria, angioneurotic edema, anaphylaxis. *Intracranial*—bulging fontanels in young infants. *Teeth*—yellow-brown staining; enamel hypoplasia. *Blood*—anemia, thrombocytopenic purpura, neutropenia, eosinophilia. *Liver*—cholestasis at high dosage.

Upon adverse reaction, stop medication and treat appropriately.

Lederle

350-8

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are also sections dealing with endocrine disorders and hematologic diseases. Finally, a new chapter dealing with pediatric physical diagnosis has been added. The sections dealing with physical diagnosis of the abdomen and musculoskeletal system have been completely rewritten. Previous sections dealing with the ear, nose, throat, and the eye have been rewritten and amplified.

The illustrations that were considered good have been retained, and many new illustrations have been added.

Progress in Atomic Medicine. Volume 2. Edited by John H. Lawrence, M.D. Quarto of 274 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $12.75.

This volume starts with a chapter reviewing the use of isotopes for the very sensitive radioimmunoassays of various hormones in the blood. Next, the use of short-lived radioisotopes in studying pulmonary and cardiac function is presented. Another chapter discusses the use of the short-lived positron-emitting isotope iron-52 and the scintillation camera to study bone marrow distribution in vivo. There is also a discussion of important factors in various scanning situations and the advantage of a particular approach for solving a specific problem.

The volume ends with a look to the future by discussing space medicine. Charles Berry, M.D., the astronauts' physician, and Dr. Stanley B. Curtis, a biophysicist working in radiation biology, present and discuss some of the physiologic findings in the Gemini flights and possible problems to be confronted on longer space missions including radiation.

Importance of midday meal

Frequently people skip the midday meal, based on the rationale that they have eaten an adequate breakfast. In view of recent findings, it is concluded that even when an adequate breakfast has been eaten in the morning, a midday meal of approximately 750 calories would be valuable in young adults.

TAO®(triacetyloleandomycin)

Brief Summary

INDICATIONS: Include staphylococci, streptococci, pneumococci and gonococci. Recommended for acute, severe infections where adequate sensitivity testing has demonstrated susceptibility to this antibiotic and resistance to less toxic agents.

CONTRAINDICATIONS: Contraindicated in pre-existing liver disease or dysfunction, and in individuals hypersensitive to the drug.

PRECAUTIONS: CAUTION: USE OF THIS DRUG MAY PRODUCE ALTERATIONS IN LIVER FUNCTION TESTS AND JAUNDICE. CLINICAL EXPERIENCE AVAILABLE THUS FAR INDICATES THAT THESE LIVER CHANGES WERE REVERSIBLE FOLLOWING DISCONTINUATION OF THE DRUG.

Not recommended for prophylaxis or in the treatment of infectious processes, which may require more than ten days continuous therapy. In view of the possible hepatotoxicity of this drug when therapy beyond ten days proves necessary, other less toxic agents should be used. If clinical judgment dictates continuation of therapy for longer periods, serial monitoring of liver profile is recommended, and the drug should be discontinued at the first evidence of any form of liver abnormality. When treating gonorrhea in which lesions of primary or secondary syphilis are suspected, proper diagnostic procedures, including dark-field examinations, should be followed. In other cases in which concomitant syphilis is suspected, monthly serological tests should be made for at least four months. When used in streptococcal infections, therapy should be continued for ten days to prevent the development of rheumatic fever or glomerulonephritis. The use of antibiotics may occasionally permit overgrowth of nonsusceptible organisms. A resistant infection or superinfection requires reevaluation of the patient's therapy. In the event such occurs with this drug the medication should be discontinued, and specific antibacterial and supportive therapy instituted.

ADVERSE REACTIONS: Although reactions of an allergic nature are infrequent and seldom severe, those of the anaphylactoid type have occurred on rare occasions.

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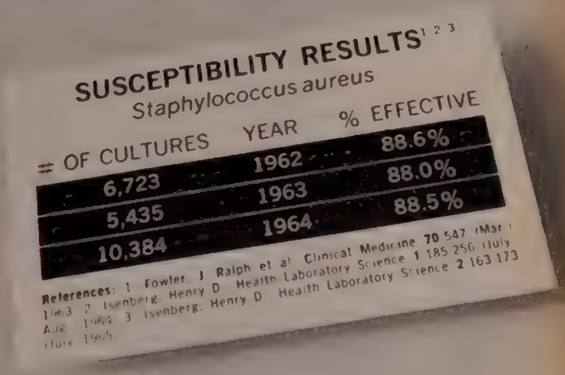

SUSCEPTIBILITY RESULTS[1 2 3]

Staphylococcus aureus

# OF CULTURES	YEAR	% EFFECTIVE
6,723	1962	88.6%
5,435	1963	88.0%
10,384	1964	88.5%

References: 1 Fowler, J. Ralph et al: Clinical Medicine 70 547 (Mar.) 1963 2 Isenberg, Henry D.: Health Laboratory Science 1 185 256 (July-Aug.) 1964 3 Isenberg, Henry D.: Health Laboratory Science 2 163 173 (July) 1965.

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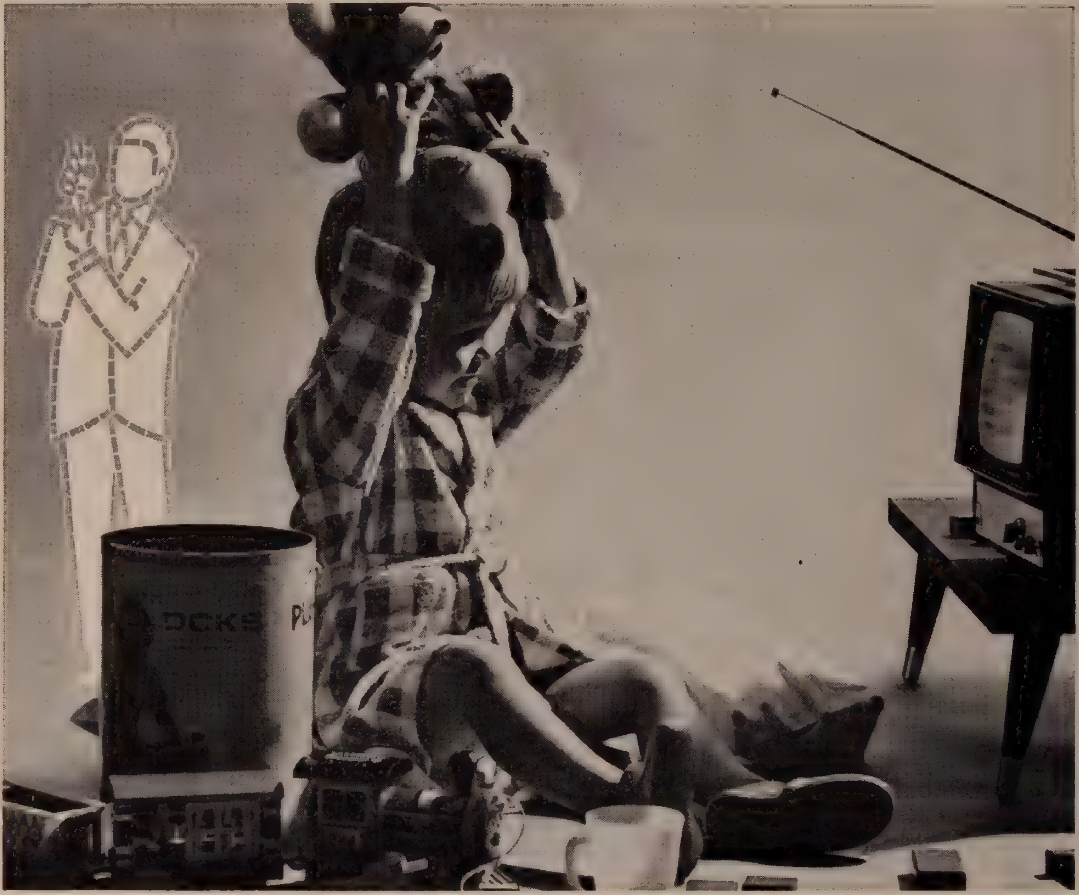

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Description: V-Cillin K, the potassium salt of V-Cillin® (phenoxymethyl penicillin, Lilly), combines acid stability with immediate solubility and rapid absorption. Higher, more rapid serum levels are obtained than with equal oral doses of penicillin G.

Indications: Streptococcus, pneumococcus, and gonococcus infections; infections caused by sensitive strains of staphylococci; prophylaxis of streptococcus infections in patients with a history of rheumatic fever; and prevention of bacterial endocarditis after tonsillectomy and tooth extraction in patients with a history of rheumatic fever or congenital heart disease.

Contraindication: Penicillin hypersensitivity.

Warnings: In rare instances, penicillin may cause acute anaphylaxis which may prove fatal unless promptly controlled. This type of reaction appears more frequently in patients with a history of sensitivity reactions to penicillin or with bronchial asthma or other allergies. Resuscitative drugs should be readily available. These include epinephrine and pressor drugs (as well as oxygen for inhalation) for immediate allergic manifestations and antihistamines and corticosteroids for delayed effects.

Precautions: Use cautiously, if at all, in a patient with a strongly positive history of allergy.

In prolonged therapy with penicillin, and particularly with high parenteral dosage schedules, frequent evaluation of the renal and hematopoietic systems is recommended.

In suspected staphylococcus infections, proper laboratory studies (including sensitivity tests) should be performed.

The use of penicillin may be associated with the overgrowth of penicillin-insensitive organisms. In such cases, discontinue administration and take appropriate measures.

Adverse Reactions: Although serious allergic reactions are much less common with oral penicillin than with intramuscular forms, manifestations of penicillin allergy may occur.

Penicillin is a substance of low toxicity, but it possesses a significant index of sensitization. The following hypersensitivity reactions have been reported: skin rashes ranging from maculopapular eruptions to exfoliative dermatitis; urticaria; and reactions resembling serum sickness, including chills, fever, edema, arthralgia, and prostration. Severe and often fatal anaphylaxis has occurred (*see* Warnings). Hemolytic anemia, leukopenia, thrombocytopenia, and nephropathy are rarely observed side-effects and are usually associated with high parenteral dosage.

Administration and Dosage: Usual dosage range, 125 mg. (200,000 units) three times a day to 500 mg. (800,000 units) every four hours. For infants, 50 mg. per Kg. per day divided into three doses.

See package literature for detailed dosage instructions for prophylaxis of streptococcus infections, surgery, gonorrhea, and severe infections.

How Supplied: Tablets V-Cillin K® (Potassium Phenoxymethyl Penicillin Tablets, U.S.P.), 125 mg. (200,000 units), 250 mg. (400,000 units), and 500 mg. (800,000 units).

V-Cillin K® (potassium phenoxymethyl penicillin, Lilly), Pediatric, for Oral Solution, 125 mg. (200,000 units) and 250 mg. (400,000 units) per 5 cc. of solution (approximately one teaspoonful). [042567A] 800198

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Editorials

Greetings to our eleventh medical school

The Mount Sinai School of Medicine opened its doors this semester to 59 students.

In temporary quarters, in an abandoned bus roundhouse, classes have started and will continue there until the great new Annenberg Building, to house the school, is completed in 1972.

Under the leadership of George James, M.D., as dean, and a faculty of great competence the school is off to an effective start.

We are confident that this great new school will meet the demands of the medicine of the future.

J. L. Van Lancker, M.D., of Brown University, in speaking of the new medical school at his institution, said that "it will turn out doctors who are scholars trained to acquire new knowledge on their own, keen observers, and skillful manipulators of instruments. They will be men of decision, capable of retrieving information quickly, and arriving at a reasoned diagnosis.

They will be men of action who have the courage to apply therapy without delay."

These are high and shining goals commensurate to our times. The men and women of Mount Sinai, as in all our schools, will meet them.

Rat control

While Congress has minimized the importance of rat control to the health and safety of the people, our own State government has not.

An appropriation of 2.5 million dollars, by the State of New York, for the years 1968–1969 for this purpose, assures a well-planned, intensive attack on the problem in this State.

Immediate emphasis has been put on rat killing by the professional dispersal of poisons and by eliminating places where rats feed and nest. A program to replace open dumps by sanitary landfill has been under way for three years. Surveys to disclose needs and resources are about completed, and many communities have changed over from open dump to sanitary landfill.

Research is going forward to find a means to control the rat population biologically. A chemical known as mestranol shows considerable promise. Scientists state that $500 worth of this compound will sterilize a million rats for three years. If this disturbs the ecology of the rat, it is to our advantage. An effective bait in which to mix the chemical is being sought at present. After this is accomplished field trials will be started.

Strict sanitary control of migrant workers' living quarters is being enforced since these facilities have heretofore been potent sources of rat encouragement.

Elimination of the open dump has an added by-product in the lessening of air and water pollution.

It is good to know that the money and the means are at hand to drastically control an ancient enemy.

Animal care accreditation information

For the benefit of those interested readers of prior editorials on the Association for Accreditation of Laboratory Animal Care, we list here the full name and address of this worthy organization.

The American Association for Accreditation of Laboratory Animal Care
4 East Clinton Street
P. O. Box 13
Joliet, Illinois 60634
Telephone (815) 727-1955

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Indication — Oral contraception.

Contraindications — Thrombophlebitis, thromboembolic disorders, cerebral apoplexy or a past history of these conditions, markedly impaired liver function, known or suspected carcinoma of the breast, known or suspected estrogen-dependent neoplasia, undiagnosed abnormal genital bleeding.

Warnings — Watch for the earliest manifestations of thrombotic disorders (thrombophlebitis, cerebrovascular disorders, pulmonary embolism, retinal thrombosis); if present or suspected discontinue the drug immediately.

British studies reported in April 1968[1,2] estimate there is a seven- to tenfold increase in mortality and morbidity due to thromboembolic diseases in women taking oral contraceptives. In these controlled retrospective studies, involving 36 reported deaths and 58 hospitalizations due to "idiopathic" thromboembolism, statistical evaluation indicated that the differences observed between users and non-users were highly significant. The conclusions reached in the studies are summarized in the table below:

Comparison of Mortality and Hospitalization Rates Due to Thromboembolic Disease in Users and Non-Users of Oral Contraceptives in Britain.

Category	Mortality Rates		Hospitalization Rates (Morbidity)
	Age 20-34	Age 35-44	Age 20-44
Users of Oral Contraceptives	1.5/100,000	3.9/100,000	47/100,000
Non-Users	0.2/100,000	0.5/100,000	5/100,000

No comparable studies are yet available in the United States. The British data, especially as they indicate the magnitude of the increased risk to the individual patient, cannot be applied directly to women in other countries in which the incidences of spontaneously occurring thromboembolic disease may differ.

Discontinue medication pending examination if there is sudden partial or complete loss of vision, or sudden onset of proptosis, diplopia or migraine. Withdraw medication if papilledema or retinal vascular lesions are found.

Since the safety of Ovulen in pregnancy has not been demonstrated, it is recommended that pregnancy be ruled out for any patient who has missed two consecutive periods before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule the possibility of pregnancy should be considered at the first missed period.

A small fraction of the hormone agents in oral contraceptives has been identified in the milk of mothers receiving these drugs. The long-range effect to the nursing infant cannot be determined at this time.

Precautions — Pretreatment physical examination should include special reference to the breasts and pelvic organs, and a Papanicolaou smear.

Endocrine and possibly liver function tests may be affected by Ovulen. Therefore, it is recommended that such tests if abnormal be repeated after the drug has been withdrawn for two months.

Pre-existing uterine fibromyomas may increase in size under the influence of progestogen-estrogen preparations.

Because these agents may cause some degree of fluid retention, conditions which might be influenced by this factor, such as epilepsy, migraine, asthma, cardiac or renal dysfunction, require careful observation.

In breakthrough bleeding, and all irregular vaginal bleeding, consider nonfunctional causes. Adequate diagnostic measures are indicated in undiagnosed vaginal bleeding.

Carefully observe patients with a history of psychic depression and discontinue the drug if severe depression recurs.

Any possible influence of prolonged Ovulen therapy on pituitary, ovarian, adrenal, hepatic or uterine function awaits further study.

A decrease in glucose tolerance has occurred in a significant percentage of patients on oral contraceptives. The mechanism of this decrease is obscure. For this reason, diabetic patients should be observed carefully while receiving Ovulen.

Because of the effects of estrogens on epiphyseal closure Ovulen should be used judiciously in young patients in whom bone growth is not complete.

The age of the patient constitutes no absolute limiting factor, although Ovulen therapy may mask the onset of the climacteric.

The pathologist should be informed of Ovulen therapy when relevant specimens are submitted.

Adverse Reactions — A statistically significant association has been shown between use of oral contraceptives and the following serious adverse reactions: thrombophlebitis, pulmonary embolism.

Although available evidence is suggestive of an association, such a relationship has been neither confirmed nor refuted for the following serious adverse reactions: cerebrovascular accidents, neuro-ocular lesions, e.g., retinal thrombosis and optic neuritis.

The following adverse reactions are known to occur in patients receiving oral contraceptives: nausea, vomiting, gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, amenorrhea during and after treatment, edema, chloasma or melasma, breast changes (tenderness, enlargement, secretion), change in weight, changes in cervical erosion and cervical secretions, suppression of lactation when given immediately post partum, cholestatic jaundice, migraine, allergic rash, rise in blood pressure in susceptible individuals, mental depression.

Although the following adverse reactions have been reported in users of oral contraceptives, an association has been neither confirmed nor refuted: anovulation post treatment, premenstrual-like syndrome, changes in libido, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, fatigue, backache, hirsutism, loss of scalp hair, erythema multiforme and nodosum, hemorrhagic eruption, itching.

The following laboratory results may be altered by oral contraceptives: hepatic function: increased sulfobromophthalein and other tests; coagulation tests: increase in prothrombin, Factors VII, VIII, IX and X; thyroid function: increase in PBI and butanol extractable protein bound iodine, and decrease in T^3 uptake values; metyrapone test; pregnanediol determination.

References: 1. Inman, W. H. W., and Vessey, M. P.: Brit. Med. J. 2:193-199 (April 27) 1968. 2. Vessey, M. P., and Doll, R.: Brit. Med. J. 2:199-205 (April 27) 1968.

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Scientific Articles

Management of Infected Stones with Acidifying Agents

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HARRY SENECA, M.D.
IGO LIGHT
GERDA MAYER, PH.D.
FRIEDA KARP
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From the Department of Urology, Columbia
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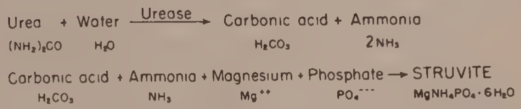
CALCULUS FORMATION *can be blamed on obstruction and infection in stones formed by urea splitting by urease-positive organisms, resulting in struvite formation, and those producing a "putty"-like stone associated with persistent staphylococcal infections. Unexpected components present new and unsolved problems. A successful regimen in treating infected calculi over periods as long as ten years utilized urinary acidification with chlormerodrin, ammonium chloride, and cranberry juice.*

THE OCCURRENCE of infection in the presence of stones is found in more than half of our patients with calculus.[1] The fact that calculus formation can be blamed primarily on obstruction and infection is, however, true of only two types of stones: those formed as a result of urea splitting by urease-positive organisms, resulting in struvite formation, and those producing a "putty"-like type of stone which we have found in association with persistent staphylococcal infections. At one time, the seriousness of stones secondary to urea splitters was perhaps overemphasized,[2] but in the presence of effective antibacterial therapy and powerful acidifying agents capable of blocking the bacterial urease, the prognosis is much improved.[3] The pioneer work of Hager and Magath,[4] Michie, Michie, and Ragni,[5,6] Schoenbach,[7] and Wahlberg[8] has already been reviewed, emphasizing the effect of bacterial urease in degrading urea to one carbonic acid and two ammonias (Fig. 1).[9] It must be remembered that bacterial enzymes capable of splitting fat, breaking glucuronide bonds, and metabolizing citrate may also play a role in stone formation.[10] The production of ammonia from urea or from methenamine may serve to increase the anticomplementary effect described by Beeson and Rowley[11] in limiting the host resistance to the bacterial invader. In alkaline urine, these stones, once formed, continue to grow forming either struvite (magnesium ammonium phosphate) or a mixture of magnesium ammonium phosphate and calcium carbonate. Urinary acidification, if carried out conscientiously, can stop stone growth in these instances and lead to diminution in stone size. This may precipitate surgical emergencies since the stone may move. Much of our urgency in the treatment of stag-horn calculus, which is the end result of this, has been mitigated by the more modern methods of estimating renal function so that stone-bearing kidneys may continue to function even for years. It is usually very difficult to eradicate the in-



$$\underset{(NH_2)_2CO}{\text{Urea}} + \underset{H_2O}{\text{Water}} \xrightarrow{\text{Urease}} \underset{H_2CO_3}{\text{Carbonic acid}} + \underset{2NH_3}{\text{Ammonia}}$$

$$\underset{H_2CO_3}{\text{Carbonic acid}} + \underset{NH_3}{\text{Ammonia}} + \underset{Mg^{++}}{\text{Magnesium}} + \underset{PO_4^{---}}{\text{Phosphate}} \rightarrow \underset{MgNH_4PO_4 \cdot 6H_2O}{\text{STRUVITE}}$$

FIGURE 1. Usual reaction whereby struvite stone production occurs in urine as result of urea-splitting infection. Calcium normally present coprecipitated with carbonate ion generated in reaction shown on top.

TABLE I. Sensitivity levels; grading in Grams per 100 cc.

Ion	Compound Used	Standard Solutions	++++	+++	++	+	±	0
Ammonium	Ammonium sulfate	365.1 mg. per 100 cc. 1.2 hydrochloric acid	25	20	10	5	2.5	1.3
Magnesium	Magnesium sulfate	1,013.0 mg. per 100 cc. 1.2 hydrochloric acid	100	50	25	20	5	2.5
Phosphate	Potassium dihydrophosphate	286.4 mg. per 100 cc. 1.2 hydrochloric acid	200	150	100	50	20	5
Calcium	Calcium carbonate	249.7 mg. per 100 cc. 1.2 hydrochloric acid	50	35	25	20	10	5
Citrate	$H_3C_6H_5O_7H_2O$ $C_6H_5O_72H_2$	218.8 mg. per 100 cc. 1.2 hydrochloric acid	100	50	40	20	10	2.5
Oxalate	Sodium oxalate	608.8 mg. per 100 cc. concentrated sulfuric acid	400	200	100	50	40	20
Urate	Uric acid	100.0 mg. per 100 cc. 0.1 sodium hydroxide	100	75	50	25	10	2.5
Cystine	$(SCH_2CH(NH_2)$ $-COOH)_2$	100.0 mg. per 100 cc. 1.2 hydrochloric acid	50	25	20	15	10	5
Carbonate	Sodium carbonate	1,760 mg. per 100 cc. 1.2 hydrochloric acid	1,000	750	500	250	100	. . .

fection, however, and the infection in these instances eventually produces irreversible loss of renal function. Our results with acidification, in particular with cranberry

Ammonium NH_4 Blank	1 drop stone solution 1 drop 20 per cent NaOH 1 drop 1.2 N HCl = all reagents	Yellow-orange = Positive (stronger than blank) No color or same as blank = Negative
Magnesium Mg	1 drop stone solution 2 drops 20 per cent NaOH 2 drops P = nitrobenzene azo-resorcinol (1 mg. per cent)	Blue color change blue precipitate = Positive purple color no precipitate = Negative
Phosphate PO_4	1 drop stone solution 2 drops ammonium molybdate reagent	Lemon yellow color = Positive No color = Negative
Calcium Ca	1 drop stone solution 1 drop alizarin red (0.05 M) 1 drop 1.2 M NH_4OH rotate until neutralized Add 0.12 M NH_4OH drop-wise until one more drop will carry over the end point Add 0.012 M NH_4OH End point is when solution turns purple with or without precipitate	Red or blue precipitate in yellow or purple sol. = Positive Purple sol. without precipitate = Negative
Citrate $H_3C_6H_5O_7$	1 drop stone solution 2 drops pyridine 2 drops acetic anhydride	Rapid develop. of definite yellow color = Positive No color = Negative
Urate $C_5H_4N_4O_3$	Pinch of ground stone dissolve in 1–2 drops of 0.1 N NaOH 1 drop 20 per cent Na_2CO_3 1 drop Folin uric acid reagent	Prompt blue color = Positive No blue color = Negative
Cystine $(SCH_2CH(NH_2)$ $-COOH)_2$	1 drop stone solution 1 drop conc. NH_4OH 2–3 drops 5 per cent NaCN wait 5 minutes 1 drop 5 per cent Na nitroprusside	Pink-purple color = Positive No color = Negative
Carbonate CO_3	Pinch of finely ground stone put on the slide and cover with cover glass. Add 1.2 N HCl from the side under and observe with magnifying glass for bubbles. By adding saturated $Ba(OH_2)_2$ solution to it; when white precipitate forms it confirms CO_3	Bubbles present = Positive Bubbles not present = Negative

FIGURE 2. Description of sensitivity test.

juice after chlormerodrin (Neohydrin) therapy, have been encouraging.

Methods

A semiquantitative or analytic scheme has been utilized for the analysis of calculi at the Squier Urological Clinic or laboratories, essentially unchanged over the last ten years, except for the addition of a semiquantitative method for silica (Table I).

SCHEMA FOR STONE ANALYSIS. After the stone is delivered to the laboratory, it is washed in distilled water to remove all adherent body secretions. It is then dried in the oven and the following observations made: (1) Size: length, width, and thickness, measured in centimeters; (2) shape: round, oval irregular, stag-horn, and so on; (3) color: tan, brown, yellow, gray, and so on; (4) surface: rough or smooth, examined with magnifying glass; and (5) interior: concentric or eccentric layers, plain crystals, powder, nucleus, foreign body found in nucleus or not, and so on. It is examined with a magnifying glass.

The stone is sectioned through its midportion, and a careful search is made for discrepancies in color and consistency. A careful search is made for foreign bodies and any evidence of other nucleating material. A vibrating plaster cast saw is used to cut the larger stones.

Approximately 10 mg. of finely ground stone is placed in a test tube, and 1.5 ml. of 1.2 hydrochloric acid is added to it and placed into a boiling water bath for twenty minutes. With a standard dropper, aliquots of this "stone solution" are then used in successive spot tests on a porcelain plate. The sensitivity of the methods is shown in Table I with gradings ++++, +++, ++, +, ±, and 0. Other details of the test are described in Figure 2.

Using Ouchterlony technics,[12] antigens and antibodies found in stone matrix were analyzed, and the data including qualitative stone analysis, the infecting organisms, the antigens, and antibodies present both in the stone and the serum of the patient were subjected to computer sorting, both by cluster analysis[13] and factor analysis.[14]

Ionized calcium in the urine of patients was measured with a calcium-specific ion electrode according to directions.*

X-ray diffraction was carried out both with our own long-spacing vacuum camera and with a Phillips recording x-ray spectrometer.† X-ray diffraction data were processed using both the Termatrex "peek-a-boo" cards and also by American Society for Testing Materials x-ray diffraction punch cards and the IBM 7094 with programs of our own devising (Tables II, III, and IV).[15]

Silica analysis, after processing the stones in boron carbide and plastic vessels, was carried out both colorimetrically, by emission spectroscopy,[16] and by neutron activation analysis carried out for us by the General Atomic Corporation.[17] We were unsuccessful with the Picker deuterium tritium neutron gun.

Thin-layer chromatography, utilized for the isolation of all lipids, was performed on Eastman Kodak fluorescent plastic-based thin-layer chromatography media, using iodine as the developing agent.[18]

Clinical data were recorded on a manual punch card, a copy of which is appended, and clinical follow-up was assisted by the preparation of a manual presented to each of the incoming residents, reviewed and updated at frequent intervals (Fig. 3). The patients were provided with a pH indicator (Nitrazine paper) and instructed in its use and urged to test each individual voiding and to make sure that urinary acidification was, indeed, present. Pre- and postoperative routines, designed to maintain the patient's urinary acidification even in the first few days postoperatively, were religiously followed.

Chlormerodrin was utilized in a dosage of 36 mg. three times a day to diminish bacterial urease, followed up with antibacterial agents according to sensitivity determinations.[19] Ammonium chloride, methenamine mandelate (Mandelamine), sulfamethizole and methenamine mandelate (Mesulfin), potassium acid phosphate (K-phos), or cranberry juice were used for long-term acidification. In all instances, our dosage varied from patient to patient to achieve a pH of 6 or lower.

Results

At the analytic level, both by x-ray dif-

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* Manufactured by Orion Electronics Corp., The Bronx, New York.

† Made available through the National Lead Company, Princeton, New Jersey.

TABLE II. Silicates found in infectious renal calculi in man; applying conversion tables for Matthews coordinate index (Termatrex) to the powder diffraction file*

Name of Compound	Chemical Formula of Compound	Silicates Found T.B.	 M.F.	 F.K.	 F.L.	 M.W.	Frequency of Occurrence
Tobermorite	4 calcium oxide. 5 silicon dioxide. 5 water	58	18	72	30	102	280
Mesolite	Sodium, calcium, aluminum silicate, 8 water	...	53	...	...	...	53
Merwinite	Calcium, magnesium, silicate	...	...	...	...	...	...
Monticellite	Calcium, magnesium, orthosilicate	8	12	3	8	9	40
Walrakite	Calcium, aluminum, silicate	18	...	13	6	...	37
Scawite	4 calcium, 0.3 silicon dioxide, 2 carbon dioxide	...	21	13	...	...	34
Jusite	Hydrated calcium silicate with 8.23 per cent aluminum 2 oxide + 3.61 per cent alkali	...	...	4	20	9	33
Gonnardite	2 calcium, 0.2 sodium, 0.4 aluminum, 2 oxide, 12 silicon dioxide	...	13	...	7	3	23
Scolecite	Calcium, aluminum silicate, 3 water	...	22	...	...	...	22
Epidote	...	9	...	...	...	...	...
Tremolite	Hydroxy calcium, magnesium silicate	11	...	...	...	...	20
Thomsonite	(Calcium sodium) oxide, aluminum 2 oxide, 2 silicon dioxide, $2\frac{1}{2}$ water	7	...	6	3	...	16
Eudialyte	Sodium 20, cerium 203, ferric oxide, manganese oxide, zirconium 203, silicon dioxide	...	13	...	...	...	13
Sodium-calcium silicate	...	11	...	...	...	...	11
Amphibole (hornblende)	Silicates of magnesium, iron, calcium, sodium	11	...	...	...	...	11
Cerite	Hydrated cerium group silicates	10	...	...	...	...	10
Richerite	Basic sodium, calcium, magnesium silicates	...	...	...	10	...	10
Jadeite	Sodium, aluminum silicate	...	...	...	7	3	10
Meta-painite	Calcium, boron, aluminum silicate	...	6	...	4	...	10
Zoisite	4 calcium, 0.3 aluminum, 2 oxide, 6 silicon dioxide, water	9	...	...	...	...	[illegible]
Pumpellyte	Calcium, aluminum, iron silicate, 2 water	9	...	...	...	...	9
Halweeite	Calcium, uranium silicate	...	6	...	...	...	6
Hornblende-pargassite	Silicates of magnesium, iron, calcium, sodium	...	...	...	...	5	5
Bakerite	8 calcium, 0.5 boron, 2 oxide, 6 silicon dioxide, water	...	...	...	...	4	4
Hornblende	Silicates of magnesium, iron, calcium, sodium	3	...	...	...	...	3
Gmelinite	Sodium, calcium, aluminum silicate hydrate	...	...	...	...	3	3
Fluortremolite	Calcium, magnesium, flourine silicate	...	...	...	...	3	3
Chabazite	Calcium, aluminum silicate	...	...	...	...	7	7

* Total patients, 682.

fraction and by computer correlations, the importance of carbonate in these infected stones became apparent (Fig. 4). Not all carbonate-containing calculi were infected at the time they were seen, but the small percentage uninfected and the large percentage infected with multiple organisms leave little doubt that infection is very highly associated with the formation of calcium carbonate-struvite stones (Fig. 5). Somewhat surprisingly, up to 6 per cent silicon dioxide was found in some of these stones, both by x-ray diffraction, neutron activation, and emission spectrography.

The occurrence of several different lipids in the "putty"-like stones suggests their origin in inspissated white blood cells in the presence of staphylococcal infection; these stones pose a real problem since acidification alone does not seem to help much in their eradication (Fig. 6). Long-term antibacterial therapy and maintenance of good drainage has, however, been successful in 80 per cent of those seen. The over-all recurrence rate utilizing chlormerodrin, operation when necessary, and subsequent urinary acidification can be seen in Figure 7.

TABLE III. Typical experimental data in infected stones; specimen spacings and intensities*

Intensity†	Stone 5	Intensity†	Stone 4	Intensity†	Stone 3	Intensity†	Stone 2	Intensity†	Stone 1	Intensity†	Tobermorite American Society for Testing Materials Files	Intensity†	Tobermorite Termatrex
A	...	A	...	S	5.68	A	...	S	5.59	S	5.55	...	5.55
M	3.64	M	3.64	M	3.64	M	3.64	M	3.49	M	3.57	...	3.57
W	3.16	M	3.18	M	3.12	A	...	M	3.20	M	3.11	...	3.11
M	2.96	M	2.96	M	2.99	M	2.96	M	2.93	M	2.99	...	2.99
S	2.79	S	2.82	M	2.81	A	...	S	2.81	S	2.83	...	2.83
W	2.28	M	2.36	M	2.36	W	2.35	W	2.35	W	2.32	...	2.32
W	2.07	W	1.95	M	1.98	W	1.97	W	2.02	M	2.07	...	2.01
W	1.82	A	...	W	1.81	A	...	W	1.86	S	1.85	...	1.85

* Tabular arrangement of x-ray diffraction interplanar spacings and relative intensities for tobermorite and silica-containing renal calculi. Stone 2 showing only 4 comparable lines is a weak contender for tobermorite; the other four, showing six or more with appropriate intensities, are very probably tobermorite in part.

† A: absent, S: strong, M: moderate, W: weak.

TABLE IV. X-ray diffraction of five urinary calculi*

Compounds; Predicted	Found F.K.	T.B.	M.W.	M.F.	F.L.
Calcium oxalate monohydrate					
5.89	V S	S	S	VVS	S−
3.65	S	W	M S	S	S−
2.95	V S	W M	M S	...	M+
2.49	M+	W	W M	V W	W
2.33	S	M	W M	W	M
2.25	W M	V W	V W	...	W
2.06	W M	V W	V W	V W	...
1.94	W	V W	V W	...	V W
1.81	V W	M−	V W	V W	...
1.73	W M	M−	...	V W	V W
Struvite					
6.0	V S	S	? S	VVS	S−
5.6	S	V S	...	...	...
4.28	S	V S	V W	...	...
3.92	M−	...	...	...	...
3.30	W M	S−	...	W+	...
2.93	M S	W M	M S	...	M+
2.81	W M	S	...	...	M S
2.69	M−	S	S	V S	M S
1.97	S	V W	...	W	V W
1.81	V W	M−	V W	V W	...
1.74	W M	M−	...	V W	V W
Carbonate-apatite					
3.44	M S	S	M S	W+	M S
2.82	M S	S	S	...	M S
2.71	M	S	S	V S	M S
2.62	V W	? S	V W	...	W
2.25	W M	V W	V W	...	W
1.92	W	...	V W	...	V W
1.83	V W	V W	V W	...	...
Aragonite					
3.40	M S	S−	M S	W+	M S
3.28	W M	S−	...	W+	...
2.70	M	S	S	V S	M S
2.48	M+	W	W M	V W	W
2.37	S−	V W	W M	W	M
2.33	S−	M	W	V W	...
1.98	S	V W	...	W	V W

(*continued on page 3006*)

Compounds; Predicted	Found				
	F.K.	T.B.	M.W.	M.F.	F.L.
1.88	. . .	V W	. . .	. . .	. . .
1.81	V W	M	V W	V W	. . .
1.74	W M	M	. . .	V W	V W
Uric acid					
6.69	W M	. . .	. . .	. . .	. . .
5.70	W	? VS	. . .	W+	W M
4.98	M –	. . .	. . .	. . .	. . .
3.91	M –	. . .	. . .	. . .	V W
3.22	M	. . .	. . .	W	W M
3.12	M S	. . .	. . .	. . .	. . .
2.90	M S	S	. . .	. . .	. . .
2.59	V W	. . .	V W	. . .	W
(Magnesium) 3 (Phosphate)$_2$, $(H_2O)_4$					
6.1	V S	W	. . .	. . .	. . .
5.2	M –	S	V W	. . .	V W
4.1	M S	V S	. . .	W	. . .
3.23	M	? S	. . .	. . .	. . .
3.09	M S	? V W	. . .	. . .	. . .
2.87	W M	S	. . .	. . .	M S
2.73	M –	V W	S	V S	M S
2.65	V W	S	V W	V W	. . .
2.51	M+	W	V M	V W	W
2.34	S –	M	V M	W	M
1.91	W	. . .	V W	. . .	V W
1.79	V W	M	V W	V W	. . .
1.74	W M	M	. . .	V W	V W
Calcium oxalate, monohydrate					
6.23	. . .	. . .	. . .	. . .	. . .
4.45	. . .	. . .	. . .	. . .	V W
3.68	S	W	. . .	S	S –
3.09	M S	? V W	. . .	. . .	. . .
2.78	M S	S	S	. . .	M S
2.41	V W	V W	. . .	. . .	. . .
2.35	S –	M	W M	W	M
2.25	W M	V W	V W	. . .	W
1.96	S	V W	V W	W	V W
(Calcium) 3 (Phosphate)$_2$					
6.55	W M	. . .	. . .	. . .	. . .
5.24	M –	? S	V W	. . .	V W
3.45	M S	S	M S	W+	M S
3.21	M	. . .	. . .	W	W M
2.88	M S	. . .	. . .	. . .	M S
2.60	V W	? S	V W	. . .	W

* Nomenclature used, or grading lines as follows: V V S = very very strong, M S = moderately strong, V S = very strong, M = medium, S = strong, W M = weak to medium, or a value between two of these.

A review of our results in patients using 1 quart of cranberry cocktail a day, as a method of urinary acidification, showed a very considerable margin of merit over other acidifying agents. While the anti-infective effects of this low dose of cranberry juice acids was not as effective as undiluted juice in larger quantities, the concentrations of formaldehyde obtained with methenamine mandelate and with sulfamethizole and methenamine mandelate probably have aided in their effect.[20]

Because there has been some thought that cranberry juice might increase calcium excretion, a study on normal subjects ingesting up to 5 pints of undiluted cranberry juice was carried out, and the effects on calcium and oxalate excretion were found to be variable from patient to patient, and the percentage of ionized calcium.

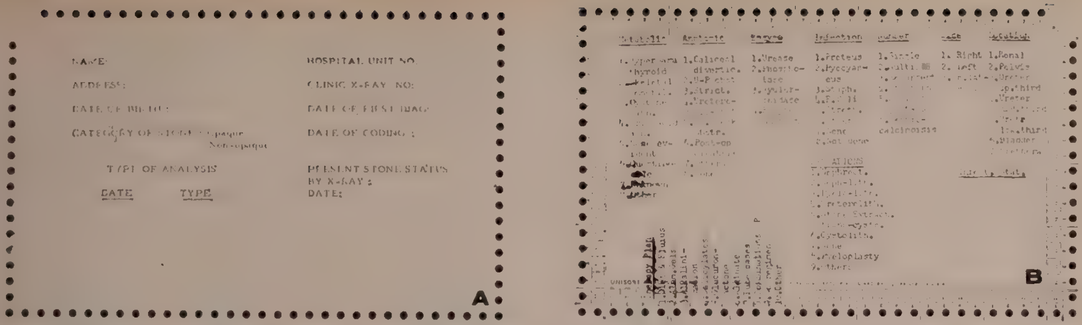
NAME:
ADDRESS:
DATE OF BIRTH:
CATEGORY OF STONE: Opaque
Non-opaque
TYPE OF ANALYSIS
DATE
TYPE
HOSPITAL UNIT NO.
CLINIC X-RAY NO:
DATE OF FIRST DIAG
DATE OF CODING :
PRESENT STONE STATUS
BY X-RAY :
DATE:
A
B

FIGURE 3. (A and B) Punch cards used for stone data accumulation in this study.

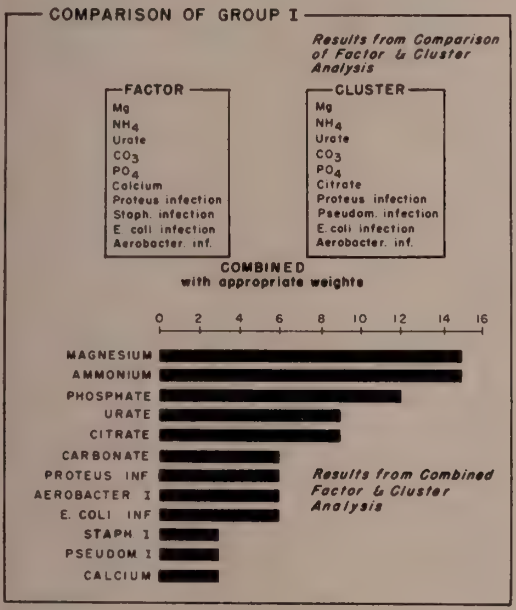

FIGURE 4. Results of computer comparison by both cluster and factor analysis show good agreement of significant components comprising patients infected with stone.

which we feel to be important, does not significantly increase. A previous study of the effect of apples and cranberries on calcium excretion,[21] as well as other studies done on a broad hospital population under good metabolic control, confirmed these conclusions (Fig. 8).[22]

Comment

UNUSUAL CONSTITUENTS. The presence of carbon dioxide in these stones can be easily explained by the splitting of urea at a molecular level to carbon dioxide and ammonia. The occurrence of silicates, however, demands a more sophisticated explanation. Silica has been found by McGavack, Leslie, and Kao[23,24] and by Light and Zinsser[25] as a constituent of aging tissue, and there is little doubt that silica plays an important part in the veterinary stone field.[26] Cornelius, Mia, and Rosenfeld[27] have managed to prevent the formation of silicate stones in large ruminants by the addition of sufficient salt to the diet to produce a saline diuresis. The metabolic tracing of silica pathways in man has not been attempted, and the short half-lives of available silicon isotopes make

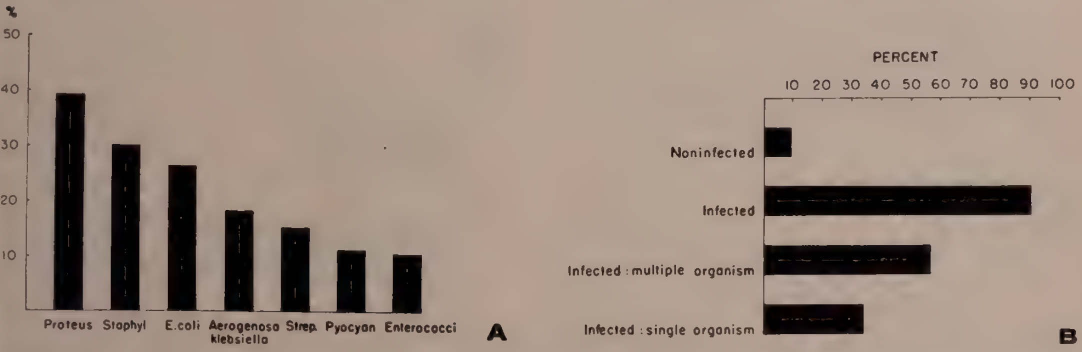

FIGURE 5. (A) Organisms cultured from urinary tract associated with carbonate in analysis of infected calculi. (B) Carbonate containing stones and infection. Small percentage of uninfected calculi containing carbonate suggests that even these may have been infected prior to study.

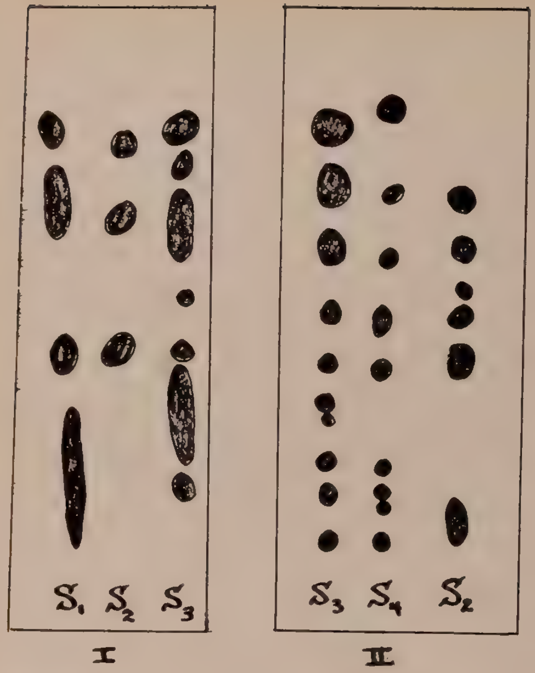

FIGURE 6. Similarity of thin-layer chromatograms of four different "putty" stones originally extracted with hot chloroform and then run on Eastman fluorescent thin-layer chromatography strips.

this problem a difficult one. There is little doubt, however, that organic silicates such as the silicon analogue of urea might well be mistaken by bacterial urease for urea and be split similarly to produce silicon dioxide rather than carbon dioxide and ammonia.

The similarity of the pattern of the fats found in the organic matrix of these stones with that of white blood cell autolysates makes pus the most likely origin for these fats. The role of staphylococcal lipases in their formation is probably important.

The presence of both antigens and antibodies in the organic matrix of these stones should be no surprise, although the presence of antibodies to organisms other than in the urinary tract emphasizes the fact that short-term immunization to intestinal pathogens is commonplace.[28] Small molecular-weight antibodies can be filtered from the plasma, and reactions within the urinary tract with bacterial antigens could result in the initiation of the precipitation phenomena seen in stone formation.[29]

Acidification. The failure of early administered acidifying agents in the absence of a mercurial enzyme inhibitor has blocked the successful therapy of these stones for long periods. The use of phosphate by Elliott[30] can be unusually effective if vigorous antibiotic therapy is carried out immediately postoperatively. Our experience with high phosphate intake is too limited as yet to draw conclusions.

It cannot be overemphasized also that up to 25 per cent of these patients, on careful examination, may show oxalate, uric acid, or cystine in the center of the subsequently infected stones that build up a layer of struvite on top of the nucleus. We have seen at least three cystinuric patients with struvite overlying their cystine nuclei. After infection has been eradicated or brought in check, a basic metabolic survey should be carried out on these patients to prevent recurrence with other types of stones.

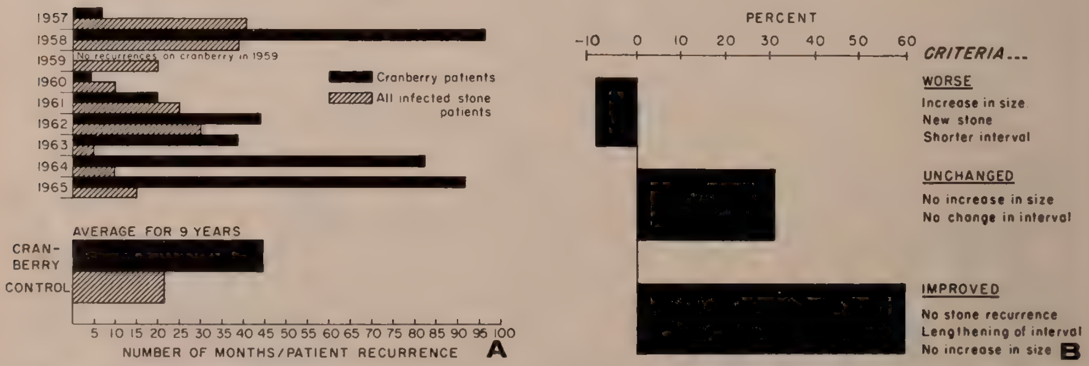

FIGURE 7. (A) Beneficial effect of ingestion of 1 quart daily of cranberry cocktail over years 1957 to 1965 in prolonging interval between recurrences of infective stones. As can be seen, increase in interval from twenty-one to forty-four months. (B) Over-all stone-prevention effect of cranberry cocktail ingestion in 53 patients, studied over nine years, as follows: only 8 per cent worse, 32 per cent arrested, and 60 per cent improved.

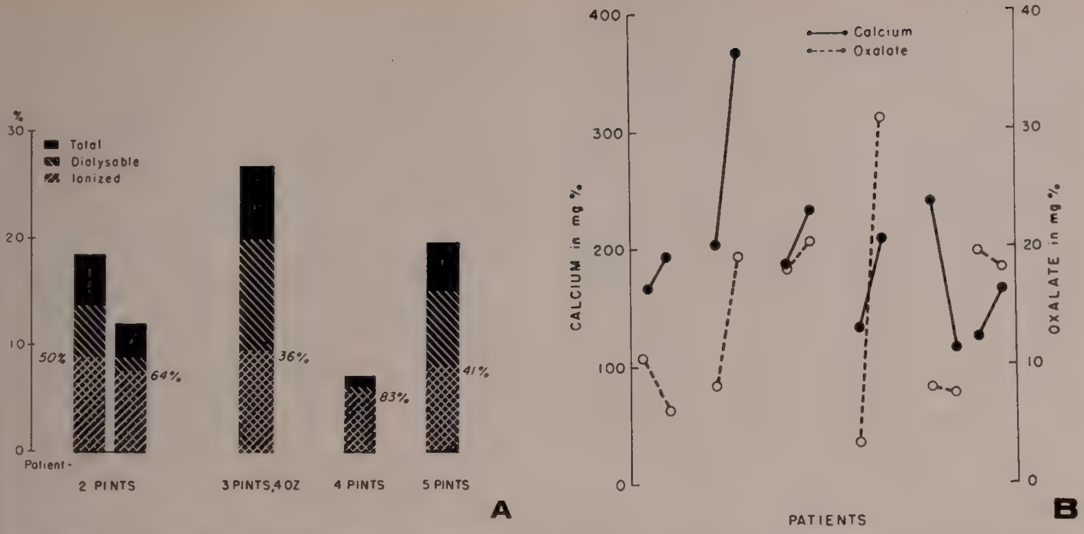

FIGURE 8. (A) Five patients. Effect of massive doses of equivalent of up to 15 pints of cranberry cocktail on partition of calcium in urine. In most individuals, proportion of dialyzable calcium increased as compared with normal. Each pint of cranberry juice mixer fed equivalent of 3 pints cocktail. (B) Six patients. Effect of equivalent of up to 15 pints cranberry cocktail on total calcium excretion is to elevate calcium excretion in 4 of 5 normal volunteers. Excretion of oxalate highly variable from patient to patient. (Twenty-four-hour output before and after 1 quart cranberry juice for one month.)

The use of hippuric acid,[31] methenamine,[32] and mandelic acid has not seemed to us to carry much advantage over the use of ammonium chloride and, indeed, patient acceptance seems somewhat lower. Our results with cranberry juice seem to indicate either greater patient acceptance with consistent acidification as a result or as yet unexplained effects of cranberry juice ingestion on rates of stone formation. The use of sodium acid phosphate may slightly increase urinary pyrophosphate excretion, but since the usual infective struvite stone contains phosphorus, its use would tend perhaps to increase stone formation rather than diminish it.[33]

Summary

Unexpected components, such as the high proportion of carbonate occurring in these stones or the presence of silica, added to some antibodies from common-infecting organisms, and lipids probably derived from white blood cells, have been reported and present new problems, some as yet unsolved in infective stone prevention. The management of infected calculi, utilizing urinary acidification with chlormerodrin, ammonium chloride, and cranberry juice, seems to provide a successful regimen over periods as long as ten years.

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Annual Convention

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The Americana, New York City

Cancer and Pregnancy

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A DEGREE OF UNCERTAINTY exists with respect to the treatment of cancer associated with pregnancy. Furthermore, collective experience in the management of cancer in the pregnant patient is limited. Because of these factors, this report is concerned with a review of the records of 52 patients with cancer and associated pregnancy who have been treated at the Roswell Park Memorial Institute, Buffalo, New York, over the last two decades. In addition, a résumé of the pertinent literature directed to this subject will also be presented.

Incidence

In recent years, toxemia, hemorrhage, and infection have become numerically less significant in maternal death rates, whereas other causes such as cancer are playing a more significant role. According to D'Espo,[1] cancer has in the last decade accounted for more deaths in obstetric patients seen at the Sloane Hospital for Women in New York City than for any other disease condition.

With regard to specific malignant conditions associated with pregnancy, figures from different institutions vary. In this series, carcinoma of the cervix accounted for the largest number of cancers followed by carcinoma of the breast and melanoma. Barber and Brunschwig[2] in their report found breast cancer, the lymphomas, melanoma, and gynecologic cancers to be the most common malignant conditions. In a further breakdown of different organ systems, White[3] noted in his survey that 1 in every 35 patients with carcinoma of the breast was pregnant. The incidence of pregnancy in carcinoma of the cervix has been reported by McGowan[4] to range from 1 in every 2,000 to 6,000 pregnancies. According to Pack and Scharnagel,[5] the incidence of malignant melanoma developing during pregnancy is about 3 cases for every 122,000 pregnancies.

In this publication, individual cancers will be presented and discussed in the order of frequency in which they occurred in this series.

Carcinoma of cervix

There were 26 patients with carcinoma of the cervix associated with pregnancy in this series. Of the 26 lesions, 13 were listed as Stage I, 6 as Stage II, and 7 as Stage III cancers. The treatment of this group of patients was mainly by external radiation, and in 21 instances it was the only method of therapy used. In the other 5 cases, radical hysterectomy was employed.

The five-year survival rate in this group was as follows: Of the 13 patients with Stage I lesions, 11 have survived five years or more; of the 6 patients with Stage II disease, only 2 patients are living after five years; and of the 7 patients with Stage III lesions, there is only 1 survivor. Of the 5 patients subjected to radical hysterectomy, 3 are living and well five years later, and each of the latter patients had Stage I lesions. The 2 patients who succumbed had Stage II disease.

As in this series, and according to the reports of others, the stage of the cancer at the time of treatment and not the pregnancy appears to be the predominant factor that influences the five-year survival rate.[4, 6–8] Fletcher, Rutledge, and Chau,[6] for example, in a series of 74 patients with carcinoma of the cervix diagnosed during pregnancy, recorded 18 patients with Stage I disease and all were alive five years later. Kinch,[7] in a detailed study of 75 pregnant patients with carcinoma of the cervix and 402 comparable nonpregnant patients under thirty-five years of age, noted almost identical five-year survival rate for all stages of the disease in both the pregnant and nonpregnant group. For example, his five-year cure rates of the Stage I cancer of the cervix in the pregnant and nonpregnant group were 63 and 66 per cent respectively.

Concerning treatment of carcinoma of the cervix associated with pregnancy, irradiation has been the principal method of therapy used in most reported series.[7,9,10] In most of these series, the irradiation was given without regard to the life of the fetus. Furthermore, when the diagnosis of cancer was made after viability of the fetus was established, most authors delivered the infant by cesarean section, and after the mother recovered from the surgery, initiated radiotherapy. There are a few reports where surgery alone has been used in the treatment of carcinoma of the cervix associated with pregnancy. Lash[11] reported a group of 14 patients treated by radical hysterectomy. Each patient had Stage I disease, and of the 14 all but 1 have survived for varying periods of time up to ten years. Kistner, Gorbach, and Smith[9] have also used radical surgery in 13 patients, and 7 have survived four years or more. These findings indicate that in certain selective cases of carcinoma of the cervix associated with pregnancy, surgery will produce survival rates similar to those obtained by irradiation.

Breast cancer

There were 11 patients with carcinoma of the breast in this series. Of the 11 lesions, 3 were detected during the first trimester of pregnancy, 4 during the second trimester, and 4 during the third trimester. The ages of the patients varied from twenty-four to forty-one years. The average age was thirty-six. Symptoms prior to seeking medical advice averaged eight months; however, 8 of the 11 patients had palpable axillary lymph nodes at the time of the first examination, and 2 patients were seen with axillary node metastases as well as metastases elsewhere. Only 1 patient in this series was seen with the disease localized exclusively to the breast tissue, and she was the only survivor.

OF 52 PATIENTS *with cancer and associated pregnancy whose records were reviewed, 41 delivered normal infants, and there was no evidence of fetal involvement by the mother's malignant condition. Clinical and experimental evidence indicates that most cancers are not aggravated by pregnancy and that abortion is not indicated. There is some evidence that breast-feeding by mothers with malignant conditions is not advisable. Almost every known malignant condition has been associated with pregnancy; in this series, carcinoma of the cervix accounted for the largest number, followed by carcinoma of the breast and melanoma.*

Concerning treatment of this group of patients, 4 were treated by radical mastectomy and 6 by radiation therapy. One patient was given no treatment because she was first seen as a terminal cancer patient. In 1 case irradiation was combined with oophorectomy and abortion, and in 2 other cases abortion was part of the primary treatment procedure. In 2 other cases where metastases other than axillary nodes became manifest after delivery, bilateral oophorectomy was employed. In 1 case no response was noted; in the other the addition of triethylenethiophosphoramide (Thio-Tepa) produced a short tumor response. As indicated previously, of the 11 patients there was only 1 survivor, and she was the only individual whose cancer was localized to the breast tissue. This latter patient has also become pregnant on two different occasions and showed no signs of recurrence over an eight-year period.

Because of the limited number of cases and the advanced stage of the disease in most of the patients in this series, it was not possible to draw any conclusions about specifics of therapy. Of interest, however, was the finding that of the 3 patients who were aborted, not one survived longer than six months. In contrast, of the 7 patients whose pregnancies went to term, each died of their disease; however, their average survival was fourteen months. This finding, that the survival was somewhat better for patients whose pregnancies were not interrupted, is not new, since Holleb and Farrow[12] have also noted this phenomenon in their series.

In a most complete examination of breast cancer associated with pregnancy, Holleb and Farrow[12] studied 283 patients and found 193 or 68 per cent to be operable. They included in this series patients with breast cancer detected during pregnancy as well as patients with cancer seen during their postpartum period. Of the pregnant patients in this series, the five-year cure rate was 33 per cent. They noted, however, when axillary nodes were present, the five-year cure rate dropped to 21 per cent, and when the nodes were negative, the cure rate was 58 per cent. Furthermore, 70 per cent of their cases had positive axillary node findings. In a further study of this problem, Treves and Holleb[13] reviewed a comparable age group of nonpregnant women under thirty-five years of age with breast cancer and reported a five-year cure rate of 40 per cent. In this group, when axillary nodes were positive, the cure rate was 21 per cent; however, the incidence of positive axillary nodes was only 58 per cent. According to these authors, the main difference between the patient who is pregnant and the nonpregnant patient with breast carcinoma is that the pregnant woman will have a higher incidence of positive axillary nodes; however, if the nodes are not involved, her chance of cure is equal to her nonpregnant counterpart. Why the higher incidence of axillary node involvement in the pregnant patient is difficult to assess. Some believe it is caused by the pregnancy; however, Westberg[14] believes delay in diagnosis is the principal factor and points out that most breast masses in pregnant women are regarded initially as changes due to gestation and nothing is done about them until they reach the stage where they are unmistakably cancer. His opinion is shared by others,[15-18] and in this series this one factor was noted in almost every case.

It is generally assumed that the guidelines used in the management of breast cancer in pregnancy are similar to those employed in nonpregnant women. In this regard, radical mastectomy has been the principal surgical procedure employed in most series, and because of the high incidence of axillary node metastases, postoperative radiation was also used.[12,15,18]

With respect to abortion as a therapeutic measure, a number of reported series have shown that it does not enhance the five-year survival rate.[3,12,15,17,18] In fact, in Treves and Holleb's[13] series, one half of their patients delivered normally, the other half had abortions, and the five-year clinical cure rate was somewhat better in the group that delivered normally: 33 versus 17 per cent. These authors believe, however, that in patients with disseminated disease, abortion, when combined with other endocrine ablation procedures, may be of some benefit.

For the inoperable and metastatic lesions, Bunker and Peters[19] found castration alone to be of little clinical value since most of their patients required additional measures such as drug therapy or adrenalectomy to effect a tumor response. Miller[16] also noted that castration alone in pregnant patients with disseminated breast disease was of limited usefulness. As indicated previously, Holleb and Farrow[12] believe that a program of estrogen ablation should be planned for patients with disseminated disease, and they advise bilateral oophorectomy plus removal of the pregnant uterus as the first step in their treatment.

According to the Joint Committee of Endocrine Ablation Procedures for Disseminated Breast Cancer, oophorectomy will produce a tumor response in about 30 per cent of the patients when done during their menstrual life; however, in patients under thirty-five years of age, the response rate drops to 16 per cent.[20,21] Furthermore, about half of the women who respond to oophorectomy in this age group will have a favorable response to either adrenalectomy or hypophysectomy. Their reports, unfortunately, make no mention as to whether or not these data apply to pregnant patients with advanced breast cancer. Moore *et al.*[22] in their writings point out that palliative success rate of adrenalectomy and hypophysectomy is about equal but because of the high morbidity and mortality rate and the complications associated with hormonal control after hypophysectomy, they prefer adrenalectomy. They believe, however, that hypophysectomy may be the preferred method of treating advanced breast cancer in pregnant patients. For the present, most authors believe that changing the hormonal environment by endocrine ablation is the most important factor in the treatment of disseminated breast cancer; however, accurate information as to its effectiveness in the pregnant patient is not available. At this time one must assume that data concerning the treatment of disseminated breast cancer in nonpregnant women also hold true for the pregnant patient.

With respect to further pregnancy, Holleb and Farrow[12] and Bunker and Peters[19] have shown that the five-year survival rate is unaffected by subsequent pregnancies. In Holleb and Farrow's[12] series, there were 52 women who later became pregnant. Of the patients with positive axillary node results, the five-year survival rate was 38 per cent, whereas for patients with negative node results, the cure rate was 64 per cent. Bunker and Peters[19] in their series noted a similar trend, and of their 31 patients there was a 61 per cent recurrence rate among those who became pregnant one year after their primary treatment; however, of those patients who became pregnant two years after the primary treatment, there was 100 per cent survival rate. Both Bunker and Peters[19] and Holleb and Farrow[12] have commented on this problem and believe that if the primary treatment fails to eradicate the cancer, the aggressive nature of breast cancer in these patients is such that it will eventually kill them irrespective of the presence or absence of another pregnancy. For these reasons they agree with most others that another pregnancy should be avoided for at least two years and not because of the adverse effects of the pregnancy on the cancer, but because of their over-all poor prognosis of the patient.

Melanoma

In this series there were 3 pregnant patients with melanoma, and in each case the lesion involved an extremity. Of the 3 patients, 2 had had lesions removed prior to their pregnancy, and it was during their pregnant state that a recurrence became manifest as regional node metastases and/or as a local recurrence. Each patient was treated by radical surgical removal of the recurrence, and each delivered a normal infant. Both patients, however, developed other metastases and died within one year of their pregnancy. In the other patient the primary lesion was detected late in the second trimester, and treatment was deferred until after delivery. The patient succumbed in three years to widespread metastases.

For many years pregnancy was considered to have an adverse effect on the five-year survival rate of patients with melanoma. In 1960 George, Fortner, and Pack[23] reported on 115 cases of melanoma, pregnancy, and 330 nonpregnant patients with similar disease. They found little evidence in this study that pregnancy per se influenced the outcome and that stage for stage the outlook in both pregnant and nonpregnant groups was about equal. Later, White *et al.*[24] reported on 61 patients with melanoma with the number of pregnant and nonpregnant patients being equally distributed. They noted the five-year survival for nonpregnant patients to be 54 per cent, whereas the survival rate for the pregnant group was 73 per cent. It was their conclusion that when the age and the stage of the disease were compared, the survival rate was about the same for either group. These clinical studies have been enhanced by the experimental studies of Shocket and Fortner[25] who found that transplantable melanoma tumors in hamsters were inhibited during pregnancy. Because of these findings, it is now generally believed that interruption of pregnancy in patients with melanoma has little therapeutic value and may even be contraindicated. In this regard, Pack and Scharnagel[5] believe immediate and radical surgery is the principal method of therapy in treatment of melanoma associated with pregnancy.

Thyroid cancer

There were 3 patients in this series with cancer of the thyroid, and each have survived three, four, and ten years respectively. Each patient had an ill-defined thyroid nodule that was discovered during the pregnant state. In 2 instances, treatment was not initiated until after delivery at which time a total lobectomy was done. In both cases cervical lymph node metastases were noted. In 1 case the metastases were managed by radical neck dissection and in the other by radiation. In the third patient, the involved thyroid lobe was excised during the pregnancy, and after delivery, a radical neck dissection was done because of cervical node metastases. In each of the 3 cases, a histologic diagnosis of follicular adenocarcinoma was established. Each of the 3 patients delivered a normal infant, and 1 patient has had two subsequent pregnancies without difficulty. To date no evidence of local or distant spread of the tumor has been observed during the period of follow-up which extends for our patients for five years.

The incidence of carcinoma of the thyroid in pregnancy is rare; however, Breese,[26] in a series of 217 thyroid cancers in women in childbearing age, noted 16 patients had cancers associated with pregnancy whereas 44 others had known lesions develop during their pregnancy. In no instance did pregnancy appear to have adverse effects on the course of the disease in his patients. Follow-up was available in each of the 16 patients whose cancers were detected during their pregnancy, and each are living six years or more without evidence of disease. Similar findings have been reported by others.[27]

The treatment of thyroid cancer during pregnancy is similar to that of a nonpregnant patient; that is, total thyroidectomy and removal of the lymph node-draining tissue. Abortion does not appear to have any therapeutic value; however, Friedman[28] believes that the thyroid-stimulating hormone is elevated in pregnancy, and as such, abortion is indicated. His opinion, however, is not supported by reported clinical studies. In certain selected cases, radioactive iodine may be required to manage metastases. Because this material traverses the placenta and concentrates in the fetal thyroid gland as early as the twelfth week of gestation, it has been suggested by Russell, Rose, and Starr[29] that this agent is contraindicated during pregnancy.

Cancer of ovary

There was 1 patient with ovarian carcinoma in this series, and she has survived ten years following oophorectomy.

The true incidence of ovarian carcinoma complicating pregnancy is unknown. Gustafson, Gardiner, and Stout[30] collected 45 cases of ovarian tumor occurring during pregnancy from the Indianapolis, Indiana, hospitals and could find only 1 carcinoma in this group. Betson and Golden,[31] in a personal series, reported 3 cases in 150,000 deliveries. Two of these patients died of their disease within eighteen months of diagnosis. These authors believe that removal of the primary tumor whenever possible is indicated followed by irradiation to the pelvis after delivery. In other reports the disease has been widespread, and abdominal metastases were often extensive. In these cases, the authors advocate surgical removal of the primary tumor and as much of the cancerous tissue as possible and reserve radiation therapy until after delivery of the infant.[4] As far as can be determined, interruption in pregnancy is not indicated, nor does the pregnancy influence the course of the disease.

Gastrointestinal cancer

There was 1 patient in this series with carcinoma of the rectum associated with pregnancy. This patient was first seen during the third trimester of pregnancy, and the lesion was inoperable. She died six months after her delivery.

O'Leary and Bepko,[32] in a study of 100 cases of colon and rectum cancers associated with pregnancy and collected from the surgical literature, concluded that these tumors are not affected by pregnancy. It was their opinion that during the first and second trimester, a colon-rectal carcinoma should be treated as if the patient were not pregnant. During the third trimester they felt the infant should be delivered by cesarean section and the tumor later resected when the patient's over-all general condition warrants the operation. McLean, Arminski, and Bradley[33] reported 8 personal cases, and in their opinion treatment was similar to the principles established by O'Leary and Bepko[32]; however, they felt that the cesarean section and removal of the tumor could be done at the same time. Furthermore, most of the authors who have reported these cases believe that abortion is not a therapeutic measure in these individuals.[34]

Sarcoma

There were 2 sarcomas in this series; 1 a leiomyosarcoma involving the soft tissues of the lumbar area and another an osteogenic sarcoma of the femur. The former patient was treated by excision of the lesion; however, a local recurrence developed within four months, and about the same time the patient became pregnant. The recurrence was widely excised, and shortly afterwards an abortion was performed. Within two weeks another local recurrence developed, the patient's course went rapidly downhill, and she expired within six months. The other patient had an osteogenic sarcoma of the femur treated by amputation approximately a year and a half before she became pregnant. At the time of amputation, questionable pulmonary metastases were present. During her pregnancy, the metastases slowly increased in size. The patient delivered a normal infant. A six-month follow-up indicates the patient is still alive with asymptomatic pulmonary metastases.

Recently Cantin and McNeer[35] reviewed their clinical experience with malignant soft-tissue tumors in pregnancy. It was their opinion that pregnancy did not affect the prognosis or the over-all survival rate. Furthermore, they could find no clinical or medical basis for recommending the interruption of pregnancy in these patients. They did note, however, that premenopausal women have a higher survival rate and suggest that the estrogen environment may play an important role in their increased survival rates. According to thees authors, the management of soft-tissue sarcoma associated with pregnancy differs little from that which one would apply to the nonpregnant patient, namely, wide surgical excision and, when necessary, amputation.

Miscellaneous

Almost every known malignant condition has been documented as being associated with pregnancy, and these include renal cell carcinoma, carcinoma of the bile duct, carcinoma of the stomach, carcinoma of the vulva, and even central nervous system tumors.[4, 27, 36] In this series, there was 1 patient who had two cancers; one a squamous cell carcinoma of the tongue and another involving the cervix. Both lesions were detected during separate pregnancies; however, the carcinoma of the tongue eventually caused her death.

Intracranial neoplasms are of interest in that pregnancy may exaggerate symptoms because of the excess water that is retained by the body by increasing the edema in or about a brain tumor. Because of this factor, Rand and Andler[37] stress the importance of avoiding any situation where an increase of intracranial pressure may occur, and they advise cesarean section because intracranial pressure is often elevated during a spontaneous delivery. These authors also point out that the prognosis for mother and child in their series was poor; however, they believe that early diagnosis and prompt surgical intervention may increase the survival rate for both mother and child.

Of the 52 patients in this series, 41 delivered normal infants. In no instance was there any clinical evidence of fetal involvement by the mother's malignant condition. Boronow[36] in a recent survey of this problem could find only 24 documented cases reported in the literature where the placenta or fetus was involved with tumor. Melanoma and Hodgkin's disease made up the majority of the cases that he collected. Furthermore, the experimental studies by Pang[38] who injected Brown-Pearce rabbit tumor into the bifurcation of the aorta in pregnant rabbits found no evidence of fetal involvement in any of the animals in which this experiment was performed. It was his opinion that the placenta is a very effective barrier to tumor cells.

With respect to a mother with a malignant tumor nursing a child, it is not possible in this series to evaluate this aspect of cancer. Ask-Upmark[39] in his reports from Sweden believes that women with malignant disease should not nurse. He emphasizes that this opinion is determined mainly from animal experiments; however, he feels that these data should make one somewhat wary about advising breast-feeding in women with cancer until it is clarified by clinical data.

Summary

A review of 52 cases of carcinoma associated with pregnancy at the Roswell Park Memorial Institute has been presented. In addition, the current literature of malignant conditions in pregnancy has been surveyed.

Clinical and experimental evidence suggests that most cancers are not aggravated by pregnancy and that abortion is not therapeutic.

Fetal involvement by the mother's malignant condition is extremely rare. It did not occur in any of the cases in this series.

There is some experimental evidence to suggest that breast-feeding by mothers with malignant conditions is not advisable.

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SYMPOSIUM

Radiology of Liver

Moderator
E. ROBERT HEITZMAN, M.D., Syracuse, New York

Introduction

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FOR MANY YEARS, radiographic evaluation of liver disease remained a most difficult field for the radiologist. Because of its uniform radiographic density, there seemed to be little that the radiologist could offer in the diagnosis of lesions of this vital organ; even large masses within the liver substance often remained undetected.

In recent years, however, great strides have been made in the radiographic diagnosis of liver disease. A new appreciation of the appearance of impressions made by the liver on adjacent organs and perivisceral fat has greatly amplified our ability to diagnose plain films of the abdomen. Contrast studies of the bile ducts and circulation of the liver has permitted the diagnosis of even small lesions situated deep within the liver substance. Hepatic scanning has opened a new vista for the evaluation of liver parenchyma.

Therefore, it was felt that a review of the current status of the radiographic methods of evaluation of the liver would be timely. The ensuing articles by members of the Department of Radiology of St. Vincent's Hospital and Medical Center in New York City and by members of the Department of Radiology of the Upstate Medical Center in Syracuse, New York, constitute an authoritative review of this important subject. The article by Joseph Whalen, M.D., demonstrates radiographically what can be achieved by careful attention to the subtleties of roentgen anatomy and illustrates why the discrepancy between the clinical and radiologic evaluation of liver size is so frequent. Robert O'Mara, M.D., reviews the history of hepatic scanning and surveys the current state of this art. Its enormous value is readily apparent. The article by Robert Bornhurst, M.D., and E. Robert Heitzman, M.D., introduces a new method for intravenous cholangiography which increases the rate of successful examinations and greatly enhances their reliability. Ruzicka and Rossi, pioneers in the field of vascular studies of the liver, review the subject from great personal experience. Finally, the article by Ruzicka and Sanchez-Ubeda discusses an important and increasingly popular method of evaluation of bile ducts in jaundiced patients. This method promises to clarify the differential diagnosis in jaundiced patients who continue to frustrate attempts at intravenous opacification of bile ducts.

Proper management of patients with liver disease or suspect liver disease requires that every physician be thoroughly conversant with these advances in radiographic diagnosis. It is hoped that this symposium will represent a significant step in the dissemination of these new concepts.

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Presented at the 162nd Annual Meeting of the Medical Society of the State of New York, New York City, Section on Radiology, February 13, 1968.

Radiographic Anatomy

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THE PROBLEMS OF EVALUATING liver size by clinical and radiographic methods have been emphasized by many authors. A point not greatly emphasized in the literature is the frequent disagreement between the clinician and the radiologist in their evaluation of liver size. The clinician depends on palpation of an edge felt below the costal margin, while the radiologist is dependent on the size of the hepatic soft-tissue density on the radiograph. It is a relatively common experience for the radiologist to be told the liver is palpable 4 fingerbreadths below the costal margin and then to be shown a film in which the liver shadow appears normal. It is apparent, then, that the portion of the liver the clinician feels is not always that portion which the radiologist sees. This point was illustrated to me when I attempted to establish measurement criteria of liver size on a radiograph.* It was apparent that attempts to evaluate liver size by measurement of a soft-tissue density in the right upper quadrant did not accurately reflect total liver mass. There are portions of the liver which do not cast a soft-tissue density either because of lack of soft-tissue fat interface or relative thinness of the liver at a certain segment. Specifically these conditions would obtain with the left lobe and the inferior margin of the right lobe of the liver. Because of this, we felt that we were not measuring the entire anterior-inferior portion of the liver substance, and arbitrarily points from other known anatomic relationships were interpolated.*

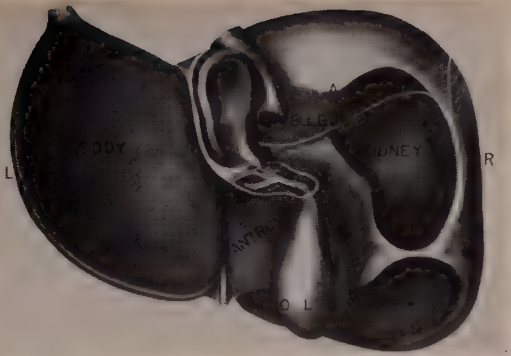

FIGURE 1. Visceral surface of liver, posterior view. Indentation of organs accentuated for emphasis. Organs indenting right posterior visceral surface (R) retroperitoneal and, therefore, related to rich extraperitoneal fat. Organs indenting medial portion of right and left lobes intraperitoneal, not related to rich extraperitoneal fat. A = adrenal, Bulb = duodenal bulb, (2) = second part, R = right, L = left.

What portion of the liver, then, are we seeing? The liver should not be considered as a hemisphere with two edges suspended from the right hemidiaphragm in the right upper quadrant lying above the other organs of the abdomen. A more useful concept is that the liver is a structure having two surfaces, one of which is felt ventrally and superiorly, is round and smooth, and corresponds to the shape of the anterior abdominal wall and the dome of the diaphragm. The other, the visceral surface, is irregular and has indentations which correspond precisely to the contour of the organs with which it is in intimate contact posteriorly (Fig. 1).

It is apparent from cross sectional anatomy that the visceral surface of the liver has relationships which are both intra- and extraperitoneal (Fig. 2). The extraperitoneal surfaces abut a very rich fat pad which permits visualization of these aspects of the liver. The portions of the liver with intraperitoneal relationships are not in contact with as rich and consistent a fat pad and are not usually visualized directly. The size and position of these portions of the liver are inferred by the position of the opacified intraperitoneal organs which are known to be related to this portion of the liver.

It is also apparent from cross sectional anatomy that the right portion of the

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* Riemenschneider, P. A., and Whalen, J. P.: The relative accuracy of estimation of enlargement of the liver and spleen by radiographic and clinical methods, Am. J. Roentgenol. 94: 462 (1965).

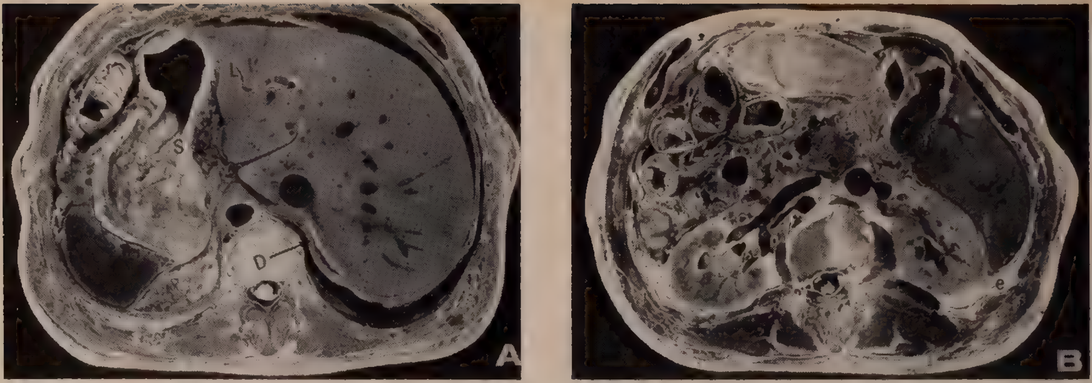

FIGURE 2. (A) Cross section through upper part of abdomen. Left lobe of liver (L) related to stomach (S). Note relative absence of fat liver interface. Superior right lobe approximates diaphragm (D). (B) Cross section through abdomen, midportion of kidney. Extraperitoneal fat (e) intimate with liver and renal shadow.

visceral surface of the liver extends more posteriorly and is then related to the extraperitoneal fat and is outlined by virtue of contrast of this fat (Fig. 2B). The more medial portions of the right and left lobes extend anteriorly and are not related to the extraperitoneal fat, and their position can only be inferred by the position of the contiguous organs such as the stomach and colon.

A radiograph of the right upper quadrant demonstrates a surface of liver outlined by fat (Fig. 3). This same fat, however, is continuous with the perirenal fat and is, therefore, extraperitoneal. The colon marginates the surface not seen because of fat liver interface and, therefore, reflects a more inferior portion. This is the area of the right lobe of the liver more anterior and inferior, that portion the clinician may feel extending below the costal margin. Similarly, on a radiograph, an air- or barium-filled stomach may be seen to be indented by the left lobe of the liver. If not indented, at least the position of the stomach may reflect the size of the left lobe of the liver, since the left lobe is not directly visualized because of contrasting fat.

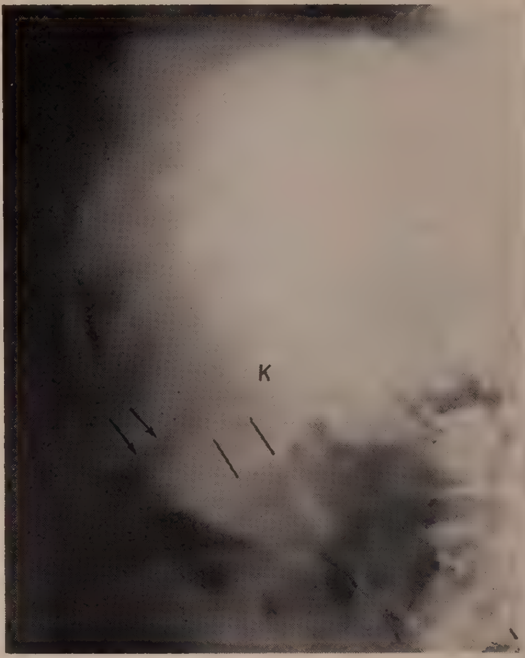

FIGURE 3. Plain film of right upper quadrant. Posterior aspect of liver outlined by perirenal fat (arrows) as is kidney (K). More anterior margin (parallel lines) abuts gas-filled colon.

Summary

The liver is a structure in the upper abdomen which on the right side lies lateral and anterior to the other organs of the right upper quadrant. Its visceral surface is irregular and in areas is deeply embedded in the rich extraperitoneal fat. It is this aspect of the liver which permits a significant fat-soft tissue interface to allow visualization on the radiograph. The more anterior and medial aspects of the right lobe and the left lobe of the liver are not in contact with this rich extraperitoneal fat and are not seen directly. The location of these portions is reflected by the position of the adjacent intraperitoneal organs. The portion of the liver felt by the clinician is not the portion of the liver seen by the radiologist. This explains the disparity between both methods in evaluation of liver size and the relative inaccuracy of both methods when taken individually and not in combination.

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Hepatic Scintiscanning

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Adequate and informative demonstration of the liver has been a problem for years especially to radiologists. Fairly complicated procedures such as splenoportography, hepatic arteriography, and percutaneous cholangiography have evolved from the attempts to gain knowledge about this organ. Radioisotopic scanning is a much simpler and safer method that has advanced steadily since Stirrett, Juhl, and Libby[1] first demonstrated the feasibility of visualizing the hepatic structure with radioisotopic materials in 1954 and Friedell, MacIntyre, and Rejali[2] successfully demonstrated intrahepatic metastases a decade ago. This article will review, in a brief fashion, some of the current knowledge of hepatic scanning.

Compounds used

The major compounds used to visualize the liver are summarized in Table I, along with their usual doses and mode of localization.

Rose bengal iodine-131 was the initial agent used both for liver scanning and estimation of hepatic function.[3] There are several reasons why this compound is not completely satisfactory for scanning purposes. There is usually a thirty- to sixty-minute delay to allow the material to accumulate within the polygonal cells. Normally, there is rapid excretion of this compound in the bile with resultant accumulation of radioactivity in the gallbladder and small bowel which then may be confused with abnormalities in the liver itself. Finally, the gonadal radiation dose is relatively high. Nonetheless, attempts are being made to utilize rose bengal to differentiate between obstructive and nonobstructive jaundice.

Another compound that is concentrated in the polygonal cells, iodipamide I^{131} (Cholografin), also is used for liver scanning.[4] It has disadvantages similar to rose bengal.

The next popular agent developed was colloidal gold-198. This material accumulates in the reticuloendothelial system,

TABLE I. Compounds used for liver scanning

Compound	Dose	Cellular Localization
Colloid Au^{198}	100 to 200 microcuries (2 to 6 microcuries per kilogram)	Reticuloendothelial cells
Tc^{99m} sulphide colloid, In^{113m} iron hydroxide colloid	3 millicuries	Reticuloendothelial cells
Microaggregated or colloidal I^{131} albumin	150 to 500 microcuries	Reticuloendothelial cells
Rose bengal I^{131}, iodipamide I^{131}	150 microcuries	Polygonal cells

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* By invitation.

notably in the Kupffer's cells of the liver. The colloidal gold is retained indefinitely by the Kupffer's cells. At present this is probably the most widely used compound. It does relieve one of some of the disadvantages of rose bengal, excretion into the bile and intestine, but gives a somewhat higher radiation dose to the liver.

Microaggregated human serum albumin labeled with I^{131} may be prepared by heat denaturation according to the methods described by Taplin *et al.*[5] and Iio *et al.*[6] Like gold colloid, it is rapidly accumulated in the reticuloendothelial system. Scanning may be started ten minutes after injection. Unlike gold, the colloid is not retained indefinitely in the Kupffer's cells but is rapidly broken down with liberation of free iodide into the blood stream. When this compound is used, the patient's thyroid gland should be blocked with Lugol's solution so that the free radioiodide may be promptly eliminated by urinary excretion.

A more recent addition to this group of agents is technetium-99m colloidal sulphide. This agent may be prepared easily.[7] Consequently, its use in liver scanning is increasing. Because of the short half-life of Tc^{99m} of six hours, considerably more activity can be safely administered (3 millicuries as opposed to 150 microcuries of Au^{198}). This achieves increased counting rates and shorter scanning times. Also, recent work indicates that the resolution of defects in a liver phantom is superior when Tc^{99m} is compared with Au^{198}.[8] Although more activity is used, the dose to the liver is less than that of Au^{198} (approximately 1 rad per 3 millicuries dose as opposed to 10 rads per 200 millicuries dose).

Last, a new radiopharmaceutical material has been introduced by Goodwin *et al.*[9]: indium-113m iron hydroxide colloid. This radionuclide has an even shorter half-life than Tc^{99m} and is also deposited rapidly within the reticuloendothelial system. The estimated dose to the liver is 0.55 rad per millicuries of administered In^{113m}.

At the Upstate Medical Center, Syracuse, we have been using Tc^{99m} sulphur colloid for our liver scans since December, 1966. Prior to this, our agent of choice was Au^{198} colloid. Besides the previously mentioned advantages of the technetium compound, repeat scans may be obtained as needed. Drawbacks to its use are the fact that it must be prepared daily and its particle size rigidly controlled. However, it is now available commercially.*

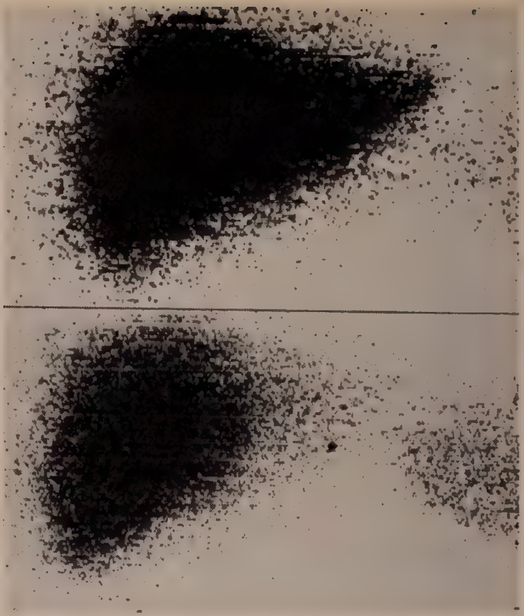

FIGURE 1. Anterior (top) and posterior (bottom) views of normal liver. Notice on posterior view that spleen seen and left lobe of liver not as well delineated as on anterior study. This is result of increased distance from detector and intervening tissues.

Method

All liver scans at our institution are performed on a dual probe scanner with 5-inch diameter crystals† using 265-hole fine-focused collimators.** Scanning speed is 140 inches per minute. Anterior and posterior scans are obtained simultaneously and lateral scans obtained if indicated. Average scanning time in a routine case is fifteen to twenty minutes. Figure 1 depicts a normal liver scan in the anterior and posterior projections obtained with this instrumentation.

Excellent liver scans may be obtained using the more popularly available 3-inch diameter crystal with a 19-hole focusing collimator and slower speeds. Stationary devices, such as the gamma camera, may reduce the time of the procedure but have the drawback of a maximum effective fixed field size of approximately 10 inches in diameter. This reduces their usefulness in evaluation of hepatomegaly where, not infrequently, the diameter of the organ will be considerably larger. An abdominal binder may be used to decrease the artifacts produced by respiratory motion. Intermittent breath holding will eliminate this motion when one uses the gamma camera.[10]

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* Nuclear Consultants Corporation, St. Louis, Missouri.
† Ohio Nuclear Inc., Cleveland, Ohio, model 54-F.D.
** Picker Nuclear, Cleveland, Ohio, model 2114.

A radiograph of the abdomen is obtained at the time of scanning with the patient in the same position as when he was scanned. Markers are placed on the scintigram and radiograph so that they may be accurately superimposed. This allows for accurate positioning of the liver in relation to the diaphragm and viscera. It is also quite helpful to utilize other radiographic examinations such as intravenous pyelogram, upper gastrointestinal series, barium enema, and so on in the interpretation of the liver scan.

Indications

Among the many indications for hepatic scanning, several which are particularly important are: (1) evaluation of liver size and relation to palpable abdominal masses. Figure 2A shows a massive liver in a sixty-eight-year-old female who was suspected clinically to have a large umbilical hernia. The scan revealed that the mass palpated anteriorly was really an enlarged left lobe of the liver. The evaluation of abdominal masses is important in children also. For example, a nine-week-old infant was thought to have a huge renal neoplasm on the left side. The liver scan revealed marked hepatosplenomegaly and proved that the mass on the left side was an enlarged spleen rather than the left kidney (Fig. 2B). The postmortem diagnosis was histiocytosis; (2) determination by scanning, not only of size but also of the liver's shape and position. Changes in position may be seen with ascites, diaphragmatic abnormalities, abscesses, and other extrahepatic masses. It is essential that other radiographic examinations be reviewed when interpreting hepatic scans. Marked elevation of the right hepatic lobe accompanying eventration of the

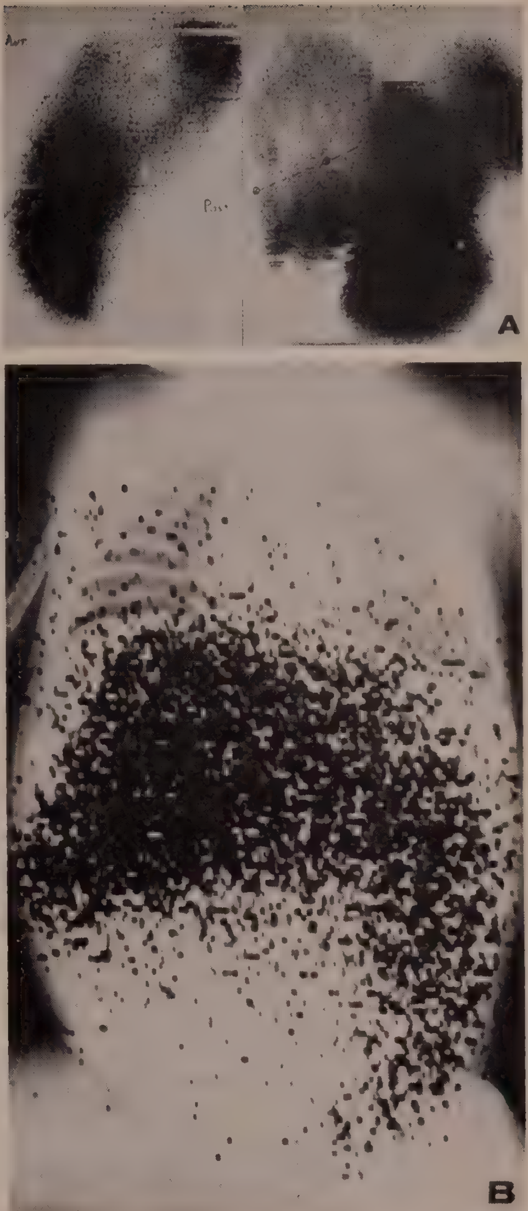

FIGURE 2. (A) Lateral (left) and anterior (right) views of liver in obese sixty-eight-year-old female suspected clinically to have large umbilical hernia. Scan demonstrated that palpable mass was enlarged left lobe of liver and almost complete replacement of right lobe. This shown to be cavernous hemangioma. (B) Hepatic scan superimposed on radiograph of nine-week-old infant who exhibited large left-sided mass originally thought to represent renal neoplasm. Liver scan demonstrated massive hepatosplenomegaly. Baby expired, and diagnosis at autopsy histiocytosis.

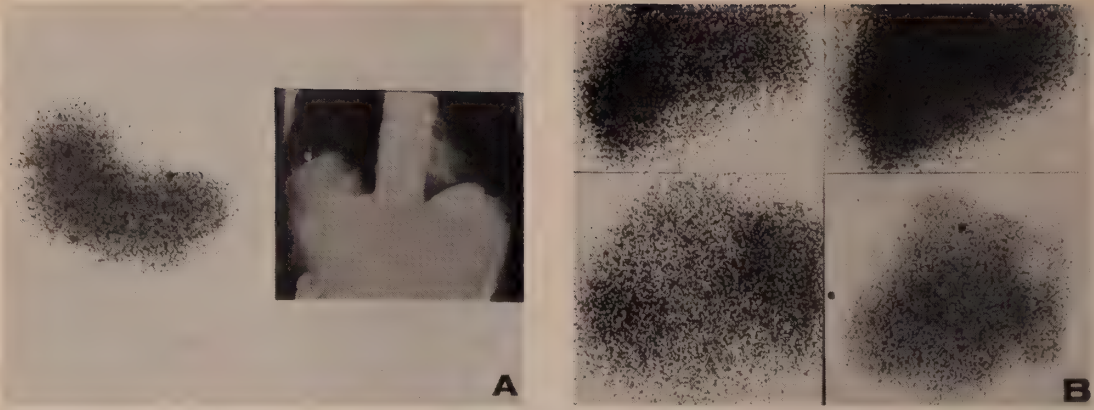

FIGURE 3. (A) Anterior liver scan (left) and radiograph (right) demonstrating unusual hepatic shape secondary to eventration of right side of diaphragm. At surgery liver normal. (B) Anterior (left) and posterior (right) liver scans in ten-year-old female with metastatic liver disease from adrenal cortical carcinoma. Lower scans performed three months after upper scintigrams to evaluate response to chemotherapy. Lack of response to therapy apparent with further increase in hepatomegaly and size of metastatic deposits.

right side of the diaphragm is illustrated in Figure 3A; (3) demonstration of the presence of intrahepatic mass lesions; (4) assessment of the efficacy of therapy for hepatic lesions by follow-up examinations. Lack of response to chemotherapy for hepatic metastases is shown in Figure 3B; (5) evaluation of liver in trauma[11]; and (6) localization of sites of intrahepatic filling defects for needle biopsy or radiotherapy fields.

Variations in size and shape

The vast variety of the normal shape and size of the liver must be recognized in the interpretation of hepatic scans. The normal variations in the shape of the liver have been described previously by Caroli and Bonneville [12] and McAfee, Ause, and Wagner [13] and will not be dealt with here. Calculations of liver volume are laborious. In a small group of normal patients as reported by McAfee, Ause, and Wagner, [13] the mean maximum horizontal diameter in the anterior scan was 18.3 cm., and the mean maximum vertical diameter was 16.7 cm. Furthermore, one must develop a knowledge of the various impressions and indentations that can be seen in a normal liver. The most common of these include the porta hepatis, the cardiac impression on the superior surface, Harrison's groove caused by the rib cage, and the renal impression posteriorly.

The most frequent abnormality encountered in hepatic scanning is hepatomegaly. Some of the important causes are: (1) malignant conditions, primary or secondary; (2) fatty infiltration; (3) cirrhosis, Laennec's or biliary; (4) hepatitis; (5) chronic passive congestion; (6) hemochromatosis; (7) amyloidosis; (8) sarcoidosis; (9) cysts; and (10) bilharziasis. Although, as a rule, hepatomegaly is generalized, localized hypertrophy of one lobe is sometimes encountered (Fig. 2A). Enlargement of the liver is more common than atrophy in cirrhosis, especially in the early stages.

A small liver may represent a normal variation or a scanning artifact caused by "high contrast" photorecording technics. There has been no statistic correlation between liver dimensions and body size, weight, or age.[13] The common causes of atrophy are: (1) cirrhosis—Laennec's, biliary, or cardiac; (2) malignant condition, secondary; (3) collagen disease; and (4) scanning artifact. Abnormally small livers are not commonly observed.

Intrahepatic filling defects

Intrahepatic filling defects are recognized on a liver scan as areas of decreased or absent radioactivity within the liver substance. Such areas do not always represent neoplasm. The patient's clinical history, physical examination, and other laboratory and radiographic examinations must be utilized when seeking the cause of such a "cold" area.

The main problem of detecting such defects is one of resolution. At present, using a plastic liver phantom filled with solution containing 3 millicuries of Tc^{99m} and the 5-inch crystal scanner mentioned previously, spherical filling defects of 1.75-cm. diameter can be detected peripherally. Spheres of 2-cm. diameter can be seen in the central or thick portion of the phantom. Obviously, there is a need for further improvement in resolution.

The causes of intrahepatic filling defects are: malignant conditions, primary or secondary; cysts; abscesses; cavernous hemangioma; hematobilia; amyloid deposits; cirrhosis; trauma; post surgery or biopsy problems; scanning artifacts; dilated bile ducts; irradiation fields; and Harrison's groove. With such a long list, it is apparent that an exact etiologic diagnosis cannot be made on the basis of the scan alone. Defects may be single or multiple, discrete or diffuse. One may see complete "amputation" of a portion or an entire lobe of the liver. This does not only result from intrahepatic lesions but also may be seen with extrahepatic masses (Fig. 4).

In metastatic disease, the liver is usually enlarged and, in the majority of cases, both lobes are involved. Occasionally, one encounters a solitary secondary deposit. The diagnostic accuracy in detection of a malignant condition ranges from 82 to 90 per cent.[14-16] The incidence of false negative scans does not exclude the possible presence of cancer.

Abnormal liver position

Normally, the superior border of the liver closely approximates the diaphragm. Although it usually occupies the right upper quadrant, congenital displacements may be found in situs inversus and in association with diaphragmatic abnormalities.

The most common cause of hepatic displacement is ascites. With this condition, the liver is usually displaced medially and inferiorly. A well-marked and positioned radiograph as well as the scan is essential in determining the amount of displacement.

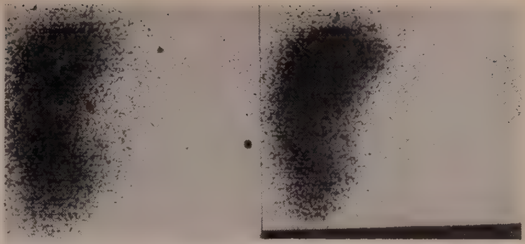

FIGURE 4. Anterior (left) and posterior (right) hepatic scans demonstrating "amputation" of left lobe of liver with defect in upper, medial right lobe as result of pressure from large pseudocyst of pancreas.

The role of hepatic scanning is most important in the diagnosis and localization of subphrenic and subhepatic abscesses.[17] Subphrenic abscess may be demonstrated as a displacement of the liver from the diaphragmatic margin on a radiograph obtained with the patient in the scanning position. Another less satisfactory diagnostic technic is to perform a combined liver and lung scan to demonstrate a zone of separation between these organs.[18,19] Subhepatic abscesses may be diagnosed by combining the liver scan with radiographic demonstration of the proximal small bowel.

Other less common causes of liver displacement are kyphoscoliosis, emphysema, asthma, pneumonectomy, massive pleural effusion, diaphragmatic abnormalities, and masses arising from the surrounding organs.

Diffuse hepatic parenchymal disease

Normally the liver parenchyma appears quite uniform except at the edges where blurring and serrations are noted. These marginal artifacts are secondary to respiratory motion. They can be troublesome because they may obscure real filling defects caused by peripheral intrahepatic masses. They may be reduced by applying an abdominal binder to decrease respiratory excursions.

The most common abnormality is seen in cirrhosis, especially Laennec's cirrhosis. One will see a diffuse decrease in the amount of radioactivity throughout the liver sub-

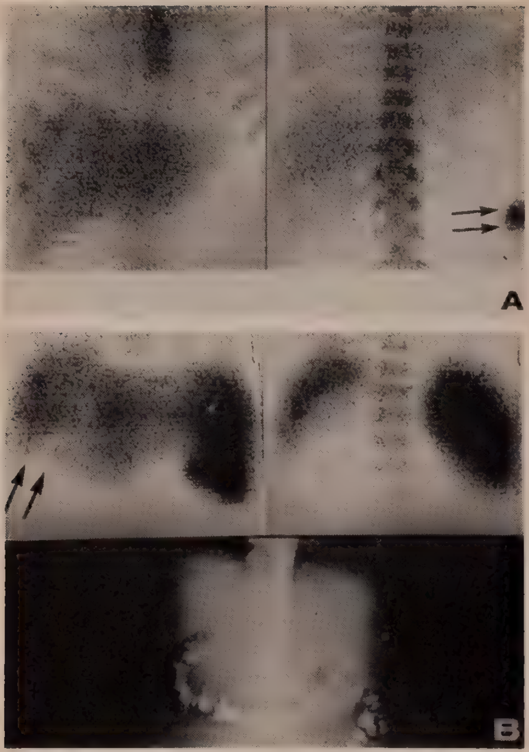

FIGURE 5. (A) Anterior (left) and posterior (right) liver scans in forty-six-year-old male patient with cirrhosis who had two shunts (splenorenal and portacaval) and splenectomy previously. Liver uptake poor and mottled, and uptake in bone marrow of spine, sternum, and ribs accentuated by splenectomy. Small round area of activity (arrows) most likely represents accessory spleen. (B) Anterior (top left) and posterior (top right) liver scans presented with radiograph of upper abdomen. Liver uptake pattern quite mottled, splenomegaly present, and increased activity in spleen and bone marrow in sixty-seven-year-old male with cirrhosis. Defect (arrows) proved to be impression caused by high hepatic flexure of colon, again illustrating necessity of obtaining radiographs with scans.

stance and a corresponding increase in the activity in the reticuloendothelial cells of the spleen and bone marrow. This finding is attributed to a decrease in hepatic blood flow. This finding is usually associated with hepatomegaly rather than with a small liver. In Figure 5A a patient with advanced cirrhosis is presented with marked activity in the bone marrow of the ribs, sternum, and spine. This is accentuated because the patient has had a splenectomy.

At times the mottled appearance of the cirrhotic liver can become quite marked and closely resemble the multiple filling defects of metastatic disease. This is caused by the increased statistical variation in the decreased count rate over the liver. At times, this pattern may be so marked that it will mask the presence of an underlying hepatoma, even a large one. As the disease progresses, one may see less and less liver activity, especially in its thinner regions (Fig. 5B). In hepatic coma one will frequently see all the radioactivity localized in the bone marrow and spleen, rather than the liver.

Other diseases will produce defects in the normal homogeneous pattern which cannot be distinguished from that seen in cirrhosis. These include fatty infiltration, chronic passive congestion, acute and subacute hepatitis, sarcoidosis, and bilharziasis.

Diagnosis of obstructive jaundice

As stated earlier, one of the objections to using rose bengal as a hepatic scanning agent is that it is rapidly excreted in the bile. Several investigators have attempted to make use of this characteristic to establish the diagnosis of extrahepatic obstruction in the jaundiced patient by determining the presence of radioactivity in the bowel after administration of the compound.[3,20,21] This may be accomplished by measuring the radioactivity in the feces, external counting over the abdomen, scintillation scanning of the entire abdomen, or a combination of these. The absence of activity within the bowel indicates obstruction to bile flow. The work reported to date appears encouraging in the presence of complete obstruction.[22–24]

Conclusion

Although there is room for considerable improvement in the instrumentation and technic of hepatic scanning, this examination represents an extremely valuable addition to the evaluation of the patient with undiagnosed or suspected liver disorders. It is a simple and relatively safe procedure from which a great deal of information may be obtained.

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New Concepts of Intravenous Cholangiography

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APPROXIMATELY A DECADE and a half has passed since the introduction of a technic for intravenous opacification of the biliary system; during this time the method has come to be used widely. Gradually, attitudes toward this examination have evolved based on an increasing body of knowledge concerning the pharmacology of methylglucamine iodipamide and on a rapidly expanding clinical experience with the agent. It is the purpose of this article to review some new concepts of intravenous cholangiography in four major areas: (1) toxicity of methylglucamine iodipamide, (2) indications for intravenous cholangiography, (3) methods of intravenous cholangiography, and (4) interpretation of intravenous cholangiography.

Toxicity of methylglucamine iodipamide

Methylglucamine iodipamide has long been considered a rather safe contrast agent.[1] While some side-effects of the type commonly associated with the intravenous administration of iodides do occur, relatively few serious reactions have been reported. One death following the administration of the agent has appeared in the literature.[2]

A complete understanding of the mechanism of reactions to iodipamide is lacking.[3] Nevertheless, recently Peters, Hodgson, and Donovan[3] and Lindgren, Nordenstam,

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and Saltzman[4] have discussed empiric methods for minimizing these reactions. Peters, Hodgson, and Donovan[3] state, "We believe that the strongest single factor contributing to reaction from methylglucamine iodipamide is the speed of injection." Their observations in dogs given rapid injections of iodipamide indicate consistent development of retching, hypotension, tachycardia, and cardiac irregularities. They feel, as does Wise,[5] that the injection time should be at least ten minutes.

Craft and Swales[1] recently reported 2 cases of renal failure following the administration of iodipamide. The fact that iodipamide produces the same morphologic changes in the kidney as do acetotrizoate preparations has been shown clearly by Lindgren, Nordenstam, and Saltzman.[4] In their clinical material, the rapid infusion of iodipamide caused renal swelling; this swelling could be maintained at a minimal level if the injection was made slowly.

In Peters, Hodgson, and Donovan's[3] series, 25 per cent of patients developing reactions to iodipamide had a history of allergy. They have further reported that antihistaminic premedication of patients reduced the incidence of reactions from 24 to 6 per cent in a large group of patients examined at the Mayo Clinic.

Recently, Crosby and Storm[6] have reported 2 cases in which malarial relapse was induced by intravenous cholangiography.

It would appear that although the extensive use of iodipamide has shown it to be a safe contrast agent, mild side reactions following its administration are not infrequent. Apparently, these can be significantly minimized by antihistaminic premedication and a slow infusion technic.

Indications for intravenous cholangiography

The indications for intravenous cholangiography have been modified relatively little over the years.

It is generally conceded that a satisfactory examination will result in approximately 90 per cent of patients with a total serum bilirubin of 3 mg. per 100 ml. or less.[5] It has been pointed out by Frey and Glenn[7] that jaundiced patients with hemolytic anemia or impaired conjugation of bilirubin may well demonstrate the biliary ducts by intravenous cholangiography despite their jaundice. Fourteen of 19 patients in their series demonstrated biliary anatomy despite total serum bilirubin ranging between 3.4 and 12.4 mg. per 100 ml. It is clear that intravenous cholangiography can be successful in jaundiced patients if liver function is normal.

Most observers agree that intravenous cholangiography is a less satisfactory method of evaluation of the gallbladder than oral cholecystography, primarily because of less adequate opacification and less satisfactory mixing of the contrast agent with the bile. Considerable emphasis has been placed on the value of intravenous cholangiography as a diagnostic tool following nonvisualization of the gallbladder by oral cholecystography.[5] It has been implied that some gallbladders will fail to visualize with a satisfactorily carried out oral examination but will be found to be normal at intravenous cholangiography. In our experience, this has not been true, and failure to visualize the gallbladder after two successive oral doses of a cholecystographic agent constitutes highly reliable evidence of gallbladder disease. Furthermore, opacification of the gallbladder with intravenous cholangiography does not necessarily indicate that the gallbladder is normal. Indeed, Harrington *et al.*[8] have demonstrated that 12 of 95 patients whose gallbladders were opacified by intravenous cholangiography were subsequently found at surgery to have chronic cholecystitis.

Intravenous cholangiography is commonly used in clinical situations of suspect acute cholecystitis. Johnson, McLaren, and Weens[9] have discussed the usefulness of intravenous cholangiography in the diagnosis of acute pancreatitis. It must be emphasized, however, that its value in acute pancreatitis and other acute abdominal conditions is essentially negative and lies in the exclusion of cystic duct obstruction. This information must be correlated with the clinical situation with utmost care.

Several miscellaneous indications for intravenous cholangiography exist. Among these, perhaps the most interesting are in the analysis of patients for possible choledochal cyst as reported by Liebner[10] and the evaluation of the proximal loop following gastric resection and gastrojejunostomy as reported by Wise.[5]

New concepts of technic

It has been stated that duct visualization will occur in 92.5 per cent of those patients whose total bilirubin is less than 1 mg. per 100 ml.[11] In the past, it has been our experience that the visualization of the ducts is often only partial and that the opacification is frequently fleeting and faint. It is not surprising, therefore, that methods have been sought which would improve the quality of the examination.

A common practice has been to "preload" the patient with an oral cholecystographic agent. Such a study reported by Finby and Blasberg[12] indicates that this technic actually reduced the rate of successful duct visualizations and increased their incidence of reactions. They postulate that the oral agent blocked the secretion of iodipamide by the liver. It would appear likely that oral agents and iodipamide compete for secreting mechanisms within the liver. It is, therefore, possible that a larger percentage of the oral agent will be excreted through the kidney when given in conjunction with iodipamide. Such increased renal excretion of oral cholecystographic agents can result in renal damage. Renal damage caused by these agents has been the subject of several recent reports in the literature.[13,14] The technic of reinforcement of intravenous cholangiography by oral agents, therefore, may not only be less efficacious but potentially more dangerous than standard methods.

In 1965 Fischer[15] presented his experimental observations on the excretion of iodipamide. He concluded that a 40-cc. dose would yield a considerably higher biliary concentration of iodine than the standard 20-cc. dose. Accordingly, in 1965, we began to use this larger volume of contrast material in a drip infusion to insure slow administration. The procedure was supplemented with laminagraphy which has now become a standard part of the procedure. Forty cc. of 52 per cent iodipamide are infused with 60 cc. of 5 per cent dextrose in water at a rate adjusted to deliver the mixture in approximately a twenty-minute period. A film made at ten minutes usually shows some duct visualization, but at twenty minutes dense opacification of the biliary system can be confidently predicted. Therefore, laminagraphy is begun at twenty minutes, expediting the examination considerably. Rarely, satisfactory opacification of the duct system does not develop until forty-five or sixty minutes. If acute cholecystitis is suspected, the examination must be carried out to a minimum of four hours.

FIGURE 1. Drip infusion cholangiogram. Anteroposterior laminagram. Note dense opacification of biliary ducts and normal tapered appearance of unobstructed common duct (arrow). Note greater density at periphery of gallbladder shadow caused by poor mixing of iodipamide and bile.

A total of 107 consecutive drip infusion examinations were reviewed. There were only 7 cases which did not visualize the biliary tract, and in each of these the bilirubin was elevated above 3 mg. per 100 ml. This represents visualization of diagnostic quality in 100 per cent of cases with a serum bilirubin of less than 3 mg. per 100 ml. In the vast majority of instances, the entire common duct was densely opacified (Fig. 1). An attempt was made to grade the degree of opacification relative to the concentration achieved on the usual intravenous urogram. Thus, a drip infusion cholangiography study rated 4 plus was considered equivalent in density to that of a "good" intravenous urogram. Two thirds of cases were graded 3 plus or 4 plus, while less

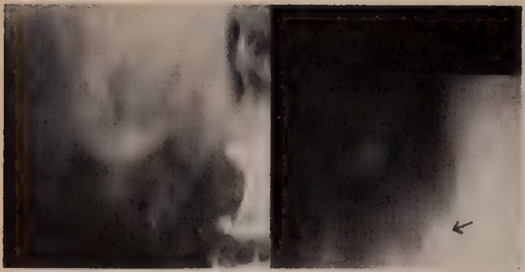

FIGURE 2. Drip infusion cholangiogram. Anteroposterior (left) and lateral (right) laminagrams. Note clear outlining of common duct calculus (arrow) by contrast agent.

than 10 per cent were graded 1 plus. This latter group were all satisfactory for interpretation, however.

Adequate follow-up records were available on 87 of these 107 patients. Of these, 32 patients were operated on, and in 23 cases the common duct was felt to be normal; in 9 cases common duct calculi were found. In all 32 cases a correct preoperative diagnosis was rendered by drip infusion intravenous cholangiography. No false positive or negative diagnoses occurred. In each case in which common duct calculi were diagnosed, the stones were directly outlined by contrast material (Fig. 2).

Side reactions have been slight. This is of interest, since a larger dose of contrast material has been given. However, as previously mentioned, observations by others have indicated that the single most important factor in minimizing reactions to iodipamide is the slow infusion of the contrast material. No instance of renal toxicity was observed. As indicated previously, renal damage due to iodipamide is very rare.

Drip infusion cholangiography, therefore, seems to be a superior method of biliary tract visualization. It has proved to result in dense opacification of the biliary tree, frequently demonstrating degrees of concentration similar to that of an intravenous urogram. This has resulted in a very close correlation of roentgen observations and surgical findings in a small group of cases.

It would appear from Fischer's[15] observations that there are sound pharmacologic reasons for the more satisfactory concentration produced by drip infusion cholangiography. In his experiments, doses of 0.6 ml. of iodipamide per kilogram of body weight resulted in the highest bile duct concentrations over the first two hours following administration. Since a dose of 40 cc. for the average 70-Kg. man approximates Fischer's[15] optimum dosage, it was selected for our series.

Interpretation of intravenous cholangiography

Drip infusion cholangiography permits a new approach to interpretation of biliary tract disease. Roentgen diagnoses with this method are based on direct demonstration of an abnormal condition rather than on indirect signs as in the past. This is emphasized by the fact that in all cases of choledocholithiasis in our series, the stones were directly outlined by the contrast material. Because of less adequate opacification resulting from conventional intravenous cholangiography, Wise[5] developed a time-density-retention concept in the diagnosis of partial common duct obstruction. This concept states that nonobstructed ducts demonstrate an earlier appearance of contrast material which is retained for a shorter period of time than obstructed ducts in which contrast material accumulates slowly and is retained longer. This concept cannot be satisfactorily utilized with the drip infusion technic, but because diagnoses can be rendered on direct evidence, this indirect evaluation has not been necessary.

The densely opacified common bile duct has been easily measured. Our material has substantiated that of Wise[5] in indicating a very wide range in the diameter of nonobstructed ducts. Hence, evaluation of partial common duct obstruction based on duct diameter is rarely helpful. We have also confirmed previous observations that the common bile duct does not dilate post cholecystectomy. Wise[5] has indicated that the distally obstructed common duct demonstrates parallel walls rather than the gently tapering wall of the normal duct (Fig. 3). This sign of distal obstruction is more easily appreciated with drip infusion cholangiography.

The gallbladder may be densely opacified by the drip infusion technic. Since the

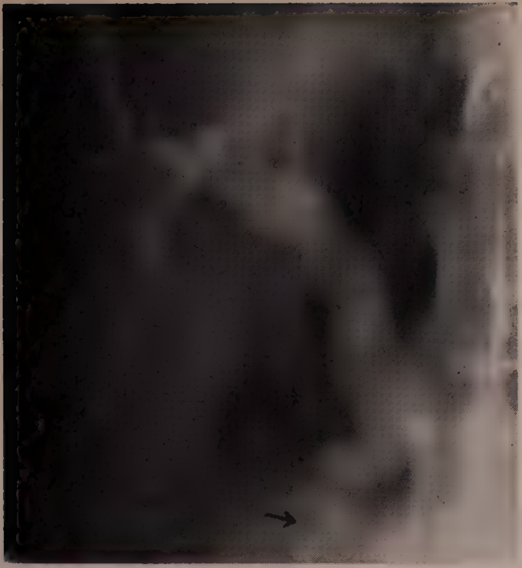

FIGURE 3. Drip infusion cholangiogram. Anteroposterior laminagram. Note dense opacification of common duct, common duct carculi (arrow), and parallel walls of partially obstructed distal common duct.

gallbladder is so frequently demonstrated, its evaluation by the drip infusion method becomes a matter of practical consideration. Several pitfalls, however, exist. Iodipamide does not mix well with bile, and radiolucent calculi can remain undetected in the unopacified portion of the bile (Fig. 1). Therefore, although a diagnosis of calculi can be confidently made when stones are visualized, exclusion of calculi by this technic is not possible. As has been stated previously, visualization of the gallbladder with intravenous cholangiography does not mean that the gallbladder is normal. Visualization of the gallbladder does, however, indicate that the cystic duct is patent, and on this point rests its value in cases of suspect acute cholecystitis. As indicated by Johnson, McLaren, and Weens,[9] acute cholecystitis without common duct obstruction does exist but is unusual. It would appear that nonvisualization following oral cholecystography is highly significant evidence of gallbladder disease and is not negated by opacification of the gallbladder at subsequent intravenous cholangiography. The explanation for this fact has been extended by Lasser.[16] His studies indicate that presently used oral cholecystographic media are conjugated in the liver and enter the bile in this form. In the wall of the diseased gallbladder, hydrolyzing enzymes are present which split this conjugated agent allowing it to be reabsorbed. Iodipamide, however, enters the bile in the same form in which it was injected intravenously. It is not acted on by hydrolyzing enzymes and is not absorbed by the diseased gallbladder wall.

Summary

Over the past fifteen years, intravenous cholangiography has become an increasingly valuable tool in the evaluation of biliary tract disease.

Iodipamide methylglucamine is a safe contrast agent. The occasional reactions which do occur can be minimized by slow administration of the agent and by antihistaminic premedication.

In our experience, slow drip infusion cholangiography utilizing 40 cc. of methylglucamine iodipamide and laminagraphy has proved a superior method of biliary tract evaluation. The method permits diagnoses to be based on direct radiologic evidence rather than on indirect evidence as in the past. In a small group of cases, a very high degree of correlation of roentgen diagnoses and surgical findings has resulted.

There have been few reactions to this increased volume of iodipamide, apparently because of the slow rate of infusion of the contrast material.

Intravenous cholangiography continues to be an excellent method for study of the biliary ducts but has definite limitations in the evaluation of gallbladder disease. Although intravenous cholangiography has a definite place in the evaluation of patients with acute cholecystitis, oral cholecystography remains the method of choice for roentgen diagnosis of possible chronic abnormal conditions of the gallbladder.

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Normal Celiac and Hepatic Arteriogram

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THE SEVERAL ARTERIES that supply the gastrointestinal tract and its accessory organs are the celiac artery, the superior mesenteric artery, and the inferior mesenteric artery. The inferior mesenteric artery is quite constant. There are, however, certain developmental variations of the celiac and superior mesenteric arteries. The more common of these deserve some attention. For the sake of discussion, it has been convenient to set up six types of variations of the celiac trunk (Fig. 1A), and 4 types of variations of the hepatic artery (Fig. 1B). This scheme has been modified from the excellent work of Odnoralov.[1,2] The case material for this analysis consists of 185 patients with adequate arteriographic demonstration of the celiac, the hepatic, and the superior mesenteric arteries.

Variations of arteries

It is important to possess an understanding of the more common variations of these major arteries so that the arterial blood supply to the various organs and structures may be identified, and by this identification abnormal processes correctly localized; for instance, is a particular abnormal vascular pattern in liver or in pancreas? The classical configuration of the celiac artery and its first order branches, 93 per cent in this series of 185 cases, is a trifurcation of the trunk into a left gastric artery and larger splenic and common hepatic arteries. For the sake of simplification, one may theoretically take this trifurcated trunk and beginning at 12:00 o'clock, proceed to detach in a clockwise direction, an artery for each variation, with the result that the detached artery arises directly from the aorta and the other two arteries arise from the celiac trunk (Fig. 1A). This maneuver provides, in addition to the classical, 3 types (0.5 to 1 per cent) which, although infrequently seen, actually do exist. A fifth type (4 per cent) is that in which the common hepatic artery arises from the superior mesenteric artery. The partial origin of the hepatic artery from the superior mesenteric artery is discussed later. A sixth type (0.5 per cent) provides origin of all arteries mentioned, namely, the branches ordinarily arising from the celiac artery and also the superior mesenteric artery, from a common trunk. Still other variations of the types

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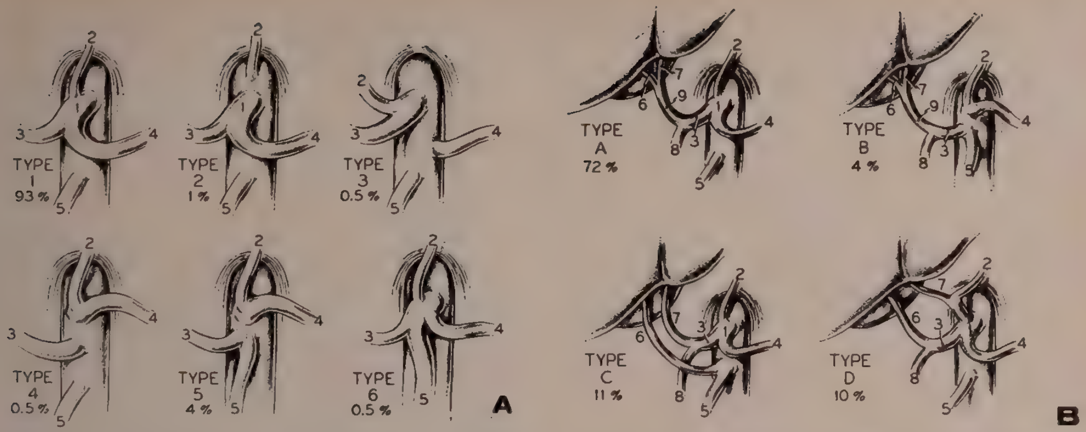

FIGURE 1. (A) Variations of celiac trunk. 1: celiac trunk, 2: left gastric artery, 3: common hepatic artery, 4: splenic artery, 5: superior mesenteric artery. (B) Variations of hepatic artery. 1: celiac trunk, 2: left gastric artery, 3: common hepatic artery, 4: splenic artery, 5: superior mesenteric artery, 6: right hepatic artery, 7: left hepatic artery, 8: gastroduodenal artery, 9: proper hepatic artery.

mentioned are rarely seen. An understanding of the types illustrated (99 per cent of the 185 cases) will, however, aid in recognition of other variations that are encountered, such as, in type 4 the right and left hepatic arteries may arise separately from the aorta instead of as a single common hepatic artery.

The hepatic artery variations are closely related to the celiac trunk variations.[2] Four major patterns were found in this series of 185 cases (Fig. 1B). The first (type A, 72 per cent) and most common is that which presents the basic celiac trunk pattern of type 1. In type A, the common hepatic artery arises from the celiac axis and gives rise to the gastroduodenal artery and both right and left hepatic arteries. The second type (type B, 4 per cent) is that in which the common hepatic artery arises from the superior mesenteric artery. This is the same as type 5 of the celiac artery variations.

In the third major variation (type C, 11 per cent) left and right hepatic arteries arise separately from the celiac axis and superior mesenteric arteries, respectively. The left hepatic artery then gives rise to the gastroduodenal artery. This type we have classified as a variation of the type 1 celiac artery pattern and label it as 1 C.

In the fourth type (type D, 10 per cent) the left hepatic artery arises from the left gastric artery, and the common hepatic artery, arising from the celiac axis, gives rise to the gastroduodenal and the right hepatic arteries. This type, also, we have considered a variation of the type 1 celiac axis pattern and have labeled it as 1 D. Other variations less commonly occur, but if these more common types of variations be recognized (97 per cent of the 185 cases evaluated with respect to the hepatic artery), the others readily fall into place.

It should be noted that the celiac trunk itself in types C and D is identical in basic pattern to type 1 even though part of the hepatic artery arises from superior mesenteric artery (type C) or left gastric artery (type D). In other words, the variation in these types is a variation of the hepatic artery rather than the celiac trunk. By adding the percentages of types C and D to type A, the total percentage of type 1 cases is 93 per cent.

It should be mentioned that in this series of cases we found the hepatic artery to arise in whole (4 per cent) or in part (11 per cent) from the superior mesenteric artery. Thus, in 15 per cent of cases, one must perform superior mesenteric arteriography in addition to celiac arteriography to visualize adequately the arterial pattern of the liver.

Summary

A scheme for classification of the variations of the celiac axis and the hepatic

artery is presented. It is the intent of the scheme to provide a practical means of recognition of the anatomic variations that may be encountered in celiac and hepatic arteriography.

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Percutaneous Transhepatic Cholangiography

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MANY ADVANCES IN many areas of medicine have been made in recent years. Perhaps one of the more important, and yet one which has not received the acceptance it should, is percutaneous transhepatic cholangiography.

To introduce this subject, a discussion of the more important applications or indications of the procedure would be of interest. Probably the most important is the differentiation between extrahepatic obstructive (surgical) jaundice and hepatocellular disease (medical) jaundice. Although liver chemistries are often useful indicators of the character of the disease, there are times when differentiation between mechanical obstruction of the biliary tract and hepatocellular disease cannot be made on this basis. When the serum bilirubin is greater than 2 mg. per 100 ml., intravenous cholangiography is of little value. It is also a fact that exploratory surgery in a jaundiced patient with hepatitis carries with it the risk of exacerbation of the disease and even liver failure. The importance, therefore, of a specific examination to determine this question and possibly avoid unnecessary surgery is readily appreciated.

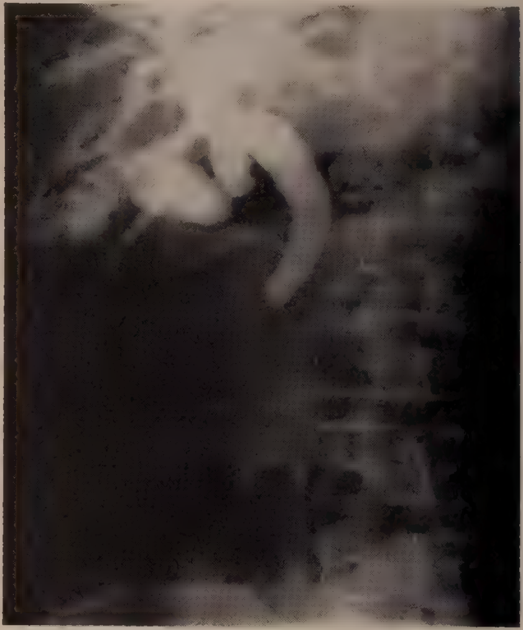

FIGURE 1. Nonopaque calculus produces concave defect in lower end of obstructed bile duct. Additional calculi cause radiolucent defects higher in common duct. Gallbladder incompletely filled, also contains many calculi.

Another area of application is the definition of the exact level of obstruction in the case where obstruction of the biliary tract is known to be present. Moreover, not infrequently, in addition to the level of obstruction, the cause can be determined. Thus, a benign lesion in the common duct, such as a calculus (Fig. 1), may be differentiated from a neoplasm such as a cancer of the pancreas.

All of this information is important for the surgeon in the planning and execution of the operation, permitting time to make the proper decision before surgery and to plan his operative attack. Furthermore, operative time can often be reduced, sometimes a vital factor in the survival of the patient. This information is especially helpful in a situation where the obstruction is high in

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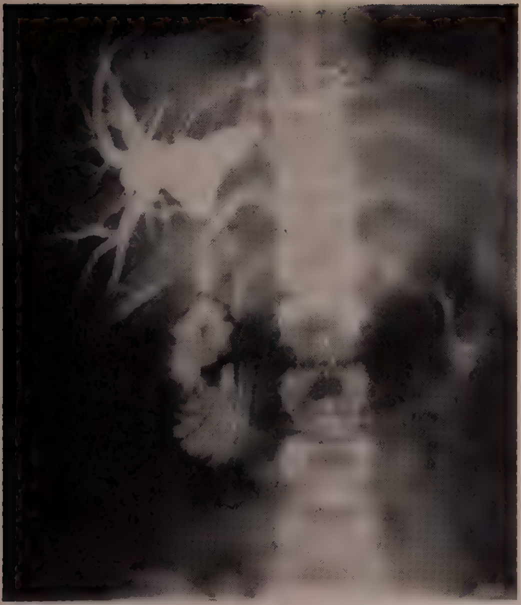

FIGURE 2. Benign stricture of common hepatic duct in porta hepatis following previous cholecystectomy. Obstruction incomplete. Common duct below stricture normal, and some contrast material enters duodenum. Small amount of contrast material, seen along inferior margin of liver, escaped along needle shaft. This produced mild pain for one to two hours.

the common hepatic duct or perhaps where the obstruction involves the main left and right hepatic ducts since, under these circumstances, the abnormal condition may be extremely difficult, if not impossible, to ascertain at surgery. Furthermore, the information may permit a decision as to whether or not surgery is indicated at all in certain cases of obstructive jaundice, for example, where no part of the biliary tract is suitably available for a bypass procedure.

A third important application is the delineation of precise anatomy in cases of known benign stricture, even when such patients are not jaundiced (Fig. 2). It is frequently not possible to demonstrate the exact anatomic relationships with the intravenous cholangiogram. Because of the dense scarring present in the area when such strictures are complications of previous surgery, it is also difficult to visualize the pathologic anatomy at exploratory operation. Operative cholangiography presents certain problems of technic which, in turn, limit the information provided. The most useful information, therefore, may be provided by percutaneous cholangiography, for example, the clear demonstration of the normal and pathologic anatomy present.

Technic

Various needle approaches have been proposed in the literature. One of the more recent is the transjugular approach.[1] Perhaps the most popular has been the subcostal approach, the needle being inserted through the skin of the anterior abdominal wall below the costal margin.[2-4] Indeed, this was the first technic to be described.[5] It has the advantage of permitting ready observation of the liver puncture site at subsequent surgery. However, it has the disadvantage of exposing the gallbladder or other organs to a greater danger of puncture.

The technic we have employed at St. Vincent's Hospital is the lateral transthoracic approach which we have performed in 66 patients. Our interest in this approach was stimulated by our experience from another project in which we had studied venous outflow tract obstruction in the cirrhotic liver by injecting contrast medium into the liver parenchyma and observing the flow of the opaque material away from the site of injection.[6] In more than 200 such injections, we encountered no complications that could be attributed to the needle passage. Consequently, we were encouraged to employ this approach for percutaneous cholangiography.

Needle placement

Fluoroscopy with the image intensifier and television monitoring is an essential component of the basic equipment necessary for proper execution of this procedure. It has permitted rapid and accurate placement of the needle into a predetermined location and thereby both increases the success rate and decreases the complication rate as compared with blind puncture.

An anteroposterior scout film of the upper part of the abdomen is studied for regional anatomic detail, and arbitrary reference points to be observed in the subsequent fluoroscopy are selected, for example, the body of the twelfth dorsal

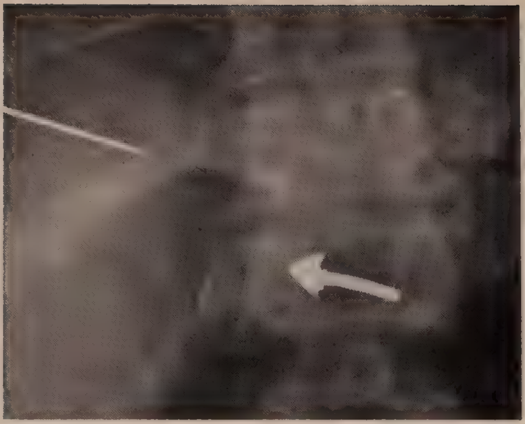

FIGURE 3. Lead marker, also visible on anterior abdominal wall, points somewhat above porta hepatis. Needle tip should be directed at least 2 cm. above porta hepatis to avoid penetration of medial surface of liver.

vertebra which is usually at a level with the liver hilum may be selected.[7] For further assistance, a lead arrow which can serve both as a direct visual and also a fluoroscopic landmark may be placed on the abdomen at a point below the xiphoid process in such a manner as to point toward the porta hepatis, that is, the liver hilum (Fig. 3).

Posterior extension of the liver is determined on the right lateral chest wall by percussion, or a lead marker may be placed at the expected point of puncture in midaxillary line and a lateral roentgenogram made. For practical purposes, the liver hilum is located in this projection 4 to 5 cm. anterior to the body of the twelfth dosal vertebra. This approach has been employed by Wiechel[7] and has proved to be quite satisfactory in our hands.

With the patient lying supine on the fluoroscopic table, appropriate sites for needle insertion are selected at the intercostal spaces between the mid and anterior axillary lines. The interspace, often the ninth, will vary with the location, size, and shape of the liver and the habitus of the patient. At least two potential sites are selected since up to four needle passages may be utilized at one sitting, and an effort is made to avoid puncturing the identical point on the liver surface more than twice, thereby decreasing the risk of bleeding or bile leakage from that particular area. After proper preparation of the skin, the first site for percutaneous needle insertion is infiltrated with 1 per cent procaine hydrochloride. This is preferably in the midaxillary line, providing the localizing film and percussion permit this. A small puncture incision is made to facilitate skin passage of the large-bore needle. The tip of a 6-inch 17-gauge needle with stylet (we have been using a Bierman needle with solid tip and two side holes) is introduced into the muscle of the appropriate interspace. Then, during suspended respiration in midexpiration, the needle is quickly passed into the liver substance for a depth of about 4 cm., and the general direction is checked at this point by fluoroscopic observation. The angulation of the needle in the transverse plane varies with the habitus of the patient and the external point of needle insertion.

This is parallel to the horizontal when the insertion is made in the midaxillary line (this is preferred since it is the simplest to attain), or it may be 45 degrees if near the anterior axillary line. An effort is made to direct the needle toward a point about 2 cm. superior to the level of the liver hilum, that is, the porta hepatis where the larger intrahepatic ducts are located.

When a bile duct is penetrated, bile ordinarily wells up at once when the stylet of the needle is removed. However, if this does not occur, gentle aspiration, employing a syringe with connecting tubing, is instituted. If bile is still not obtained, the needle is repeatedly withdrawn 3 to 4 mm. at a time, gentle suction being continuously applied. If bile has not been obtained on the first two needle passes, the last two passes may be modified by injecting small amounts of contrast medium under television observation as the needle is withdrawn. The purpose of the latter is to opacify any bile duct, including the normal, that the needle might have traversed. Some authors feel that the latter has substantially increased their success rate in cases without biliary tract dilatation.[8,9]

Once bile is recovered, it is aspirated until the return diminishes sharply or until about 100 cc. have been obtained. A solution of 30 per cent methylglucamine dia-

TABLE I. Percutaneous cholangiograms

	Biliary Ducts				
	Dilated		Nondilated		Unknown*
Condition	S†	U**	S	U	U
Obstruction to bile flow	39	7	0	1	. . .
No obstruction to bile flow	0	1	2	8	. . .
TOTALS (66)	39	8	2	9	8

* Unknown = Five of 8 cases had clinical diagnosis of cirrhosis. Their jaundice cleared on medical regimen. Three others could have had obstructive jaundice which, nevertheless, cleared without surgical intervention.

† S = Successful.

** U = Unsuccessful.

trizoate (Renografin) (equal parts of 60 per cent methylglucamine diatrizoate and normal saline) is slowly injected under television control. The total amount of contrast material injected should ordinarily not exceed the amount of bile already aspirated.

Spot films are made during the injection of the contrast agent. After the maximum amount of contrast medium decided on is injected, routine films are made with the overhead tube in the anteroposterior and both oblique positions.

At the completion of the radiographic study, aspiration of as much bile-contrast mixture as possible is carried out if the system is obstructed and dilated. It is our opinion that removal of bile from the obstructed system facilitates filling with the opaque medium and that removal of the contrast medium-bile mixture at the end of the procedure decompresses the system and minimizes the possibility of bile leakage.

Results

Arner, Hagberg, and Seldinger[8] of Sweden were successful in visualizing the biliary tract in 34 of 37 cases of jaundice, that is, 89 per cent, in which the biliary tract was dilated as it usually is in obstructive jaundice. When the intrahepatic ducts were not dilated, they were able to visualize the biliary tract in 7 of 15 cases, or almost 50 per cent of the cases. This is an unusually high success rate in patients without dilatation of the biliary tree but, nevertheless, is some indication of what can be done.

Evans[10] at New York Hospital has reported the following results with respect to the success of percutaneous cholangiography in his hands. A successful cholangiogram was achieved in 75 per cent of 150 cases in which the procedure was attempted. As with other authors, most of these successful cases occurred in patients with obstructive disease and most of the failures to visualize the biliary tract occurred in patients with hepatocellular disease. Thus, in the 110 successful examinations, there were 106 patients with dilated bile ducts. Of these 106 patients, 98 had satisfactory cholangiograms, an incidence of 92 per cent success.

Often, as most authors report, the attempt at cholangiography is unsuccessful in patients with jaundice but without dilatation of the biliary tree. If, of course, a normal biliary tree is delineated, the desired information is obtained. If, however, no bile can be aspirated and no cholangiogram achieved, some doubt may arise as to whether or not obstruction of the biliary tract has truly been excluded. However, it is reasonable to postulate that an obstructed biliary tract is usually dilated and a nonobstructed tract is usually not dilated. Furthermore, it is a matter of experience by many authors that a dilated biliary tree is easy to demonstrate by this technic, that is, it is relatively easy to place the needle within a dilated bile duct. With these thoughts in mind, therefore, failure to visualize the biliary system is strongly suggestive of nonsurgical, nonobstructive jaundice although it does not positively exclude the possibility of obstructive jaundice. Some authors feel that if no bile is recovered during the percutaneous attempt, the patient should not be operated on, at least, not at once, but should be observed for several days.

In the present series, percutaneous cholangiograms were attempted on 66 patients (Table I). The biliary tract was successfully visualized in 41 (62 per cent) of these cases. If one considers only the 46 patients who had obstruction with dilatation of the biliary tract, the biliary tract was successfully visualized in 39 patients or in 85 per cent of the cases. Those cases not visualized were: 10 of 49 patients with obstructive jaundice and 15 of 17 patients with hepatocellular disease.

In those patients with hepatocellular disease, a total of 17 cases, we obtained visualization in only 2 cases. Again, to put this in another way, there was nonvisualization of the biliary tract, that is, bile could not be recovered in 88 per cent of cases with hepatocellular disease. We therefore consider failure to recover bile as strong evidence in favor of nonobstructive jaundice.

Complications

Evans,[10] collecting 851 cases from the literature including his own, found 4 deaths attributable to this procedure; that is, a mortality incidence of 0.5 per cent. As Evans[10] points out, this mortality rate must be viewed in the light of operative fatality figures associated with surgery of the common bile duct. As he further states, these range from 3 to 10 per cent in the best clinics in this country, depending on the age group. The surgical mortality rate, in patients with hepatocellular disease and jaundice, is even higher. There have been no deaths attributable to the procedure in this series.

Reports of bile peritonitis and hemorrhage following liver puncture have appeared in the literature. There are also reports of cholangitis, septicemia, blood clots in the biliary tract, and pneumothorax that have been attributed to this procedure. Perhaps the most important complications are bile peritonitis, hemorrhage from the liver parenchyma, and cholangitis with septicemia. All of these, however, can be minimized and even avoided by early operative decompression of the obstructed biliary tract, by careful preparation of the patient, and by attention to certain matters of technic.

Most cases of bile peritonitis have resulted from inadvertent puncture of the gallbladder in the presence of biliary tract obstruction. In most reports, the subcostal approach has been used. Puncture of gallbladder can be avoided by use of television monitoring and in particular, we believe, by the lateral transthoracic approach. Since bile may leak from the puncture site at the surface of the liver in the presence of complete biliary tract obstruction, we believe it is advisable to decompress the system by removal of as much bile-contrast mixture as possible at the end of the cholangiogram. Some authors recommend surgery within four hours when the biliary tract is obstructed. Our experience of waiting from one to several days does not indicate a special urgency in this regard, but nevertheless, the matter should be kept pointedly in mind. There have been no instances of bile peritonitis in our series.

Serious bleeding from punctures of the liver that occurs with this technic is unusual, especially when the clotting mechanism is normal. Prothrombin time is an important indicator and should be normal or close to normal before the procedure is attempted. We have had no instances of serious bleeding following this procedure.

The administration of a broad-spectrum antibiotic for twenty-four hours before and forty-eight hours after the procedure helps significantly in avoiding cholangitis and septicemia.[7,9] We have had several instances of septic temperature elevation following the procedure in this group of cases.

Finally, the use of a catheter needle, theoretically at least, should reduce trauma to the liver. Since the examination may take thirty to forty minutes, less trauma to the liver can be expected if a pliable polyethylene catheter is left in place, rather than the rigid needle for this length of time. The catheter also permits more freedom in positioning the patient and thus promotes better radiography. Further, the catheter can be left in place to continue drainage in patients with complete obstruction if surgery, for some reason, cannot be done at once.

Summary

Our experience with 66 cases over a six-year period is that percutaneous cholangiography is a useful procedure. Complications can be greatly minimized, if not eliminated. Since the patients for whom this procedure is contemplated are seriously ill or harbor grave problems, we believe the slight risk that may be entailed is justified.

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Early postoperative discharge of patients from hospital

Of 611 consecutive surgical patients undergoing a wide variety of procedures, 25 went home on the day of the surgery, 286 on the first postoperative day, 107 on the second postoperative day, and 65 on the third. The remaining 128 patients stayed four or more days. The procedures ranged from ligation and stripping of saphenous vein to gastrectomy and vagotomy. In the judgment of P. T. Lahti, M.D., reporting in *Surgery* **63:** 410 (March) 1968, results of the program have been gratifying both to the surgeon and patient. Economic benefits of early discharge include reduced cost of illness and earlier return to work.

The statistical breakdown by procedures and length of hospital stay is as follows: Appendectomy for acute, gangrenous, or perforated appendix (67 patients): day of surgery, 1; first postoperative day, 40; second, 14; third, 5; four days or more, 7. Inguinal hernia, age fourteen or under (94 patients). Unilateral (87): day of surgery, 14; first postoperative day, 73. Bilateral (7): day of surgery, 1; first postoperative day, 5; second day, 1. Inguinal hernia, age fifteen and over (101 patients). Unilateral (86): day of surgery, 2; first day, 63; second day, 5; third, 1. Ventral or incisional hernia (9 patients): first postoperative day, 3; second, 2; third, 2; four days or more, 2. Umbilical hernia (6 patients): first postoperative day, 1; second, 1; third, 1; three days or more, 3. Excision of breast tumor (47 patients): day of operation, 5; first postoperative day, 31; second, 9; third, 0; four days or more, 2. Mastectomy (10 patients): 2 with simple mastectomy went home on the first postoperative day. Of 8 with radical mastectomy, 7 stayed four or more days, and 1 went home on the third day. Ligation and stripping of saphenous vein (31 patients). Unilateral (3): all discharged on first postoperative day. Bilateral (28): first postoperative day, 15; second, 10; third, 3. Cholecystectomy and cholecystotomy (84 patients). These were broken down into acute, subacute, and chronic. The chronic cases (72) were discharged as follows: first postoperative day, 1; second, 10; third, 22; fourth, 13; fifth, 13; six or more, 13. Thyroidectomy (16 patients). Unilateral (6): day of surgery, 1; first postoperative day, 2; second, 3. Bilateral (10): second day, 5; third, 2; four days or more, 1. Salpingo-oophorectomy or excision of ovarian cyst (16 patients): first postoperative day, 5; second, 7; four days or more, 4. Total hysterectomy (7 patients): second postoperative day, 2; third, 2; four days or more, 3. Vagotomy and pyloroplasty (19 patients): third postoperative day, 1; fourth, 9; fifth, 3; six days or more, 6. Vagotomy and gastrectomy (6 patients): fourth postoperative day, 1; fifth, 3; six days or more, 2.

The advantages of early discharge are getting the patient home in his own bed with food he is accustomed to; fewer postoperative complications such as gas pains, pneumonia, and phlebitis; shorter convalescence; more efficient use of beds, reduced hospital costs; and less time spent on rounds by the surgeon.

Seborrheic Symptom Complex

Expression of Disturbed Intestinal Malutilization of Vitamin B-12 Measured by Radioactivity*

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SEBORRHEA, *an expression of an internal disorder which affects many parts of the skin organ, produces the seborrheic symptom complex. This may be caused by certain defects in the genetic make-up of the individual, by intestinal malabsorption or malutilization of vitamin* B_{12}*, or, in cases of disturbed carbohydrate metabolism, an increased requirement of vitamin* B_{12}*. The Schilling test was performed in 28 patients exhibiting this complex and revealed the beneficial therapeutic influence of high doses of vitamin* B_{12} *in decreased absorption of vitamin* B_{12}.

IN THE DERMATOLOGIC field the most common condition occurring in man is seborrhea. Inasmuch as this disorder refers to a whole complex of diseases, it is known as the seborrheic system complex. The condition may start in the uterus when the maternal hormones are active and produce the vernix caseosa. The infant, subject to the disease, is born with a seborrheic dermatosis and especially a cradle cap so that the condition appears to be the expression of some genetic defect.[1] The disease remains in the individual throughout his life and encompasses a variety of conditions such as heavy dandruff, early alopecia, blepharitis, pruritus ani, and many other dermatoses which are connected with the seborrheic diathesis.

Defining the problem

These seborrheic disorders have been attributed to a variety of causes among which climate, hormonal disorders, race, and stress are most often named. Of equal importance in producing this condition is an improper diet of indulgence in fats, rich food, and especially sweets. It is interesting to observe that under starvation, the seborrheic condition is equally aggravated. Nutritional defects, particularly those relating to the deficiency of vitamin B complex which is essential to the epidermal enzyme system, have been described as a causative factor in producing the seborrheic symptom complex.[2]

In other words, the seborrheic behavior in its direct relationship to climatic, endocrinal, nutritional, emotional, and other influences points in the direction of a condition involving the whole organism and not merely the sebaceous gland with its influence on the skin of the human being. As a case in point, the seborrheic condition causes an interference with the absorption and the utilization of food in the alimentary tract producing nutritional deficiency which in turn brings about secretory and tissue changes in the gastrointestinal tract.[3]

In 1948 a crystalline compound, cyanocobalamine, which in microgram quantities could produce hematologic conditions in patients with pernicious anemia, was isolated. The discovery of this new substance is regarded as a great accomplishment because this pure crystalline vitamin B_{12} is able to induce as well as maintain hematologic and neurologic remissions in patients with pernicious anemia. There-

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* Aided by a grant from The Squibb Institute for Medical Research, New Brunswick, New Jersey.

TABLE I. Range of study

Patients	Range (Per Cent)
19	0 to 5
4	6 to 10
5	11 to 15
TOTAL 28	

fore, this disease can be considered a form of avitaminosis. Assuming that seborrhea is a product of a nutritional deficiency, this substance should have an influence on the seborrheic symptom complex. Indeed, when we treated over 100 patients with this crystalline substance in quantities of 6 to 10 injections of vitamin B_{12}, 1,000 micrograms weekly, we accomplished remarkable benefits in internal treatment alone in a variety of conditions all of which belong to the seborrheic symptom complex.[4]

The questions then arise in which part of the human anatomy does this maladjustment originate—is it in the brain, liver, gastric mucosa, or in the intestinal tract? Sutton[5] in his textbook says, "there are more etiological factors involved than are understood at present. That they are concerned with chemical processes we do not doubt." Available to us now are tests in which fairly conclusive evidence has been accumulated corroborating our empirical findings of the beneficial influence of vitamin B_{12} on the many facets of the seborrheic symptom complex which lie in the existence of a selective vitamin B_{12} malabsorption.[6] This is presumably caused by congenital and sometimes by acquired depletion of vitamin B_{12} stores or an increased need of vitamin B_{12} because of the lack of "specific acceptor systems in the intestinal wall."[7,8]

Radioisotopes

Few laboratory procedures influenced clinical thinking more than introduction of radioactive vitamin B_{12}. For the simple yet ingenious idea of introducing cobalt-60 into the molecule by biosynthesis, the credit goes to Chaiet, Rosenblum, and Woodbury.[9] The easily detectable radiation of the cobalt isotopes and the nonexchangeability of the central atom of the vitamin B_{12} molecule allow for a simple method in the form of the Schilling test.

Materials

A 2- by 2-inch sodium-1 (thallium) well-type scintillation detector with a gamma spectrometer and scaler was used. Vitamin B_{12}-labeled Co^{60} was the isotope utilized. Co^{60} has a half-life of 5.3 years with 2 gamma components of 1.17 and 1.33 mev. It also emits a beta of 0.31 mev. The isotope is prepared in a solution of 1 ammonium chloride as cobalt C_{12} with a concentration of 1 mc-ml and the specific activity is approximately 1 microcurie per microgram of vitamin B_{12}. The test is performed in the following manner: (1) Fast from nine to twelve hours prior to test; (2) the patient returns the following day, empties bladder, and is given 0.5 microcurie Co^{60}-labeled vitamin B_{12} capsule. Immediately following or within one hour, 1,000 micrograms of stable vitamin B_{12} are given intramuscularly as a "flushing dose." This exhibits no effect on absorption but flushes out the circulating absorbed labeled vitamin B_{12} and blocks its fixation in the liver, creating increased renal excretion but only of the absorbed portion; (3) all urine is collected for twenty-four hours; (4) total urine specimen is measured; and (5) 5 cc. of urine are counted in a scintillation well for five minutes, and this is subtracted from the background count.

Standard

1. Take an identical capsule and dilute in 100 cc. of water.
2. Take 1 cc. of this dilution and add to 4 cc. of tap water to total 5 cc.
3. Count this 5 cc. in well counter for five minutes.

The formula is:

$$\frac{\dfrac{\text{Net Count of 5 cc. of Urine}}{5 \times 5 = 25} \times \text{Vol. of Urine}}{\dfrac{\text{Net Counts of Standard} - \text{Background}}{5'}}$$

The normal range for this laboratory is: If renal disease is suspected, urine may be collected for forty-eight hours. If the excretory percentage is less than 6 per cent, an intrinsic factor is given and the examination repeated.

The normal range of urinary excretion of Co^{60}-labeled vitamin B_{12} in our radioisotope

TABLE II. Control series of 30 normal nonhospitalized patients

Patients	Range (Per Cent)
3	3 to 5
14	6 to 10
7	11 to 15
3	16 to 20
3	21 to 25
TOTAL 30	

unit is from 6 to 22 per cent of the ingested dose.

The range in this study is shown in Table I, and control series of 30 normal nonhospitalized patients are shown in Table II.

Sixty-nine per cent of the patients were in the abnormally low range of 0 to 5 per cent. None reached the upper level of urinary excretion of Co^{60}-tagged vitamin B_{12} of 15 per cent. In a control series of 30 normal patients, 90 per cent of the patients fell into the range of 6 to 25 per cent. Thus the comparative results demonstrate an over-all low excretory value in the patients afflicted with the seborrheic symptom complex. The over-all findings are shown in Table III.

Vitamin B_{12} seems to be involved in several major metabolic reactions in animal tissues, not all of which have been clarified. Luig, Chow, and Heinrich[10] reported that vitamin B_{12} plays an important role in carbohydrate and lipid metabolism. They suggested that the impairment in the carbohydrate metabolism exists by virtue of a vitamin B_{12} deficiency caused by a diminished glutathione content of the blood and tissues. Just as sugar reabsorption from the intestines can be accelerated through injections of a high dosage of vitamin B_{12},[11] so in diabetes a diminished reabsorption of vitamin B_{12} takes place, just as it does in liver disease.

Many of our patients with the seborrheic symptom complex have been found to be suffering from disturbed carbohydrate metabolism. Thirteen patients were selected for examination of postprandial blood sugar determination, and 9 were found to have a disturbed carbohydrate metabolism and would be defined as suffering from "chemical diabetes." It is not only the known diabetic patient who produces seborrhea and moniliasis such as skin eruptions in the intertriginous areas, but also the person with a hidden and easily disturbed carbohydrate metabolism with higher than average carbohydrate intake. Some of those cases were discovered to have such an imbalance by a low result of the Schilling test. There was no definite relationship established between the degree of malabsorption as judged by urinary excretion of tagged vitamin B_{12} and remission of the skin eruption. The presence of chemical diabetes had no influence on the remission of seborrhea.

As mentioned earlier, it is a generally accepted fact that improper diet is one of the major causes of seborrhea. Moreover, seborrheic dermatitis is not as easily influenced as other vitamin deficiencies by a single one-a-day vitamin pill taken orally. First of all, there are other, deeper reasons for a seborrheic constitution. Even in a prolonged defective diet without the inherited trait, certain changes must take place in the alimentary tract. These changes prohibit the normal absorption and utilization of food even if the individual is then restored to a "normal" and well-balanced diet. This can be seen in the case of the food faddists and vegetarians.[12-14]

A tremendous amount of literature has been accumulated, and two international congresses have been held in Hamburg, Germany, for the sole purpose of studying the influence of vitamin B_{12} in health and disease. The pregnancy state with its decline in the serum vitamin B_{12} level is an interesting example for consideration. Heinrich and Lahann[15] suggest that this lowered concentration reflects the "utilization" of the maternal tissues during the production of the fetus. The data indicate that the fetus is a main beneficiary of the increased absorption rate occurring in pregnancy and point to the affinity of the fetus for the maternal reserve.[16] Yet, in spite of the high vitamin B_{12} level in fetal plasma, the amount of this vitamin in a newborn rat's liver is only half of what it is in the mother rat.

It is at this point that the slightest disturbance in the fetal-maternal exchange can cause the seborrheic conditions of the fetus to be produced. Citrin, DeRosa, and Halsted[17] have pointed out that the site of absorption appears to be the ileum. Therefore, patients who have vitamin B_{12} de-

TABLE III. Over-all findings

Sex	Age (Years)	Dermatologic Symptoms	Schilling Test Result (Per Cent)	Blood Sugar*	Results and History
M	80	Diabetes, seborrhea, ocular perriphigus	0.3	Fasting 28, P.P. 1 hour 258	Cured after six injections
M	58	Extensive seborrhea for 30 years. Alcoholic peripheral neuritis	0.3	93 per cent	Remarkable improvement
F	25	Typical seborrhea dandruff. Pruritus vulvae, dry skin	1	All test results negative	Mother had same condition. Born with cradle cap. Remarkable improvement after injection. Improvement held for one year
M	32	Red, scaly, eyelids; nasal labial folds; a spot on chest. Typical thinning of hair. Pruritus	1	All test results negative	Born with cradle cap. Cured after 6 injections. Received 10 injections. Recurrence after 10 months
M	68	Chronic seborrhea of face, scalp, eyes, ears. Generalized arteriosclerosis	1.3	Fasting 98, P.P. 1 hour 113, P.P. 2 hours 157	Seborrhea greatly improved. Received 10 injections
M	43	Seborrhea for 10 years. In New Guinea for 10 years on starvation diet. All symptoms of seborrhea	2	Fasting 85, P.P. 2 hours 145	Was on vitamins without improvement. Drinks wine. Cured after 6 injections. No recurrence after 6 months
M	18	Referred by ophthalmologist. Has "sand in eye" feeling. Blepharitis, otitis, extensive	2	All test results negative	According to mother, was born with cradle cap. Eyes felt itchy at times. Allergy test result negative. Improved after 6 injections
M	45	Nervous. Granulated eyes. Hair loss. Otitis, extensive	2	All test results negative	Improved after 6 injections. Received 10 injections
M	29	Discharged from Army with seborrhea in 1962. Received 4 injections, felt improved enough, and disappeared. Recurrence 1965, very extensive, spot on penis, rectal fissure	2.5	Fasting 91, P.P. 1 hour 160, P.P. 2 hours 145	Developed moniliasis-like intertrigo. No diabetes history. Improved after 10 injections
M	20	Dandruff, seborrhea faciei, heavy sweet eater.	3	Fasting 90, P.P. 1 hour 155, P.P. 2 hours 150	Cured after 6 injections. Received 10. No recurrence after one year
M	34	Scaly eyes, intertrigo, rectal inflammation, heavy beer drinker.	3	Normal 100, P.P. 1 hour 135	Extensive prior treatment. Cured after 6 injections. Nine months observation
M	55	Referred by ophthalmologist. Red-rimmed eyes. Dandruff	3	Normal 100, P.P. 2 hours 135	No allergies. No intestinal disturbances. Great improvement. Ophthalmologist finds it remarkable
M	57	Typical symptoms, patient alcoholic. Has cancer of lung. Pneumonectomy 1964	4	Fasting 70, P.P. 1 hour 139, P.P. 2 hours 153	Considered cured after 6 injections
M	80	Arteriosclerotic heart disease. Pulmonary emphysema, seborrhea	4	83 per cent	Cleared
F	43	Heavy dandruff, butterfly area, submammary erythema, pruritus vulvae	4.3	. . .	"Nervous stomach." X-ray result negative. Improved
M	48	Heavy wine drinker. Typical seborrhea	5	. . .	Cured after 6 injections
F	73	Broken hip, total disability. Diabetes, neuropathy. Typical seborrheic symptom complex	5	Fasting 234, P.P. 1 hour 298, P.P. 2 hours 211	Even neuropathy improved, as stated by metabolism clinic
M	22	Mother had the same condition. Born with cradle cap, oily scaly scalp. Petechiae thinning of hair	5	. . .	Improved
M	22	Dandruff, otitis externa. Under treatment by ear, nose, and throat physician	6	. . .	Born with cradle cap according to mother. Recurrence after 6 months with ear itch. After second 6 injections, cured. One year observation
M	68	Parkinsonism. Blepharoconjunctivitis, postencephalic seborrhea, dermatitis, heavy sweating, pasty skin	7, 9, 11	Normal	Tremendous change in skin. Great improvement in mental status. After stopping vitamin B_{12}, recurrence. Repeat treatment with same good result

(*continued*)

TABLE III—(*continued*)

Sex	Age (Years)	Dermatologic Symptoms	Schilling Test Result (Per Cent)	Blood Sugar*	Results and History
M	60	Dyspnea, congestive heart failure, seborrhea, heavy-scaling scalp, eyelashes, and butterfly area; pruritus	8	84 per cent	Great improvement
M	60	Congestive heart failure. Degenerative arthritis, seborrhea	10	Normal, 76 per cent	Seborrhea greatly improved
F	58	Pruritus vulvae and ani. Dandruff, scaly face	11	Normal	No intestinal history. Cured
F	70	Under treatment for about one year with vitamin pills, moniliasis. Heavy dandruff	13	Normal	Improved
M	49	Seborrhea, eyes, scalp, otitis, extensive. Pruritus ani	13	...	Sweet eater, improved. Recurrence after 1 year with rectal fissure. Improvement after 6 injections
F	72	Generalized arthritis. Generalized seborrhea with hair loss	14	...	Great improvement. No local therapy. Even hair grows back
M	70	Cerebrovascular accident, parkinsonism	15	...	Little improvement. Recurrence

* P.P. = Postprandial.

ficiencies as well as intestinal abnormal conditions have to be excluded from such an investigation. It is a known fact that patients with sprue,[18] resection of the small intestine,[19] diverticula of the small intestine,[20,21] and pernicious anemia are unable to absorb doses of vitamin B_{12} even in the presence of certain amounts of the intrinsic factor which should be adequate to correct the defects of Addison's pernicious anemia.

If, in spite of normal vitamin B_{12} absorption in cases of megaloblastic anemia associated with pregnancy and the puerperium, a distinct malfunction in the seborrheic state is found, then it must be assumed that there are other pathologic features which have not been realized as yet, and which must be caused by malfunction in the absorption of labeled cyanocobalamine.[22]

Although we are usually inclined to associate the therapeutic effect of vitamin B_{12} with the vitamin B_{12} deficiency in pernicious anemia, a nonspecific enzymatic function of vitamin B_{12} in catalyzing this oxidation has recently been reported.[22] It is quite possible that this nonspecific oxidation property causes additional oxidation of fatty substances resulting in amelioration of the seborrheic symptom complex and achieving what the faulty carbohydrate metabolism failed to achieve. However, this concept needs further investigation. In view of the remarkable clinical result obtained with injections of vitamin B_{12} in cases of defect and specifically intestinal malabsorption or malutilization, the deficiency of this vitamin has to be strongly considered an etiologic factor of the seborrheic symptom complex.

Summary

Seborrhea, an expression of an internal disorder which affects many parts of the skin organ, produces the seborrheic symptom complex. It may be an inherited condition by virtue of certain defects in the genetic make-up of the individual producing the seborrheic diathesis.

Seborrheic skin eruptions are aggravated and may be precipitated by intestinal malabsorption or malutilization of vitamin B_{12}.

In cases of disturbed carbohydrate metabolism, an increased requirement of vitamin B_{12} may produce the seborrheic symptom complex.

Proof of the beneficial therapeutic influence of high doses of vitamin B_{12} has been found in the decreased absorption of vitamin B_{12} as measured by the excretion of 0.5 microgram of ingested Co^{60}-labeled vitamin B_{12} in a twenty-four-hour collection of urine (Schilling test). This was performed in 28 patients clinically exhibiting the seborrheic symptom complex and was compared with a series of 30 normal patients.

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Possible barbiturate interference with anticoagulant

Animal experiments have demonstrated that liver microsomal enzymes can be increased in amount and activity by administration of certain drugs, notably barbiturates. Circumstantially, it can be reasonably deduced that this also happens in man. Since these enzymes metabolize anticoagulants, it follows that any increase in enzymatic activity lowers blood and tissue levels of the metabolized drug. To induce the desired anticoagulant effect, therefore, larger doses of coumarin or other drugs are required. If the barbiturate is stopped, the rate of drug metabolism is slowed down, and the now overlarge anticoagulant dosage may cause bleeding reactions.

M. G. MacDonald, M.D., and D. S. Robinson, M.D., writing in the *Journal of the American Medical Association* **204:** 97 (April 8) 1968, report on studies of the records of 2 groups of patients. The first group consisted of 56 patients whose records were available from a total of 67 with bleeding reactions during a four-year period. In 14, enzyme induction appeared to play a role, and 2 of these patients died. The other group consisted of 52 patients with myocardial infarction from a total of 69 admitted over a one-year period (1964). Of these, 40 on barbiturates showed a more erratic anticoagulant control. These patients received sodium warfarin in larger dosage than the others, but despite this, prothrombin times were shorter than in the group not getting barbiturates.

The 40 patients in the myocardial infarction group who were on barbiturate therapy had a total of 526 prothrombin determinations, and 47 of these exceeded 40 per cent activity. Also, many in the phenobarbital group had marked day-to-day variations, often escaping the accepted therapeutic range of 20 to 30 per cent activity.

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Treatment of acquired heart disease (continued)

CHRONIC HEART BLOCK. Chronic complete heart block may be divided into congenital and acquired types. Congenital block is uncommon and is associated with other heart anomalies in more than half of the cases. Corrected transposition and ostium primum septal defects should be sought for as well as other more complex anomalies. Many patients with congenital heart block remain asymptomatic for years, while in others Adams-Stokes attacks may prove fatal early in life. Acquired heart block may be either primary (unknown cause) or secondary. The latter group would include postsurgical cases, those associated with ischemic or rheumatic heart disease, and those due to unusual causes such as syphilitic gumma, amyloid disease, and metastatic carcinoma. However, a large percentage of the elderly population showing symptoms of heart block probably belong to the "primary" group, in which strategic fibrotic lesions involve either the main conducting bundle or both right and left bundle branches. These patients were presumed in the past to have ischemic heart disease, but much evidence suggests the process to be related to aging rather than ischemia.[236] On the other hand, in 9 per cent of patients in whom acute myocardial infarction is complicated by complete heart block, the block is persistent.[237] Chronic ischemia as a cause of heart block is difficult to prove, and it is likely that patients with chronic Adams-Stokes syndrome who are candidates for artificial pacing form a select group. When ischemic heart disease underlies heart block, the first syncopal attack is more likely to be lethal with the result that a low incidence

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of coronary artery disease is found in the population with long-term pacing. Postmortem coronary angiography and histologic study in a group of patients with pacemakers support this concept.[238]

Although there is much individual variation in the natural history of chronic complete heart block, the over-all prognosis is poor, and sudden death is common. The almost invariable presence of significantly lowered cardiac output in association with slow rates may result in congestive heart failure, cerebral insufficiency, and occasionally renal failure. Therefore, the reasons for long-term pacing in the therapy of this disease are the prevention of morbidity and death associated with Adams-Stokes syndrome and the amelioration of low cardiac output.

Rate-output studies performed in patients with chronic heart block have shown that cardiac output is diminished at low rates and that it increases with artificial pacing. Those with impaired ventricular function cannot alter stroke volume and depend on increasing heart rate for augmentation of cardiac output. As heart rate is increased a maximum cardiac output is usually achieved between 60 to 75 beats per minute. Beyond this rate, cardiac output frequently falls as stroke volume diminishes. Several different types of response of cardiac output to increasing heart rate have been described, and occasionally there is little rise in output as the rate is increased. In the latter group, pacing at the usually acceptable rates of 60 to 70 beats may be detrimental, since studies have shown an increase in anaerobic metabolism in this situation.[239] This may explain the occasional onset of congestive heart failure or angina following onset of artificial pacing. The optimal rate is difficult to arrive at without sophisticated studies and should reflect the lowest heart rate at which maximum cardiac output and adequate coronary blood flow are achieved. This rate should exceed the "critical rate," however, to suppress ectopic ventricular tachyarrhythmias. The critical rate is usually about 50 beats per minute, but occasionally the ventricle may have to be driven faster to eliminate this dangerous arrhythmia. The optimal rate undoubtedly changes as ventricular function improves or worsens. One study indicated that cardiac output was increased and less dependent on rate after one year of pacing; this was attributed to improved ventricular function.[240] In contrast, other serial studies have shown a decrease in cardiac output at a fixed rate after several months of pacing.[241] Finally, the important contribution of atrial systole to stroke volume is well established. Synchronized atrioventricular contraction results in increased ventricular filling and augmentation of cardiac output.[242] The effect becomes more important as ventricular rate increases and diastolic filling time decreases.

Over the past several years, methods for safe, reliable, long-term pacing of the heart have been developed. Initially, only patients with recurrent syncopal episodes resistant to drug therapy were selected for long-term pacing, but as equipment and technics improved, the criteria became less strict. Currently, many groups insert permanent pacemakers in individuals with asymptomatic chronic complete heart block. There are two basic areas of difference in methods of pacing the heart. One concerns the method of applying the stimulus to the heart, whether on the epicardial or the endocardial surface. The other concerns the relationship of the electrical stimulus to the cardiac cycle. Most epicardial series quoted a 10 per cent immediate mortality rate associated with the operation. Since most of these patients were over seventy years old, many of whom had complicating illnesses, a simpler method was sought. Today the transvenous endocardial pacing system, inserted entirely under local anesthesia, is most popular, although a few centers still employ the transthoracic technic as the method of choice. The catheter electrode is passed via the cephalic or external jugular vein into the right ventricular apex under fluoroscopic control, and the pulse generator is usually placed subcutaneously in the infraclavicular area.[243] Unipolar and bipolar electrodes have both been advocated, but there is no clear advantage of one over the other in the transvenous systems.[244] Wire breakage, failure of power supply, and increasing threshold to pacing, although relatively frequent in early experience, are now quite unusual. With transvenous systems late displacement of the electrode tip resulting in failure to pace is a potential problem.

Infection, thrombosis, and myocardial perforation are uncommon. Current policy recommends routine replacement of pulse generators at about twenty-four months before there is any electrical evidence of beginning power failure. This is readily accomplished under local anesthesia. Refinement of radio-frequency stimulation of the heart with external power supply would make change of battery a simple matter, while the proposed harnessing of endogenous power supply would completely eliminate this problem.[245, 246]

There are three basic types of pacemaker circuits. The simplest, most reliable, and until recently the most popular unit has been the asynchronous fixed-rate pacemaker. This stimulates the ventricle repeatedly at the same frequency. The major disadvantages of this system stem from its failure to provide synchronous contraction of atria and ventricles, resulting in lower cardiac output than might otherwise be achieved. More important, a theoretical danger of inducing ventricular fibrillation exists when atrioventricular conduction complicates fixed ventricular pacing. This danger may be more than theoretical, considering that the incidence of sudden death among patients with long-term pacing of the heart is 10 per cent.[247] In one report, the death rate was 5 times greater among the patients with pacemakers with competitive rhythms than in the remainder of the group.[248]

"Standby" or "demand" fixed-rate pacemakers have been developed which are as reliable as the fixed-rate units.[249] These units stimulate the ventricle at a fixed rate but only if there has not been a spontaneous ventricular contraction within a certain preceding period. Therefore, there is no danger of pacing with a competitive spontaneous rhythm. We now routinely employ demand fixed-rate units in everyone, and when fixed-rate units require changing, they are replaced with a demand unit. Patients may have complete heart block for many years and then regain atrioventricular conduction. Because of this, we believe demand pacemakers are indicated rather than fixed-rate units, even in this group.

Obviously, the ideal pacemaker circuitry would provide for synchronous atrioventricular contraction, by timing the ventricular impulse appropriately to follow atrial contraction. This requires an atrial electrode to recognize the atrial contraction. Provision must be made to change over to a fixed-rate, nonsynchronous pacing if the atrial rate is above or below an acceptable range—as with the development of atrial fibrillation or sinus bradycardia.

Synchronous pacemakers have been developed for both transthoracic and transvenous insertion.[250,251] There have been problems with breakage or displacement of the atrial lead, and the complicated circuitry is more vulnerable to malfunction. Synchronous pacemaking, which would obviously be the best method, is presently not widely employed because the hemodynamic advantage is not enough to balance the higher incidence of breakdown.

Pulmonary embolism. Pulmonary embolism, until recently, has been infrequently diagnosed in patients in the hospital. In several published series, although emboli were found in up to 50 per cent of consecutive autopsies, they had only been diagnosed during life in 8 to 26 per cent of these subjects. Pulmonary lung scanning has made physicians alert to the frequency of emboli, so that the diagnosis is now being made more often.[252]

Most patients do not show any evidence of severe circulatory embarrassment after embolization, and of those that do, all but a small percentage can be managed by blood transfusion and vasopressors. Therefore, very few are candidates for pulmonary embolectomy.

The pathophysiology of pulmonary embolism is incompletely understood. Because emboli often occur in patients with other serious illnesses, data obtained from experiments performed on healthy animals must be carefully translated to clinical situations. Much study has been devoted to whether or not pulmonary embolism initiates vasoconstrictive reflexes, whereby a generalized constriction of pulmonary arteries is added to the purely mechanical obstruction of the embolus itself. It is well known that a healthy person will tolerate ligation of the right pulmonary artery without rise in pulmonary artery pressure. Death, therefore, from emboli causing a lesser obstruction suggests that there is a reflex mechanism. Experimentally, large vessel embolizations are not associated with reflex vasoconstriction, but embolization of particles to smaller vessels, 200 microns in diameter, does cause reflex vasoconstriction.[253] An episode of clinical embolization may cause both large- and small-vessel obstruction, so that there may be mechanical and reflex causes for the increased pulmonary vascular resistance.

Comroe postulated that serotonin was liberated from the platelets in the embolus causing vasoconstriction, but the role of serotonin and other humoral factors has not been proved.[254]

Arterial oxygen desaturation occurs following pulmonary embolization, mainly due to decreased diffusing capacity and altered ventilation-perfusion ratios.[255] Shunting through atelectatic areas is a less important cause of desaturation. Arterial desaturation causes a slight degree of pulmonary arterial constriction in some patients, which is reversible with breathing oxygen.[256]

The right ventricle normally ejects blood against the low resistance of the pulmonary vascular bed and does not adapt well to acute elevation of pulmonary vascular resistance. In dogs with acute embolization the maximum right ventricular systolic pressure attainable is about 70 mm. Hg.[257] Right ventricular failure, as evidenced by elevation of right ventricular end-diastolic pressure, occurs when the systolic pressure exceeds 35 mm. Hg. The increased oxygen requirements of the right ventricle are met by coronary vasodilatation. The left ventricle does not suffer any impairment as shown in experiments on animals.[258]

Pulmonary emboli composed of fresh clot disappear rapidly in animals. Smith and Fred have demonstrated by serial angiograms the spontaneous disappearance of emboli in man in as little as seven days.[259]

The experimentally determined facets of pulmonary embolism probably all operate in varying degrees in human beings, but the total amount of circulatory impairment is also determined by their interaction with pre-existing abnormal cardiopulmonary function. For example, a person with coronary artery disease may suffer fatal left ventricular failure secondary to arterial oxygen desaturation and systemic hypotension.

Most emboli do not cause discernible circulatory embarrassment and will not be diagnosed unless the subtle clinical signs and symptoms are recognized and appreciated. Dyspnea always occurs, while pleuritic pain and cough are only present in 75 per cent of cases. The pulmonary photoscan with radiolabeled macroaggregated serum albumin has become widely used to diagnose pulmonary embolism. It is safe, and there is a high correlation between the inactive areas of the photoscan and nonperfused segments shown on the pulmonary arteriogram. However, emphysematous blebs, atelectatic areas, and infiltrates also are inactive on the photoscan.[260]

There are two basic therapeutic approaches to the patient with suspected pulmonary embolism, depending on whether or not there is associated circulatory impairment. If the patient shows no clinical evidence of decreased cardiac output, we believe that a scan should be done. If the scan shows positive findings, then anticoagulation therapy with heparin should be instituted. If the scan interpretation is equivocal, because of the reasons given, we would obtain a pulmonary angiogram prior to administering heparin. If there have been previous, recent embolic episodes, we generally obtain an angiogram; and if there is an embolus, we would interrupt the inferior cava. Partition of the cava into several small channels, either by closely spaced sutures or by a specially designed plastic clip, causes less venous difficulty in the lower extremities than complete ligation.[261]

Each patient with severe cardiorespiratory embarrassment who is suspected of having an embolus represents a different problem, and every attempt must be made to separate and quantitate the contributing factors. Diagnostic work-up should include radiographic and hemodynamic measurements, and the surgeons should be alerted as soon as the diagnosis is suspected. It is frustrating to be called late in the afternoon when most of the day has been spent in obtaining a variety of studies that have not elucidated the hemodynamic status and the indications for pulmonary embolectomy.

If there is severe shock, treatment should be started, as outlined, and then cardiac pressures on the right side measured. Del Guercio *et al.*[262] have stressed the advantage of "floating" a catheter into the right ventricle at the bedside. We use a portable fluoroscope and monitoring equipment to make these bedside measurements. If the right ventricular mean pressure is below 30 mm. Hg, pulmonary embolism is probably not the cause of the circulatory problem. If the mean pressure is above 30 mm. Hg, but it seems that nonsurgical management will be satisfactory, we would obtain a scan to confirm the diagnosis, rather than an angiogram. A pulmonary angiogram imposes a sudden stress on the circulatory system which may kill a critically ill person. The contrast medium is hypertonic and temporarily crenates red cells, which then have poor flow characteristics in the small vessels, requiring increased pulmonary artery pressure to achieve the same flow rate. The hypertonic solution also draws fluid into the vascular bed, temporarily increasing blood volume.

If surgical intervention is necessary, an angiogram must be performed. Photoscans are not satisfactory because it must be determined if the blockage is in the proximal or distal pulmonary vessels, and a scan will not delineate this.

Pulmonary embolectomy should be performed if the prognosis of the patient's disease process warrants and if adequate circulation cannot be maintained. A young patient whose embolization followed reduction of a fractured femur would be considered for surgery, while an elderly person with metastatic carcinoma probably would not.

The right ventricle should be supported according to the same principles outlined for postoperative management. Satisfactory arterial oxygenation should be achieved, if necessary, by ventilator, and an inotropic agent should be given to increase cardiac contractility. Isoproterenol probably should be used first, and if systemic pressure is not satisfactory, then l-norepinephrine. The right atrial pressure should be maintained at 15 mm. Hg to increase right ventricular diastolic fiber length. Transfusion may be indicated to achieve this.

If satisfactory cardiac output cannot be achieved, either estimated clinically or by direct measurement, then surgery should be performed. If reasonably satisfactory output can be maintained, operation should be delayed several hours in the hope that the thrombus will fragment and reduce the obstruction or that right ventricular function will adapt to the increased resistance.

There is no specific level of right ventricular pressure that indicates the necessity for surgical intervention. This must depend on the pre-existing integrity of the cardiopulmonary systems.

Cross and Mowlem[263] reported a 60 per cent survival rate from data collected from several surgeons when the embolus was removed by unilateral thoracotomy without cardiopulmonary bypass. Only 30 per cent survived embolectomy with heart-lung bypass. The decision to employ bypass depends on the situation. Unilateral emboli, which may be removed by unilateral thoracotomy, rarely cause death in patients under fifty years of age, and surgical intervention is not necessary. Younger people suffering from severe cardiac embarrassment probably will require heart-lung bypass to remove bilateral emboli or an embolus in the main pulmonary artery. A unilateral embolus in an older person, or someone with cardiorespiratory disease, may require removal, and this might be accomplished without bypass.

Cardiac and great vessel trauma. Those patients who arrive at a hospital with penetrating wounds of the heart represent a selected group of all those suffering cardiac trauma. Those who received large lacerations of pericardium and myocardium will have died of bleeding or destruction of the cardiac pumping mechanism. Others, with smaller wounds, will have succumbed to cardiac tamponade. In some patients reaching the hospital with chest wounds, there will be obvious massive intrathoracic hemorrhage, and these patients will be quickly operated on to control the sites of bleeding.

There remains a group of patients with thoracic wounds in whom there is considerable difference of opinion regarding management. These are the patients with suspected or proved cardiac trauma whose condition can be stabilized with blood replacement or needle aspiration of the pericardium. We believe that if cardiac trauma is suspected, the patient should be operated on. If there is indication of mild pericardial tamponade and the blood pressure is satisfactory, we would not disturb the region by needle aspiration. Needle aspiration is only performed as necessary to relieve severe tamponade until the chest is opened. This regimen prevents delayed hemorrhage and tamponade, and evacuation of the hemothorax and hemopericardium speeds recovery. Several groups have recently advocated this method rather than nonsurgical management.[264,265]

Some patients suffer intracardiac lesions that require elective or emergency open-heart correction of a valvular damage or septal perforation.[266,267]

Trauma to the major intrathoracic blood vessels is of two general types: direct trauma from penetrating wounds and tears of the aorta from sudden deceleration as occurs in automobile accidents. Usually sudden death results, but sometimes the hemorrhage is contained temporarily in the vicinity of the injury. With a small, direct penetrating injury of a large vessel, the mediastinal tissues may limit the amount of bleeding. Vascular injuries caused by deceleration usually involve the aortic arch, either in the ascending portion or, more commonly, just distal to the origin of the subclavian artery. This is the site where the mobile arch joins the immobile, descending portion fixed to the chest wall. If the tear does not involve all layers of the aorta, the outer layers may contain the bleeding long enough for the patient to reach the hospital.

Both direct and deceleration injuries to the large vessel can be suspected by a widened mediastinal shadow, and angiocardiography should immediately be performed to delineate the lesion precisely. When the diagnosis is made, the patient should be operated on. Late follow-up chest x-ray films should be obtained in all cases of chest trauma; occasionally a false aneurysm will manifest itself weeks or months later.[268]

CORONARY ARTERY DISEASE. Twenty-five million Americans have symptomatic coronary atherosclerosis, making it by far the most common cause of heart disease. Recently, surgical amelioration has been attempted in both chronic and acute cases secondary to myocardial ischemia; and although the ultimate role of surgery remains to be determined, there is reason to believe that several procedures will find an important place in the treatment of patients with coronary atherosclerosis.

Surgical procedures in the chronic phase of myocardial ischemia are directed toward increasing the myocardial blood flow, excision of poorly contracting portions of myocardium, and reduction of cardiac work through electrical stimulation of the carotid sinus. Following acute infarction, surgical therapy has included closure of ventricular septal defects, resection of the infarcted muscle, and mechanical assistance of the left ventricle. Mechanical assistance for the failing heart is discussed in a separate section.

MYOCARDIAL REVASCULARIZATION. Surgical intervention to increase myocardial blood flow seems indicated for severe, chronic angina. As yet, there is no evidence that surgical intervention protects the patient against infarction or progressive fibrosis and loss of contractility.

The natural history of angina is characterized by remissions and exacerbations, and there is a strong psychologic component, making it difficult to evaluate the efficacy of a procedure by patients' subjective responses. This was best demonstrated by the operation of internal mammary artery ligation, which was supposed to increase myocardial blood flow through the cardiophrenic branch of this vessel. Those patients subjected to sham operation reported the same benefit as those operated on.[269] There are two types of revascularization procedures: Indirect methods attempt to bring new blood flow to the myocardium through collateral arterial vessels; the other procedures attempt to increase blood flow by direct surgical approach on the main coronary arteries.

Indirect revascularization of the ischemic myocardium was first given serious clinical trial by Beck.[270] He developed two approaches: the Beck I operation, constriction of the coronary sinus and talc poudrage of the pericardium; and the Beck II operation, arterialization of the coronary sinus by bypass aortic graft.[270,271] Angina was relieved in some patients following such operations, but the morbidity and mortality rate were high, especially with the Beck II procedure. Technics for measuring the "new blood" brought to the heart were not available. Such improvement as was noted was ascribed to the natural ebbs and flows of angina, and Beck's operations were discontinued.

Vineberg[272] attempted myocardial revascularization by implanting the open end of the internal mammary artery into the muscle of the left ventricle. They postulated that connections would develop with the coronary arterial system. Their procedure was not as complex technically as the Beck II and could be accomplished with a reasonable mortality rate. A series of experimental and clinical observations suggest that the basic postulate was sound.

Dogs survived gradual complete constriction of both main coronary arteries after this procedure and there seemed to be convincing relief of angina in patients.[273,274] Still there was little acceptance of mammary artery implantation until Sones demonstrated, by selective injection of contrast material into a mammary artery, ten years after implantation, that the coronary vascular bed was opacified. Exciting as this direct visualization was, it still did not prove that there was tissue capillary perfusion from the mammary implant. Subsequently, Gorlin and Taylor[275] demonstrated that there is augmented flow to the capillaries, because myocardial metabolism shifted from anaerobic to aerobic after implantation. Additional indirect evidence suggesting that new implants may supply viable myocardium is the finding that radiopaque dye injected into the implanted artery results in similar T-wave changes as seen with injection into the coronary arteries.[276]

Most patients who are evaluated for surgery have severe, unremitting angina. Young patients without angina who have had myocardial infarctions are also considered in the hope that this will protect against progressive ischemic changes and frank infarctions. There is as yet no solid evidence that this protection is offered, but since the risk of operation is small, it seems reasonable to perform an implantation procedure if the criteria are present. Cardiac output and pressure measurements should be made and, at the least, left ventricular pressures should be measured.

There should be at least 50 per cent narrowing of the lumen of the left circumflex or the anterior descending artery. Involvement of both arteries is not a contraindication. If, in addition, the right coronary artery is involved, the operative risk is higher. In almost all patients with coronary artery disease, administration of isoproterenol elicits evidence of myocardial ischemia. The percentage of lactate extraction from the coronary arterial blood is reduced, and there may actually be lactate production. The magnitude of these changes correlates with the morphologic severity of the coronary artery involvement. Initially, involvement of only the right coronary artery was considered a contraindication, but the posterior myocardium can sometimes be implanted with the right internal mammary artery. Additionally, other arteries, such as the epiploic or splenic, have been brought from below the diaphragm to vascularize the posterior myocardium.

Contraindications for implantation are massive or multiple ventricular aneurysms, severe heart failure, or massive cardiac dilatation. A large, poorly contracting ventricle probably has considerable fibrous tissue which is unsuitable for implantation and development of collaterals.

There are numerous variations in surgical technic. Many groups routinely implant both internal mammary arteries, and other vessels probably will be used to an increasing extent to revascularize the posterior myocardium. At the operating table, the ischemic areas should be delineated; the regional washout rates of krypton-85 after intramyocardial injection have been utilized for this purpose.[277]

Clinical improvement may not appear before three months and may require more time. This correlates with laboratory studies showing that maximum flow through the implanted artery is achieved in about six months. Seventy to 80 per cent ultimately obtain significant improvement in symptoms. The surgical mortality rate is about 5 per cent.

Gorlin and Taylor[275] have shown a change from anaerobic to aerobic metabolism following implantation, giving a physiologic correlation to clinical improvement. Data from one patient show essentially normal capillary blood flow in the myocardial tissue supplied by the implant, determined by the rate of Kr^{85} washout after injection of the isotope into the implanted internal mammary artery.

Direct surgical intervention on the coronary vessels, either by endarterectomy or vessel-to-vessel anastomosis is technically difficult; furthermore, only a small percentage of coronary artery occlusions are so located as to allow consideration of a direct approach.[278,279] Gas endarterectomy may facilitate direct approaches on the coronary vessels, but this method has not yet been evaluated.[280]

In summary, at the present time indirect myocardial revascularization by vessel implantation appears to relieve angina in about 70 to 80 per cent of patients. Because of the low morbidity and mortality rate, it would seem reasonable to implant arteries into the myocardium in young patients who have had one or more myocardial infarctions but who are without angina. It should be realized, however, that at present there are no data to support the hope that protection will thus be afforded against future infarctions or progressive myocardial fibrosis. The role of direct surgical intervention on the vessels cannot yet be evaluated.

VENTRICULAR ANEURYSM. Gorlin and associates have recently published two articles on left ventricular aneurysms, diagnosed during life, which essentially render obsolete previous data from retrospective autopsy studies.[281,282] They evaluated myocardial contractility in 100 patients with coronary artery disease by means of selective coronary cineangiography and left ventricular cineangiograms in several projections. Pressure and flow measurements were also made. Twenty-four of these patients either had akinesis (lack of motion) or paradoxical motion of a portion of the left ventricle by cineangiographic examination and were, therefore, considered to have ventricular aneurysm. In only 19 of these 24 patients was aneurysm suspected clinically, as determined by physical examination, electrocardiograms, and apexcardiograms. In 9 of these 19 cases, the size of the aneurysm was grossly underestimated. The association of aneurysm with severe coronary artery disease was confirmed; at least two and often three vessels to the area of aneurysm were blocked in every case. Eleven patients had various degrees of congestive heart failure, in 3 it was of grade 3 plus severity, on a scale of 0 to 4 plus; in the others it was less. There was no necessary relationship between the size of the aneurysm as determined by ventriculogram, or the heart size shown on roentgenograms, and the presence of clinical failure. Left ventricular end-diastolic pressure was elevated above normal, 14 mm. Hg or greater, in all 11 patients; this pressure was also increased in 7 other patients who had never had symptoms of failure.

In 16 of these patients direct examination of the aneurysm was made either at autopsy or during the surgical procedure for internal mammary artery implantation. The most striking aspect of this study was that in only 7 of the 16 cases was the aneurysm made up of a thinned-out fibrotic scar. Seven additional patients had mixed "full-thickness" muscle and fibrosis, and 2 showed aneurysmal bulging of viable, perfused myocardium. Furthermore, in 1 of the latter cases the myocardial blood flow, as determined by the rate of Kr^{85} washout after intramyocardial injection, was the same in the aneurysm as in normally contracting ventricle.

For adequate systolic change in ventricular volume to occur, the remaining muscle fibers must shorten a greater distance to compensate for the inactive fibers. A theoretical analysis was presented, showing that when 20 to 25 per cent of the left ventricular surface is immobile the heart must dilate. At this stage of aneurysmal involvement, the functioning muscle fibers can only achieve the necessary amount of shortening if their resting length is increased.

Surgical excision of ventricular aneurysms is indicated in order to correct two complications of aneurysm: congestive heart failure and thromboembolic complications. To properly evaluate the role of surgical therapy, one must understand the natural history of ventricular aneurysm. Most data must be obtained from older autopsy articles, realizing that these were based on gross studies and probably did not include many cases with noncontractile fibromuscular regions which did not have the classical thinned-out fibrosed structure.

Most patients with ventricular aneurysm die of recurrent acute myocardial infarction. Rupture must be extremely rare if it occurs at all; it was not reported in two series comprising 167 cases, if mycotic and acute aneurysms are excluded.[283,284] Schlichter, Helbestein, and Katz[283] published data in 1954 obtained from autopsies performed on 102 patients with ventricular aneurysm, drawn from a total of 512 patients who had myocardial infarction. Thromboembolic phenomena occurred in 52 per cent of the patients with aneurysm, compared with 26 per cent of the remaining patients with myocardial infarction without aneurysm, but in only 21 per cent did this cause death directly. It may have contributed to death in another 13 per cent. The most important cause of death was another myocardial infarction, 57 per cent of patients. Only 15 per cent were thought to have died of congestive heart failure. In 1963 Abrams *et al.*[284] published a similar type study of 65 cases, and the significant difference was the lower incidence of thromboembolic episodes. Only 9 patients had evidence of emboli, and none died of this cause. This probably reflects the present widespread use of anticoagulants in the postinfarction period. Fifty per cent of the patients in this series died of another myocardial infarction and only 15 per cent of congestive heart failure. Thus the two reasons for operative intervention for ventricular aneurysm, congestive heart failure, and thromboembolism occur infrequently. Furthermore, the duration of life after the first infarction was similar to those patients with and without associated aneurysm, 7.2 and 8.2 years respectively. The presence of a ventricular aneurysm per se is not an indication for surgical excision.

Initially, aneurysms were excised by a closed method, but open technic with heart-lung bypass is now used because it provides better control of any thrombus and a safer and more precise excision and suturing of the ventricular wall. Dramatic relief of congestive heart failure has been accomplished by several groups, including our own.[285,286] The mortality rate is about 10 per cent. According to Gorlin and associates' data, one might expect to find noncontractile areas that are not clearly demarcated but composed of grossly normal muscle or fibromuscular tissue, and it might be difficult to decide on the limits of excision.

ELECTRICAL RELIEF OF CARDIAC WORK. Braunwald *et al.* has recently reported relieving angina by stimulation of the carotid sinus by an implanted electrical stimulator controlled by the patient.[287] Electrical stimulation of the carotid sinus decreases sympathetic efferent traffic, reducing heart rate, arterial pressure, and myocardial contractility, thus lowering myocardial oxygen consumption.

This approach to the therapy of angina stemmed from the work of Schwartz, Griffith, and Neistadt[288] who reported the control of essential hypertension in animals and man by chronic electrical stimulation of the carotid sinus nerve.

SURGERY SHORTLY AFTER MYOCARDIAL INFARCTION. Rupture of the ventricular septum is an uncommon but serious complication of myocardial infarction. The average interval between infarction and rupture is ten days. Most of these patients die within hours or a few days after the perforation.

Only 1 of 8 patients in a series survived two months.[289] Most of the septal perforations are near the apex, and in about one third of the patients there is an associated ventricular aneurysm. When rupture occurs, there is an acute deterioration of the clinical status, a loud systolic murmur, and usually a precordial systolic thrill. If the patient's condition can be stabilized, open-heart repair of the defect should be postponed. However, if deterioration progresses, open-heart repair should be considered at once. The incidence of partial breakdown of the repair is probably around 50 per cent when repair is performed within ten weeks of occurrence, due to friable ventricular tissue, so that it is better to wait longer, if possible, before attempting repair.[290] However, even if the repair eventually breaks down, most patients survive, where they otherwise would have died. If there is a coexisting aneurysm, it is excised.

Excision of infarcted muscle within a few hours of experimentally induced infarction in dogs improves survival and ventricular performance.

Heimbecker, and Chen[291] have excised acute infarctions in calves and have demonstrated experimentally that both electrical stability and mechanical performance of the myocardium is improved. Heimbecker, Lemne, and Chen[292] reported on 4 clinical cases of acute infarctectomy.

SUBSTITUTION FOR THE HEART. Many experiments have been performed to evaluate mechanical support of the poorly contracting heart, and there have been limited clinical trials. At open-heart surgery, following completion of repair of the defect itself, it is not uncommon to continue heart-lung bypass, usually for minutes but sometimes for more than an hour, until the heart can resume the total circulatory pumping action.

The major area of applicability for assisted circulation, however, is in cardiogenic shock following acute myocardial failure when, after a relatively short period of support, the myocardium would, hopefully, be able to resume its total responsibility.

The aim in mechanical support of the failing heart is the reduction of ventricular work and, hence, left ventricular oxygen consumption. Sarnoff *et al.*[293] have shown that oxygen consumption of the left ventricle is directly related to systolic pressure generation. Neill *et al.*[294] found a linear relationship between oxygen consumption of the left ventricle and the product of the aortic mean pressure, the duration of left ventricular systole, and the heart rate: the tension-time index. The volume of blood pumped by the heart is not an important determinant of oxygen consumption by the left ventricle.

Partial bypass of the heart can be accomplished using a pump oxygenator. Blood is withdrawn from the venous side by peripheral cannulation of the femoral veins, passed through an oxygenator, and pumped into the arterial system through retrograde cannulation of an extremity artery, usually the femoral. Salisbury *et al.*[295] found that 80 to 90 per cent of the total flow must be diverted into a venous to arterial assist system before the oxygen consumption of the left ventricle is reduced.

Spencer *et al.*[296] have employed left atrial to femoral artery bypass in resuscitation of 3 patients with poor cardiac output after open-heart surgery, with 1 long-term survivor. These patients were returned to the operating room for thoracotomy and cannula placement fourteen to thirty hours after the initial surgical procedure. A fourth case was managed with peripheral veno-arterial bypass but succumbed to irreversible pulmonary hypertension. They concluded that left atrial to femoral artery bypass was the technic of choice in left ventricular failure.

Left atrial to femoral artery bypass without thoracotomy has been achieved by Dennis *et al.*[297] employing a specially developed trans-septal cannula introduced via the jugular vein. They demonstrated in dogs a reduction of ventricular oxygen consumption with as little as 25 per cent bypass. The calculated time-tension index remained high despite decreasing oxygen consumption of the left ventricle with increasing bypass flow. The use of this technic in 6 patients has been reported by Cappelletti, Marone, and Reynolds.[298] Three patients were placed on bypass as support for surgical procedure, with 2 survivors. Three patients in acute cardiac shock after myocardial infarction were treated with bypass; all three died.

Using a valved, left ventricular bypass pump, described by Liotta *et al.*,[299] which is implanted transthoracically, De Bakey has supported the circulation of 10 patients, 9 of these following open-heart surgery. The clinical details of the latter 9 patients have yet to be reported.

Another method of circulatory support without thoracotomy is counterpulsation, described by Clauss *et al.* in 1961.[300] By means of cannulae placed in the femoral arteries, blood is removed from the arterial circulation during the ejection phase of systole. The blood is returned to the arterial circulation during diastole. Counterpulsation is, therefore, a synchronous form of circulatory assistance acting to augment diastolic pressure. Soroff *et al.*[301] studied counterpulsation in dogs and were able to demonstrate reduction of left ventricular systolic pressure of 30 per cent, reduction of tension-time index of 33 per cent, and reduction of myocardial oxygen consumption of 20 per cent. Proper phasing of counterpulsation with the cardiac cycle is critical. Brown, Goldenberg, and Dennis[302] compared bypass of the left side of the heart in shocked dogs using their cannula method with counterpulsation. They concluded that bypass of the left side of the heart is significantly more effective than counterpulsation in reducing the tension-time index when the blood pressure is depressed. There is some evidence in dogs that counterpulsation may increase the formation of coronary artery collateral vessels after experimental myocardial infarction.[303] Soroff *et al.*[304] report

1 human survivor in a series of 7 patients with cardiogenic shock treated with this method.

Two cases have been reported by Kantrowitz *et al.*[305] in whom an auxiliary ventricle was used to provide temporary circulatory support, using the counterpulsation principle. Both patients had advanced myocardial disease which could not be managed by standard technics. The device is penumatically powered from an external source, synchronized with the cardiac cycle by myocardial electrodes, and contains no valves. One patient died twenty hours after operation of refractory tachycardia and failure, and the second patient died of a cerebrovascular accident thirteen days after implantation.

An alternative method of counterpulsation is the use of an intra-aortic balloon, described by Moulopoulos, Topaz, and Kolff,[306] and adapted for clinical use by Kantrowitz *et al.*[307] The method avoids cannulation of the femoral vessels and withdrawal and reinfusion of blood during the cardiac cycle. Instead, a balloon of about 30-cc. capacity is positioned in the descending aorta just below the subclavian artery, usually via a femoral artery cutdown. By appropriate synchronization and the use of a solenoid switch, the balloon is deflated during systole and inflated during diastole. The aorta is never completely occluded. The simplicity of the method is attractive. The results of initial clinical trails have been most encouraging, and this method may find wide application in the treatment of refractory, potentially reversible cardiac failure. We are at present familiarizing ourselves with this method in our laboratory.

Total mechanical replacement of the heart has to date only been accomplished for brief periods in experiments with animals.[308] There are many problems to be solved, not the least of which is the fragility of erythrocytes subjected to the pumping trauma.[309]

In the absence of a workable mechanical substitute for the heart, the dream of many investigators has been heart replacement with a biologic substitute. Hardy *et al.*[310] in 1965 attempted heart transplantation with xenograft replacement from a chimpanzee. A successful replacement of a human heart with an allograft was performed in 1968 by Barnard.[311] Lower, Stofer, and Schumway[312] demonstrated in 1960 that the technical problems of heart transplantation, although considerable, were capable of solution by the combined use of topical hypothermia for the graft, cardiopulmonary bypass, and the use of atrial cuffs for suturing. The major problem is immunologic; to date there is no evidence that this has been solved. To this must be added the formidable logistics of cardiac transplantation, where a moribund donor must be matched with a suitable recipient during a circumscribed period of time.

At the present time human heart transplantation is an experimental procedure and should be restricted to those few groups equipped to make meaningful observations on such patients. Although technically possible, the long-term contribution of transplantation to the treatment of clinical heart disease has yet to be established. The potential candidates for such a procedure, patients with irreversible, severe, refractory chronic myocardial failure from, say, myocardiopathy or terminal coronary artery disease, are legion. The pool of available donors seems to be extremely limited, judging from current experience.

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Inoperable lung cancer: radiation therapy versus placebo

Male patients with localized but clinically inoperable bronchogenic carcinoma were selected at random so that 308 were given radiation treatment and 246 a placebo consisting of an inert compound (lactose). This study was published in *Radiology* **90**: 688 (April) 1968 by B. Roswit, M.D. *et al.* Evaluation was based chiefly on survival rates at monthly intervals. Statistical analyses showed that while the radiation-treated patients had an improved survival time, this improvement was small.

The total group consisted of 800 male patients with clinically inoperable lung cancer. From this group, treatments were assigned at random so that 308 were given radiation and 246 a placebo. A third group was chemically treated. These patients were given coded antitumor agents such as nitrogen mustard, testosterone propionate, cyclophosphamide, fluoxymesterone (Halotestin), and others. There was no evidence of metastases in any patient, and 90 per cent had not had exploratory thoracotomy or other treatment.

Supportive treatment, consisting of antibiotic agents, transfusions, and so on, was given all patients regardless of other therapy. In radiation therapy, a moderate dose-time formula was agreed on: 4,000 (minimum) to 5,000 (maximum) rads over a period of four to six weeks, with daily dosage increments of 175 to 200 rads. Of the 308 patients who were given radiation therapy, 103 (33 per cent) got less than 4,000 rads; 61 died before completion of the planned treatment, and 41 had to have their treatment interrupted because of medical problems. Some (14 per cent) got more than 5,000 rads.

Various systems of statistical analysis were applied to the data. All indicated that radiation therapy (principally orthovoltage) tested for efficacy against a placebo had a significantly favorable influence on the survival time of male patients with localized inoperable lung cancer. While the actual influence is small, the difference in survival pattern and the number of patients studied was large enough to support the hypothesis that radiation treatment will prolong the lives of some patients. The effect of radiotherapy is most evident at eight and nine months after the start of treatment, but at the end of a year the survival rate was only 18.2 per cent in the treated group as against 13.9 per cent in the control group. The median survival time of the radiation-treated patients was one hundred forty-two days; for the controls, one hundred twelve.

Electrocardiograms of the Month

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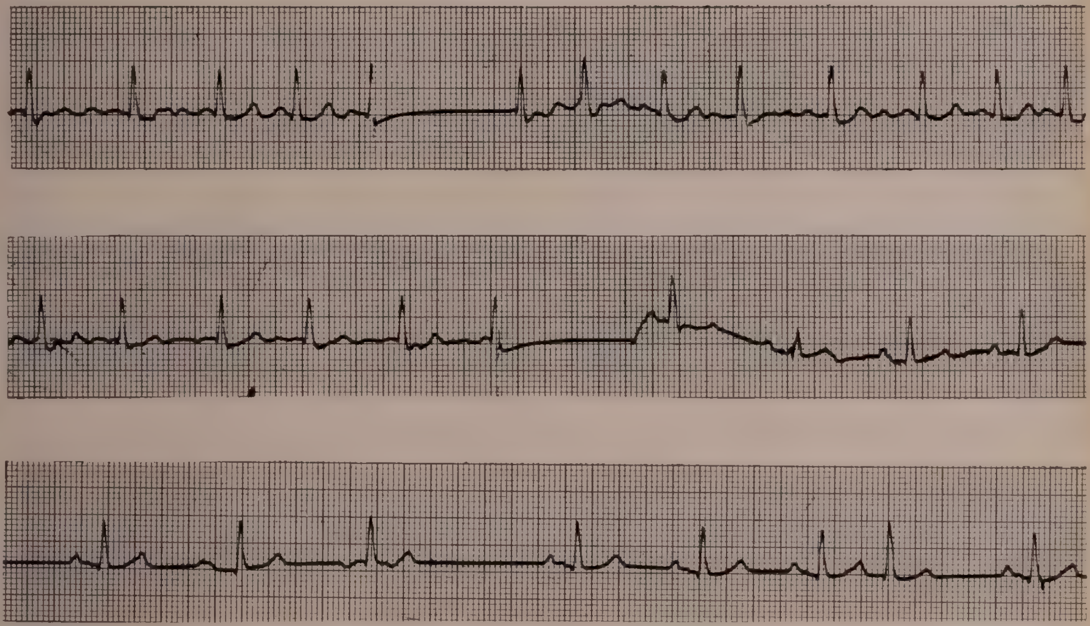
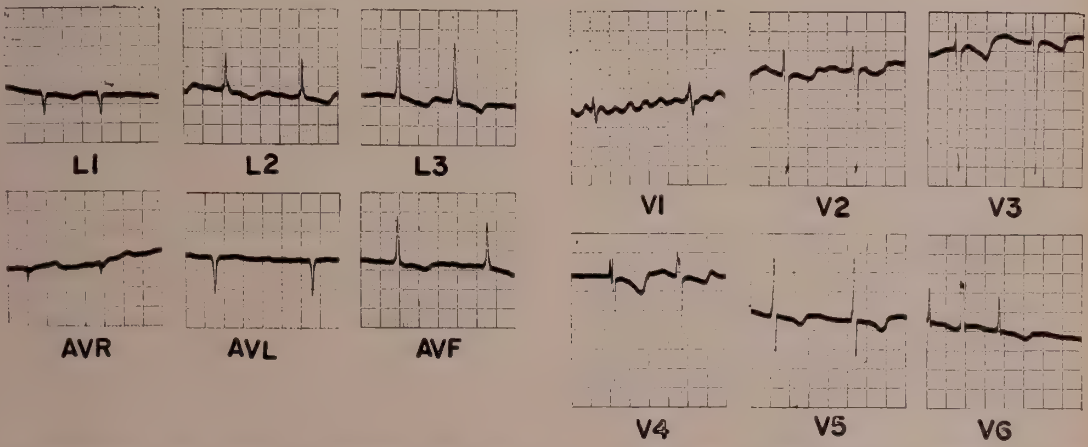


QUESTION 33. These electrocardiograms were obtained from a sixty-three-year-old man admitted to the hospital because of palpitations. Following the first half of the top two strips, direct current shock was administered. What is the interpretation?



QUESTION 34. This electrocardiogram was obtained from a thirty-three-year-old man admitted to the hospital with a cardiac murmur and fatigability. What does the electrocardiogram suggest?

Electro-
cardiograms
of Month

ELUCIDATION

QUESTION 33. The top strip shows a totally irregular ventricular rate with no P waves. The rhythm is atrial fibrillation. In the area where there is a straight line, a 50 watt-second direct current shock was administered without effect on the rhythm. The straight line represents the automatic cutoff of the electrocardiogram during the shock. In the middle strip, a 100 watt-second shock was administered, and the rhythm reverted to regular sinus rhythm. In the third strip there is a notched broad P wave visible preceding the first and second QRS complexes. The third QRS complex is preceded by an inverted P wave. The seventh beat comes early, and the P wave is superimposed on the preceding T wave. There is a notch in the first T wave, probably representing a premature P wave that was not conducted. Similarly, the inverted wave preceding the third T wave is probably a blocked atrial premature beat. Premature atrial beats which occur early after the preceding normal P wave often initiate atrial fibrillation. They may also occur immediately following electrical conversion of atrial fibrillation to regular sinus rhythm. The broad P waves in this lead suggest atrial disease which may be the basis for the development of atrial fibrillation.

QUESTION 34. The rhythm is atrial fibrillation. The large irregular f waves in V_1 (coarse atrial fibrillation) are reportedly more common in patients with left atrial enlargement secondary to rheumatic heart disease. The electrical axis is shifted to the right (MEA + 110) as degrees shown by the deep S wave in lead I, with a tall R wave in leads II and III. In lead V_1 the R wave is taller than the S wave. There are nonspecific S-T depressions in leads II, III, aVf, and V_2 to V_6. These findings are characteristic of right ventricular hypertrophy. The deep S waves in V_2, V_3, and V_4 suggest left ventricular hypertrophy in addition. When these QRS changes are associated with coarse atrial fibrillation, mitral stenosis and insufficiency can be suspected. The S-T and T wave abnormalities may be due to digitalis.

Afternoon diabetes

Afternoon diabetes is described as consisting of a normal response to a morning glucose challenge but a distinctly diabetic response when the challenge is given at noon. A. J. Bowen, M.D., R. L. Reeves, M.D., and R. L. Nielsen, M.D., writing in the *Journal of the American Medical Women's Association* **23:** 261 (March) 1968, report on 25 such patients first seen in 1961–1962 and followed for five years. Of these, 3 had manifestations of peripheral neuropathy, and 7 had arteriosclerotic cardiovascular disease. Two of the women had borne children weighing more than 9 pounds at birth; 3 women were obese. Three patients had recurrent urinary tract infections, 2 had diabetic retinopathy, 18 were relatives of diabetic individuals, and 20 had glycosuria during at least one glucose tolerance test. During the five-year follow-up, 5 patients decompensated into clinical diabetes.

There were 6 men and 19 women in the series with an age range of fourteen to sixty-nine years. Criteria for inclusion in the study were: (1) normal response to morning oral glucose tolerance test, (2) diabetic response to midday test, (3) absence of disease known to affect carbohydrate metabolism, and (4) willingness to participate in the study. In the morning, 75 Gm. of glucose were given orally. Blood was taken fasting and at one, two, and three hours. All subjects fasted eight hours prior to the test. In midday, the fast was five hours; the tests, as the earlier ones, were begun at noon. A minimum of 300 Gm. of carbohydrate intake was required for three days preceding the test. Test results were considered diabetic if the one-hour level was greater than 160 mg. per cent and the two-hour level greater than 120 mg. per cent. The response was considered borderline if one but not both test results exceeded these values.

The mechanism of afternoon glucose intolerance apparently has not been explained. It is closely related to the evolution of the diabetic state and is often present in persons with the degenerative complications of diabetes whose glucose tolerance is normal in the morning.

Case Reports

Recurrent Intussusception from Metastatic Melanoma

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METASTATIC MELANOMA to the gastrointestinal tract producing obstruction has been previously recognized.[1,2] However, the importance of palliative surgical treatment has not been adequately stressed. The surgical management of a patient with recurrent intussusception due to metastatic melanoma is reported.

Case report

A thirty-eight-year-old woman was admitted in February, 1964, with a diagnosis of malignant melanoma of the left side of the scalp. She was treated by a wide excision of the primary lesion, skin graft, and a radical neck dissection on the left. Metastatic melanoma was found in the lymph nodes of the left side of the neck at the submental and lower jugular areas. She remained well for twelve months after the operation. She was readmitted in April, 1965, as an emergency with signs of intermittent small-bowel obstruction. Intravenous pyelograms and gastrointestinal studies were carried out which revealed only an enlarged spleen. The patient was explored and was found to have an ileoileal intussusception, with one plaque of metastatic melanoma in the distal ileum as the lead point. Resection of the intussuscepted segment and splenectomy were carried out. The splenic pulp was replaced by metastatic melanoma (Fig. 1A). No other gross evidence of metastatic melanoma was noted in the peritoneal cavity. The patient again did well and was apparently free of disease until Spring, 1966. In May, 1966, she developed recurrence of intermittent obstructive symptoms. Upper gastrointestinal series performed on this occasion was not helpful. Mild symptoms persisted until August, 1966, when she was again admitted as an emergency with acute exacerbation of severe cramping abdominal pain. A lemon-sized mass was palpated in the left upper quadrant of the abdomen. At exploratory laparotomy a 25-cm. jejunojejunal intussusception led by two metastatic deposits of melanoma in the mucosa was found (Fig. 1B). The larger deposit was 3 cm. in diameter and protruded into the lumen as a polypoid mass.

Resection of the intussuscepted segment was carried out with an end to end anastomosis. Further exploration of the abdominal cavity again failed to show evidence of other gross visceral metastasis.

The patient was operated on for the third time in June, 1967, for another episode of obstruction. She was found to be free of intra-abdominal melanoma, and the obstruction was due to an omental band and it was relieved. The patient was seen last in July, 1967, feeling generally well.

Comment

It was formerly thought that cutaneous melanoma rarely metastasized to the gastrointestinal tract. A review by DasGupta *et al.*,[1] from this institution, pointed out that metastases to the gastrointestinal tract are quite frequent, 58 per cent in disseminated melanoma. Although the clinical diagnosis of metastatic melanoma to the small intestine is difficult, the signs of intestinal obstruction or bleeding per anum

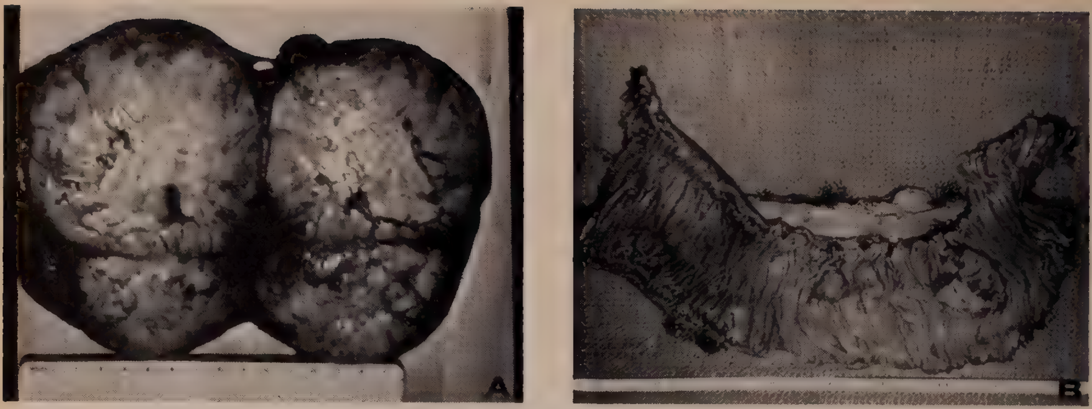

FIGURE 1. (A) Spleen bisected to show metastatic involvement of splenic pulp. Note veneer of normal-appearing splenic tissue around periphery. (B) Position of jejunum with two polypoid metastatic lesions. This segment resected at second operation.

in a patient with melanoma are highly suggestive of metastatic involvement of the gastrointestinal tract. Intussusception is the most common cause of small-bowel obstruction in patients with metastatic melanoma. The lesion is usually polypoid, projecting into the bowel lumen as the lead point of the intussusception. Obstruction because of mesenteric lymph node involvement is seen; annular constricting lesions are extremely rare.

Diagnosis at surgery is easy in the presence of intussusception. Often at the time of exploration the intussusception is relieved, and localization of the lead point must be sought.

An aggressive approach of this nature will give symptomatic relief to the patient for an indefinite period of time. It is pointed out that an increase in survival time may be expected from relief of obstruction, but the over-all course of the disease will not be altered. This type of palliative approach can be judiciously repeated, as is evident from this patient.

Summary

A case of successfully palliated metastatic melanoma to the small bowel with repeated obstruction due to intussusception is presented.

Metastases to the bowel must be suspected in melanoma patients seen with small-bowel obstruction and/or anemia.

Intussusception is the most common cause of small-bowel obstruction in patients with metastatic melanoma. Surgery is indicated for palliation in spite of the over-all poor prognosis.

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Adenocarcinoma of Fallopian Tube with Torsion

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CARCINOMA OF THE fallopian tube is rare, accounting for 0.16 to 1.6 per cent of all primary genital tumors.[1] An extremely rare phenomenon is carcinoma with torsion of the tube. The more usual symptoms are vaginal discharge, pain, a pelvic mass, or any combination of these. These will be discussed further.

Torsion of the fallopian tube in the absence of carcinoma is in itself a rare occurrence, and only a few hundred cases have been reported in the literature.[2] The event may be associated with both otherwise normal[3] and abnormal fallopian tubes.[4,5] The rarity of case reports referring to torsion of a fallopian tube containing carcinoma led us to the publication of this case.

Case report

The patient, a thirty-eight-year-old white married female, gravida 4, para 4-0-0-4, was admitted for the first time on December 1, 1966, with left lower quadrant pain of one day's duration beginning at the time of the onset of her otherwise normal menstrual period. The pain increased in severity and was accompanied by a yellow vaginal discharge. There were no urinary symptoms.

PAST MEDICAL HISTORY. The patient admitted to a normal menstrual history. She gave a history of a left ovarian cyst which had been treated in 1960 by hormonal medication. In January, 1965, the patient had been seen at the State University of New York Upstate Medical Center complaining of left lower quadrant pain occurring at the midcycle, and a diagnosis of mittelschmerz was made. In July, 1965, she had been seen for a routine examination, and a left ovarian cyst was noted but was not considered to be pathologically significant. Cervical smears were reported as showing no abnormality at this time.

FAMILY HISTORY. One sister had died with a carcinoma of the genital system.

PHYSICAL EXAMINATION. At the time of admission, the patient was afebrile with a pulse rate of 70 per minute, blood pressure of 116/70 mm. Hg, and normal respirations. The significant findings on physical examination were limited to the abdomen and pelvis. The abdomen was flat and soft with a tender abdominal mass arising from the pelvis on the left side and extending one third of the way to the umbilicus and across the midline. There was no rebound tenderness, and the bowel sounds were decreased. On pelvic examination the external genitalia were found to be normal. Speculum examination revealed evidence of chronic cystic cervicitis, and menstrual blood was noted issuing from the external cervical os. On bimanual examination, the uterus was found to be displaced slightly to the right; it was firm, slightly enlarged, and retroverted. Tenderness was elicited on manipulation of the cervix. A 6- to 8-cm. mass anterior to the broad ligament to the left of the midline was palpated which was separate from the uterus and was movable. Palpating the right side no mass was felt, but a fullness was noted. Both adnexa were tender on examination. Rectal examination revealed no further information.

LABORATORY DATA. The hematocrit was 36, hemoglobin 12.7 Gm. per 100 ml., and white blood count 12,100 cells per cubic millimeter with 80 per cent polymorphonuclear leukocytes. In urinalysis specific gravity was 1.006, pH 6, there was a trace of protein, and many red cells. Urine culture revealed a colony count of over 100,000 colonies per milliliter with many coagulase-negative staphylococci. Chest x-ray film gave negative findings. Intravenous pyelogram revealed a central pelvic mass depressing the bladder superiorly from the left.

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* Student Summer Fellow in Gynecological Oncology, supported by Institutional Funds of the Upstate Medical Center.

HOSPITAL COURSE AND TREATMENT. The impression on admission was that the patient had a left ovarian or para-ovarian cyst. The day after admission, the pelvic examination was repeated. Because of increased tenderness and some enlargement of the abdominal mass, laparotomy was performed. There was a cystic mass approximately 15 by 8 cm. in diameter with a whitish-blue appearance in some areas, which was thought to be the left ovary. It was then noted that a large part of the mass was tubal rather than ovarian. Torsion was noted about the pedicle in a clockwise direction, one complete turn, with no evidence of infarction. Papillary excrescences were studded over the surface of the cyst and were also palpated over the vesicouterine peritoneal reflection and on the posterior surface of the uterus. Frozen section of the mass was reported as adenocarcinoma of either the fallopian tube or endometrium. A total hysterectomy with bilateral salpingo-oophorectomy, an appendectomy, and omentectomy were carried out. The final pathologic diagnosis was moderately well-differentiated adenoacanthoma of the left fallopian tube with peritoneal metastases.

The hospital course was complicated by an exacerbation of the urinary tract infection which had been subclinically present on admission. A second, more serious complication was a pulmonary infarction. It was felt that the source of the embolic phenomenon was the pelvis and that it might well have occurred at the time of surgery with the manipulation of the twisted adnexa. On the seventeenth day postoperatively the patient was discharged.

In view of the evidence of local peritoneal seeding, a course of postoperative radiotherapy was advised. This was commenced on December 20, 1966, as an outpatient, two days after being discharged. She received 4,500 rads over a five-week period using the telecobalt unit which she tolerated well.

FOLLOW-UP. The patient is being followed in the State University Hospital Gynecologic Tumor Clinic and the Radiotherapy Clinic, and there have been no complications to date. The last examination was on June 26, 1968.

Comment

Carcinoma of the fallopian tube rarely is seen as torsion with an acute condition of the abdomen. According to Regad,[4] torsion is more frequently found as a complication of hydrosalpinx, pyosalpinx, ectopic pregnancies, and uterine pregnancies. Anspach[5] reviewed 87 cases of torsion and found only 2 with carcinoma of the tube.

SYMPTOMS. Torsion most frequently is seen with pain which varies from mild discomfort to an acute abdominal emergency.[6] In contrast to this, the most common symptom of carcinoma of the fallopian tubes is not pain but vaginal discharge which occurred in 61 per cent of the cases reviewed by Stern and Hanley.[7] The discharge may be watery, serosanguineous, or creamy.[8] Pain, according to Stern and Hanley's[7] review, occurred in only 28 per cent of the cases. The pain associated with carcinoma of the fallopian tube is usually of the lower abdomen, as it was in the case presented here; it may be a continuous dull ache or intermittent and colicky. The classical symptoms described by Latzko[9] of hydrops tubae profluens, a sudden discharge of serous yellow or serosanguineous fluid with relief of pain and disappearance of a lump, is rare, and Sedlis[10] found only 10 cases in the literature that were seen this way. Kneale and Attwood[11] claim hydrops tubae profluens is more common with hydrosalpinx than with other tubal abnormal conditions. Other symptoms that are considered diagnostic of fallopian tube carcinoma are the development of a serous vaginal discharge following dilatation and curettage.[12] A positive cervical smear with negative curetting results is also considered diagnostic.[10]

The peak age incidence for the development of carcinoma of the fallopian tube is at the time of the menopause or shortly after.[13,14] However, the disease has been reported three times in eighteen-year-old girls[15–17] and once in an eighty-four-year-old woman.[18] It is interesting that the case of the eighty-four-year-old female was one of the rare cases that was seen with an acute abdominal condition and a fallopian tube that had undergone torsion.

Some associate this tumor with sterility. Hu, Taymor, and Hertig[19] found a 27 per cent correlation with sterility, and Sanger and Barth[20] found a 44 per cent correlation. In the case presented, this was not a feature. Carcinoma of the fallopian tube has also been associated with urinary tract symptoms.[21,22] In this patient there were no urinary symptoms, but a subclinical urinary infection was present on admission and this later became symptomatic.

Signs. The most common sign of fallopian tube carcinoma is a palpable mass which is found in 85 per cent of the cases.[7] The signs of torsion are tachycardia, abdominal tenderness and guarding, and on vaginal examination tenderness in all fornices and on movement of the cervix. A cystic swelling is palpable in the majority of cases.[23] This last feature is common to both tubal torsion and tubal carcinoma.

Summary

A case report is presented of carcinoma of the fallopian tube seen as an acute abdominal emergency caused by torsion of the tube. The symptoms and signs of both fallopian tube carcinoma and torsion of the fallopian tube are discussed, and the rarity of both disorders is pointed out.

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Alternating Supraventricular Tachycardia and Sinus Bradycardia

Treated with Digoxin, Propranolol, and Transvenous Pacemaker

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THERE ARE ONLY RARE instances reported of repetitive supraventricular tachycardia alternating with severe bradycardia.[1,2] The patient to be described, with long-standing coronary artery disease, developed repetitive bouts of supraventricular tachycardia. When these were controlled, his ventricular rate persistently and intolerably slowed although all medication had been discontinued.

The patient was successfully treated with a permanent transvenous pacemaker to control the marked sinus bradycardia; propranolol and digoxin prevented recurrent supraventricular tachycardia.

Case report

A sixty-five-year-old male was admitted to Montefiore Hospital and Medical Center on November 17, 1965, with a two-day history of palpitations.

His cardiac history dated back to 1949 when he had been admitted to a hospital with a "heart attack" for three weeks. Similar episodes had occurred in 1953, 1954, and 1962. In 1958 his electrocardiogram had showed atrial fibrillation with a ventricular rate of 70 per minute; Q waves with T-wave inversions were present in leads III and aVf. He had received digoxin 0.25 mg. per day and intermittent diuretic therapy since 1958. A cholecystectomy had been performed on October 13, 1965.

Past history included a herniorrhaphy in 1955 and a prostatectomy in 1965. In 1963 mild diabetes had been detected.

Physical examination revealed a well-developed white male, acutely ill, with a regular heart rate of 180 per minute and blood pressure 140/80. There was no change in rate with carotid massage. When his rate slowed, a Grade II to VI short systolic murmur was audible in the second left intercostal space along the left sternal border. The remainder of the examination was within normal limits.

Electrocardiograms, as shown in Figure 1, revealed supraventricular tachycardia at 180 per minute (Fig. 1B). This converted to atrial fibrillation with a ventricular rate of 80 per minute after vomiting. The remainder of the laboratory studies gave normal results. He returned home on November 25, 1965, taking digoxin 0.25 mg. per day. On May 23, 1966, palpitations recurred, and he was readmitted to Montefiore Hospital and Medical Center with supraventricular tachycardia at a rate of 180 per minute. Digoxin had been increased to 0.25 mg. twice a day one month prior to this admission, and digitalis toxicity was suspected. Diphenylhydantoin, 350 Gm. intravenously, produced transient asystole followed by sinus bradycardia with a ventricular rate of 40 per minute. Despite oral diphenylhydantoin, 100 mg. three times a day, and phenobarbital 15 mg. three times a day, the supraventricular tachycardia recurred. Diphenylhydantoin 350 mg. intravenously, endrophonium chlo-

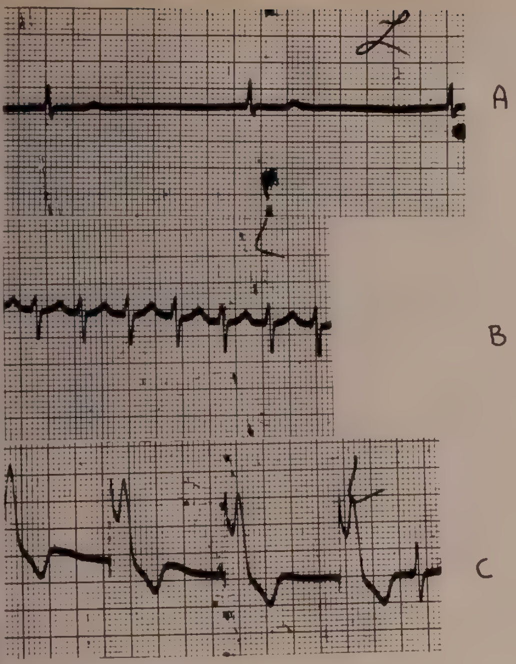

FIGURE 1. Electrocardiograms. (A) Sinus bradycardia with ventricular rate of 40 per minute. (B) Supraventricular tachycardia with ventricular rate of 180 per minute. (C) Transvenous pacemaker rhythm at 70 per minute.

ride (Tensilon) 10 mg. intravenously, and carotid massage were unsuccessful in attempts at slowing his ventricular rate. Twenty-four hours after admission, propranolol (7 mg. intravenously) converted the rhythm to sinus bradycardia at 40 per minute (Fig. 1A). Oral propranolol, 10 mg. four times a day, was given for nine days but was discontinued because of the slow rate of 40 per minute. He had received no digoxin since hospitalization eleven days previously. The supraventricular tachycardia recurred; using digoxin 1.25 mg. intramuscularly, this rhythm converted to sinus rhythm at 80 per minute. Thereafter he was maintained on digoxin 0.25 mg. daily and 10 mg. of propranolol four times a day. On the fourteenth hospital day, his ventricular rate again dropped to 40 per minute, and digoxin and propranolol were discontinued. Four days later the tachycardia recurred and was converted to sinus bradycardia at 40 per minute with methoxamine hydrochloride 10 mg. intravenously. He continued at this rate for another five days when it was decided to insert a demand transvenous pacemaker to achieve a ventricular rate of 70 per minute (Fig. 1C). He had received neither digoxin nor propranolol for nine days. He did well with the pacemaker until June 21, 1966, when supraventricular tachycardia recurred. Carotid massage, methoxamine hydrochloride, and digoxin were only effective transiently. The tachycardia persisted for three days until propranolol, 5 mg. intravenously, stopped the arrhythmia; 10 mg. of propranolol four times a day were reinstituted. He was maintained on this medication and the demand pacemaker at a rate of 70 per minute. Serum enzyme and electrolyte studies during his hospitalization gave normal findings. Thyroid work-up with protein-bound iodine, triiodothyronine, and I-131 revealed normal findings.

When the cardiac pacemaker was turned off, the ventricular rate invariably slowed to a sinus bradycardia at 40 per minute. A permanent transvenous pacemaker was therefore inserted, and he was discharged on July 2, 1966. From July 3, 1966, to August 31, 1966, he developed four episodes of supraventricular tachycardia which were converted with additional propranolol intravenously, digoxin, and intravenous methoxamine hydrochloride on different occasions. His oral propranolol was gradually increased to 40 mg. four times a day. Chlorpromazine hydrochloride 25 mg. four times a day was instituted on August 12, 1966, and was increased to 50 mg. four times a day on August 28, 1966, because of a reactive depression. He was discharged from the hospital on September 8, 1966, on digoxin 0.25 mg. three times a day, chlorpromazine hydrochloride 50 mg. four times a day, propranolol 40 mg. four times a day, and the demand pacemaker.

On October 11, 1966, he developed fever of 103 F., sore throat, and cough. Procaine penicillin 600,000 units intramuscularly was given at home and penicillin G 1,200,000 units given by mouth daily. His fever persisted, and two days later a furuncle was noted in the right axilla. He was readmitted to the hospital on October 14, 1966. Blood studies revealed a hematocrit of 31; white blood count 2,150, with 1 per cent polymorphonuclear leukocytes, 7 per cent monocytes, and 92 per cent lymphocytes; and 292,000 platelets. Bone marrow showed maturation arrest with no visible stabs or polymorphonuclear leukocytes.

The patient was treated with oxacillin sodium, 4 Gm. per day orally and cephalothin 4 Gm. per day intravenously. All other drugs were stopped. The pacemaker was maintained.

Forty-eight hours later, the supraventricular tachycardia recurred. He was given propranolol 5 mg. intravenously, and the rhythm converted to the pacemaker rate of 70 per minute. Propranolol 40 mg. by mouth four times a day and digoxin 0.25 mg. per day were reinstituted. Temperature returned to normal, and the furuncle cleared rapidly. Nine days after admission the hematocrit was 42; white blood count 5,750 with 61 polymorphonuclear leukocytes, 3 monocytes, and 31 lymphocytes; and 5 atypical cells. The only drug which was not reinstituted was chlorpromazine hydrochloride. The cephalothin was given for seven days and oxacillin sodium, for ten days. He was discharged ten days after admission, October 24, 1966, taking propranolol 40 mg. four times a day and digoxin 0.25 mg. three time a day. The demand pacemaker maintained his ventricular rate at 70 per minute, and the underlying rhythm remained atrial fibrillation.

During the next eight months on this medical regimen, he had been well except for two short bouts of supraventricular tachycardia. One occurred when the propranolol was inadvertently omitted. The second occurred coincident with a dislodged pacemaker catheter tip and resultant ineffective pacing. The pacer catheter was reinserted into the apex of the right ventricle, and a ventricular rate of 70 per minute was re-established.

The patient was asymptomatic on propranolol 40 mg. four times a day, digoxin 0.25 mg. three times a day, and the transvenous pacer.

Comment

Repetitive supraventricular tachycardia alternating with severe bradycardia is an unusual clinical occurrence.[1,2] The combination of sympathomimetic drugs to accelerate heart rate and digitalis, procaine amide, and quinidine to prevent recurrent tachycardia has not been effective.

In patients with atrial arrhythmias, the ventricular rate is determined by the frequency of the atrial impulses and the refractory period of the atrioventricular junctional tissue. Circulating and locally released catecholamines increase rate and conductivity.[3-5] Propranolol, a beta adrenergic receptor blockading agent, reverses catecholamine effects and increases atrioventricular block in atrial fibrillation and flutter as well as slowing atrial automaticity in patients with atrial tachycardia.[6-9]

In the case presented, intravenous propranolol was effective in stopping paroxysmal supraventricular tachycardia. When combined with digoxin, oral propranolol prevented recurrent paroxysmal supraventricular tachycardia. Neither agent had been effective alone. The patient also had marked sinus bradycardia at a rate of 40 per minute. A transvenous pacemaker kept the ventricular rate at 70 per minute. When propranolol and digoxin were used in addition, the patient was maintained active and asymptomatic.

Summary

A patient with paroxysmal supraventricular tachycardia alternating with sinus bradycardia at rates of 40 per minute had been followed for many months. Pacemaker therapy controlled his marked bradycardia. Standard antiarrhythmic therapy was ineffective in preventing frequent recurrent episodes of supraventricular tachycardia. When propranolol therapy was combined with digoxin, the recurrent tachycardia was controlled.

Addendum

The patient was well on the foregoing program until July, 1967, when supraventricular tachycardias recurred. We gradually increased his propranolol to 100 mg. four times a day. Procaine amide 500 mg. four times a day was added, and digoxin 0.25 mg. twice a day was maintained.

Despite this program, his recurrent tachycardias intensified. We therefore performed open-heart surgery on October 11, 1967, and surgical division of the patient's conduction system at the bundle of His was performed. Complete heart block was induced, and his transvenous pacemaker was maintained. The patient died in the immediate postoperative period of cardiac arrest.

Varying drug programs as outlined afforded good therapy for his refractory arrhythmias from November, 1965, until July, 1967, when incapacity returned, necessitating the changes and terminal events.

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Abortion

Social, Psychiatric, and Psychoanalytic Perspectives

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From the William Alanson White Institute

HISTORICALLY, THE FEAR of abortion has been widespread. Taboos have existed in almost all ethnic groups and societies. Certainly this fear is rooted in concern about survival of the species. Before the last half-century, with its enormous medical progress, survival of the infant and child was far from assured.

Nevertheless, there are indications that abortion was attempted also in early civilizations and among primitive peoples. Probably many deaths ensued, since infection was not understood nor were technics adequate. These factors provide a background of anxiety and fear in relation to abortion. Guilt was superimposed in response to the formation of social and religious codes.

Most recent contributions to the currently existing taboo on abortion have probably stemmed from the desire to control man's sexual expression for both religious and secular purposes. This control has had both positive and negative consequences. But in effect, until women gained control over their fertility—and this is relatively recent and still far from prevalent—they were, in a sense, in sexual bondage to men, a bondage that refusal of abortion further extended.

Unwelcome pregnancy

Manifold are the reasons why pregnancy may be unwanted and abortion desired. From such statistics as are obtainable, it would seem that by far the greater number of women desiring abortion and obtaining it are married. Unwelcome pregnancy may result from ignorance, unavailability of contraceptives, faulty technics, accidents of many kinds, rape, prospect of physical malformation of the fetus, lack of willingness to be a mother under any circumstance—a sign of major personality warp in the woman, serious physical or mental illness of the prospective mother, poverty, or even apparently simpler reasons like untimeliness or change in the nature of relationship between marital partners.

Empathy with feminine experience: rape, damaged fetus

Before considering our attitudes toward abortion, a word about the feelings of a woman forced to submit to an unwelcome pregnancy is in order. Men have been the ones almost exclusively involved in decisions relating to abortion and contraception, yet few seem to have been able to empathize with or to understand the feelings of a woman under these circumstances. It is most difficult to understand areas of experience quite foreign to one's own, and this seems particularly true in the differing sexual roles of men and women. Thus, men have been able to emphathize with a goose force-fed for paté and have passed laws in restraint of this, since forced feeding may at some time have been the experience of their childhood. However, the feelings of a woman, to whom the

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occasion of her pregnancy may have been a horror, are not yet recognized as a forcing not only of the unwelcome but also of living for months harboring what may be perceived as a "foreign body," of enduring bodily discomfort and the agony of childbirth,[1] and then of undergoing a total change in her life circumstances.[2]

Shakespeare's incredible insight into the infinite varieties of human experience brought to life the outrage, anguish, anger, blight, and despair of rape in his *Rape of Lucrece:* "The wound that nothing healeth, the scar that will despite of cure remain, leaving the spoil perplexed in greater pain. She bears the load of lust he left behind . . ." It is distressing that women have been expected to serve a lifetime sentence to the hated product of outrage.

In a recent survey of psychiatrists across the country, conducted by the Association for the Study of Abortion, in answer to the question of whether or not abortion should be permitted for rape, 91.7 per cent believed it should for girls under the age of sixteen. But for girls from sixteen to eighteen, the percentage dropped 5 points. This would seem to imply their belief that the maturing girl is more likely to be a seductive participant in rape. But again, perhaps this reflects a lack of empathy and projects male attitudes, in which hostile sex and sex under any circumstances is more likely to be accepted.

In the same study, 90 per cent believed that significant risk of mental or physical defect in the fetus justified abortion. This is a high figure but not high enough to suggest sufficient empathy with the feminine predicament here. Many women, as an expression of their insecurity and self doubt, harbor the fear that they may give birth to a "monster." What can be the feelings of a woman when reality is added to this, and she knows that growing within her is a child, if he survives, who literally will be such a creature as a result of illness or drugs, and one who will be a monstrous burden to himself, to her, and to the entire family? Will she love him, and will she succeed in disguising her true feelings to herself, to him, and to others? Who among us has not observed at least one tragic instance in which the well-being of all members of a family has been secondary to the care of a damaged child?

Problems of unwelcome pregnancy

Many complex factors coalesce to form an accepting or rejecting maternal attitude.[2,3] Psychiatric illness or the somatic illnesses associated with pregnancy always contain elements of rejection of the child and are the mother's response to the stress of pregnancy.[4] Studies have shown that after the first trimester of pregnancy, in which unwelcome pregnancy precipitates a crisis that may include suicide or illegal abortion—a kind of murder-suicide pact—virtually all of the somatic illnesses then developing have psychic components. In two of the most serious conditions, pernicious vomiting of pregnancy and eclampsia, the woman uses a bodily metaphor to express her rejection of the fetus and her rage. She attempts to "vomit the fetus out" or to clamp down on it, to "grit her teeth and bear it." In addition, of course, there are the frank psychiatric manifestations of depression or psychotic breakdown.

In the postpartum period, in addition to the frank depressed, delirious, or other psychotic states, minor depressions are much more extensive than generally recognized. These suggest some degree of response to stress and contain some elements of at least transient rejection of the child, suggesting how complex the maternal emotions are, and pointing to the small likelihood that a woman, forced to carry through with unwelcome pregnancy, will be an acceptant and caring mother.

Guilt

Psychiatrists and psychoanalysts have talked a great deal about the problem of guilt after abortion. I have seen little of this. But I have seen great relief. Perhaps we find what confirms our own beliefs. Margaret Mead has pointed out that in some societies in which women are expected to be stoics, they will die in childbirth without an outcry; while in other groups in which it is tolerated, pain will be readily expressed. The demands of the society are the determinant, and the same applies to expressions of guilt.

But I have heard expressions of guilt as a disguise for fear in relation to another person or the society. Further, any expression of guilt cannot be understood unless related to the motivation or occasion of the pregnancy and the desire for abortion. To illustrate:

> An unmarried woman who deliberately becomes pregnant as a means of trying to cement a relationship with a man may, when he refuses marriage, obtain an abortion and then become disturbed and "guilt-ridden." But her disturbance in this instance is not the result of abortion; it is the result of failure of her manipulative effort, an effort suggesting that her interpersonal skills and emotional development are so limited that she has resorted to a coercive device to structure a relationship. Implicit in this is doubt about her capacity to develop future relationships. Any expressions of guilt are disguised, "socially acceptable" complaints in relation to the failure of her scheme rather than any concern about the "lost child." One may well ask how adequate a mother such a woman would prove herself.

Attitudes

We have been begging the question until now. What types of choice do we make? Is it better to produce a child at all costs, however conceived, however damaged, whatever the threat it poses to the mother's well-being and that of other members of the family, whether or not it elicits suicide or psychosis, or is foreordained to live in a series of foster homes, rather than remove some cells which have not yet become a sentient human being? No man or woman ever fully utilizes his or her reproductive potential; is not the loss of an egg also a type of murder?

Must women be punished with children? Have we no confidence that free to choose, women will choose motherhood at the proper time? Are we still at that stage which existed in education before educational philosophy advanced, largely under the influence of John Dewey; that is, do we persist in believing that coercion is the best approach rather than offering assistance and encouragement, thus fostering eagerness?

Fears have been expressed about recidivism. Do we believe that the experience of anesthesia and surgery are so pleasant that women will readily seek this? Except in rare instances, this is not likely to be the case if proper contraceptive advice and help are given.

Questions have been raised about the rights of the husband in decisions on abortion. One might ask in relation to this: What right has one human being to coerce another when that other person will bear the major burden and responsibility? What is the nature of the marital relationship in which the husband is not supportive of his wife, or in which no mutual decision can be reached? What promise does such a family hold for a prospective child?

Conflicting values

The more I have thought about this problem, the closer I have come to the conclusion that the indication for abortion is an unwelcome pregnancy. But no consideration of abortion could be complete without seeing it in perspective against the sociocultural background. Our society is fraught with irrationalities and inconsistencies. If our concern about abortion is the taking of a life, why do we take the cream of our youth and send them off to be killed in war? What is the justification for this kind of murder?

The discrepancy between the values sold by the mass communications media, of which advertising is one instrument brainwashing people into a philosophy of instant and constant self indulgence, widens the gap between prevailing attitudes and the punitive demand that a woman must accept her pregnancy regardless of her own will. This, in effect, singles out women in these circumstances for punishment that thus becomes even more severe than formerly.

One further point in relation to male attitudes must be made. From a psychoanalytic perspective, most adults to some degree retain islands of irrational attitudes stemming from early experience with significant adults. This is transference or paratactic distortion. It is not far-fetched to state that the unwillingness of some men in responsible positions to accept abortion originates in unconscious and unrecognized feelings of a hostile nature toward the mother figure, summoned up by the image of the pregnant woman, and excites punitive retaliatory emotions which are disguised and well-rationalized. Thus, "I hate mother" becomes "Now I am in power and will punish you," but is expressed as: "You must retain your pregnancy because I am concerned about human life." The psychiatrist recognizes these as mechanisms of denial and sublimation.

Conclusion

There are increasing signs in our society today of the loss of reverence for life. The fostering and encouragement of growth under optimal conditions should be our aim. The acceptance of abortion is in no way antithetical to this but rather consistent with it. It might be added that a mother can usually have another child; a child cannot have another natural mother. Let us ask whether a child has a right not only to life but also to an environment which will accept him and foster his well-being.

Geneticists foresee that in the not too distant future, according to Dobzhansky,[5] we will be so threatened by overpopulation that boards may be established to grant a woman permission for pregnancy. Expediency now dictates much greater leniency in regard to abortion. Let us not lose the opportunity to make the decision an ethical one as well.

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Auto seat safety

The front seat backs in passenger autos should be 28 inches high, several inches higher than they are now, to provide better protection against whiplash and other injuries in rear-end collisions, according to a new study. This prescribed height was arrived at after a series of collision experiments conducted by the Institute of Transportation and Traffic Engineering, University of California at Los Angeles, under D.M. Severy, H.M. Brink, and J.D. Baird.

The findings also took into consideration the problem of vision both from within the car and for motorists ahead or behind, trying to see through the vehicle. On this point, the report states that the width of the seat back near the top can be reduced to accommodate increased visibility without significantly reducing the overall protection afforded by a head support. The head restraint in the front seat unit should be designed as an extension of the seat back, the entire seat acting as a unit.

In regard to the rear seat of an auto, the study found that in a moderately severe, 30 mile per hour-collision, a bench seat, modified from 21 to 25 inches, provided good protection for the average-sized passenger. The passenger's head, tests showed, did not strike the rear window or the area above the window.

Other aspects of the rear-end collision problem tested included the performance of the fuel tank under impact, seat structures and anchorages, seat back deflection and permanent deformation, head restraints, lap belts, and padding for passenger protection.

Necrology

Alvin M. Arkin, M.D., of New York City, died in July at the age of fifty-six. Dr. Arkin graduated in 1935 from New York University School of Medicine. He was an assistant attending orthopedic surgeon at The Mount Sinai (off service) and Bellevue Hospitals. Dr. Arkin was a Diplomate of the American Board of Orthopedic Surgery, a Fellow of the American College of Surgeons, and a member of the American Academy of Orthopaedic Surgery, the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Heinz Arons, M.D., of New York City, died on July 2 at the age of seventy-six. Dr. Arons received his medical degree from the University of Berlin in 1918. He was an assistant attending physician at Metropolitan Hospital (affiliate). Dr. Arons was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Nathan Beckenstein, M.D., of Brooklyn, died on October 16 at the age of sixty-three. Dr. Beckenstein graduated in 1928 from Cornell University Medical College. He was director of Brooklyn State Hospital. Dr. Beckenstein was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry), a Fellow of the American College Physicians, and a member of the American Psychiatric Association, the New York Academy of Medicine, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Ralph Henderson Boots, M.D., of New York City, died on October 21 at the age of seventy-seven. Dr. Boots graduated in 1915 from the University of Pittsburgh School of Medicine. He was a consulting physician at Presbyterian Hospital and an honorary physician at Southampton Hospital Association. Retired, on June 21, he founded and directed the Faulkner Arthritis Clinic at the Columbia-Presbyterian Medical Center and was clinical professor emeritus of medicine at Columbia University College of Physicians and Surgeons. A member of the American Rheumatism Association and a past president, he was a founder and a director of the Arthritis Foundation and formerly had served as vice-president of the New York Chapter and also as chairman for four years. In 1963 he received the Floyd B. Odlum Award of the Arthritis Foundation for distinguished leadership and, in 1965, its Distinguished Service Award. An honorary police surgeon of the New York City Police Department and past chairman of the Article 1-B Medical Board of the New York City Fire Department, he was also chairman of the American Medical Advisory Board of the American Hospital of Paris. Dr. Boots was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the New York Academy of Medicine, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Orren Daniel Chapman, M.D., of Syracuse, died on September 14 at the age of seventy. Dr. Chapman graduated in 1924 from Syracuse University College of Medicine. He was a Fellow of the American College of Physicians and a member of the American Association of Pathologists and Bacteriologists, the American Public Health Association, and the Syracuse Academy of Medicine.

William Beatty Dickson, M.D., of Utica, died on October 16 at the age of seventy-three. Dr. Dickson graduated in 1920 from the University of Toronto Faculty of Medicine and was a Fellow of the Royal College of Surgeons of England. He was an attending orthopedic surgeon at St. Luke's and Marcy State Hospitals, an attending surgeon and an attending plastic surgeon at Children's Hospital Home of Utica, and a consulting orthopedic surgeon at Herkimer Memorial Hospital. In 1964 he volunteered for two months medical duty aboard the *S.S. Hope.* Dr. Dickson was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, and a member of the Utica Academy of Medicine, the Oneida County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Neil Edgar Falkenburg, M.D., of Huntington, died on September 12 at the age of seventy-one. Dr. Falkenburg graduated in 1925 from Columbia University College of Physicians and Surgeons. He was an attending physician emeritus in general practice at Huntington Hospital where he had served as chief of medicine and president of the medical staff formerly. Dr. Falkenburg was a member of the American Academy of General Practice, the American Geriatrics Society, the Suffolk County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Edward Lyon Gainsburgh, M.D., of Rego Park, retired, died on October 18 at the age of eighty-nine. Dr. Gainsburgh graduated in 1905 from Columbia University College of Physicians and Surgeons. He was a former medical examiner for the Metropolitan Life Insurance Company and from 1917 to 1921 was medical director for the United States Railroad Administration. Dr. Gainsburgh was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Jane Vorhaus Gang, M.D., of New York City, died on October 17 at the age of forty-eight. Dr. Gang graduated in 1946 from Columbia University College of Physicians and Surgeons. She was a staff psychiatrist at Veterans Administration Hospital, New York City. Dr. Gang was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the American Psychiatric Association, the Westchester County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert Harold Hull Goheen, M.D., of Princeton, New Jersey, formerly of New York City, retired, died on October 18 at the age of eighty-eight. Dr. Goheen graduated in 1905 from Rush Medical College. He served for forty years building what is now St. Luke's Hospital, Vengurla, India, and coordinating the development of the Miraj Medical Center, including its Goheen Psychiatric Center, before retiring in 1945. In 1933 he was awarded the Kaisar-i-Hind Medal for distinguished service in India by King George V of Great Britain. Dr. Goheen was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Samuel Gorham, M.D., of New York City, died on May 19 at the age of sixty-eight. Dr. Gorham graduated in 1925 from University and Bellevue Hospital Medical College. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Hans Joachim Grauert, M.D., of Rochester, died on August 2 at the age of sixty. Dr. Grauert received his medical degree from the University of Hamburg in 1932. He was a member of the Pan-American Medical Association, the Monroe County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

William I. Jacobs, M.D., of New York City, died on August 28 at the age of seventy-one. Dr. Jacobs graduated in 1922 from Long Island College Hospital.

Garo H. Koomey, M.D., of Old Bethpage, died on October 10 at the age of seventy-nine. Dr. Koomey graduated in 1917 from the University of Michigan Medical School. He was a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Emil John Papa, M.D., of Williston Park, died on October 18 at the age of forty-two. Dr. Papa graduated in 1952 from Georgetown University School of Medicine. He was an associate attending orthopedic surgeon at Nassau and St. Charles (Port Jefferson) Hospitals and an attending orthopedic surgeon at Meadowbrook Hospital. Dr. Papa was a Diplomate of the American Board of Orthopedic Surgery and a member of the Nassau County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Gustav R. Petz, M.D., of Richmond Hill, died on October 4 at the age of seventy-three. Dr. Petz graduated in 1918 from Long Island College Hospital. He was a member of the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Herman Joseph Philipp, M.D., of Richmond Hill, died on June 3 at the age of sixty-seven. Dr. Philipp graduated in 1924 from Columbia University College of Physicians and Surgeons. He was a Fellow of the American College of Obstetricians and Gynecologists.

Hector Joseph Ritey, M.D., of New York City, died on October 14 at the age of sixty-eight. Dr. Ritey received his medical degree from the University of Florence in 1922. He was a founder of the Metropolitan Center for Mental Health, Inc., in 1962, and at the time of his death was the medical director. Dr. Ritey was a Diplomate of the American Board of Psychiatry and Neurology (Psychiatry) and a member of the American Psychiatric Association, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Arthur J. Tillinghast, M.D., of New York City, died on March 28 at the age of fifty-nine. Dr. Tillinghast graduated in 1938 from the University of McGill Faculty of Medicine. He was a Diplomate of the American Board of Radiology and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert M. Toll, M.D., of New York City, died on October 12 at the age of eighty-three. Dr. Toll graduated in 1907 from the University of Pennsylvania School of Medicine. He was a Fellow of the International College of Surgeons and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

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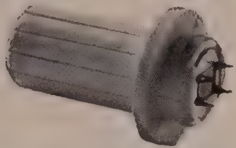

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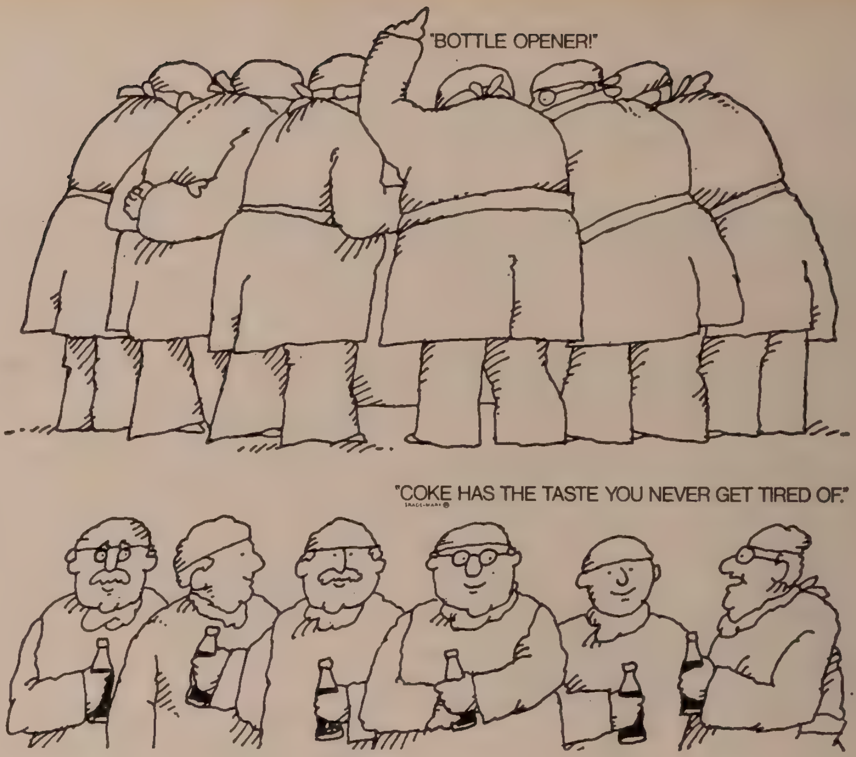
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The award was presented in 1963 to Herbert A. Kaufman, M. D. for introduction of an effective treatment of virus infections which contain DNA; and in 1962 to James O. Elam, M. D., for his research and development of a mouth-to-mouth resuscitation method.

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helps relieve psychic tension with associated depressive symptoms

ne individuals under careful surveillance because of their
disposition to habituation and dependence. In pregnancy,
ation or women of childbearing age, weigh potential
efit against possible hazard.

ecautions: If combined with other psychotropics or anti-
ıvulsants, consider carefully pharmacology of agents em-
ıyed. Usual precautions indicated in patients severely
pressed, or with latent depression, or with suicidal ten-
ıcies. Observe usual precautions in impaired renal or
patic function. Limit dosage to smallest effective amount in
lerly and debilitated to preclude ataxia or oversedation.

de Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation, have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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AN IMPORTANT MESSAGE ON SPUTUM CYTOLOGY

Sputum Cytology—practical and economical as a routine diagnostic aid for the detection of lung cancer to be used in conjunction with other diagnostic techniques (such as roentgenology and bronchoscopy) in industry, hospitals, community health centers, and private practice.

DIRECTIONS FOR USING
EACH MORNING FOR FOUR (4) DAYS, BEFORE EATING OR DRINKING, DO THE FOLLOWING:
1. Open mouth and take a deep breath
2. Cough with force and spit once into the funnel.
3. Close cap tightly
CYTEC® SYSTEM
Sputum Collection Kit for Sputum Cytology
PULL TO OPEN
PULL
CYTEC®
SPUTUM COLLECTION KIT
Please Print
Name
Address
Age
Occupation
Organization
Physician's Name
Physician's Address

AN AID TO THE MEDICAL COMMUNITY: Sputum cytologic screening is an aid in lung cancer detection when used with professional judgment as part of the diagnostic workup of the patient.

Pulmonary exfoliative cytology is a useful diagnostic aid when used in conjunction with other diagnostic techniques in early lung cancer detection; however, problems in sputum collection, difficulties in preparation, and expenses involved have made it impractical for routine screening. As a consequence, it has not been used to the fullest in private, industrial, and public health programs. The CYTEC® System of Sputum Cytology helps overcome most of these problems.

The CYTEC System is sputum cytology with rapidity

Developed by Nuclear Research Associates, Inc., the CYTEC System provides reliable collection, preservation, separation, and concentration of cells as well as automated staining, all with accuracy, uniformity, speed, and simplicity.

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CYTEC is simple, convenient and easy to use

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A few words about Nuclear Research Associates, Inc., and its Ca Detection Laboratories

Nuclear Research Associates, Inc. is an interdisciplinary organization of physicians, physicists, biologists, chemists, and engineers working in the physical, biological, and medical sciences. The Ca Detection Laboratories represents a portion of Nuclear's recently established biomedical division and is devoted to research and technology in the cancer detection field. CYTEC is the first development to be offered to the medical community by the biomedical division. Others are on their way.

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New York State Journal of Medicine

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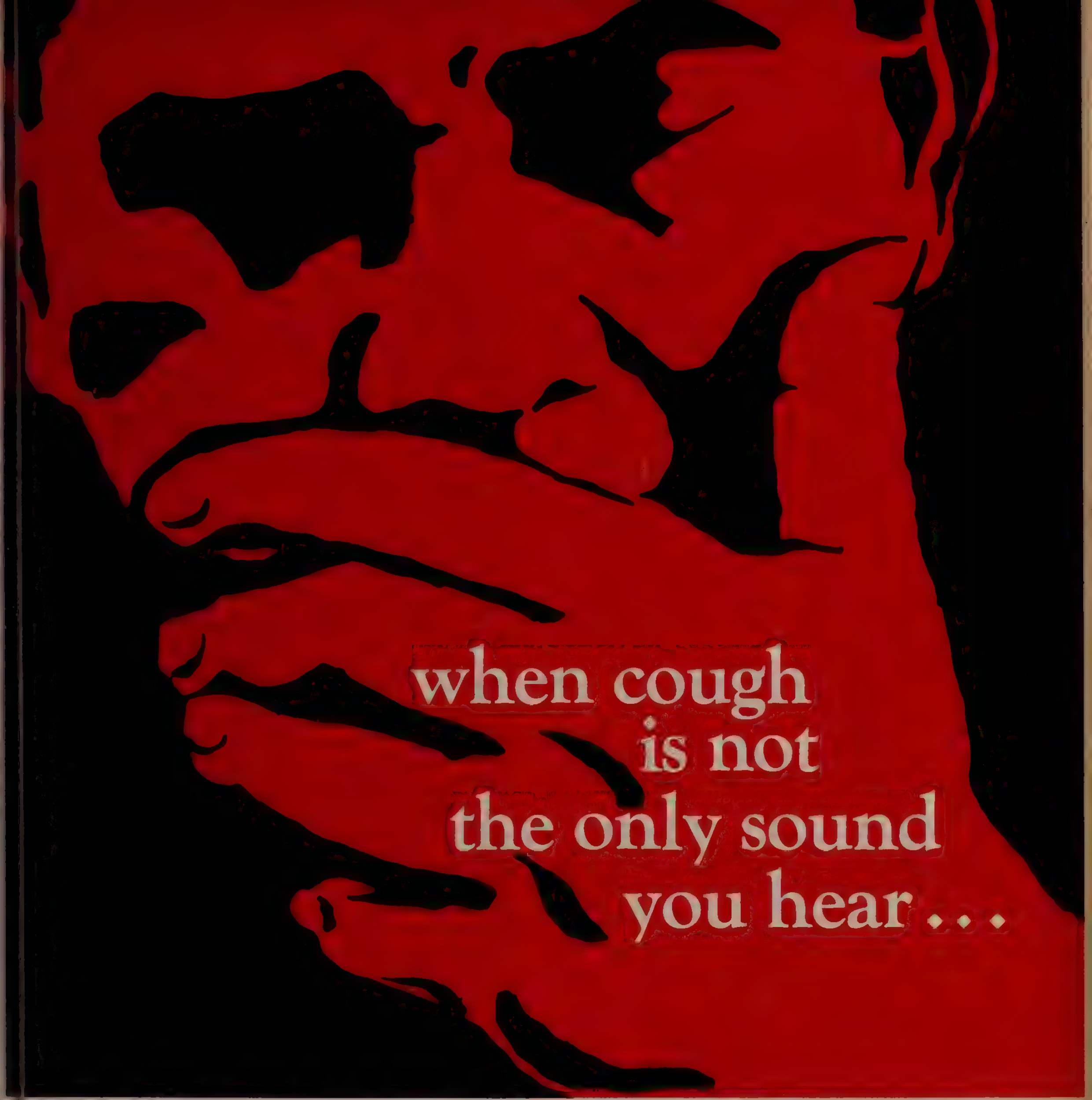

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Is it depression?

He says "It's my stomach..." ...but his other symptoms:
functional somatic complaints, anxiety, insomnia, anorexia, feelings of guilt
strongly suggest
an underlying depression.

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when the diagnosis is depression

ELAVIL® HCl
(AMITRIPTYLINE HCl | MSD)

Indications: Mental depression and mild anxiety accompanying depression.

Contraindications: Glaucoma and predisposition to urinary retention. Not recommended in pregnancy.

Precautions and Side Effects: Drowsiness may occur within the first few days of therapy. Patients should be warned against driving a car or operating machinery or appliances requiring alert attention. When depression is accompanied by anxiety or agitation too severe to be controlled by ELAVIL HCl alone, a phenothiazine tranquilizer may be given concomitantly. Suicide is always a possibility in mental depression and may remain until significant remission occurs. Supervise patients closely in case they may require hospitalization or concomitant electroshock therapy. Untoward reactions have been reported after the combined use of antidepressant agents having varying modes of activity. Accordingly, consider possibility of potentiation in combined use of antidepressants. Monoamine oxidase inhibitor drugs may potentiate other drugs and such potentiation may even cause death; permit at least two weeks to elapse between administration of two agents; in such patients, initiate therapy with ELAVIL HCl cautiously with gradual increase in dosage required to obtain a satisfactory response. Caution patients about errors of judgment due to change in mood, and that the response to alcohol may be potentiated. May provoke mania or hypomania in manic-depressive patients.

Side effects include drowsiness; dizziness; nausea; excitement; hypotension; fine tremor; jitteriness; weakness; headache; heartburn; anorexia; increased perspiration; incoordination; allergic-type reactions manifested by skin rash, swelling of face and tongue, itching; numbness and tingling of limbs, including peripheral neuropathy; activation of schizophrenia which may require phenothiazine tranquilizer therapy; epileptiform seizures in chronic schizophrenics; temporary confusion, disturbed concentration or, rarely, transient visual hallucinations on high doses; evidence of anticholinergic activity, such as tachycardia, dryness of the mouth, blurring of vision, urinary retention, constipation; paralytic ileus; jaundice; agranulocytosis.

Careful observation of all patients is recommended. The antidepressant activity may be evident within 3 or 4 days or may take as long as 30 days to develop adequately, and lack of response sometimes occurs. Response to medication will vary according to severity as well as type of depression present. Elderly patients and adolescents can often be managed on lower dosage levels.

Supplied: Tablets ELAVIL HCl, containing 10 mg., 25 mg., and 50 mg. amitriptyline HCl, bottles of 100 and 1000; Injection ELAVIL HCl, in 10-cc. vials, containing per cc.: 10 mg. amitriptyline HCl, 44 mg. dextrose, 1.5 mg. methylparaben, and 0.2 mg. propylparaben.

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Books Received

*The following books were received during the month of October, 1968.**

Zinsser Microbiology. By David T. Smith, M.D., Norman F. Conant, Ph.D., Hilda Pope Willett, Ph.D., *et al.* Fourteenth edition. Quarto of 1,281 pages, illustrated. New York, Appleton-Century-Crofts, 1968. Cloth, $22.50.

Pediatrics. By Henry L. Barnett, M.D., with the collaboration of Arnold H. Einhorn, M.D. Fourteenth edition. Quarto of 1,847 pages, illustrated. New York, Appleton-Century-Crofts, 1968. Cloth, $24.50.

Current Diagnosis—2. Edited by Howard F. Conn, M.D., and Rex B. Conn, Jr., M.D. Quarto of 990 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $21.75.

Atlas of Fluorescence Fundus Angiography. By Shinichi Shikano, M.D., and Koichi Shimizu, M.D. Quarto of 201 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $28.

A Manual of Electroneuromyography. By Hyman L. Cohen, M.D., and Joel Brumlik, M.D. Quarto of 178 pages, illustrated. New York, Hoeber Medical Division, Harper & Row, Publishers, 1968. Cloth, $10.50.

Surgery of Ptosis. By Sidney A. Fox, M.D. Quarto of 284 pages, illustrated. New York, Grune & Stratton, 1968. Cloth, $15.75.

TUR Transurethral Prostatectomy; Technique, Hazards, and Pitfalls. By George Otto Baumrucker, M.D. Octavo of 141 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $9.50.

Technologist Guide to Mammography. By Robert L. Egan, M.D. Quarto of 123 pages, illustrated. Baltimore, The Williams & Wilkins Company, 1968. Cloth, $8.75.

Physiological Chemistry of Lipids in Mammals. By Edward J. Masoro, Ph.D. Octavo of 304 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $7.75.

An Introduction to Clinical Anatomy by

Dissection of the Human Body. By R. D. Laurenson, M.D. Octavo of 522 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $9.50.

Reconstructive Anatomy: A Method for the Study of Human Structure. By Maurice Arnold, M.B. Quarto of 529 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $10.75.

An Atlas of Pelvic Operations. By Langdon Parsons, M.D., and Howard Ulfelder, M.D. Illustrated by Mildred B. Codding, A.B., M.A. Second edition. Folio of 448 pages, illustrated. Philadelphia, W. B. Saunders Company, 1968. Cloth, $24.

Psychotherapy in Action. By D. Ewen Cameron, M.D. Octavo of 228 pages. New York, Grune & Stratton, 1968. Cloth, $8.50.

Diary of a Heart Patient. By Yehuda Kesten. Octavo of 272 pages. New York, McGraw-Hill Book Company, 1968. Cloth, $7.95.

Changing the Family. By Warren M. Brodey, M.D. Octavo of 160 pages. New York, Clarkson N. Potter, Inc., 1968. Cloth, $6.00.

Suicide and Mass Suicide. By Joost A. M. Meerloo, M.D. Octavo of 153 pages. New York, E. P. Dutton & Co., Inc., 1962. Cloth, $4.95.

The Hurricane Years. By Cameron Hawley. Octavo of 567 pages. Boston, Little, Brown and Company, 1968. Cloth, $7.50.

The Side of the Angels. By John Rowan Wilson. Octavo of 348 pages. Garden City, N.Y. Doubleday & Company, Inc., 1968. Cloth, $5.95.

A Doctor's Approach to Sensible Dieting and Weight Control. By Paul G. Neimark in consultation with Eugene Scheimann, M.D. Duodecimo of 115 pages, illustrated. Chicago, Budlong Press Company, 1968. Paper.

Infection Control in the Hospital. Octavo of 140 pages, illustrated. Chicago, American Hospital Association, 1968. Paper.

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* Books received for review are acknowledged promptly in this column. No other obligation is assumed for the courtesy of those sending them for this purpose. Selection for review is made on the basis of merit and reader interest.

In the complex picture of moderate to severe anxiety...

there is a new reason for prescribing Mellaril (Thioridazine HCl)

effectiveness in mixed anxiety-depression

Long recognized for its usefulness in the reatment of moderate to severe anxiety, Mellaril is now also known to be effective against mixed anxiety-depression.

Often the symptoms of anxiety states are difficult to sort out—even with the most careful probing. The patient may manifest symptoms of agitation, restlessness, insomnia, somatic omplaints. But what of the depression that may be mixed in the total picture? It is reassuring o know that Mellaril may be prescribed—with trong possibilities of success—when there is anxiety alone or a mixture of anxiety and depression.

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Contraindications: Severe central nervous system depression, comatose states from any cause, hypertensive or hypotensive heart disease of extreme degree.

Warnings: Administer cautiously to patients who have previously exhibited a hypersensitivity reaction (e.g., blood dyscrasias, jaundice) to phenothiazines. Phenothiazines are capable of potentiating central nervous system depressants (e.g., anesthetics, opiates, alcohol, etc.) as well as atropine and phosphorus insecticides. During pregnancy, administer only when necessary.

Precautions: There have been infrequent reports of leukopenia and/or agranulocytosis and convulsive seizures. In epileptic patients, anticonvulsant medication should also be maintained. Pigmentary retinopathy may be avoided by remaining within the recommended limits of dosage. Administer cautiously to patients participating in activities requiring complete mental alertness (e.g., driving). Orthostatic hypotension is more common in females than in males. Do not use epinephrine in treating drug-induced hypotension. Daily doses in excess of 300 mg. should be used only in severe neuropsychiatric conditions.

Adverse Reactions: *Central Nervous System*—Drowsiness, especially with large doses, early in treatment; infrequently, pseudoparkinsonism and other extrapyramidal symptoms; nocturnal confusion, hyperactivity, lethargy, psychotic reactions, restlessness, and headache. *Autonomic Nervous System*—Dryness of mouth, blurred vision, constipation, nausea, vomiting, diarrhea, nasal stuffiness, and pallor. *Endocrine System*—Galactorrhea, breast engorgement, amenorrhea, inhibition of ejaculation, and peripheral edema. *Skin*—Dermatitis and skin eruptions of the urticarial type, photosensitivity. *Cardiovascular System*—Changes in the terminal portion of the electrocardiogram have been observed in some patients receiving the phenothiazine tranquilizers, including Mellaril (thioridazine hydrochloride). While there is no evidence at present that these changes are in any way precursors of any significant disturbance of cardiac rhythm, several sudden and unexpected deaths apparently due to cardiac arrest have occurred in patients previously showing electrocardiographic changes. The use of periodic electrocardiograms has been proposed but would appear to be of questionable value as a predictive device. *Other*—A single case described as parotid swelling.

Mellaril®
(Thioridazine HCl)
25 mg. t.i.d.

for moderate to severe anxiety and mixed anxiety-depression

SANDOZ SANDOZ PHARMACEUTICALS, HANOVER, N. J. 68-169

a breakthroug in the control of pain

Talwin® **Brand of pentazocine (as lactate)**
Potent, non-narcotic analgesic for parenteral use

Contraindications: *Increased Intracranial Pressure, Head Injury, or Pathologic Brain Conditions in which clouding of sensorium is undesirable.* Talwin (brand of pentazocine) should not be administered in these cases, since drug-induced sedation, dizziness, nausea, or respiratory depression could be misleading.

Precautions: *Pregnancy.* No teratogenic or embryotoxic effects attributable to the use of Talwin have been seen in extensive reproductive studies in animals; however, like all new drugs, Talwin should be given with caution to pregnant women. A large number of patients in labor have received the drug with no adverse reactions other than those that occur with commonly used strong analgesics. However, as with other strong analgesics, Talwin should be used with caution in women delivering premature infants.

Ambulatory Patients. Since sedation, dizziness, and occasional euphoria have been noted, ambulatory patients should be warned not to operate machinery, drive cars, or unnecessarily expose themselves to hazards.

Certain Respiratory Conditions. The possibility that Talwin (brand of pentazocine) may cause respiratory depression should be considered in treatment of patients with bronchial asthma. Talwin should be administered only with caution and in low dosage to patients with respiratory depression (e.g., from other medication, uremia, or severe infection), obstructive respiratory conditions, or cyanosis.

Dependence Potential. Talwin is not classified as a narcotic. It is not subject to narcotic controls, based on the results of findings in direct addiction tests, substitution tests in morphine addicts, and single-dose tests in hospitalized narcotic addicts completely withdrawn from drugs. It does not substitute for morphine in subjects who are physically dependent on morphine and does not prevent withdrawal symptoms. Chronic administration of parenteral Talwin was disliked by hospitalized opiate addicts. Talwin is a mild narc antagonist and some patients previously given a narcotic for month or longer had mild withdrawal symptoms when it was repla with Talwin. After a short period of adjustment these patients usu continued to take Talwin, and relief of pain was satisfactory.

Abrupt discontinuance following excessive use of parenteral Tal has resulted in symptoms such as abdominal cramps, elevated te perature, rhinorrhea, restlessness, anxiety, and lacrimation. Th have occurred primarily in patients with a history of narcotic d abuse. In prescribing parenteral Talwin for chronic use, particul if the drug is to be self-administered, the physician should take cautions to prevent increases in dose and frequency of injection the patient and to prevent the use of the drug in anticipation of rather than for the relief of pain.

Nonaddicted Patients Receiving Narcotics. Symptoms believed to indicative of antagonism to the opiate may be observed rarely administration of Talwin to patients receiving opiates for a s time. Intolerance or untoward reactions are seldom observed a administration of Talwin to patients who have received single do or who have had limited exposure to narcotics.

Impaired Renal or Hepatic Function. Although laboratory tests h not indicated that Talwin causes or increases renal or hepatic pairment, the drug should be administered with caution to patie with such impairment. Extensive liver disease appears to predisp to greater side effects (e.g., marked apprehension, anxiety, dizzin sleepiness) from the usual clinical dose, and may be the resul decreased metabolism of the drug by the liver.

Myocardial Infarction. As with all drugs, Talwin (brand of penta cine) should be used with caution in patients with myocardial farction who have nausea or vomiting.

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Adverse Reactions: The most commonly occurring reactions are: sea, vertigo (dizziness or lightheadedness), vomiting, euphoria.

n-narcotic

Talwin®

ınd of

pentazocine

(as lactate)

TEVER the intensity of the pain
the cause of the pain
the site* of the pain
the duration of the pain
the chronicity of the pain
the age† of the patient

in should not be used for patients with
sed intracranial pressure,
njury or pathologic brain conditions.

sufficient experience is gained, it should not
ministered to children under 12 years of age.

a potent injectable analgesic — may be used in place of morphine, meperidine and other narcotics

Talwin acts as rapidly as morphine; its duration of action may sometimes be less. Relief of pain with Talwin usually lasts three hours or longer.

Less constipation than with morphine
Less urinary retention than with morphine
Less risk of severe respiratory depression than with morphine
Less nausea than with meperidine
Less vomiting than with meperidine
Less diaphoresis than with meperidine

(For details of Adverse Reactions to Talwin see Brief Summary, below.)

With Talwin — no narcotic controls

Talwin does not require a narcotic prescription or narcotic records. The World Health Organization Expert Committee on Dependence-Producing Drugs concluded that "...there was no need at this time for narcotics control of pentazocine [Talwin] internationally or nationally." (*WHO Tech. Rep. Ser.*, no. 343, 1966, p. 6.)

Talwin relieves pain of all types and all degrees in acute and chronic disorders.

86% of medical and of surgical patients obtained excellent to good relief with Talwin 30 mg. administered parenterally.

ently occurring reactions are — *respiratory:* respiratory de-
n, dyspnea, transient apnea in a small number of newborn
whose mothers received Talwin during labor; *cardiovascular:*
ory depression, shock, hypertension; *psychiatric:* alteration
d (nervousness, apprehension, depression, floating feeling),
; *gastrointestinal:* constipation, dry mouth; *dermatologic in-*
local: diaphoresis, sting on injection, flushed skin including
a, dermatitis including pruritus; *others:* urinary retention, head-
paresthesia, alterations in rate or strength of uterine contrac-
uring labor.

reported reactions include — *neuromuscular and psychiatric:*
tremor, insomnia, disorientation, hallucinations; *gastroin-*
l: taste alteration, diarrhea and cramps; *ophthalmic:* blurred
nystagmus, diplopia, miosis; *others:* tachycardia, nodules and
ion at injection site, drug dependency with withdrawal symp-
weakness or faintness, chills, moderate transient eosinophilia,
c reactions including edema of the face.

e and Administration: *Adults, Excluding Patients In Labor.*
e recommended single parenteral dose is 30 mg., by intra-
lar, subcutaneous, or intravenous route; may be repeated
three to four hours. Pain has been relieved in most patients
ot more than three doses daily. Infrequently, selected patients
eceived single doses as high as 60 mg. As with most parenteral
when frequent daily injections are needed over a prolonged
, intramuscular administration is preferable to subcutaneous.
ition, constant rotation of sites (e.g., the upper outer quad-
of the buttocks, midlateral aspects of the thighs, and the
areas) is recommended.

ts in Labor. A single, intramuscular 30 mg. dose has been
commonly administered. An intravenous 20 mg. dose has given
ate pain relief to some patients in labor when contractions
e regular, and this dose may be given two or three times at
three-hour intervals, as needed.

en Under 12 Years of Age. Since clinical experience in chil-
nder twelve years of age is limited, the use of Talwin (brand
tazocine) in this age group is not recommended.

CAUTION. Talwin should not be mixed in the same syringe with soluble barbiturates because precipitation will occur.

Treatment of Overdosage or Respiratory Depression. Means of maintaining proper oxygenation should be available in case of overdosage or respiratory depression, and methylphenidate (Ritalin®) should be administered parenterally. The usual narcotic-antagonists, such as nalorphine, are not effective respiratory stimulants for depression due to Talwin.

How Supplied: *Ampuls of 1 ml.*, containing Talwin (brand of pentazocine) as lactate equivalent to 30 mg. base and 2.8 mg. sodium chloride, in Water for Injection. Boxes of 10, 25, and 100.

Multiple dose vials of 10 ml., each 1 ml. containing Talwin (brand of pentazocine) as lactate equivalent to 30 mg. base, 2 mg. acetone sodium bisulfite, 1.5 mg. sodium chloride, and 1 mg. methylparaben as preservative, in Water for Injection. Boxes of 1.

The pH of Talwin solutions is adjusted between 4 and 5 with lactic acid and sodium hydroxide.

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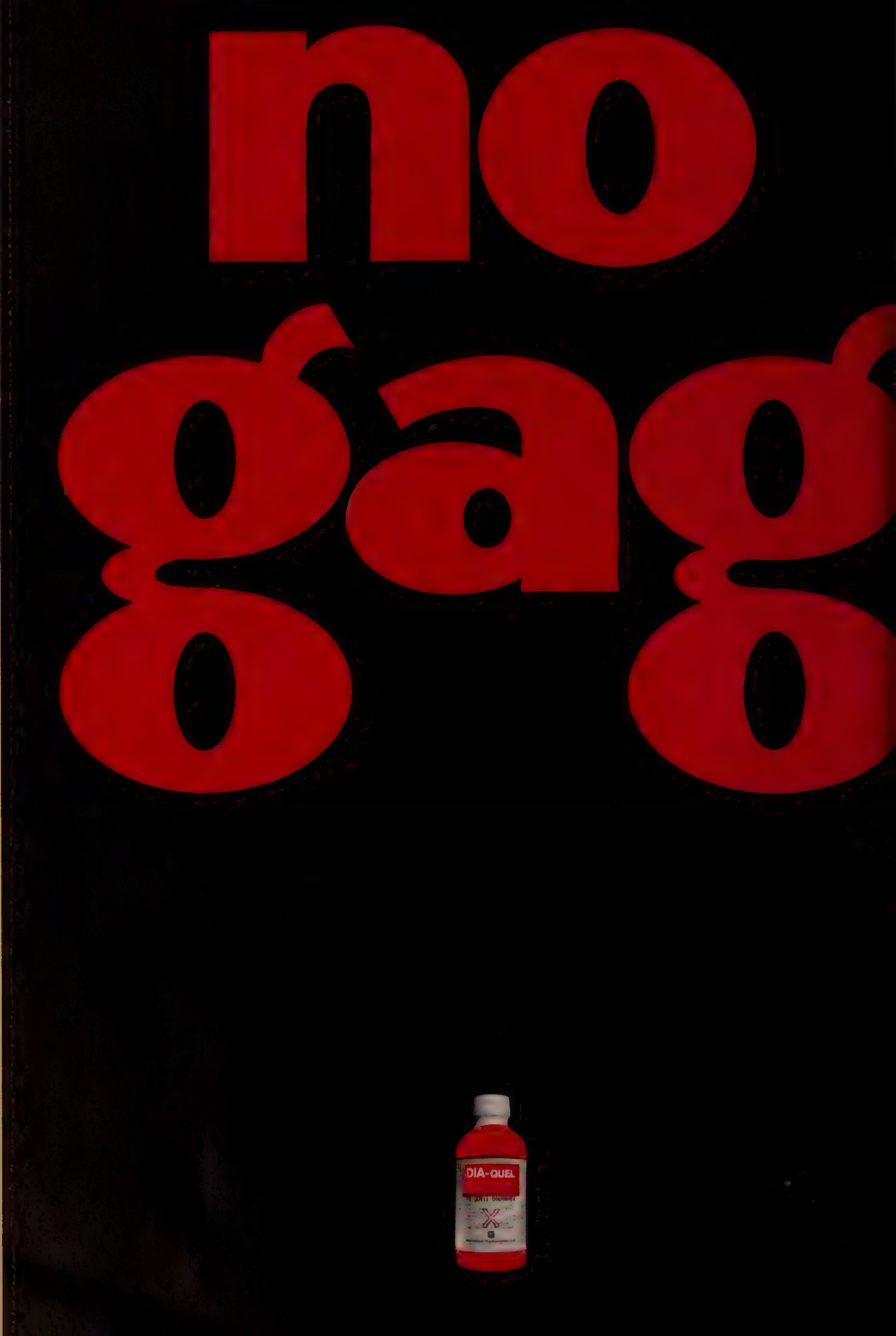
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DIA-QUEL actually tastes good

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By leaving out paregoric's outdated preservative—bitter-tasting camphor—we've produced an antidiarrheal that is good-tasting, as well as effective and prompt-acting in acute, nonspecific diarrheas and their accompanying "cramps." It is DIA-quel, a clear, red liquid with a pleasant cherry flavor.

Each teaspoonful (5 ml.) of DIA-quel Liquid contains:

Tincture of Opium... 0.03 ml.—Equivalent to 0.75 ml. of paregoric.
(Warning: May be habit forming)

To reduce hypermotility and frequency.

Homatropine Methylbromide... 0.15 mg.

A safe dose for mild spasmolysis to curb cramping and griping.

Pectin... 24. mg.

Demulcent, adsorbent. Helps form stools.

Alcohol 10% by volume.

In case you're curious, back in the 1700's paregoric was being used for diarrhea, but since the state of the pharmaceutical art was extremely primitive, fungus growth in the medication was a problem. Bitter-tasting camphor was added to prevent such growth and anise oil was added in an attempt to cover up the camphor taste. DIA-quel Liquid is a modern formulation that does not contain either of these outdated ingredients.

Caution: With use of DIA-quel Liquid observe the usual precautions associated with opium derivatives and anticholinergics.

Dosage: Usual adult dosage: 1 or 2 tablespoonfuls (15 or 30 ml.) t.i.d. or q.i.d. Usual children's dosage (Clark's rule): ½ to 2 teaspoonfuls (2.5 to 10 ml.) t.i.d. or q.i.d.

How Supplied: In 4 fl. oz. (118 ml.) band-sealed bottles.

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DIA-quel is a Federally exempt narcotic (Class X) preparation. Where state law permits, no prescription is necessary.

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DIA-QUEL LIQUID

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Sponsored by the

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Committee on Medical Aspects of Sports

Saturday, February 8, 1969 **9:00 a.m. to 5:00 p.m.**
Americana Hotel, New York City

Registration—8:30 a.m., Georgian Ballroom (No Registration Fee)

Program—Morning Session—9:00 a.m. Moderator, Alexius Rachun, M.D.
Team Physician, *Cornell University*

A. Head and Neck Injuries
B. The Trainer's Role in High School Athletics
C. Rehabilitation of the Injured Athlete
D. Highlights of the Olympics

Luncheon—12:30 p.m. Guest Speaker: "Sleepy" Jim Crowley
Quarterback 'The Four Horsemen of Notre Dame'

Program—Afternoon Session—2:00 p.m. Moderator, M. Laurens Rowe, M.D.
University of Rochester Medical School

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H. Boxing

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February 9-13, 1969

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They want your help and Aventyl HCl can help you.

Whether depression is open or secretive, Aventyl HCl assists in relieving the symptoms and the state of depression itself. It may aid in removing the emotional distortions and, in lifting the depression, help patients face, accept, or change their life patterns.

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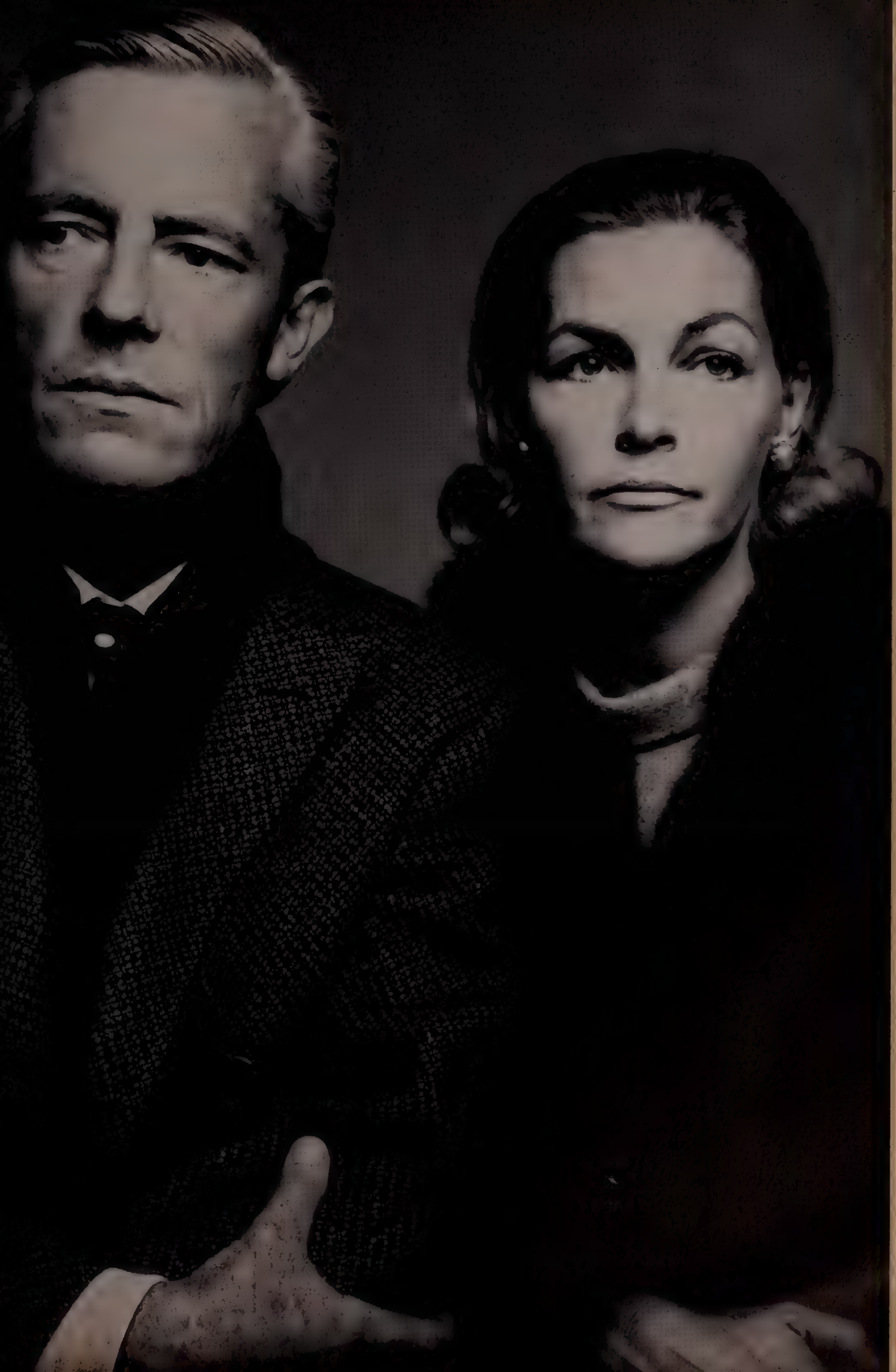
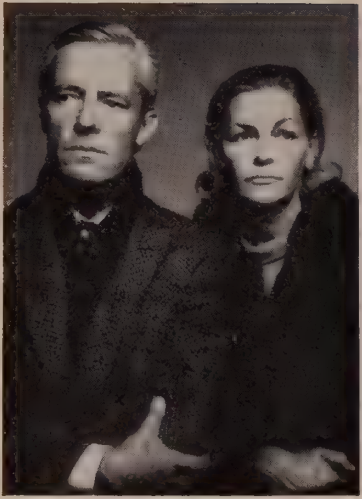
lift the depression,
and release the patient

Aventyl® HCl
Nortriptyline Hydrochloride

600376

(See last page for prescribing information.)





Aventyl® HCl

Nortriptyline Hydrochloride

Description: Aventyl HCl is a safe and effective agent for treatment of mental depression, anxiety-tension states, and psychophysiological gastrointestinal disorders. It is not a monoamineoxidase (MAO) inhibitor.

In laboratory animals, anticholinergic effects of Aventyl HCl are milder than those of related antidepressants.

Indications: Depressive reactions (alone or accompanied by anxiety) associated with such presenting symptoms as depression, anxiety, tension, insomnia, restlessness, disinterest, and irritability.

Psychophysiological gastro-intestinal disorders and symptomatic reactions in childhood (e.g., enuresis).

Contraindications: Hypersensitivity to the drug; concurrent use with a MAO inhibitor or use within two months after the MAO inhibitor is discontinued.

Warnings: Use in convulsive or hypotensive states should be closely followed by the physician.

At present, data are insufficient to recommend the drug during pregnancy. The possibility of a suicidal attempt in a depressed patient should always be considered.

There have been rare reports of agranulocytosis, jaundice, hypotension, tremor, urinary retention, thrombocytopenic purpura, and paralytic ileus. Periodic laboratory studies are recommended.

Cardiovascular complications, including myocardial infarction and arrhythmias, have been reported occasionally with related drugs. Patients with cardiovascular disease should be given Aventyl® HCl (nortriptyline hydrochloride, Lilly) under close observation and in low dosage. This drug, like members of its group, tends to produce sinus tachycardia and to prolong the conduction time, as manifested by first-degree AV block.

Precautions: Because of its anticholinergic activity, Aventyl HCl should be administered cautiously in patients with glaucoma or a propensity for urinary retention. Use Aventyl HCl with care in conjunction with sympathomimetic or anticholinergic drugs. Epileptiform seizures or troublesome patient hostility may occur. Aventyl HCl used alone in schizophrenic patients may result in an exacerbation of the psychosis.

Concomitant use of Aventyl HCl and ECT (with or without atropine, short-acting barbiturate, and muscle relaxant) has not been thoroughly studied. If these treatments are used together, the physician should be aware of possible added adverse effects.

Patients should be warned about the possibility of drowsiness if they operate dangerous machinery or drive a vehicle. Concurrent ingestion of other C.N.S. drugs or alcohol may potentiate the adverse effects of Aventyl HCl.

Patients receiving a tricyclic antidepressant (e.g., nortriptyline) may respond poorly to hypotensive agents such as guanethidine.

Adverse Reactions: The following have been observed or reported following the use of Aventyl HCl: dryness of mouth, drowsiness, constipation, dizziness, tremulousness, confusional state, ataxia, disorientation and hallucinations, restlessness, weakness, precipitation of hypomanic or manic state, tachycardia, blurred vision, epigastric distress, sweating, peculiar taste, black tongue, fatigue, excess weight gain or weight loss, insomnia, headache, paresthesia, nausea and vomiting, adynamic ileus, rash, itching, delayed micturition, hunger sensation, flushing, diarrhea, nocturia, inner nervousness, anxiety and panic, ankle and orbital edema, hypotension, hypertension, impotence, nightmares, palpitation, numbness, peripheral neuropathy, photosensitization, extrapyramidal symptoms, and increased or decreased libido.

Habituation or withdrawal symptoms have not been reported.

Administration and Dosage: Aventyl HCl is administered orally as Pulvules® or liquid. Dosage should be individualized. The following general principles are applicable.

Aventyl HCl is preferably given in gradually increasing doses: 1 Pulvule (10 mg.) twice the first day, 1 Pulvule three times the second day, and 1 Pulvule four times daily thereafter.

If neither beneficial nor adverse effects are seen after five to seven days with 10 mg. four times a day, the patient can be given 25 mg. twice the first day, 25 mg. three times the second day, and 25 mg. four times daily thereafter.

If minor side-effects develop, reduce the dosage. If side-effects of a more serious nature or allergic manifestations develop, discontinue the drug.

For mild symptoms of a depressive nature, give 10 mg. three or four times a day; for severe depressions, 100 mg. daily.

Dosages above 100 mg. daily seem to induce no greater degree of clinical response, but side-effects may increase.

Usual Recommended Dosage

ADULTS—20 to 100 mg. daily

Pulvules: 25 mg.—1 Pulvule one to four times daily

10 mg.—1 or 2 Pulvules one to four times daily

Liquid: 1 to 2 teaspoonfuls (5 to 10 cc.) one to four times daily

CHILDREN—1 to 2 mg. per Kg. or 10 to 75 mg. daily

Pulvules: 25 mg.—Ages seven to twelve, 1 Pulvule one to three times daily

10 mg.—Ages three to six, 1 Pulvule one to three times daily

Ages seven to twelve, 1 or 2 Pulvules one to three times daily.

Liquid: Ages three to six, 1 teaspoonful (5 cc.) one to three times daily

Ages seven to twelve, 1 to 2 teaspoonfuls (5 to 10 cc.) one to three times daily

Maintenance medication is necessary until it is evident that the depression cycle has run its spontaneous course. This assumption may be based upon the history of previous depressions, the removal of the precipitating factors in the environment, or a recognition that the patient is able to manage his affairs. It is advisable to continue maintenance therapy for several months after improvement.

How Supplied: Liquid Aventyl® HCl (nortriptyline hydrochloride, Lilly), 10 mg. (equivalent to base) per 5 cc., in pint bottles.

Pulvules Aventyl HCl, 10 and 25 mg. (equivalent to base), in bottles of 100 and 500. [081668]

Additional information available to physicians upon request. 800376

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Month in Washington

Three fourths of the Medicare Part B carriers now are using individual physician fee profiles in determining reasonable charges. The S.S.A. (Social Security Administration) said that these carriers, a total of 36, collectively process 80 per cent of the Medicare bills submitted by physicians. Prevailing fees continue as a major factor in the reasonable charges determined by the carriers. The remaining 14 carriers which have not yet fully developed the individual physician fee profiles, or the computer capacity for using them, are employing other interim technics. Some use, in addition to prevailing fees, fee schedules; others use relative value scales, or similar technics, in determining reasonable charges.

The Medicare law calls for individual determinations by the carrier which take into account the customary charges of the physician and the prevailing charges in the locality for similar services. In addition, carriers must assure that the charges determined to be reasonable for Medicare beneficiaries are not higher than the charges for comparable services under comparable circumstances to their own policyholders and subscribers. Payment is to be made on the basis of the lowest of the three criteria or the physician's actual charge, if that is still lower, the S.S.A. said.

"Making a reasonable charge determination involves checking each bill against compiled data on the individual physician's customary charges for similar services and the prevailing level of charges for such services in the locality in which the physician practices," the S.S.A. said.

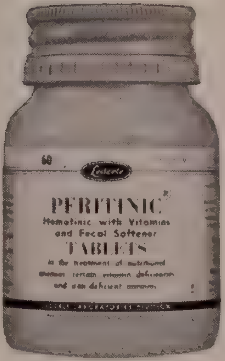
"The development of physician fee profiles," according to Thomas M. Tierney, Medicare's director, "presents a unique challenge to both the S.S.A. and the contracting carriers. At the time of Medicare's enactment, there was no industry-wide pattern in the health insurance field on the approach to reasonable charge determination.

"There is evidence now that the successful application of the guidelines interpreting the Medicare reasonable charge provisions, including the required development and use of individual physician fee profiles, is leading to a more systematized and consistent approach to the payment of physicians' bills in the health insurance field generally."

Prepared by the Washington, D.C., Office of the American Medical Association.

continued on page 3104

anticostive*
hematinic



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anticostive, *adj.* (*anti* opposed to + *costive* causing constipation.) Against constipation. Now isn't that a good idea in an iron-containing hematinic?

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will it help "my gassy stomach"?

Mylanta *also* contains simethicone: for concomitant relief of G.I. gas distress.

"will this one taste O. K.?"

The *prolonged* acceptance of Mylanta was recently confirmed in 87.5% of 104 patients—after a total of 20,459 documented days of therapy.* *Danhof, I. E.: Report on file.

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Each Cough Calmer™ contains the same active ingredients as a half-teaspoonful of Robitussin-DM® Glyceryl guaiacolate, 50 mg., Dextromethorphan hydrobromide, 7.5 mg
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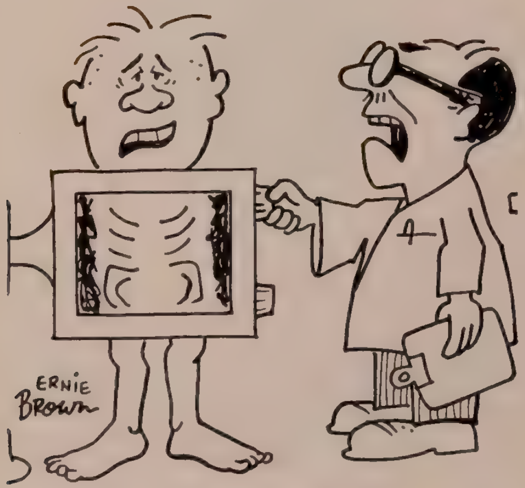

"There's no need to say 'cheese,' Mr. Fenn."

continued from page 3101

The Medicare hospital deductible will be increased from $40 to $44 January 1, 1969. The law specifies that if an annual review shows that hospital costs have changed significantly, the hospital deductible amount must be adjusted for the following year. Necessary increases in the deductible amount are to be made in units of $4.00 to avoid small annual changes.

* * *

The shortage of physicians, particularly general practitioners, was cited in a government report as a factor in the increase in physicians' fees since World War II.

The Bureau of Labor Statistics reported that charges for medical care, including hospitalization, had risen at an annual rate of 3.9 per cent since World War II, while prices of all consumer items combined advanced at a rate of 2.6 per cent per year. The bureau said that medical care prices had risen at a faster rate in recent years, 6.6 per cent in 1966 and 6.4 per cent in 1967.

The report said that physicians' fees, while not advancing as rapidly as hospital charges, had more than doubled in the past ten years. Hospital charges more than quadrupled.

"The rise in physicians' fees during the 1946–1967 period is partially due to the general rise in price levels and to the physicians' need for increased income to cover his personal and business costs," the report said.

"This is especially true for the past two years. Doctors have tended to attribute their higher fees in recent years to the general economic conditions and the higher cost of doing business. Nevertheless, some charges clearly reflect the shortage of doctors. With an overload of patients, physicians in some cases have tried to discourage the practice of making house calls by raising the rate for such a service to a level that few patients are willing to pay. The postwar emphasis on medical specialists has also helped to boost physicians' fees since general practitioners have become scarce and specialists, with their extra training, are able to command higher fees."

The number of general practitioners declined from 73,593 in 1963 to 68,920 in 1967, while the number of physicians in all categories was increasing from 276,475 to 308,475. The Bureau of Labor Statistics conceded that its reports on health care costs do not give adequate consideration to improvements in the quality of medical care as reflected in longer life spans, improved and more efficient technics for treatment, shorter hospital stays, and so on.

"It is obvious that there are many problems of definition and measurement to be solved before any progress can be made in introducing appropriate methods of measuring medical care price changes in a more meaningful way," the report said.

Two other Federal developments dealt with medical care for the poor. The Board of Medicine of the National Academy of Sciences announced the start of a comprehensive, two-year

continued on page 3106

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Congress of Delegates..........May 18, 19, 1969
Scientific Assembly............May 20, 21, 22, 1969

A CONVENTION ESPECIALLY TAILORED
TO THE FAMILY PHYSICIAN

continued from page 3104

study titled "Health and the Poor." A joint state-Federal task force reported on its study of costs for medical and public assistance programs.

The Board of Medicine named a special panel for its study which will cover: the quantity and quality of medical care the poor now receive; existing Federal programs, such as Medicaid, antipoverty projects, maternal and child health programs, and community immunization programs; future needs and possible programs; and the economics of medical care for the poor.

Recommendations of the joint task force to the Department of Health, Education, and Welfare included: (*a*) States should draw samples to produce information on the current utilization of each of the medical care services offered and their costs. (*b*) The sample should provide data on how much of these costs are borne by the medical assistance program and the amount that comes from other sources.

* * *

President Johnson signed into law a bill providing for tougher penalties for illegal traffic in amphetamines and barbiturates. LSD (lysergic acid diethylamide) also is mentioned specifically. The new law makes illegal possession, manufacture, or disposal of the drugs a misdemeanor carrying maximum penalties ranging from imprisonment of one year and a fine of $1,000 to imprisonment of fifteen years and a fine of $20,000. Leniency is authorized for first offenders.

Johnson praised the law as a measure that will "strengthen the hands of our police and give our families protection." He said it should "put the drug peddlar in jail." But, he added, the active support of all Americans, both adults and young, is needed.

* * *

Richard M. Nixon will take over as President pledged to oppose national compulsory health insurance and Federal control of physicians' fees. Highlights of his position on health care issues are as follows:

Federal role in medicine. The role of the Federal government in medicine should be supportive, never dominating. It should serve as a catalyst and supplement private efforts only as needed.

Medicare. Although the program has been plagued by financial and administrative problems, it offers good potential if wisely administered. Medicare must provide needed services at the lowest possible cost. The program could be endangered by a continuing escalation of costs.

More effort is needed to reduce dependence on costly hospitalization through better use of extended care facilities and increased use of outpatient care. Also needed is a re-examination of reimbursement formulas and experimentation with financial incentives to assure that the program encourages efficiency at all levels.

Medicaid. The basic philosophy of Medicaid, that of helping medical indigents who need aid to meet medical expenses, is favored. Unfortunately, the program has fallen short of its expectations. What is needed is a careful reassessment of Medicaid, especially at the local level, with full professional guidance, and emphasis on advice from physicians. There also is a need for simplification of literature and application forms.

National compulsory health insurance. He opposes a national compulsory health insurance program because he does not want to lower the quality of medical care in the United States. Also, new health programs should be geared only to persons in need. . . .

"I want to see that every individual who needs medical care is able to get it. But I want it to be good medical care. That's why I want to keep the doctors free from government control as much as possible and oppose extension to a national compulsory health insurance program for everyone."

Compulsory area-wide health planning. He opposes compulsory area-wide health planning because communities cannot be assured of better health planning just by making such groups compulsory. Area-wide planning should be left to state and local determination.

Federal control of physicians' fees. Federal control of physicians' fees is opposed. Our system is an open, competitive market, assuring an individual the prerogative of setting a value on the services he performs. "I would be as opposed to infringing on this right by regulation of physicians' fees as I would be to regulating fees charged by the members of any other profession."

Department of Health. "As President, I intend to establish a Commission on Government Reorganization to study thoroughly ways of increasing efficiency in government organization as well as making it more responsive to the people.

Mental health. We must develop new methods of treating the mentally ill.

Tax deductions for the aged. The 100 per cent income tax deduction for nonreimbursable drug and medical expenses of those over age sixty-five should be restored.

Preventive medicine. Preventive medicine is both an opportunity and a major challenge to medicine. Automated mass screening programs would seem to have great possibilities even though they are generally still in their infancy and therefore cannot yet be gauged concerning their effectiveness in preventing chronic illness and reducing deaths. Information about these programs is still inadequate to warrant a broad Federal program.

Hill-Burton Act. As demand for hospital facilities increases, additional funds under the Hill-Burton Act for construction and modernization of such facilities will be required to supplement state and local efforts. To assure the most efficient use and distribution of Hill-Burton funds, a proposal for bloc grants in this area should be considered.

Abortion laws. Nothing should be done on the Federal level. The abortion laws should be considered by each state and should be acted

continued on page 3108

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It is an anticholinergic drug without narcotic properties. Side effects are usually mild.

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CONTRAINDICATIONS: Sensitivity to Cantil® (mepenzolate bromide), glaucoma, G.I. or G.U. obstruction, toxic megacolon. **WARNINGS:** Possibility of adverse reactions in advanced severe ulcerative colitis and atypical agitated reactions to phenobarbital in the elderly (Cantil with Phenobarbital). **PRECAUTIONS:** Cantil is of adjunctive use only; treatment of the underlying condition is indicated, be it organic or functional. Observe caution in conditions known to be incompatible with atropine-like drugs, e.g., open-angle glaucoma or prostatic hypertrophy. **ADVERSE EFFECTS:** Dry mouth; blurred vision; constipation; nausea; vomiting; bloating; dizziness; urinary retention. All are anticholinergic effects and usually tolerable. Habituation and idiosyncratic reactions to phenobarbital (Cantil with Phenobarbital) are possible, as is generalized rash. **DOSAGE:** One or two tablets three times a day and one or two at bedtime usually provide prompt relief. Cantil with Phenobarbital may be prescribed if sedation is required. **HOW SUPPLIED:** CANTIL (mepenzolate bromide)—25 mg. per scored tablet. Bottles of 100 and 250. CANTIL with PHENOBARBITAL—containing in each scored tablet 16 mg. phenobarbital (warning: may be habit forming) and 25 mg. mepenzolate bromide. Bottles of 100 and 250.

LAKESIDE LABORATORIES, INC., Milwaukee, Wisconsin 53201

continued from page 3106

on by each state, depending on the opinion in that state. . . .

A nationally-imposed law would not be accepted in many parts of the country, and only when a majority of people of a state reach a conclusion that they want that kind of legislation, as they did in Colorado and as they may in the State of New York, should such a law be passed or considered.

Abstracts

Correction

Casper, W. A., and Manfredi, O. L.: Seborrheic symptom complex; expression of disturbed intestinal malutilization of vitamin B-12 measured by radioactivity, NEW YORK STATE J. MED. **68:** 3040 (Dec. 1) 1968.

Seborrhea, an expression of an internal disorder which affects many parts of the skin organ, produces the seborrheic symptom complex. This may be caused by certain defects in the genetic make-up of the individual, by intestinal malabsorption or malutilization of vitamin B_{12}, or, in cases of disturbed carbohydrate metabolism, an increased requirement of vitamin B_{12}. The Schilling test was performed in 28 patients exhibiting this complex and revealed the beneficial therapeutic influence of high doses of vitamin B_{12} in decreased absorption of vitamin B_{12}.

Rossi, A. O.: The slow learner, NEW YORK STATE J. MED. **68:** 3123 (Dec. 15) 1968.

School progress is based principally on verbal intellectual requirements. However, many factors other than verbal intelligence influence slow learning; slow is not necessarily poor; these components may be dealt with remediably; intelligence quotient or mental age and learning are not directly equatable; and learning should be measured directly as achievement and only hypothetically as verbal "intelligence." A retarded child or slow learner should be appraised by a physician who is experienced in developmental evaluation and versed in neurologic, biochemical, and genetic factors which play etiologic roles in the deficits of these children. Some drugs apparently facilitate learning and memory but do not work in a monolithic manner.

Shuster, M. M., and Lewin, M. L.: Needle tracks in narcotic addicts, NEW YORK STATE J. MED. **68:** 3129 (Dec. 15) 1968.

The stigma of the narcotic addict is the needle track. These tracks are linear pigmented streaks on the skin overlying the veins used for injection of narcotics. There may also be round or punctate scars produced by intradermal or subcutaneous injections. Surgical disguise of the visible stigma of addiction is most helpful to the cured, "burned out" addict in his effort to create a new life for himself. In rehabilitating the addict it is important to eliminate the visible identification, because the presence of such stigmata is an impediment to the search for employment; also, he is recognized by law enforcement agents and by other addicts. It is important that he dissociate himself from his former environment and friends.

Lanyi, V., Preston, R., and McEwen, C.: Synovectomy in rheumatoid arthritis, NEW YORK STATE J. MED. **68:** 3135 (Dec. 15) 1968.

Synovectomy in the treatment of patients with rheumatoid arthritis was studied in relation to 58 synovectomies performed on 34 patients over a period of eleven years. Results were analyzed on the basis of pain, joint function, type of procedure, and the value of early synovectomy in preventing the recurrence of active rheumatoid disease. Rheumatoid activity at the time of operation has little influence on the result of synovectomy and is a contraindication to surgery only in the most inflamed cases. In terms of degree of involvement, none of the synovectomies were really early.

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Abstracts in Interlingua

Correction

Casper, W. A., e Manfredi, O. L.: Le complexo a symptomatologia seborrheic; un expression de disturbate mechanismos de utilisation intestinal de vitamina B-12, mesurate per medio de technicas a radioactivitate (*anglese*), New York State J. Med. **68:** 3040 (1 de decembre) 1968.

Seborrhea—un expression de disordines interne afficiente numerose partes del organo cutanee—se manifesta in un complexo de symptomas, le complexo de symptomas seborrheic. Isto pote esser causate per certe defectos in le constitution genetic del individuo, per malabsorption o malutilisation intestinal de vitamina B-12, o—in casos de un disturbate metabolismo de carbohydratos—per un augmentate requirimento de vitamina B-12. Le test de Schilling esseva effectuate in 28 patientes exhibiente iste complexo, resultante in le constatation de un benefic influentia therapeutic de alte doses de vitamina B-12 in le presentia de un defective absorption de vitamina B-12.

Rossi, A. O.: Le lente apprensor (*anglese*), New York State J. Med. **68:** 3123 (15 de decembre) 1968.

In evalutar le progresso scholari del puero individual, on utilisa principalmente criterios dictate per verbal requirimentos intellectual. Tamen, varie factores distincte ab intelligentia verbal exerce un influentia in le phenomeno del "lente apprension." "Lente" non es necessarimente "mal." Le componentes del phenomeno pote esser attaccate con modalitates remedial. Quotiente de intelligentia o indice de etate mental non es linearmente interrelationate, e le parametro "apprension" deberea esser mesurate directemente como un attingimento in se e solo indirecte-e hypotheticamente como "intelligentia" verbal. Le retardate juvene qui es un lente apprensor deberea esser examinate per un medico experte in le evalutation disveloppamental e ergo plenmente conscie del factores neurologic, biochimic, e genetic que ha rolos etiologic in le defectos e

continued on page 3110

continued from page 3109

defecits in le juvene subjectos hic in question. Il pare que certe pharmacos pote facilitar le processo de apprension e stimular le memoria, sed nulle tal pharmaco es per se mesme le solution del problema.

Shuster, M. M., e Lewin, M. L.: Tracias de agulia in narcomanos (*anglese*), NEW YORK STATE J. MED. **68:** 3129 (15 de decembre) 1968.

Le stigma del narcomano es le tracias del agulia. Iste tracias es pigmentate strias lineari in le pelle in sitos superjacente super le venas usate in le injection de narcoticos. Etiam occurre rotunde o punctuate cicatrices producite per injectiones intradermal o subcutanee. Le celamento chirurgic del visibile stigma de narcomania es de grande importantia pro le curate ex-narcomano in qui le mania es "extinguite" e qui nunc se effortia a crear pro se un nove vita. In rehabilitar le ex-narcomano, il es importante eliminar le visibile identification de su passate narcomania proque le presentia de tal stigmas representa pro ille un impedimento in su questa de empleo. In plus, le tracias de agulia, si ancora recognoscibile, revela le passato del ex-narcomano al agentes del lege si ben como a subjectos qui es activemente narcomane. Il es importante pro le ex-narcomano que ille se dissocia ab su previe amicos e su previe ambiente.

Lanyi, V., Preston, R., e McEwen, C.: Synovectomia in arthritis rheumatoide (*anglese*), NEW YORK STATE J. MED. **68:** 3135 (15 de decembre) 1968.

Synovectomia como tractamento de arthritis rheumatoide esseva evalutate a base de 58 operationes effectuate in 34 patientes in le curso de un periodo de dece-un annos. Le resultatos esseva analysate relative al sequente punctos de interesse: le dolor suffrite per le patiente, le functionamento del articulationes operate, le typo de chirurgia, e le valor de precocitate de intervention in prevenir le recurrentia de active morbo rheumatoide. Esseva trovate que le grado del activitate rheumatoide al tempore del operation non exerce un mayor influentia super le resultato del synovectomia. Extense activitate rheumatoide es un contraindication contra chirurgia solo in casos characterisate per un extreme inflammation. Judicate a base del grado de affection, le casos in le presente serie includeva nulle in que le synovectomia esseva effectuate vermente in tempores precoce.

TAO® (triacetyloleandomycin)

Brief Summary

INDICATIONS: Include staphylococci, streptococci, pneumococci and gonococci. Recommended for acute, severe infections where adequate sensitivity testing has demonstrated susceptibility to this antibiotic and resistance to less toxic agents.

CONTRAINDICATIONS: Contraindicated in pre-existing liver disease or dysfunction, and in individuals hypersensitive to the drug.

PRECAUTIONS: CAUTION: USE OF THIS DRUG MAY PRODUCE ALTERATIONS IN LIVER FUNCTION TESTS AND JAUNDICE. CLINICAL EXPERIENCE AVAILABLE THUS FAR INDICATES THAT THESE LIVER CHANGES WERE REVERSIBLE FOLLOWING DISCONTINUATION OF THE DRUG.

Not recommended for prophylaxis or in the treatment of infectious processes, which may require more than ten days continuous therapy. In view of the possible hepatotoxicity of this drug when therapy beyond ten days proves necessary, other less toxic agents should be used. If clinical judgment dictates continuation of therapy for longer periods, serial monitoring of liver profile is recommended, and the drug should be discontinued at the first evidence of any form of liver abnormality. When treating gonorrhea in which lesions of primary or secondary syphilis are suspected, proper diagnostic procedures, including dark-field examinations, should be followed. In other cases in which concomitant syphilis is suspected, monthly serological tests should be made for at least four months. When used in streptococcal infections, therapy should be continued for ten days to prevent the development of rheumatic fever or glomerulonephritis. The use of antibiotics may occasionally permit overgrowth of nonsusceptible organisms. A resistant infection or superinfection requires reevaluation of the patient's therapy. In the event such occurs with this drug the medication should be discontinued, and specific antibacterial and supportive therapy instituted.

ADVERSE REACTIONS: Although reactions of an allergic nature are infrequent and seldom severe, those of the anaphylactoid type have occurred on rare occasions.

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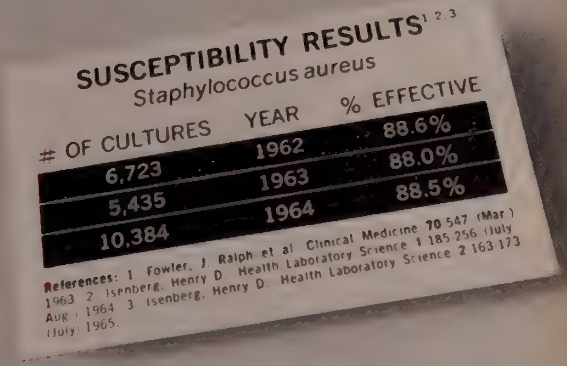

SUSCEPTIBILITY RESULTS[1,2,3]
Staphylococcus aureus

# OF CULTURES	YEAR	% EFFECTIVE
6,723	1962	88.6%
5,435	1963	88.0%
10,384	1964	88.5%

References: 1. Fowler, J. Ralph et al. Clinical Medicine **70** 547 (Mar.) 1963. 2. Isenberg, Henry D. Health Laboratory Science 1 185-256 (July-Aug.) 1964. 3. Isenberg, Henry D. Health Laboratory Science 2 163-173 (July) 1965.

TAO® (triacetyl-oleandomycin) is a macrolide antibiotic, for use only in the treatment of acute severe infections where adequate sensitivity testing has demonstrated susceptibility to this antibiotic and resistance to other less toxic agents.

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triacetyloleandomycin

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Indications: Streptococcus, pneumococcus, and gonococcus infections; infections caused by sensitive strains of staphylococci; prophylaxis of streptococcus infections in patients with a history of rheumatic fever; and prevention of bacterial endocarditis after tonsillectomy and tooth extraction in patients with a history of rheumatic fever or congenital heart disease.

Contraindication: Penicillin hypersensitivity.

Warnings: In rare instances, penicillin may cause acute anaphylaxis which may prove fatal unless promptly controlled. This type of reaction appears more frequently in patients with a history of sensitivity reactions to penicillin or with bronchial asthma or other allergies. Resuscitative drugs should be readily available. These include epinephrine and pressor drugs (as well as oxygen for inhalation) for immediate allergic manifestations and antihistamines and corticosteroids for delayed effects.

Precautions: Use cautiously, if at all, in a patient with a strongly positive history of allergy.

In prolonged therapy with penicillin, and particularly with high parenteral dosage schedules, frequent evaluation of the renal and hematopoietic systems is recommended.

In suspected staphylococcus infections, proper laboratory studies (including sensitivity tests) should be performed.

The use of penicillin may be associated with the overgrowth of penicillin-insensitive organisms. In such cases, discontinue administration and take appropriate measures.

Adverse Reactions: Although serious allergic reactions are much less common with oral penicillin than with intramuscular forms, manifestations of penicillin allergy may occur.

Penicillin is a substance of low toxicity, but it possesses a significant index of sensitization. The following hypersensitivity reactions have been reported: skin rashes ranging from maculopapular eruptions to exfoliative dermatitis; urticaria; and reactions resembling serum sickness, including chills, fever, edema, arthralgia, and prostration. Severe and often fatal anaphylaxis has occurred (*see* Warnings). Hemolytic anemia, leukopenia, thrombocytopenia, and nephropathy are rarely observed side-effects and are usually associated with high parenteral dosage.

Administration and Dosage: Usual dosage range, 125 mg. (200,000 units) three times a day to 500 mg. (800,000 units) every four hours. For infants, 50 mg. per Kg. per day divided into three doses.

See package literature for detailed dosage instructions for prophylaxis of streptococcus infections, surgery, gonorrhea, and severe infections.

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V-Cillin K® (potassium phenoxymethyl penicillin, Lilly), Pediatric, for Oral Solution, 125 mg. (200,000 units) and 250 mg. (400,000 units) per 5 cc. of solution (approximately one teaspoonful). [042567A] 800198

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Editorials

Christmas, 1968—Little Christmas

The basis of much of the world's folklore is deeply rooted in the religious experience of its people.

The festival of Christmas runs for twelve days—from the Nativity to the Epiphany when the Wise Men spread the news. The end of the period came to be known as Twelfth-night or Little Christmas.

In all the nations of Western Civilization this event humanly enough called for a party.

Customs varied from country to country but a common thread running through all of them was the removal and ceremonial burning of the Christmas decorations, accompanied by wining and dining, with music and dancing in the streets and in the homes.

Cakes have always been associated with the Twelfth-night feast. Until well into the nineteenth century every French, Dutch, German, and English family had its Twelfth-cake. This was often a very splendid confection; dark with fruit and spices, heavily iced, and decorated with stars, flowers, crowns, animals, and figures of the Magi.

An old custom, observed particularly in France and England, was baking a bean and a pea in the Twelfth-cake. The man who obtained the bean became king and head of the festivities for the occasion and the woman who found the pea became his queen.

We have lost the charm of this naïveté but it is part of our background.

As medical students returning from the Christmas holidays our wonderful Irish landlady always gave us a Twelfth-night party, plentifully supplied with cakes and ale.

The memory is as green as holly and as bright as a Christmas candle.

May your Christmas be a happy one—all twelve days of it.

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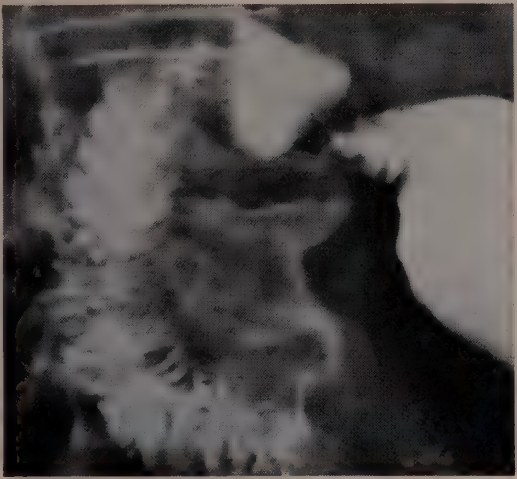
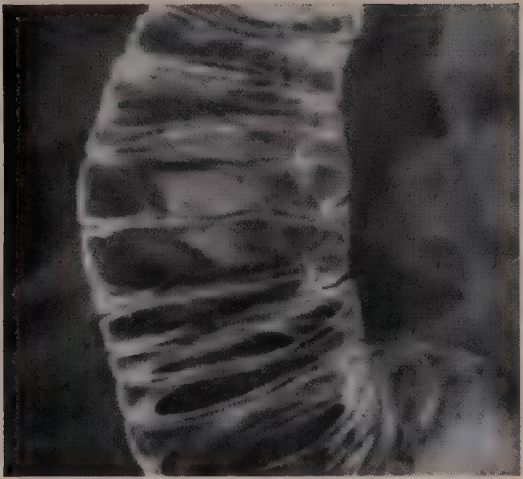
THE RESTLESS DUODENUM ...AT REST



DUODENUM—(Conventional X-ray)
The restless duodenum makes radiographic diagnosis difficult, uncertain and often unproductive. Is this duodenum normal?



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How the X-rays were taken

In the hypotonic duodenograph[1,2] reproduced above, the gastrointestinal tract was relaxed with Pro-Banthīne. The duodenum was intubated. Pro-Banthīne in a dose of 60 mg. intramuscularly was used to assure prompt aperistalsis and double-contrast visualization was achieved with ordinary barium and air.

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Contraindications: Glaucoma; severe cardiac disease.

Precautions: Since varying degrees of urinary hesitancy may occur in elderly males with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most *adult* patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthīne (brand of propantheline bromide) is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

(1) Bilbao, M. K.; Frische, L. H.; Rösch, J., and Dotter, C. T.: Hypotonic Duodenography, Scientific Exhibit, Radiological Society of North America, Chicago, Nov. 27–Dec. 2, 1966.

(2) Bilbao, M. K.; Frische, L. H.; Dotter, C. T., and Rösch, J.: Hypotonic Duodenography, Radiology, 89:438-443 (Sept.) 1967.

(3) Cf. also, Liotta, D.: Pour le diagnostic des tumeurs du pancréas: la duodénographie hypotonique, Lyon chir. 50:445-460, (May-June) 1955.

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EVERY MEDICAL PRACTITIONER is well acquainted with the patient for whose multiple, and often recurrent, complaints he can discover no adequate physical explanation. Among medical students and house officers, such patients are often referred to as "crocks." This common term connotes not only a patient who is considered to be hypochondriacal, but one who has become annoying and irritating to the staff by virtue of his clinging behavior and endless complaints.

The "crock"

As part of the present study, a group of interns and medical students were asked to define what they meant by a "crock." Not only was there general agreement about the above mentioned characteristics, but from the responses, a portrait of a typical patient of this kind emerged. She is a woman in her late fifties or sixties with a whining voice, a body full of aches that are totally untreatable, and a psyche that is massively impervious to any insight into the emotional nature of her problems. For this reason, she is considered a poor candidate for psychiatric treatment, and her referral to a mental health facility seems of little avail. The only treatment that is considered practicable is a reassuring approach on the part of the physician combined with the use of one of the minor tranquilizing agents such as meprobamate or chlordiazepoxide hydrochloride.

Although some respondents mentioned depression as a descriptive term when characterizing these patients, there seemed to be little belief that depression as a clinical entity was of primary importance in the "crock syndrome."

The purpose of the present study was to assess the incidence of depression in patients designated as "crocks" by the use of a rapid-screening device, the Self-Rating Depression Scale, and to compare this incidence with a control group of medical patients not so designated.[1] Various studies have described the prominence of somatic symptoms in depression.[2-4] These studies have emphasized the importance of recognizing depressive illness in medical patients to provide treatment as rapidly as possible. Chalgren,[2] in a study of 100 medical patients whose primary illness was depression, found that somatic symptoms could involve any organ or tissue of the body. While gastrointestinal complaints predominated, muscle and joint discomfort, chest pain, and difficulties of the auditory and visual systems were frequent. It seemed of value, then, to attempt to determine, by means of an easily administered screening questionnaire, the incidence and severity of depression in a group of patients whose multiple complaints and clinging behavior suggested that a masked depressive illness could play a major role in their symptomatology.

Method

One hundred patients in the medical screening clinic of the Bronx Municipal Hospital Center were selected for study.

TABLE I. Mean self-rating depression scale indices for each age group and total mean for "crock" and "noncrock" groups

"Crocks"			"Noncrocks"		
Ages	Number of Patients	Mean Scores	Ages	Number of Patients	Mean Scores
20 to 49	5	0.52	20 to 49	5	0.49
50 to 59	10	0.60	50 to 59	5	0.45
60 to 69	13	0.59	60 to 69	14	0.44
70 to 79	20	0.62	70 to 79	22	0.45
80 to 89	2	0.48	80 to 89	4	0.34
TOTAL	50	0.58	TOTAL	50	0.44

In the experimental group were 50 patients designated for the purposes of the study as "crocks" by the interns working in the clinic. The choice of these patients was left entirely to the interns, with no prior attempt on the part of the researchers to define what was meant by a "crock." Each physician was requested merely to use his own personal criteria for the selection of such patients. Fifty patients, matched for age, who were not considered "crocks" by the house staff, comprised the control group.

The 100 patients were rated on the Zung Self-Rating Depression Scale, which consists of 20 items. The scale, based on the results of previous studies incorporating factor analysis in their investigation, employs the most commonly found characteristics of depression. Some samples of these items are as follows: "Morning is when I feel the best." "I have trouble sleeping at night"; and "I notice that I am losing weight." The patient is asked to rate each of the items as presently experienced; a little of the time, some of the time, a good part of the time, or most of the time. A value of 1, 2, 3, or 4 is assigned to each response, depending on whether the item is worded positively or negatively.

Following the administration of the questionnaire, which ordinarily could be

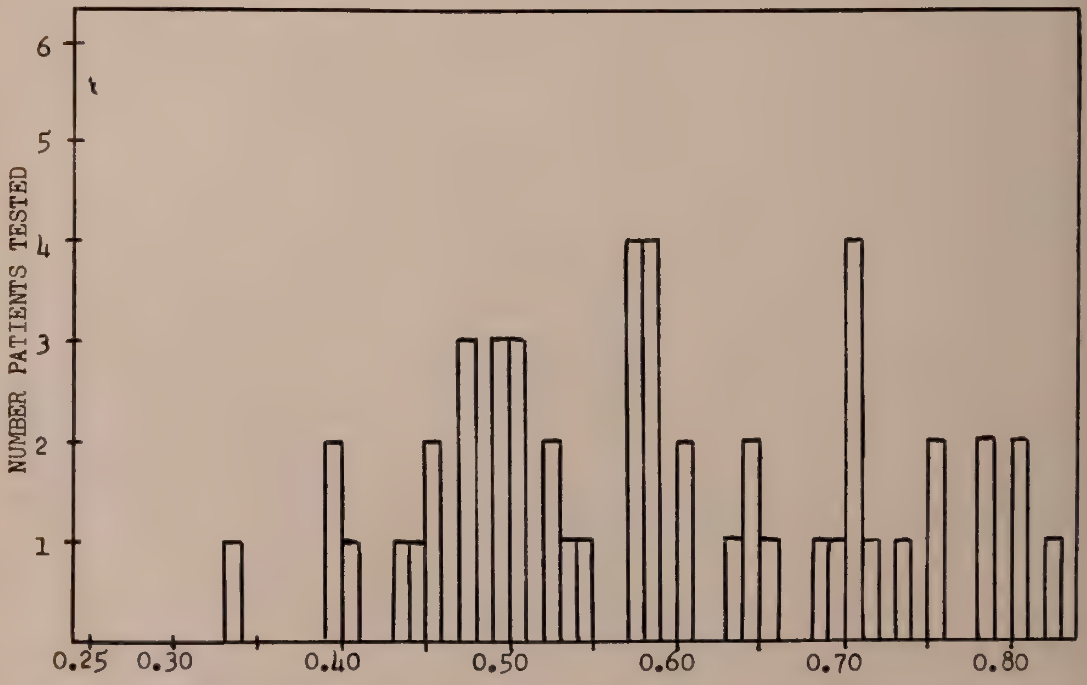

FIGURE 1. Self-rating depression scale indices of 50 patients termed "crocks" at medical screening (mean = 0.58).

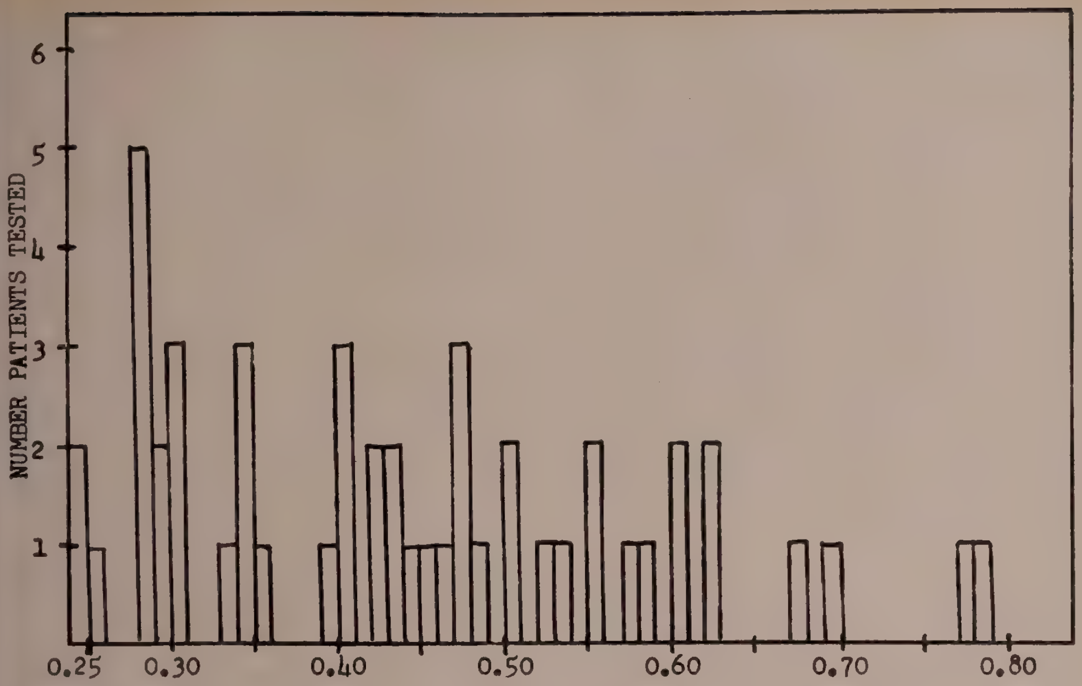

FIGURE 2. Self-rating depression scale indices of 50 patients termed "noncrocks" at medical screening (mean = 0.44).

accomplished in twenty minutes, the available charts of the patients designated as "crocks" were scrutinized carefully for all information covering symptoms and previous medical history. Seventy-four females and 26 males were tested, reflecting both the larger proportion of female to male patients seen at the clinic, as well as the proportionately greater rate of females referred as "crocks" by medical interns. Ages ranged from twenty to eighty-nine years. Eighty-four per cent of the patients ranged in age from fifty to seventy-nine years.

Results

The scores of those patients designated as "crocks" were found to be considerably higher than the scores of the control medical patients. Table I shows the means for each age group as well as the over-all mean. The mean index of the experimental group (0.58) is significantly greater than the mean index of the controls (0.44); t score = 2.61, $P < 0.01$.

The self-rating depression scale indices for each group are presented graphically in Figures 1 and 2. An index of 0.53 or more is considered clinically significant, while 0.44 or more is above normal. Sixty-six per cent of the experimental group scored 0.53 or more, and 92 per cent scored above 0.44. Twenty-eight per cent of the control group scored 0.53 or more and 50 per cent scored above 0.44.

Results of the Zung validation study revealed that a mean index of 0.53 on the self-rating depression scale was obtained by patients who were admitted to a psychiatric unit for depressive illness but in whom further study revealed the depressed affect to be part of a more general psychiatric disorder. In the population designated as "crocks," 13 patients had been referred by the house staff for psychiatric evaluation. Of these referrals, 7 were made during the course of the study, most likely reflecting the impact of the study itself on the interns' awareness of psychologic problems in these patients, and 2 several months afterwards. Only 4 patients had been referred for psychiatric help prior to the onset of the study. Of these 13 patients, 12 were diagnosed as suffering from clinically significant depressive illness, while 1 was diagnosed as a borderline personality.

The hospital records of the 40 "crocks" for whom they could be obtained, showed that 51 per cent of the patients had five or more systemic complaints; 20 per cent had four systemic complaints, 16 per cent had three systemic complaints, and 13 per cent had two systemic complaints. There were no patients whose complaints were limited to only one system. The chief systemic complaints were in rank order: musculoskeletal; gastrointestinal; ear, nose and throat; cardiovascular; and psychologic, feeling nervous and tense or developing "nervous headaches." Previous studies have found multiple systemic complaints to be common in depressed patients.[5-7] The systems reported in this study were the same as those described elsewhere, with a somewhat different rank order noted in our population.

Comment

The finding that those medical patients designated as "crocks" score significantly higher on a depression scale than patients not so labeled will not come as a surprise to physicians familiar with the many faces of depression. The clinical hypochondriac picture of hypochondriasis, with its multiple complaints, along with regressive demanding behavior are phenomena familiar to the psychiatrist as well as to the medical practitioner. What is of importance is the ease with which depression can be overlooked in these patients. This seems to us to be attributable to several sources. First, these patients do not as a rule show a marked depressive effect. Instead, the depression is cloaked within the framework of the somatic symptoms. Second, it often happens that a "set" develops towards these patients on the part of the physicians, which precludes their being seen as seriously ill either medically or psychiatrically. Their clinging behavior appears more infantile than "sick," and it is difficult, particularly for the busy and inexperienced physician, to detect in this regression the depressive element. In addition, questions pertaining to depression as a clinical entity may not be asked frequently enough by screening physicians. Particularly important in this regard are questions concerning recent losses, anniversary reactions, vegetative signs, feelings of guilt and worthlessness, and the occurrence of severe self reproaches. It seems probable that the routine inclusion of these questions in the history-taking procedure with such patients would in itself detect the way out of the depressive reactions in this population. The use, also, of the self-rating depression scale, which is easily and rapidly administered as a screening procedure among elderly patients in a medical clinic, may prove to be of considerable value.

It is clear that if depressive illness is a major factor in these patients, the antagonistic relationship that all too frequently develops between themselves and their doctors can only aggravate the situation. The cycle of demand, antagonistic response, and increased demands once established is difficult to break. The recognition and prompt treatment of depression by means of antidepressant medication, individual and group psychotherapy, or electroconvulsive therapy, as the situation warrants, offers hope for the improved management of these difficult patients.

Summary

Fifty patients designated as "crocks" at a medical screening clinic were evaluated for depression by means of a questionnaire, the Zung Self-Rating Depression Scale, and compared with 50 control medical patients. The scores of the "crock" group were significantly higher than the control group, suggesting the presence of greater depressive illness in this patient population. Psychiatric interviews with 13 patients referred for diagnosis from the experimental group confirmed the diagnosis of clinical depression in 12 patients. The significance and probable reason for these findings is discussed.

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The Slow Learner

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SCHOOL PROGRESS IS *based principally on verbal intellectual requirements. However, many factors other than verbal intelligence influence slow learning; slow is not necessarily poor; these components may be dealt with remediably; intelligence quotient or mental age and learning are not directly equatable; and learning should be measured directly as achievement and only hypothetically as verbal "intelligence." A retarded child or slow learner should be appraised by a physician who is experienced in developmental evaluation and versed in neurologic, biochemical, and genetic factors which play etiologic roles in the deficits of these children. Some drugs apparently facilitate learning and memory but do not work in a monolithic manner.*

NOT EVERYONE who is earnestly concerned about the slow learner clearly understands him, unequivocally identifies him, or advocates sound or intelligent programs for dealing with him. The term "slow learner" to some implies generalized retardation in all types of learning; but when we ponder more carefully, we find that the term might be rephrased as "subaverage (for age) reader." Since reading is the key to so much learning, and since promotions naïvely assume equal pacing, this oversimplification is too readily accepted; and since school progress is based principally on verbal intellectual requirements, the scholastic bias is understandable although unacceptable.

From these narrow views we must now move to broader concepts of definition, identification, causative variables, and imaginative and innovative programs. We must recognize that I. Q. (intelligence quotient) is only one variable and a rather dubious one; that M. A. (mental age) is more meaningful than I. Q., and that both are related to types of tests and test circumstances; that many factors other than verbal intelligence influence slow learning; that slow is not necessarily poor; that these components may be dealt with remediably; that I. Q. or M. A. and learning are not directly equatable; and that learning is measured directly as achievement and only hypothetically as verbal "intelligence."

In short, the slow learner is behind schedule in learning something rather than everything. Even generalized slow learners may learn rapidly in some areas, just as generalized rapid learners may learn slowly in some tasks. Indeed, we must focus on the academic slow learner with an average or high I. Q. We should precede "slow learner" with an adjective denoting the learning task, and certainly we should not identify this with M. A. or I. Q. alone.

The American philosophy of education, based on educating every child to his capacity, cannot afford to make exceptions. The loss of potential manpower; the high dropout rate from our schools; the cost of unemployment, delinquency, and crime; the threat to sound family relationships and to individuals within families are all direct or indirect consequences, which can be traced to the fact that education has largely ignored the needs of an important segment of our society—the children often referred to as "slow learners." [1]

It is more difficult to recognize the slow learner than to recognize the gifted child. While the gifted child attracts us because he accomplishes rather special things, the slow learner may also be identified through observation of all the things he does not do that we expect of him. At first glance he appears to be just like the other children in his group, and he often gets tagged "lazy" or "poorly motivated." [2]

Causes of learning handicaps

Much has been written about the slow learner and the ways to teach him, but there are no intelligent guidelines to the neurophysiologic causes of his learning handicaps. Modern tests and testing procedures have contributed little to our understanding of individual differences and to the extent and size of such differences. Intelligence, aptitude, and achievement tests, and the various measurements of personality have yielded certain scores, but too often they have not been interpreted to yield further diagnostic information that could guide us in our remedial efforts. Too often teachers who are subject-centered consider test items in terms of the course of study. They become more concerned with a score than with evidence revealed by performance on individual items, evidence which may indicate needed changes in the curriculum or increased individual guidance in learning. Evaluation should be concerned with growth of the total personality. Teachers need to maintain questioning attitudes which help to identify causes of behavior. Identification technics have, as their chief function, to find out how the child is growing and developing. Part of the job involves a much closer relationship between the home and the school.[3]

If anyone doubts the need of sincere efforts to educate these slow learners, let him consider the fact that 20 of every 100 pupils chosen at random means at least 4 million for the country as a whole. Then let him ponder the consequences of permitting that number of future adult citizens to grow up illiterate, uncultured, and uninitiated in the American way of life. If anyone doubts the soundness of investing a considerable sum in their education, let him try to forecast the consequences of not making that investment, bearing in mind, of course, the diminished capacity to produce as well as to consume, but more important, not overlooking the declining zeal for the democratic way of life that invariably accompanies illiteracy and ignorance.[4]

Although some writers state that slow learners are essentially normal in their emotional, social, physical, and motor development, others point out many differences.[1] Following are some differences most frequently cited when comparing slow learners with children considered intellectually normal:

1. Short attention and interest span
2. Limited imagination and creative thinking
3. Slow reaction time
4. Apathy, diffidence, dependence, and placidity, but frequent presence of excitability and sensitivity
5. Academic retardation, especially in reading; achievement age lagging behind chronologic age
6. Absence or easy loss of self confidence
7. Instability, gullibility, shyness, and submissiveness
8. Low power of retention and memory
9. Inability to do abstract thinking, handle symbols, evaluate results, and foresee consequences of acts
10. Ease of confusion, fears, and anxieties
11. Limited powers of self direction, of adapting to change in situations and people
12. Low levels of initiative, vocabulary, standards of workmanship, persistence, concentration, reasoning, defining, discriminating, and analyzing
13. Failure to transfer ideas to extend beyond local point of view in time or place; to retain interest if results are deferred or intangible
14. Action based on impulse, insistence on quick results, and inclination toward jumping to conclusions
15. Lack of motivation and disinterest in school work

Recent experience in an analysis of a group of 30 slow learners at junior high school level revealed a common combination consisting of differences 1, 5, 10, and 15. For a basic point of departure when this combination or other characteristics are recognized by the teacher, the following four ingredients of identification and definition are proposed by Jewett and Hull[5]: teachers' marks, group intelligence tests, teachers' estimates of school achievement, and standardized achievement tests. Use of these technics usually provides quantitative data for grouping pupils in an "educational handicap quotient" (EHQ).

Psychiatric and neurologic examinations

Just as normal or bright children may have overlapping abilities, slow learners may have disabilities that are interrelated. Sometimes they become confused in the cause-and-effect relationship. For example, a limited demonstration of intelligence (75 to 90 I.Q.) may result from handicaps in sight, hearing, and emotional adjustment, and in speech or neurologic deficits; or limited intelligence may itself result in emotional maladjustment. The psychiatric social worker's examination should concentrate on the following items:

Normalcy of natal period
Prematurity
Long labor period
Small weight at birth
Congenital defects
Normal development
Developmental lags
Hyperirritability
Hyperkinesis
Restlessness
Convulsions
Staring spells
Measles
Parental rejection
Parental dyslexia
Sibling differences
Related mentally defective persons
Difficult school adjustment
Disordered behavior
Emotional lability
Short attention span
Defective work habits
Impulsiveness, meddlesomeness
Social incompetence
Specific learning disorders

To reach the child himself, it is necessary to dig incisively through the terms that attempt to describe problems of children. Overprotection, dominance, aggressiveness, shyness, and Oedipus complex are tags that frequently interfere with a full understanding of what the child is really like, what made him that way, and what may be done about it. These factors may perpetuate his slower pace merely because they serve as a cover for more basic difficulties and identify symptoms rather than real causes, with varying degrees of accuracy at that. Educational films which describe two-year-olds as "terrible," four-year-olds as "frustrating," and adolescents as "in turmoil" may be accurate in some cases but provide convenient handles that fail to determine or uncover far more serious factors beneath the surface.

Mental subnormality is the outstanding feature of the most common single group of chronic disorders encountered in children. Although it is the concern of professionally trained individuals in many disciplines, the study of a retarded child or a slow learner is not complete without appraisal by a physician who is thoroughly experienced in developmental evaluation and versed in the neurologic, biochemical, and genetic factors which play etiologic roles in the deficits of all of these children.[6] The neurologic examination should focus on the following factors:

Eye dominance
Impaired speeh
Visible genetic defects
Intention tremors
Choreiform movements
Abnormal gait
Tandem walking difficulty
Inability to stand on one leg
Dysdiadochokinesis
Inability to catch a ball
Delayed laterality
Right-left confusion
Hand and foot dominance
Reversals or inversions
Inability to copy geometric forms
Dyslexia
Impaired visual perception: eye-motor coordination; figure ground; form constancy; position in space; and spatial relations
Short interest span
Perseveration
Hyperactivity and restlessness
Hypokinesia
Signs of mental deficiency
"Suggestions" of neurologic impairment
"Soft signs" of neurologic impairment
"Hard signs" of neurologic impairment

The causes of mental and academic slowness in children may be traced to two major areas which are usually intertwined: the mental capacity that is inherited and the influence of environmental factors. Research in medicine and particularly in biochemistry may, in time, bring more understanding of the inherited qualities of human beings. There are children who are developing normally today when just a few years ago they would have been classified as victims of phenylketonuria, hypothyroidism, galactosemia, hypoglycemia, or kernicterus. Yet, even today a number of our young children born normal are stricken with mental retardation or an arrest in the development of the central nervous system when their simple measles turn into encephalitis, subclinically unrecognized.

Some say the first, most concerned, and most important teacher is the parent, the most involved adult of all in the development and education of the slow learner. In many instances this is not so. A child whose progress is slow may be seen by parents as a threat or an insult, with injustices accruing to the child or his teacher. His slowness may also be denied or ignored. Another reaction may be that of disguised rejection demonstrated by oversolicitous or hostile attitudes. In some cases, the family physician and the pediatrician also contribute negatively by not recognizing the early handicaps or by not wanting to tell the parents something they do not want to hear.

TABLE I. Analysis of 205 consecutive child intakes to Orange County mental health clinics (November 1, 1966 to November 2, 1967)

	Goshen	Newburgh	Port Jervis	Total
Referrals				
School psychologist	23	58	13	94
School principal	8	4	7	19
School guidance counselor	10	2	1	13
School nurse	0	2	2	4
Family physician	8	2	31	41
Parents	7	6	5	18
Clinic staffs	11	5	0	16
Welfare department	6	4	0	10
Court, probationary officer	1	0	1	2
	74	83	60	217
Diagnoses				
Psychoneurologic impairment	48	58	31	137
Adjustment reaction, childhood	12	11	15	38
Adjustment reaction, adolescence	5	2	5	12
Schizophrenia, childhood type	2	3	2	7
Mental deficiency	3	6	2	11
Dyslexia, mixed laterality, dysphasia	6	8	5	19
	76	88	60	224

Yet some still say problems of this kind are a family responsibility. Teachers, administrators, and guidance personnel can help and can provide some understanding, but the basic concern remains where it starts. The first answers to questions, the first adjustment of toys and books to abilities, and the first acceptance of limitations are given at home where the pace is set for what the school will do later. So for the most important first five years developmentally, some of our children are raised at a donkey's pace in a donkey's world.

Those who are truly concerned about educationally handicapped children now must turn to the parents, to the preschool educators, and to the teachers of the primary grades. Early identification of the handicapped child is a vital matter. That psychiatric and neurologic examinations in each case are mandatory was made clear in a recent analysis of 205 consecutive child referrals to the three Orange County mental health clinics at Goshen, Newburgh, and Port Jervis in the past twelve months. Of these 205 cases, 137 (two thirds) had objective evidence of psychoneurologic impairment, and 75 per cent of these had perceptual-motor deficits. The basis for referral was poor classroom performance and/or behavioral problems such as adjustment reaction of childhood, 38 in number. There were 12 adjustment reactions of adolescence; 7 cases of schizophrenia, childhood type; 11 cases of mental deficiency; and 19 children who demonstrated specific isolated neurologic deficits such as dyslexia, mixed laterality, and dysphasia (Table I).

Drug therapy

Medication was given to all psychoneurologically impaired patients.[7–24] Moderate to marked improvement was recorded by teacher reports in 80 per cent of the cases; the younger the child, the more prompt and more dramatic the change in performance and behavior. Medication, in most cases for a period of four months, seemed to catalyze the proper serotonin-norepinephrine balance, and, once triggered into action, further enzyme stimulation was unnecessary. Only after such chemical balancing is one justified in performing psychologic testing; too often, we have subjected children with serotonin imbalance to testings that, by their very scatter, can result in a misleading label. In 12 cases, children were transferred out of special education classes, and 9 are now doing satisfactory work in regular classes. In the cases of adjustment reactions, both childhood and adolescent, medication was helpful when combined with family therapy. In these cases also it was noted that

TABLE II. Results of medication in 158 cases*

Results	Neurologic	Performance	Behavior
Marked improvement	57	52	50
Moderate improvement	48	58	62
Little improvement	14	22	24
No improvement	12	15	11
Dropout	6	11	11

* There were no aggravated symptoms.

the younger the child, the better were the results (Table II).

Drug therapy aimed at synchronization of reticular core dysfunction (the Rossi hypothesis for the cause of most learning disabilities) is our only key (1) to activate the neocortex and other parts of the brain so that they are able to respond to the incoming coded signals in a meaningful manner; and (2) to block selectively the majority of stimuli potentially affecting us so we can concentrate on those that are significant to us at the moment.

Neurophysiologic research

To give some substance to the sweeping speculation that what our laboratories are discovering in rat brains today, our educators will be applying to our grandchildren tomorrow, one should take a quick trip across the mainland and look in on some animal laboratories where research on the chemical mechanisms of memory and learning is in full operation. To place these researches in their proper context, let us review briefly and quite inadequately one of the major theories which guides this neurophysiologic research.

The two-stage memory storage process theory now accounts for short-term and long-term memories and the conversion of the one into the other. Immediately after every learning trial or, indeed, after every experience, a short-lived electrochemical process is set up in the brain. It is assumed that this process is the physiologic mechanism which carries the short-term memory. Within a few seconds or minutes, however, this process stops; but before doing so, if all systems are active, the short-term electrochemical process triggers a second series of events in the brain. This second process is chemical in nature and involves primarily the production of new proteins and the induction of higher enzymatic activity levels in the brain cells. This second process is more enduring and serves as the physiologic substrate of our long-term memory.

The step-down procedure, devised by Jarvik,[25] blocks long-term memory. Agranoff's[26] work supports the hypothesis that the synthesis of new brain proteins is crucial for the establishment of the long-term memory process. The psychobiology laboratories of McGaugh[27] showed that central nervous system stimulants such as pentylenetetrazol (Metrazol) resulted in a 40 per cent improvement in learning ability.

It would seem clear then that we already have available a fairly extensive class of drugs which can facilitate learning and memory in animals. But a closer observation of McGaugh's results and of the work of others also suggests that these drugs do not work in a monolithic manner on something called "learning" or "memory." In some instances, the drugs seem to act on attentiveness; in some, on the ability to vary one's attacks on a problem; in some, on persistence; in some on immediate memory; and in some, on long-term memory. Different drugs work differentially for different strains, different individuals, different intellectual tasks, and different learning components.

Now do all these results mean that we will soon be able to substitute a pharmacopoeia for our various school-enrichment and innovative educational programs, and that more teachers will soon be technologically unemployed, or, if they are young enough, will they have to retool and turn in their schoolmaster's gown for a pharmacist's jacket? Krech[28] and colleagues argued as follows: If the establishment of long-term memory processes involves increased activity of brain enzymes, animals which have been required to do a great deal of learning and remembering should end up with brains enzymatically different from those of animals which have not been so challenged by their environment. This should be especially true for the enzymes involved in transynaptic neural activity. Further, since such neural activity would make demands on brain cell action and metabolism, one might also expect to find morphologic differences between the brains of rats brought up in psychologically stimulating and psychologically pallid environments. Permitting the young rat to grow up in an educationally and experientially inadequate and unstimulating environment creates an animal with a relatively deteriorated brain, a brain with a thin light cortex, lowered blood supply, diminished enzymatic activities, smaller neuronal cell bodies, and fewer glia cells. A lack of adequate psychologic enrichment for the developing school child results in palpable, measurable, deteriorative changes in the brain's chemistry and anatomy.

In all of this we see another role for the educator, this time for the education of the future. This will be a role in applied education, but there again the educator will have to collaborate with the biochemist. Both the biochemist and the teacher of the future will combine their skills and insights for the educational and intellectual development of the child. We are hearing a great deal about innovative "hardware" of education, computer-assisted instruction, methodics, and microtransparencies. We should be talking about the "software" or rather the "chemware" of education, enzyme-assisted instruction, and protein memory consolidators.

One of the problems of medical and educational communication is to digest the overexpanding volume of new work, and the sphere of educational handicap is no exception. It is all too easy nowadays to get lost in the woods as a result of paying too much attention to the trees.

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Needle Tracks in Narcotic Addicts*

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THE STIGMA OF THE *narcotic addict is the needle track. The tracks are linear pigmented streaks on the skin overlying the veins used for injection of narcotics. There may also be round or punctate scars produced by intradermal or subcutaneous injections. Surgical disguise of the visible stigma of addiction is most helpful to the cured, "burned out" addict in his effort to create a new life for himself. In rehabilitating the addict it is important to eliminate the visible identification, because the presence of such stigmata is an impediment to the search for employment; also, he is recognized by law enforcement agents and by other addicts. It is important that he dissociate himself from his former environment and friends.*

STIGMATIZING DISFIGUREMENTS have always played an important role in social relationships. This is especially so when the stigma is associated with an undesirable social attribute, such as criminality, antisocial behavior, or drug addiction. One such stigma, which has attracted little specific attention heretofore and has not been previously reported in the surgical literature, is the needle track of the narcotic addict (Fig. 1).

During and subsequent to a recent experimental study of the rehabilitative effects of plastic surgery on ex-prison inmates in New York, a group of 16 patients, consisting of addicts and former addicts, underwent operations for removal of their needle tracks.[1] Some of our observations and surgical experience in treating these 16 patients are reported here, together with observations on 20 other addicts and former addicts who were not part of the experimental project. All 36 patients themselves requested that needle tracks be surgically removed.

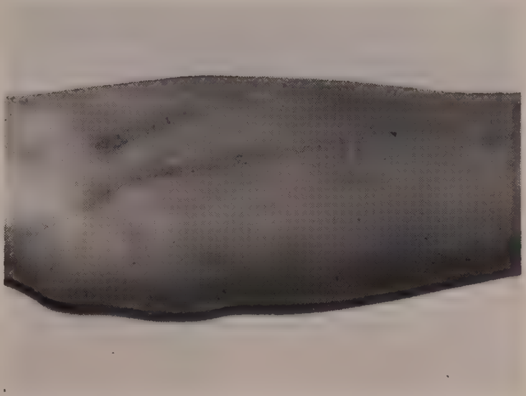

FIGURE 1. Typical needle tracks in Negro showing hyperpigmented streaks on volar aspect of forearm and antecubital fossa.

The common stigma of the narcotic addict, particularly the "main-liner" who injects heroin intravenously, is the needle track. This is a linear, pigmented streak on the skin of the extremity, overlying the superficial thrombosed vein that was used repeatedly for injection of narcotics. Needle tracks, which may be single or multiple, are usually located on the upper extremities, particularly on the forearm and dorsum of the hand, especially in the antecubital area.

In an injection of narcotics the addict frequently uses contaminated material. In his effort to sterilize the needle by flaming, soot collects on the instrument. Thus, the effect of multiple injections is soot tattooing and/or multiple small infections with

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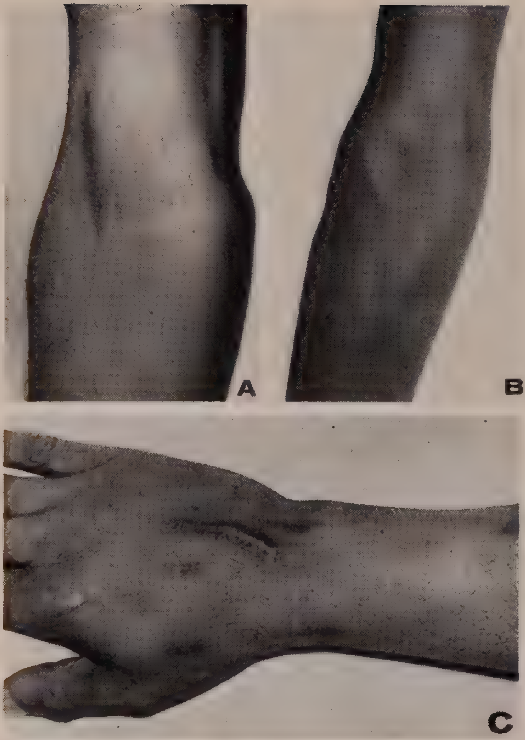

FIGURE 2. (A) Minimal needle track located in antecubital fossa over superficial veins. (B) Several tracks in antecubital fossa and on forearm. (C) Needle tracks on dorsum of hand and wrist.

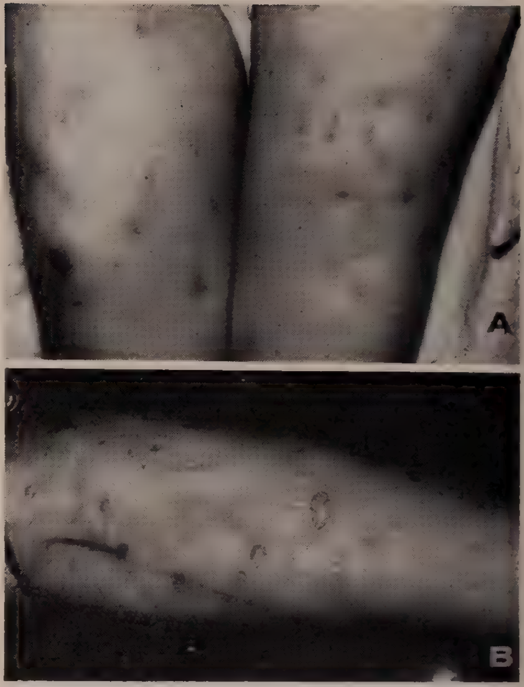

FIGURE 3. (A) Multiple "pockmarks" produced by contaminated subcutaneous injections of narcotics. (B) Small pigmented and depressed round scars caused by narcotic injections.

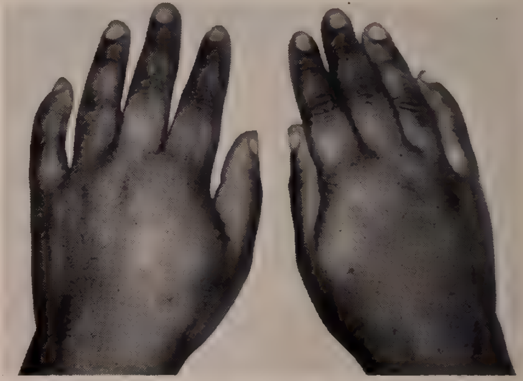

FIGURE 4. Chronic edema of hands which may persist for several years or permanently and is not related to acute infection.

abscess formation and inflammation at the sites of puncture. In addition, episodes of acute thrombophlebitis of the involved vein often occur.

The variation in the appearance and prominence of needle tracks is shown in Figure 2. Figure 2A, in which only one or two distinct tracks are discernible, illustrates a mild form. In the patient in Figure 2B the veins were used more extensively, and multiple streaks are visible in the antecubital fossa and forearm. Involvement of the veins of the hands is shown in Figure 2C.

A different type of addiction-stigmatizing disfigurement is depicted in Figure 3. This consists of depressed round or punctate scars (pock marks), seen on the forearm, thighs, and legs. These scars are produced by intradermal or subcutaneous injections of narcotics, "skin popping," which result in small localized abscesses and eventually in small, atrophic, depressed scars. They may be pigmented or nonpigmented, depending both on the cleanliness of the injection technic and on the patient's tendency to pigmentation. The edematous hand shown in Figure 4 is another deformity occasionally seen in addicts of long standing. This condition may be transient or chronic. It is not known whether it is caused by occlusive thrombophlebitis of the forearm veins or by lymphedema secondary to inflammatory occlusion of the lymphatics.

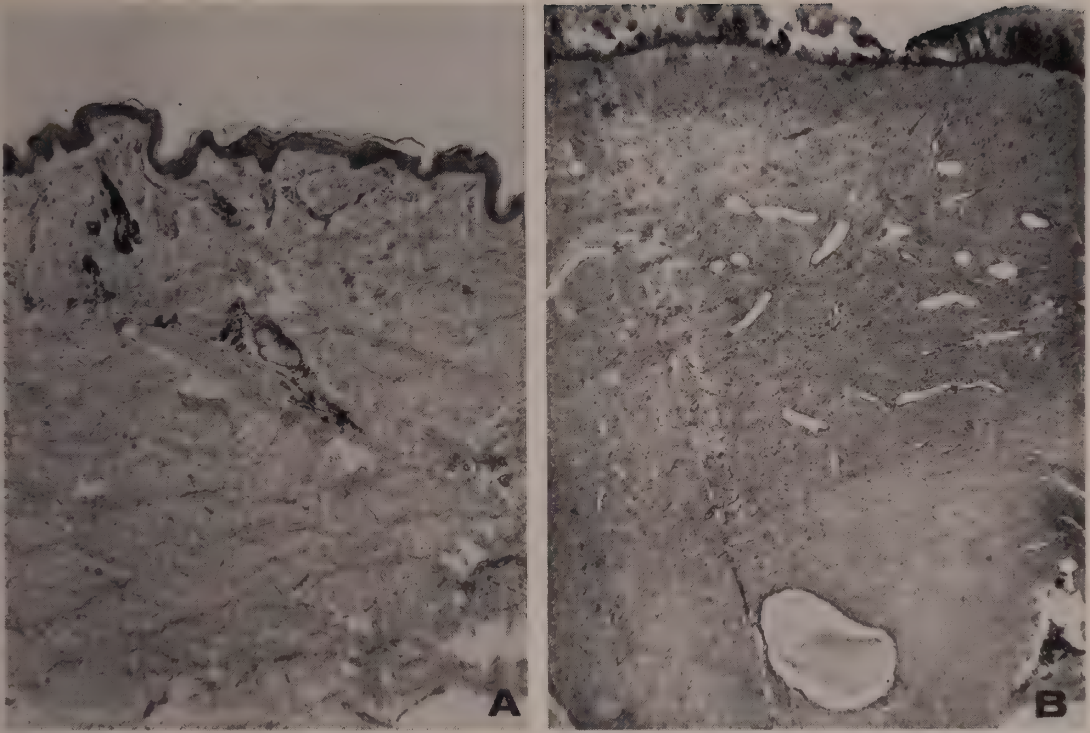

FIGURE 5. (A) Needle track with tattoo pigment in dermis. Increased denseness of collagen bundles in dermis (hematoxylin and eosin stain). (B) Track scar and subjacent vein, excised together. Note extensive sclerosis of vein wall, narrowing of lumen, and dense adhesions of vein to overlying skin.

Pathologic features of needle tracks

Histopathologically, the operative specimens show cicatrization. The epidermis may be either atrophic, with loss of rete pegs, or it may be relatively normal. Occasionally, inflammatory infiltrates are seen under the epidermis. The dermis shows hyalinization and dense collagen bundles, with either normal or decreased numbers of blood vessels (Fig. 5B). Pigment deposits may be present in the upper half of the dermis (Fig. 5A). In the specimen shown in Figure 5B the underlying sclerotic vein is intimately adherent to the skin.

Surgical technics and results

The operation consisted of elliptical excision of the pigmented scar and meticulous wound closure in two layers. In the linear defects a subcutaneous or subcuticular pull-out 0000 stainless steel wire was used for closure, with fine silk sutures or steristrips for approximation of the skin. When the underlying subjacent vein was firmly adherent to the skin, it was excised with the specimen. In about half the patients the vein was not adherent to the skin and was not disturbed. In an antecubital fossa the wound closure generally followed the pattern of a Z-plasty. Postoperatively, the extremity was immobilized with a bulky compressive dressing.

The cosmetic results varied a great deal and were not very impressive. In Negro patients and in patients with dark complexions, for example those of Latin American or Mediterranean origin, the scar initially tended to hypertrophy and to spread. Although the scars flattened in time, they remained hyperpigmented (Fig. 6A). In lighter skinned patients hypertrophy or hyperpigmentation was rare, but spreading of the scar occurred frequently. The disguise was more effective on a hairy extremity (Fig. 6B).

When sutures were left for more than four or five days, cross hatching resulted. Patients readily accepted cross hatching as well as the scars, since these conditions carried a surgical connotation and offered a complete disguise of the stigma.

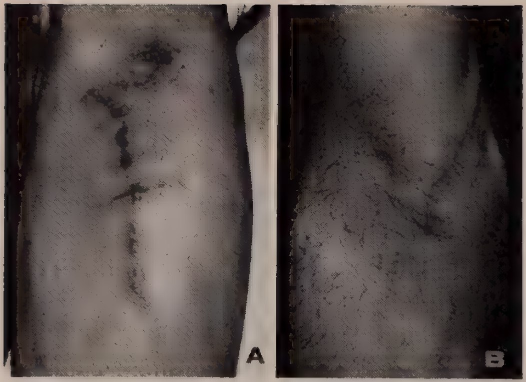

FIGURE 6. (A) Postoperative result in Negro. Note intense hyperpigmentation and close resemblance to previously illustrated tracks. (B) Results of excision and Z-plasty at antecubital fossa in Caucasian with hairy limb. Cross hatching gives scar surgical connotation.

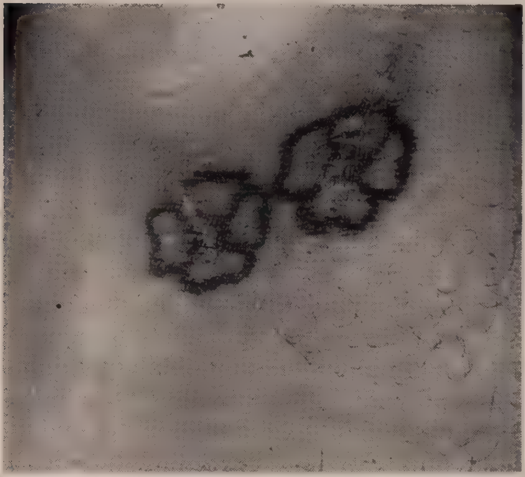

FIGURE 7. Decorative tattoo placed over needle track to conceal it.

In severe cases in which needle tracks were so numerous and extensive that simple excision was not practical, addicts were advised against operation. However, in such cases or when "pock marks" are present, the possibility of dermabrasion can be considered. On the extremities, healing of dermabraded areas is unsatisfactory and delayed and usually results in diffuse pigmentation in dark-complexioned patients or in superficial scarrings in light-skinned patients. However, this could mask the original lesion, thus accomplishing the desired effect.

In our study group, dermabrasion was not used because it demands prolonged postoperative treatment which we endeavored to avoid. We found that in most instances in which multiple stages were planned, in which one extremity at a time would be operated on, patients simply did not report for the second operation.

Diffuse needle tracks can be eliminated by excision of the area involved, followed by skin grafting. However, the anticipated color changes in the skin graft, the magnitude of the surgical undertaking, and the prolonged healing of donor areas make this treatment unattractive.

The time-honored method that addicts themselves use to conceal needle tracks is tattooing over the involved area. Figure 7 shows a decorative tattoo covering a needle track. Surgical tattooing over the needle tracks could be considered as a possible method of treatment. However, this was not used in our cases.

Motivation for operative removal of needle tracks

All addicts requesting removal of needle tracks gave as their reason that they wished to avoid identification as addicts. Police officers and other law enforcement agents are familiar with these lesions, as are many employers and employment agency personnel. Thus the presence of such stigmata is a severe impediment to the search for employment.

Most important, however, is that addicts identify other addicts by the presence of needle tracks. It has been demonstrated repeatedly that one of the most important steps in curing drug addiction is to dissociate the addict from other addicts. In this endeavor the elimination of the visible stigma of addiction becomes a very important adjunct to rehabilitation. The former addict, who in his sincere effort to cure himself moves away from his original environment and friends, knows that he will be approached by strangers who recognize him as a fellow addict by, among other things, the visible surface stigmata.

In our study it was obvious that another factor motivating the addict's request for surgery was his own self image. Even if needle tracks are only partially eliminated, the patient may feel that he has divorced himself from his habit, and his self esteem rises.

Effect of surgical treatment on social rehabilitation

Our patients could be divided into three categories, and the results of surgical treatment in terms of social rehabilitation were different for each of them. They are as follows: (1) cured addicts who had remained "clean" for several years, and whose cure was not in question; (2) active addicts who claimed to be motivated toward cure, and who insisted that surgical rehabilitation would be a great boost to their efforts; and (3) those addicts who had been "cured" for a few weeks or months and were seeking various external means to bolster their vacillating resolve.

Our experience indicates that patients in the first category have benefited a great deal by this operation. It has contributed to their rehabilitation, aided their social adjustment, and given them courage to face new environments and new situations. An example of a beneficial result is the case of a thirty-five-year-old male patient with a ten-year history of narcotic addiction which included several incarcerations. He had been "clean" for five years, during which time he was employed in one job. He refused an opportunity for a better job for fear his needle tracks would be recognized in his new place of employment. Surgical disguise of the more noticeable of his tracks allowed him to accept a new position without apprehension.

The social effect of operative treatment in the second and third group was less favorable. Our project dealt with narcotic addiction only tangentially, and we were not geared to offer any substantial help with the emotional or psychologic problems of the addict.

According to our records, of the 16 active addicts treated in this project only 2 broke the narcotic habit for a period longer than a year. Surgical disguise of needle tracks thus appears in our experience to have little effect on the active addict or on those in the early stages of withdrawal.

Narcotic addict as surgical patient

Management of an addict in a hospital environment presents a multitude of problems.[2] The cured, burned-out addict, strongly motivated toward rehabilitation and anxious to erase any links with his past addiction, is most cooperative. His physiologic tolerance to narcotics may be increased, but he makes up for it by his masochistic tolerance of pain and discomfort. Such a patient was a rare exception in our series.

As a rule, an addict released from prison is physiologically cured, having lived without drugs for several months. However, the psychologic aspect of his addiction remains unchanged. It usually takes only a few hours or days for him to become readdicted after he returns to his former environment. The addict needs drugs to handle his anxieties. Thus, as he awaits an operation, the ambivalence of his feelings about his decision to undergo surgery, the fear of the unknown, and the strange environment of the hospital compound his stresses and so increase his craving for narcotics. Because of his immaturity, he requires instant gratification of his needs and has a low threshold for pain and frustration. He demands narcotics and sedation and simulates symptoms to obtain them.

In our study the brunt of the pressure and responsibility in the hospital management of these patients fell on the resident. It was he who had to prepare the patient for operation and manage him postoperatively. On several occasions the medical, and in particular, the paramedical personnel, expressed fear for their personal safety. This was ungrounded, and through experience the staff soon learned to disregard any threatening utterances. There were no episodes of violence, an observation which is in keeping with the well-known passivity of the addict.[3,4] To prepare our staff for the hospital management of the addict, conferences were set up and frequent discussions were held at staff meetings to pass on the observations of experienced residents to new ones.

In acute cases, addicts were usually given heavy doses of tranquilizers such as chlordiazepoxide hydrochloride (Librium) or chlorpromazine hydrochloride (Thorazine) and frequently methadone hydrochloride, particularly when the patient demanded it. In general, the preoperative sedation was most unsatisfactory, even when massive doses of barbiturates and narcotics were used. Antihistamines were somewhat more effective. The choice was usually between no preoperative sedation at all or general anesthesia. These patients also required tremendous doses of anesthetic agents. Gaseous agents were more effective than intravenous drugs.[5]

Because of the unpredictable and unreliable behavior of most of the addicts, we avoided any treatment methods that would require a great deal of cooperation from the patient or would necessitate protracted postoperative care. The record of these patients in carrying out postoperative instructions or keeping appointments was very poor. Thus it required a great effort on the part of our social service to maintain follow-up.

Summary

We have presented our experience with a small group of narcotic addicts who were treated by surgical disguise of their needle tracks. The clinical and pathologic entity of the needle track and related skin lesions is described, and the social importance of this stigma of addiction is emphasized.

The role of surgical disguise of needle tracks in the over-all rehabilitation of narcotic addicts is discussed. It is concluded that this treatment contributes little to rehabilitation if carried out before the narcotic habit is reasonably controlled. In fact, early requests for the disguise of needle tracks indicate that the addict is misplacing his emphasis on external aspects of his problem.

Surgical disguise of the visible stigma of addiction is most helpful to the cured, "burned-out" addict in his effort to create a new life for himself.

Acknowledgment. We wish to acknowledge gratefully the assistance of Wallace Mandell, Ph.D., Richard L. Kurtzberg, M.A., and Howard Safar in the psychometric examinations and sociologic aspects of the Social and Surgical Rehabilitation Project.

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Salvage of ischemic limb

Experience with 39 patients over a period of seventeen months demonstrated that present technics for arterial reconstruction can produce a high rate of success in salvaging severely ischemic extremities which formerly would have been amputated. V. M. Bernhard, M.D. *et al.*, writing in a recent issue of *J.A.M.A.*, state that of 10 patients with aorto-iliac artery occlusion, 8 (80 per cent) had functional and viable extremities one to seventeen months postoperatively. Of 29 patients with femoral popliteal artery occlusion, salvage was achieved in 22 (76 per cent). Hemodynamic studies showed that blood flow after graft insertion was comparable in both the limb salvage category extremities and nonsalvage (functional ischemia) extremities at all levels, but the pressure gradient was higher and the relative increase in flow greater in patients with aorto-iliac salvage. There was no significant difference in either pressure gradient or flow at the femoral-popliteal level between salvaged and nonsalvaged extremities. The flows measured, however, were adequate to insure graft patency and to provide sufficient arterial perfusion to maintain a functional and pain-free extremity. Average flow per extremity was 270 ml. per minute after aorto-iliac bypass and 100 ml. per minute after femoral-popliteal bypass. By local injection of papaverine hydrochloride intra-arterially in 7 femoral-popliteal bypass cases, flow could be increased to 170 ml. per minute. This can be used as a test to estimate the ultimate flow potential: failure of papaverine hydrochloride to increase the flow suggests technical errors which may be correctable.

Amputation was resorted to in 1 of the 10 aorto-iliac bypass cases and in 6 of the femoral-popliteal bypass cases, incidences, respectively, of 10 and 21 per cent. One patient died in each of the 2 categories, for a mortality rate of 5 per cent. Over all, 30 of the 39 patients (77 per cent) had limbs salvaged at the time of evaluation.

Synovectomy in Rheumatoid Arthritis*

SYNOVECTOMY IN THE *treatment of patients with rheumatoid arthritis was studied in relation to 58 synovectomies performed on 34 patients over a period of eleven years. Results were analyzed on the basis of pain, joint function, type of procedure, and the value of early synovectomy in preventing the recurrence of active rheumatoid disease. Rheumatoid activity at the time of operation has little influence on the result of synovectomy and is a contraindication to surgery only in the most inflamed cases. In terms of degree of involvement, none of the synovectomies were really early.*

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SYNOVECTOMY IN THE EARLY course of rheumatoid arthritis has been used as an orthopedic procedure since Key[1] observed in 1925 that synovial regrowth recurred rapidly in intervals after synovectomy. In the late 1920's and 1930's several series were reported;[2,3] satisfactory results were obtained in about 65 per cent of the patients.

During the past decade both orthopedists and rheumatologists became interested in the revival of this procedure. Observations disclose that the earlier synovectomy is done, when there is less destruction of cartilage and bone in the course of arthritis, the more beneficial this procedure can be.

The purpose of this report is to present the experience of the New York University Rheumatic Diseases Study Group with regard to the effect of synovectomy in the treatment of patients with rheumatoid arthritis. During the past twenty years a large number of orthopedic surgical procedures have been performed, and studies have been attempted to evaluate their effect on the total rehabilitation of the patient. At this point we have chosen 58 synovectomies performed on 34 patients during the past eleven years for evaluation. The recent increased interest in synovectomy required us to clarify the definition of synovectomy. After careful review we have divided our cases into four operative categories: (1) synovectomy only, that is, removal of synovial tissue only; (2) synovectomy plus bone debridement; (3) tendon transplant in addition to synovectomy and bone debridement; and (4) complete arthroplasties. Our investigations were concerned with the particular question of whether or not these procedures had relieved pain, increased function, and prevented recurrences of synovitis in the operated joint.

We would like to remind our readers that this is a retrospective study. The observations with regard to pain were made by several members of the staff throughout the years. The definition of pain is very difficult. Its gradation was based not only on subjective observations but also on psychologic evaluations in which the patient's general attitude toward pain was studied. Function was evaluated on the basis of activities of daily living tests and range of motion.

Analysis of results

We have analyzed results in these patients in terms of pain (Table I). Three patients with painful elbows prior to opera-

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* This research was supported in part by grants from the social and vocational rehabilitation services RD2231-M and from The Arthritis Foundation.

TABLE I. Analysis of results in terms of pain

Joints Involved	Preoperative		Postoperative		
	None	Present	Improved	Same	Total
Elbow	...	3	3	...	3
Knee	...	21	19	2	21
Metacarpophalangeal	8	13	13	8	21
Wrist	1	2	2	1	3
Distal interphalangeal	...	2	2	...	2
Ankle	...	2	2	...	2
Shoulder	...	3	3	...	3
Proximal interphalangeal	1	...	1	...	1
Tendon sheath	...	2	2	...	2
TOTAL	10	48	47	11	58

TABLE II. Analysis of results in terms of function

Joints Involved	Preoperative			Postoperative			
	Good	Fair	Poor	Improved	Same	Worse	Total
Elbow	...	...	3	3	...	...	3
Knee	...	14	7	19	2	...	21
Metacarpophalangeal	8	13	...	11	4	6	21
Wrist	1	2	...	2	1	...	3
Distal interphalangeal	...	2	...	...	2	...	2
Ankle	...	2	...	2	...	...	2
Shoulder	...	...	3	3	...	...	3
Proximal interphalangeal	...	1	...	1	...	...	1
Tendon sheath	...	2	...	2	...	...	2
TOTAL	9	36	13	43	9	6	58

tion were improved postoperatively. Nineteen of 21 patients with painful knees were improved after operation, whereas 2 remained unchanged. Eight patients had no pain and 13 had some pain preoperatively in the metacarpophalangeal joints. Postoperatively, 13 improved and 8 remained the same. Before surgery 2 wrists were painful and 1 was not. Postoperatively, 2 have improved and 1 has remained painful. Two painful distal interphalangeal joints improved postoperatively. Two ankle joints and 3 shoulders were painful prior to surgery and have improved postoperatively. One proximal interphalangeal joint was pain-free and remained so postoperatively; 2 tendon sheaths, both painful before surgery, were free of pain after synovectomy. It has become apparent, therefore, that regardless of the severity of the involvement all of the joints operated on have either improved or remained the same, but none has become worse with regard to pain. In the majority of cases, pain was the patient's greatest concern.

Joint function, an essential item in rehabilitation, was also evaluated. Preoperative function was not normal in any of our patients (Table II). In 3 patients elbow function was poor preoperatively but all improved postoperatively. Function was fair in 14 and poor in 7 of the 21 knees operated on. Postoperatively 19 improved, and 2 remained the same. Preoperative function in the 21 metacarpophalangeal joints was good in 8 and fair in 13. Postoperatively, 11 improved, 4 remained the same, and 6 became worse. Preoperatively, wrist function was good in 1 and fair in 2; postoperatively, 2 had improved and 1 remained the same. The two patients who underwent synovectomy of the distal interphalangeal joints had

TABLE III. Results in function in relation to procedure

Procedure	Improved	Not Improved	Total
Synovectomy only	19	4	23
Synovectomy and bone debridement	18	3	21
Tendon transplant, synovectomy, and bone debridement	3	1	4
Complete arthroplasty	4	6	10
TOTAL	44	14	58

fair function both pre- and postoperatively. Poor function in 3 shoulders showed improvement postoperatively, and 2 tendon sheaths with fair function preoperatively improved postoperatively.

In this tabulation, the changes in the metacarpophalangeal joints are striking. Preoperative function in 8 was originally good, and synovectomy was performed primarily to correct ulnar deviation, but there was no great functional disability. However, postoperatively 4 remained the same and 6 have become worse. In other words, the ones who had fair or good motion have become worse.

Results in relation to the type of procedure carried out are shown in Table III. In 23 patients, who had synovectomy only, function improved in 19 and remained the same in 4. There were 21 patients who had bone debridement in addition to synovectomy; 18 improved and 3 did not. Of the 4 patients, who underwent synovectomy, bone debridement, and tendon transplant, 3 improved and 1 remained the same. Complete arthroplasty was performed in 10 patients; 4 improved and 6 showed no improvement. The number of cases is too small for comparison on a percentage basis, but it seems apparent that the greater the degree of intra-articular damage the less the chance for improvement.

One other question of great importance regarding the value of early synovectomy is whether this procedure can prevent the recurrence of active rheumatoid disease in the joint operated on. In 11 of our 58 patients generalized exacerbations of rheumatoid arthritis occurred in the years after operation, but the synovectomized joint escaped clear-cut rheumatoid involvement. Synovitis occurred in 2 of the 58 joints within three years of operation, but in both there was preceding trauma, and it is not clear that the synovitis was rheumatoid in nature. It has been our clinical impression that a most important factor contributing to the success or failure of orthopedic procedures for correction of arthritic disabilities is the patient's cooperation; however, this was found to be true only in those patients with disabilities in weight-bearing joints.

Rheumatoid activity at the time of operation has only a minimal influence on the result of synovectomy and is a contraindication to surgery only in the most inflamed cases. In terms of degree of involvement, none of the synovectomies were really early. None of these patients had rheumatoid arthritis for less than five years.

The difficulties encountered in this retrospective analysis of results have clearly shown the importance of carrying out this type of study on a prospective basis. The need for controls is also clear but presents additional difficulties. Our current efforts are directed toward resolving these problems.

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A series of review articles dealing with medical progress

Recent Advances in Medicine and Surgery

ROBERT TURELL, M.D., Editor

Iron Metabolism in Infants and Children

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ALTHOUGH IRON HAS BEEN USED therapeutically since ancient times, only in the past thirty years have major advances been made in our understanding of the uses of iron in the body. Most of this knowledge has been gained since the introduction of radioactive tracer methods of investigation. These methods have provided definitive information on the absorption and excretion of iron, the pathways that it follows in the body, and the dynamic aspects of its metabolic activity. Clinical application of studies of iron metabolism have provided valuable diagnostic methods. Iron is indispensable to three important vital processes: synthesis of hemoglobin; synthesis of important iron-containing enzymes, such as cytochromes, catalase, and peroxidase; and synthesis of myoglobin.

The total quantity of iron in the body of a child is determined largely by the size of the child and the level of the circulating hemoglobin. A newborn infant contains about 300 mg. of iron; a three-year-old child has about 1 Gm. Hemoglobin contains 60 to 75 per cent of the body's iron; myoglobin, catalase, and cytochrome contain about 5 per cent; plasma about 1 per cent; and storage depots 20 to 30 per cent. Enzyme iron and myoglobin iron are probably not available for erythropoiesis except under extreme circumstances. Hemoglobin, on the other hand, depends on iron not only for its synthesis but is also one of the major regulators of iron metabolism, both in transport and in storage. As physicians, we are concerned with the metabolism of iron principally as it is involved in erythropoiesis and in the synthesis and breakdown of hemoglobin.

Iron is an important element during infancy since at this age erythropoiesis is markedly increased, and iron stores and intake are often deficient. The need to triple the blood volume during the first year of life brings special stress on the erythropoietic tissues and places a premium on adequate supply and efficient utilization of iron.

The transfer of iron to the fetus takes place across the placenta. The blood in the fetal circulation is separated from that of the mother only by the thin-walled villi that are in contact with a pool of maternal blood. The total amount of iron in the infant at birth is 300 to 500 mg. The fetus acts as a parasite and is able to obtain the amount of iron it needs even when the mother is moderately deficient in iron. The fetus obtains iron through the placenta in some manner other than by simple diffusion. Iron from the maternal plasma is transferred to the fetal plasma even though the plasma level of the iron in the fetus is higher than in the maternal plasma. Iron that enters the fetal circulation does not reenter the maternal circulation. In the fetus the transferrin level is lower, and the degree of saturation with iron is greater than in the mother.

Absorption of iron

Normal children absorb from 5 to 10 per cent of the dietary iron, and those with iron deficiency absorb from 15 to 20 per cent.

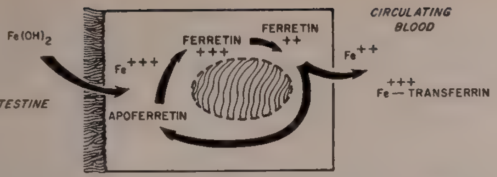

FIGURE 1. Diagram showing general scheme for absorption of iron by intestinal mucosal cell. Note intracellular transport of iron by apoferritin.

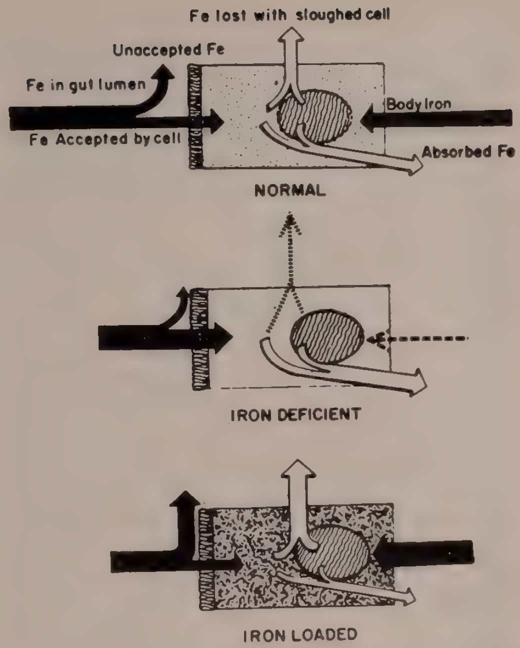

FIGURE 2. Diagrams showing mechanism for control of iron absorption by intestinal mucosa. Under normal conditions mucosal cells contain iron supplied from body stores. This reduces amount of iron which can be absorbed from gut. As a result, some iron remains in gut lumen and is lost. Iron which enters cell but is not absorbed into blood stream also is lost when columnar cell is sloughed at end of its life span. In iron deficiency, iron readily enters villous epithelial cells and then passes freely into blood. When there is iron loading, body iron which is incorporated into epithelial cells is eventually lost as cells are sloughed. But during life span of cells its presence inhibits entry of additional iron into cells. (Courtesy of Blood.)

Thus, about 1 to 2 mg. of iron are absorbed from an average daily diet by a normal child, but children with severe iron-deficiency anemia may absorb up to 3 or 4 mg. of iron from the same diet. Dietary iron usually consists of ferrous and ferric organic iron complexes. Aided by an acid pH in the stomach, these complexes are broken down to simpler inorganic salts and ultimately are reduced to the ferrous or bivalent form. In the small intestine the alkaline pH favors the formation of ionized reduced iron, the form in which dietary iron is absorbed. Ferrous hydroxide enters the mucosal cells of the small intestine where it is changed to ferric hydroxide. This combines with the intracellular protein, apoferritin, to form the compound ferritin. The ferric iron in the ferritin then is reduced again to the ferrous state (ferrous-ferritin) and, in this form, diffuses out of the cell into the portal circulation. Intestinal absorption is then complete (Fig. 1).

A mucosal block against excessive absorption is said to occur when the available apoferritin is fully saturated with iron. The ferric-ferritin (trivalent form) is reduced to ferrous-ferritin (bivalent form). This ferrous iron then rapidly attaches itself to the iron-binding protein, transferrin, in the plasma, where it is reconverted to the ferric form. An additional amount of apoferritin is thus made available, and iron is once again absorbed through the intestinal mucosa. According to this concept, control of iron absorption is mediated through the intestinal mucosa which can refuse or accept iron, depending on whether the available apoferritin in the mucosal cells is fully saturated with iron (Fig. 2). But in many patients with iron overload the mucosal block does not prevent additional iron from being absorbed in spite of the presence of adequate or excess body iron stores. Such observations throw doubt on apoferritin and the mucosal cell as being sole regulators of iron absorption. This demonstrates that the mucosal block to iron absorption is only partial and incomplete. But the intestinal mucosa could still exert an important effect on iron absorption. This would not be through an apoferritin-mediated mucosal block but by variations in the activity of the absorptive mechanism.

The duodenum is the most important site of gastrointestinal absorption of iron. Other intestinal areas also participate in iron absorption. But although iron probably can be absorbed from any part of the gastrointestinal tract, absorption is greatest in the duodenum and diminishes progressively in the more distal portions of the bowel.

The biochemical mechanisms that control iron absorption by the intestinal mucosa cell are not clearly known. Increasing evidence suggests that an active transfer system exists for transporting iron across the mucosal cells to the plasma. ATP (adenosine triphosphate) and ascorbic acid mediate the conversion of ferrous hydroxide to ferritin (apoferritin plus ferrous hydroxide). ATP is thought to stimulate the oxidation of ascorbic acid in the presence of iron. This reaction also reduces the plasma-bound ferric iron to the ferrous state, thus releasing iron from its protein bond and making it available for incorporation into ferritin.

Iron transfer is an active metabolic process. Studies using segments of small intestine from rats show that the transport of iron across the mucosal cell can take place against a concentration gradient, it is limited in capacity, and requires oxidative metabolism and the generation of phosphate bond energy. Active transfer across the mucosal cell involves two steps: (1) mucosal uptake, and (2) transfer to the serosal surface, that is, into the portal blood stream. Both steps require oxidative metabolism. Both bivalent and trivalent iron are taken up at the mucosal surface, but net transfer to the serosal surface, which is the slower step, is relatively specific for bivalent or ferrous iron.

Iron absorption is affected significantly by many factors. These factors include:

AMOUNT OF IRON INGESTED. Increasing the amount of iron ingested increases the amount that is absorbed. But the percentage of absorption is smaller when large amounts are ingested. Thus, a larger percentage of a small dose of iron and a smaller percentage of a large dose are absorbed.

TYPE OF IRON INGESTED. Ferrous iron is absorbed better than ferric iron.

PRESENCE OF FOOD IN GASTROINTESTINAL TRACT. Food in the gastrointestinal tract affects the absorption of iron significantly. Merely mixing ferrous salts with food before ingestion reduces the absorption of iron by about 50 per cent. The food may hinder absorption by the mechanical effect of its bulk. In addition, high levels of phosphorus in the diet inhibit iron absorption. Phytates, present in cereals, inhibit movement of inorganic iron from the intestinal lumen because they bind the iron. But this binding is not of practical significance in clinical practice. On the other hand, large amounts of ascorbic acid and probably other reducing substances seem to promote absorption of iron.

STATE OF IRON STORES. Absorption is relatively increased in iron deficiency (low stores) and is relatively decreased in conditions of iron overload.

RATE OF ERYTHROPOIESIS. Absorption is enhanced when erythropoiesis is increased and is diminished when erythropoiesis is decreased.

BAROMETRIC PRESSURE. Intestinal absorption of iron is increased three to four times during the first days of exposure to high altitudes. During this period red cell precursors are markedly hyperactive. In contrast, iron absorption is decreased during descent from high altitudes coincidental with a depression of bone marrow erythroid activity. The stimulus for intestinal absorption of iron is related to the greater or smaller erythropoietic demand associated with changing red cell production and erythropoietin level.

Transport of iron

Transferrin, an iron-binding protein, is a true carrier of iron. Its role as a carrier of iron is analogous to the role of hemoglobin with respect to transport of oxygen. Iron entering the plasma is derived from heme pigments, body stores, and gastrointestinal absorption. It is transported in the plasma in combination with a specific protein, a beta-1-globulin, variously called iron-binding globulin, siderophilin, or transferrin. The movement of transferrin is responsible for the transport of iron in the body. In the process of iron turnover, transferrin delivers iron to the liver, spleen, and bone marrow. The iron is then used either for storage in the labile iron pool or for hemoglobin synthesis and erythropoiesis.

When it leaves the intestinal mucosal cell, iron is in the ferric form and is transported in the plasma attached to transferrin. The protective effect of the protein binding of the iron in the blood was demonstrated by means of intravenous injections of iron preparations. It was found that poorly dissociated iron compounds, such as iron saccharide, can be given intravenously in large amounts. But easily dissociated iron compounds can be given only in small amounts. Larger amounts of easily dissociated iron compounds quickly saturate the total iron-binding capacity of the plasma, and the excess iron produces signs of acute iron intoxication.

Transferrin has a molecular weight of about 90,000. Each molecule combines with two molecules of ferric iron. There are many variants of human transferrin that are under genetic control. At least 15 transferrins have been identified by starch gel electrophoresis, and they are named after letters of the alphabet. Only transferrin C is found in the majority of persons. The transferrin variants, most commonly B2 and D1, apparently do not differ in their ability to transport iron and to deliver it to the tissues.

Transferrin functions not only in the transport of iron in the plasma but also in the delivery of iron from the plasma to the red cell precursors in the bone marrow. Transferrin plays an important role in iron utilization by the developing normoblasts and reticulocytes. This process involves the attachment of the transferrin molecule to the cell membrane. The iron, which is tightly bound to the transferrin molecule, is delivered, or injected, into the cell from the transferrin attached to the cell membrane. The mechanism is energy dependent. Thus, transferrin plays an essential role in the transfer of iron from the plasma to the young red cell.

As evidence for the concept regarding the function of transferrin, a case was reported of congenital absence of transferrin in a child.* The child showed a hypochromic microcytic anemia, but his reticuloendothelial tissues had excessive iron deposits, that is, the iron stores were abundant. But erythropoiesis was decreased because of inability to utilize iron. The abnormal findings in this child emphasize the nonessential role of transferrin in iron absorption and storage and the apparent necessity of transferrin for iron utilization in erythropoiesis.

The newborn infant is a poor synthesizer of specialized proteins, such as prothrombin and antibodies. Accordingly, the infant also has hypotransferrinemia. He has a distinctly lower level of transferrin than his mother. The average total iron-binding capacity or transferrin level for a newborn infant is 225 micrograms per 100 ml.; for childbearing women the total iron-binding capacity averages about 425 micrograms per 100 ml. On the other hand, the serum iron level of the fetus is higher than his mother's.

The level of serum iron reflects the balance between the iron absorbed, the iron utilized for hemoglobin synthesis, iron released by red cell destruction, and the iron released from the storage depots. The capacity of the serum to combine with iron is measured as the serum iron-binding capacity. The test measures the amount of unbound transferrin in the serum. The total iron-binding capacity may also be called the transferrin level. Normally, transferrin is about one-third saturated, the bound fraction representing the segment linked to iron as serum iron.

Storage of iron

The ability of plasma to bind and transport iron is limited. The circulating serum iron of a normal three-year-old child (17 Kg.) is about 0.8 mg. The storage iron constitutes from 20 to 30 per cent of the total iron in the body. In a three-year-old child whose total body iron is about 1 Gm., storage iron would be 200 to 300 mg. Iron is stored chiefly in the reticuloendothelial cells of the liver, spleen, and bone marrow. This stored iron can be retrieved and utilized for hemoglobin synthesis.

Iron is stored in the form of ferritin and hemosiderin, under normal conditions principally as ferritin. Ferritin and hemosiderin are equally available for use in erythropoiesis. Ferritin is soluble and not visible in the tissues. The ferritin molecule is composed of a cluster of ferric hydroxide radicals bound to the protein, apoferritin. Whereas only small amounts of iron can be stored as ferritin, extremely large amounts can be stored as hemosiderin.

The incorporation of the plasma iron into ferritin in the storage area is an energy-dependent reaction involving ATP and ascorbic acid. A complex is formed which involves 2 mols of ATP, 1 mol of ascorbic acid, and the iron-bound transferrin of the plasma. It is postulated that on stimulation of the oxidation of ascorbic acid by ATP, the ferric iron bound to transferrin is reduced to ferrous iron and thus released from its bond to the protein for incorporation into ferritin. The iron stores are estimated for clinical purposes by iron stains of bone marrow smears and determinations of serum iron and iron-binding capacity.

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* Heilmeyer, L., *et al.*: Congenital atransferrinemia in a seven-year-old girl, Deutsche med. Wchnschr. **86:** 1745 (1961)

Excessive iron stores may arise either from excessive intestinal absorption or from increased hemolysis. Excessive intestinal absorption of iron may occur as the result of either an intestinal defect, as in idiopathic hemochromatosis, or a diet high in iron, such as that in the African Bantu. This leads to the deposition of iron in parenchymal cells.

Excretion of iron

Iron is one of the most carefully conserved substances. Under normal conditions so little iron is lost that for all practical purposes this loss is negligible. Only a very small amount is lost daily as a result of desquamation of the cells of the skin and gastrointestinal tract, through the migration of leukocytes into the gastrointestinal tract, by the shedding of hair, and by the excretion of minute amounts of iron in the bile, urine, and sweat. Fecal excretion of normal children is 0.2 to 0.4 mg. daily. In iron-deficiency anemia the amount of iron excreted may be only one-half as much. When a child bleeds, he loses about 0.4 mg. of iron per milliliter of blood lost.

The quantity of iron in the body is regulated by the amount of iron that is absorbed. There is no balanced mechanism of absorption and excretion like that existing for many metals, such as calcium and sodium. Iron metabolism is peculiar in that the intestine cannot significantly alter the iron stores by varying the amount of intestinal and urinary excretion. Thus, during a period of high-iron intake considerable amounts of iron may be absorbed. But this surplus is not excreted to any appreciable degree during a subsequent period of low-iron intake.

This conservation of iron is generally advantageous to the body economy. But the inability of the excretory mechanisms to rid the body of more than a small amount of iron each day allows the accumulation of iron when excessive amounts gain access to the body. This accumulation of iron may be a result of blood transfusions, parenteral injections of iron, or abnormal absorption from the intestine. The maximal limit of iron excretion through shedding iron-laden cells from the gastrointestinal tract is estimated to be only 2 mg. per day. Thus, iron is recycled and re-used. A single atom participates in repeated cycles of hemoglobin synthesis and catabolism.

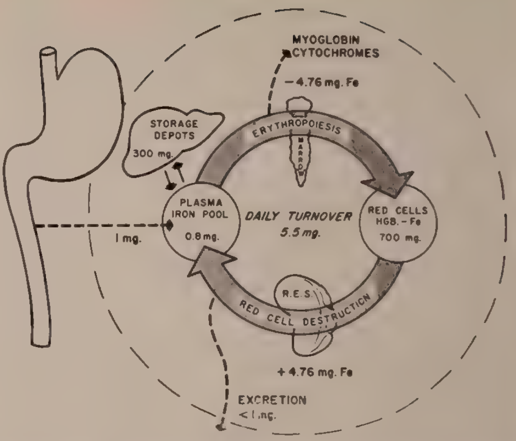

FIGURE 3. Diagram showing general scheme for dynamic turnover of iron. Iron quantities are adapted to normal 17-Kg. child.

Dynamic turnover of iron (ferrokinetics)

The iron in the plasma pool undergoes a constant turnover. There is a dynamic equilibrium (Fig. 3). A fairly constant plasma iron level is maintained by a balanced redistribution, that is, iron comes into the pool from dietary sources, storage depots, and hemoglobin catabolism. It leaves the pool to be stored or to be used for synthesis of new hemoglobin. Of the approximately 5.5 mg. of iron which enter and leave the plasma each day in a three-year-old child, about 4.76 mg. are obtained from catabolism of hemoglobin; the remainder is obtained primarily from reserve iron stores, with a very small percentage representing ingested iron. Eighty to 90 per cent of the iron leaving the plasma is taken up by the erythropoietic tissues for reincorporation into hemoglobin, with smaller amounts going to storage depots and to growing tissue for utilization in enzyme systems. Since the plasma of a three-year-old child contains only 0.8 mg. of iron at any given time, and since 4.76 mg. are consumed daily in hemoglobin synthesis, replacement must occur at least six times per day.

A function of reticuloendothelial cells is to retrieve iron from the heme moiety of nonviable and broken-down erythrocytes. The reticuloendothelial cells then return part of this iron to plasma transferrin, and part of the iron is temporarily stored in the reticuloendothelial cells.

The availability of radioactive iron has made it possible to trace the pathways of iron in the body. Plasma iron can be labeled by the injection of a tracer amount of radioiron, and its clearance from the plasma can be followed by counting that which remains in the plasma at various intervals. From this determination, if the level of the serum iron is known, the plasma turnover rate can be calculated. The amount of iron that is utilized for effective hemoglobin synthesis can be measured by determining the amount that is incorporated in the circulating erythrocytes at various time intervals. In normal children, the half-time disappearance rate of iron injected intravenously is seventy to eighty minutes; 85 to 100 per cent of the injected iron can be accounted for in the circulating erythrocytes within a period of seven to ten days in normal subjects.

The daily requirements of hemoglobin production of a normal 17-Kg., three-year-old child can be calculated. If the hemoglobin level is 12 Gm. per 100 ml., the total blood volume is 1,400 ml., and the average life span of the erythrocytes is one hundred twenty days, the daily production of hemoglobin is 1.4 Gm. (12 × 1,400/100 × 120). Since each gram of hemoglobin contains 3.4 mg. of iron, the daily requirement of iron for hemoglobin production for a three-year-old child is 3.4 × 1.4 or about 4.76 mg. The average daily iron intake of about 1 mg. just balances the daily loss of iron from the body.

The daily iron need for hemoglobin production is provided by the hemoglobin contained in the erythrocytes destroyed each day. But the measured figure for plasma turnover of 5.5 mg. is appreciably above the theoretic value, 4.76 mg. per day, calculated for hemoglobin production. The figures indicate that about 30 per cent of the iron entering and leaving the plasma each day is not utilized for effective hemoglobin production. This means that there is appreciable movement of iron which apparently is not immediately involved in erythropoiesis. Possibly an appreciable portion of this iron initially is taken up by tissue other than the marrow, such as the liver, and the remaining 10 per cent of the unaccounted-for iron that does go to the marrow is involved in ineffective erythropoiesis. That is, the erythrocytes are destroyed in the marrow without reaching the general circulation.

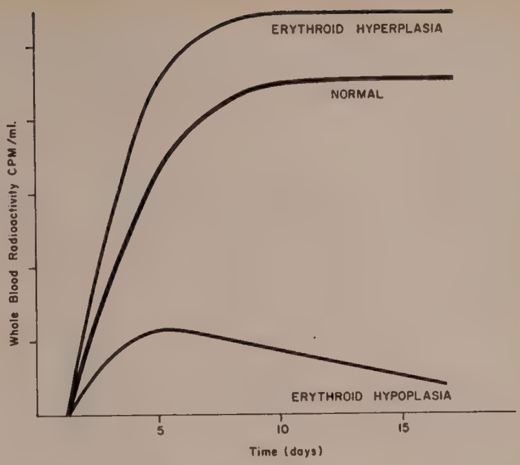

FIGURE 4. Diagram showing normal utilization of radioiron by red cells in erythroid hyperplasia and in erythroid hypoplasia (semi-log scale). (Courtesy of Medical Science.)

Erythropoiesis is a dynamic process. Serum iron and transferrin levels reflect only a part of the picture. When there is suspicion of hypofunctioning or hyperfunctioning of bone marrow, it is advisable to study the pattern of red cell iron turnover. The plasma iron pool can be labeled by injecting Fe^{59} intravenously. The rate of erythropoiesis can be estimated by determining the rate of uptake or utilization of Fe^{59}.

Iron gains entrance into red cells only during their formation and is released from red cells only during their destruction. Thus, if one determines the rate or amount of Fe^{59} incorporated into the red cells, one has a means to estimate the rate of erythropoiesis. To measure the rate of red cell uptake or utilization of Fe^{59}, one proceeds as follows: (1) Draw a blood sample to determine base line radioactivity; (2) inject Fe^{59} intravenously; (3) draw blood samples on days 3, 7, and 14; and (4) count radioactivity of the red cells of all samples. From these data one can then plot a curve showing the rate of red cell uptake or utilization. This can then be compared with the normal curve (Fig. 4).

Conclusion

We have reviewed iron metabolism with mention of special features that apply to infants and children. It is hoped that awareness of the peculiarities of iron metabolism may form the basis for a more rational approach to management of iron deficiency and iron overload. It may also foster a more dynamic understanding of disorders of erythropoiesis encountered in care of children.

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Emphysematous cholecystitis

The increased use of preoperative abdominal x-rays has resulted in the more frequent identification of cholecystitis caused by gas-forming organisms, reports D. H. Brannon, M.D., writing in *Journal of the Medical Association of the State of Alabama* **37:** 1263 (May) 1968. Emphysematous cholecystitis has been considered rare, with less than 100 cases reported up to 1965. Basic to successful management includes: (1) consideration of immediate cholecystectomy when the case is early and uncomplicated, with symptoms of less than forty-eight hours and no evidence of gas infiltration into the gallbladder wall; (2) in patients seen later, after extension of gas into or beyond the gallbladder wall, conservative management with later elective cholecystectomy should offer the best chance of a good outcome; and (3) reports of successful nonoperative management should be borne in mind where there is increased surgical risk because of coexisting disease or other factors.

The patient was admitted with severe right upper quadrant pain, vomiting, and abdominal distention of forty-eight hours duration. His temperature was 101 F., and his white blood count was elevated. He had a six-month history of recurring mild discomfort in that area. Plain films showed the characteristic appearance: a distended gallbladder with an air-fluid level surrounded by a ring of gas infiltrating the gallbladder wall. In this case, the causative organism turned out to be Clostridium welchii, the agent most frequently found.

Adapted to the individual situation, management may be nonoperative, immediate surgery, or surgery following early conservative control. Perhaps the best course would be early conservative control with elective cholecystectomy later. Good results have followed early cholecystectomy in those cases where symptoms have lasted less then forty-eight hours and there is no x-ray evidence of gaseous infiltration of the gallbladder wall. In such cases, diagnosis may be uncertain because of the absence of gaseous invasion of the wall of the gallbladder. Success with conservative management alone has been reported. In vitro studies have indicated that in clostridial infections, the drugs of choice are tetracycline with penicillin in high dosages. In choosing the course of management, particular attention should be given the time sequence in development, of the disease. Cholecystectomy has seldom been of value. Gas gangrene antitoxins have not proved to be of any particular value, and the value of hyperbaric oxygen therapy has not been established.

Clinicopathologic Conference

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Conducted by JOHN T. FLYNN, M.D., and
CHARLES M. KARPAS, M.D.

Discussed by MELVIN ROSENZWEIG, M.D.

Recurrent Hemorrhage Following Plication of Perforated Gastric Ulcer

Case history

Manjula Mittal, M.D.: A seventy-nine-year-old Chinese man was admitted to Beekman-Downtown Hospital with symptoms of nausea, vomiting, and anorexia for the preceding several months. During that time he had also had weight loss of undetermined amount and weakness; for one month, he experienced an ill-defined pain in the abdomen. Two days before admission he had felt faint and lost consciousness, suffering a laceration over the right frontal region. X-ray films taken in the emergency room and in the outpatient department showed evidence of a small chip fracture of the fourth cervical vertebra; the skull, the remainder of the spine, the left wrist, and the right leg showed negative results for fracture. The hemoglobin was 10.6 Gm. per 100 ml., and hematocrit 34; blood sugar was 165 mg. and blood urea nitrogen 26 mg. per 100 ml. At the time of admission the patient was complaining of generalized aching and urinary frequency about 10 times per day; the remainder of the history was unobtainable, due to language difficulties.

Physical examination revealed a systolic blood pressure of 80 mm.; a diastolic pressure was unobtainable; pulse rate was 90, respirations 20 per minute, and temperature 97 F. The patient was alert, thin, and in no acute distress. There was a recently sutured 5-cm. laceration in the right frontal region. The lungs were clear; the heart was not enlarged, the rhythm was regular, and there were no murmurs. The abdomen was flat with generalized rigidity, diffuse pressure tenderness, and questionable rebound tenderness. No abdominal organs or masses were palpable. The rectal examination showed negative findings.

The initial urinalysis showed a specific gravity of 1.017, albumin 2 plus, and sugar 1 plus; the urinary sediment contained 10 to 20 white blood cells and 5 to 8 red blood cells per high-power field. The hemoglobin was 12.5 Gm. per 100 ml. and the hematocrit 37.5; the white blood cell count was 2,200 with 19 per cent segmented forms, 40 per cent nonsegmented forms, 24 per cent lymphocytes, 1 per cent monocytes, and 14 per cent metamyelocytes. The platelet count was 196,000 per cubic millimeter. The blood urea nitrogen was 51 mg. and the total bilirubin 0.7 mg. per 100 ml.; the serum amylase was 136 units (normal 50 to 150 units). The carbon dioxide-combining power was 16 mEq., the serum potassium was 6.1 mEq., the serum sodium 136 mEq., and the chlorides 108 mEq. per liter. The electrocardiogram showed sinus tachycardia and minor S-T and T-wave changes suggestive of myocardial ischemia, possibly secondary to the tachycardia.

X-ray examinations revealed clear lung fields, a normal cardiac shadow, and atherosclerosis of the aorta. Repeat films of the

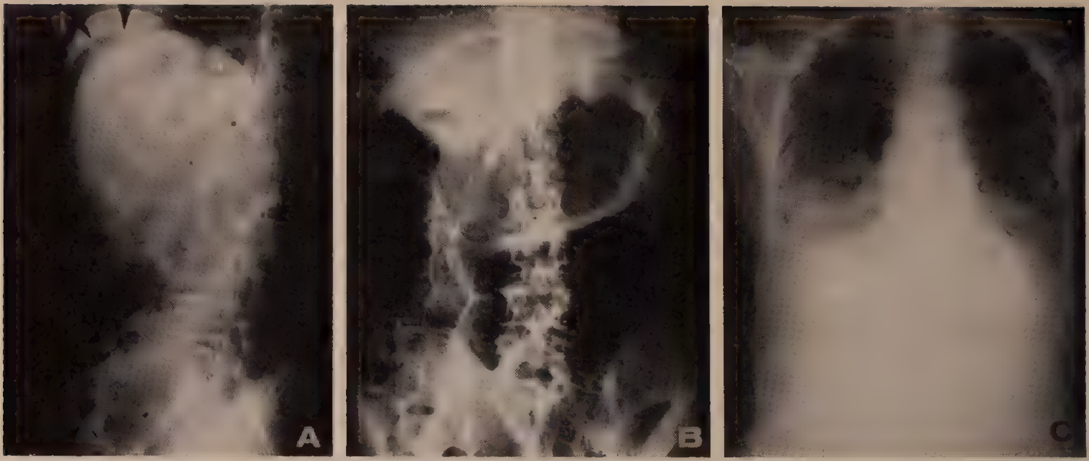

FIGURE 1. X-ray films. (A) Lateral view of abdomen showing free air beneath diaphragm (arrows). (B) Film of abdomen showing gaseous distention of entire gastrointestinal tract, suggesting adynamic ileus. (C) Chest film showing infiltration and pleural reaction in lower lobe of right lung.

cervical spine again showed the fracture of the fourth cervical vertebra; x-ray film of the abdomen showed free air over the anterior surface of the liver (Fig. 1A). Gastric aspiration revealed grossly bloody stomach contents.

On the day of admission the patient underwent immediate surgical exploration of the abdomen; gastric contents were found in the peritoneal cavity, and there was scarring of the duodenum and of the adjacent pylorus. A perforated peptic ulcer $1^1/_2$ by $^3/_4$ cm. on the anterior wall of the stomach was found and was plicated. Biopsy from the margin of the ulcer showed only necrosis and acute inflammation, consistent with perforation of a benign ulcer.

Postoperatively the patient remained in critical condition with a blood pressure of 70 to 80 systolic; his white blood cell count rose to 10,300 with 24 per cent segmented forms, 66 per cent band forms, 8 per cent metamyelocytes, 1 per cent monocytes, and 1 per cent lymphocytes. The reticulocyte count was 5.7 per cent. The hemoglobin remained at 9.2 Gm. per 100 ml. The total serum protein was 4.6 Gm. (albumin 2.2 Gm. and globulin 2.4 Gm.) per 100 ml. The total serum calcium was 8.2 mg. and the phosphorus 4.3 mg. per 100 ml. The serum potassium decreased to 5.1 mEq. per liter; the blood urea nitrogen remained at 60 mg. per 100 ml. The serum iron was 62 micrograms (normal 50 to 180) and the iron-binding capacity 167 micrograms (normal 250 to 440) per 100 ml. A bone marrow smear showed hypocellular marrow with normal cell distribution and a a slight increase in plasma cells, 7 to 10 per cent. The direct and indirect results of the Coombs' tests were negative.

During the first postoperative week repeated stool examinations showed positive results for blood on guaiac tests. The white blood cell count and differential returned to normal, but the hemoglobin dropped to 7 Gm. per 100 ml. and the hematocrit to 22. The blood urea nitrogen was 39 mg. and the creatinine 1.4 mg. per 100 ml. An x-ray film of the abdomen revealed marked distention of the stomach, small bowel, and colon, which was suggestive of adynamic ileus (Fig. 1B). Chest x-ray film taken on the ninth postoperative day showed a small amount of pleural reaction at the base of the right lung and a questionable area of pneumonic infiltration in the lower lobe of the right lung (Fig. 1C). Serum electrolytes remained normal, except for serum potassium levels of 3.2 to 3.8 mEq. per liter. The patient was treated with parenteral procaine penicillin and streptomycin throughout his hospital course; his temperature remained essentially normal during this time.

During the second postoperative week, the patient developed edema in the back and lower extremities; spontaneous bowel movements and enemas produced grossly tarry stools. The patient developed increasing dyspnea and anorexia. A Levin tube was inserted to feed the patient, but on the seventeenth hospital day, gastric aspiration revealed black coffee-ground gastric contents. The hemoglobin fell to 6.4 Gm. per 100 ml., and the blood urea nitrogen rose to 150 mg. per 100 ml.; the prothrombin time was 18.5 seconds (control 13.4). The platelets were 196,000. With 7 units of whole blood, the patient's hemoglobin rose to 13 Gm. per 100 ml. and upper gastrointestinal bleeding ceased. The patient's appetite improved; the abdomen remained soft, although the edema persisted. Four plus albuminuria continued; the total serum protein was 6 Gm. with albumin 2.2 and globulin 3.8 Gm. per 100 ml. The total cholesterol was 142 mg. per 100 ml.

On the twenty-third postoperative day, the patient suddenly went into peripheral vascular collapse with a blood pressure of 40/0; the hemoglobin dropped to 4.5 Gm. per 100 ml. Coffee-ground material was aspirated from the Levin tube, and the patient began to pass grossly tarry stools. After 8 units of whole blood were administered, the hemoglobin rose to 11 Gm. per 100 ml. Repeat chest x-ray film indicated the presence of diffuse infiltration throughout both lung fields, suggestive of pulmonary edema, together with bilateral small pleural effusions. Subcutaneous emphysema was noted in the left axillary region.

On the twenty-fourth postoperative day, the patient again passed a massive tarry stool, and bright red blood was returned through the Levin tube. The blood pressure was 50/0 and the pulse 120 per minute. The surgical consultant felt that the patient was not in condition for further surgical exploration. Two additional units of blood were given, but his condition gradually deteriorated with increasing mental confusion. The blood urea nitrogen rose to 150 mg. per 100 ml., and the hemoglobin dropped progressively to 5.4 Gm. per 100 ml.; the patient expired on the afternoon of the twenty-seventh postoperative day.

Discussion

MELVIN ROSENZWEIG, M.D.*: In summarizing the protocol, we have a seventy-nine-year-old Chinese man who came from Canton or the provinces south of the Yangtze River. He had weakness, anorexia, and nausea for several months; however, he came into the emergency room suffering from lacerations and a fracture of the skull as the result of a fall he had two days previously. At the time of admission he was in circulatory collapse with symptoms of an acute condition in the abdomen. He was hypotensive, hypothermic, dehydrated, and sweating profusely. The laboratory examination uncovered an unusual leukopenia with a predominance of early forms, including myelocytes and metamyelocytes. At this time there was moderate anemia, but no thrombocytopenia was present. On admission blood was aspirated from the stomach by Levin tube. Needless to say, the patient was immediately operated on, and a perforated ulcer was plicated. Shortly after the surgical procedure we note that the white blood cell count rose to over 10,000 with still a predominance of early forms; however, he had a hypocellular bone marrow with a slight increase of plasma cells. In addition, he developed moderate hypocalcemia. The serum iron was normal while the iron-binding capacity was moderately low. During the entire postoperative period, this patient bled persistently and received many transfusions. He finally died in a state of shock in which we saw increasing albuminuria, a rising blood urea nitrogen, and terminally subcutaneous emphysema. In viewing the x-ray films, I was interested in any evidence of abdominal aneurysm or splenomegaly. Dr. Batillas, will you discuss the x-ray films?

JOHN BATILLAS, M.D.: Actually, the patient had numerous x-ray films taken in the emergency room, and the only significant finding was a chip fracture of the anterior superior margin of the fourth cervical vertebra. X-ray films of the abdomen demonstrated free air beneath the diaphragm (Fig. 1A). Ordinarily when x-ray films are taken with the patient in a supine position one cannot detect the free air, but it can be detected above the liver on the lateral view of the abdomen. The chest examination showed no active infiltration of the lungs, but we saw chronic changes bilaterally and a tracheostomy tube in situ. There was no evidence of an enlarged spleen. Follow-up x-ray films taken on the ninth postoperative day demonstrated gastric dilatation and a pattern of gas scattered throughout the small and large bowel and rectum, consistent with an adynamic ileus (Fig. 1B). On the same day a chest x-ray film demonstrated diffuse infiltration radiating peripherally from the hilar regions; the diaphragm and costophrenic angles were obliterated by pleural fluid (Fig. 1C). The x-ray films suggested pulmonary edema. Ten days later, there was some resolution of the pulmonary edema, but still there were bilateral pleural effusions and congestive changes. Subcutaneous emphysema could be seen in the left axillary region, and two days later it was still visible.

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Dr. Rosenzweig: The first thing we are interested in is the possible association of perforation with bleeding. DeBakey[1] in reviewing more than 1,000 cases showed that massive hemorrhages occur in from 6 to 12 per cent of cases of peptic ulcer in which there has been perforation. On the other hand, after plication operations, in only 1.4 per cent of over 1,200 cases was there bleeding from the operative site in the gastrointestinal tract. So probably in this case the bleeding was not from the plicated ulcer. We are most probably dealing with another primary process, very likely the presence of a second ulcer as suggested in the operative report.

But what are the other possible causes of gastrointestinal bleeding in this patient? Since 1952 many institutions have utilized what is called the vigorous diagnostic approach in the acute gastrointestinal bleeder. At Metropolitan Hospital, Katz *et al.*[2] have found that in 27 per cent of more than 400 cases, acute gastrointestinal bleeding is usually the result of an acute gastric lesion, most often erosive gastritis or diffuse gastritis. About 20 per cent of bleeding was caused by duodenal ulcer and 13 per cent by varices. The vigorous diagnostic approach which I mentioned utilizes immediate ice water lavage followed by esophagoscopy and gastroscopy to locate the bleeding site.[3] There have been many errors in the past, especially in patients with cirrhosis, by assuming that gastrointestinal bleeding must be caused by a duodenal ulcer or esophageal varices. Admittedly in massive bleeding episodes, or when the patient has a hemoglobin of less than 8.5 Gm. per 100 ml., the most common cause in adults over age sixty has been duodenal ulcer; below age sixty esophageal varices have been more common. This patient had a perforated ulcer for probably two days before admission; later in his postoperative course we might have been dealing with a stress-induced ulcer or a diffuse gastritis.

Another cause of gastrointestinal bleeding after age sixty is ruptured abdominal aneurysm, but in this case we lack sufficient evidence to support such a diagnosis. In more than 50 per cent of cases in which an aneurysm is the cause of upper gastrointestinal bleeding there is evidence of the aneurysm on x-ray film. Usually such an aneurysm causes massive bleeding via a duodenal perforation. In addition, in various neoplastic diseases, especially in prostatic cancer, the presence of an increased fibrinolysin may cause bleeding with normal platelet levels. I include this because the patient had frequency of urination, possibly associated with his diabetes or to a prostatic problem. Although I am not convinced of this, I mention it as a possibility.

I would like to comment on the possibility of cirrhosis in this patient. During the second hospital week a low prothrombin time and a low serum albumin were recorded, although the results of other tests of liver function were normal. It is not unusual to find cirrhosis in a patient who has little clinical laboratory evidence of that condition. In the case of any Chinese male born in Canton, we should consider the possibility of Schistosoma japonicum as a cause of liver disease. Incidentally, it is not true that hepatoma is present in a higher per cent in Chinese from Canton who have S. japonicum infestation. I think that hepatoma is more frequent in North China where trematode infestation is more common. So we should include the possibility of cirrhosis, with bleeding from esophageal varices, even though the shock-like state prevented an adequate search for them. We are all aware of the great number of complications that occur in patients with cirrhosis; high on the list we find peritonitis, perforated ulcer, acute pancreatitis, and vascular occlusion.

We have also to consider, in addition to local causes, certain systemic causes of such gastrointestinal hemorrhage. Often multiple myeloma is associated with an abnormal globulin and frequent bleeding episodes. In our case, the bone marrow had an increased number of plasma cells, which might imply only a reactive bone marrow and not necessarily the presence of myeloma. The marrow did not show atypical cells, such as early plasma cells or what we call myeloma cells, and the serum did not show a hyperglobulinemia, so I believe multiple myeloma can be ruled out. However, the leukopenia and the early cell forms in the peripheral blood might indicate an atypical type of leukemoid reaction or possibly the precursor state of an acute leukemia. Here again a general hypocellular bone marrow without a predominance of early forms would tend to rule out leukemia. Bleeding diatheses in leukemia are sometimes related to marked intravascular coagulation and lack of hemostasis, but I am not persuaded that leukemia was present in this patient.

Sometimes undiagnosed tuberculosis can show an unusual blood picture—a leukemoid reaction, pancytopenia, and usually a hypocellular marrow; so we should consider tuberculosis in this Chinese male with a history of weakness and lack of appetite for several months. On the basis of available clinical data, I cannot completely rule out tuberculosis.

In relation to the leukopenia, I would like to mention the possibility of a circulating endotoxin associated with the gastrointestinal perforation of two days' duration. Destruction of mature leukocytes, leukopenia, and stimulation of the bone marrow to produce early forms are not unusual findings.[4] Also, when an endotoxin is present, we may see the Sanarelli-Schwartzman phenomenon, the so-called generalized Schwartzman reaction in which intravascular coagulation occurs, and the patient bleeds profusely from various sites.[4] This can occur in local areas or can be generalized with purpura, gastrointestinal bleeding, and hematuria. Usually associated with this is a low serum fibrinogen, depletion of the prothrombin complex, a low prothrombin time, and poor clearance of thromboplastic material. Such patients may undergo cortical necrosis of the kidney and die if not treated. This type of generalized Schwartzman phenomenon can also be seen in certain types of experimental cancer in animals, so that an occult carcinoma would have to be considered in this patient.

Another interesting finding is the subcutaneous emphysema which may at times be associated with a gastrointestinal perforation. Did this patient perforate a second gastric ulcer or did the Levin tube erode part of his esophagus and give rise to the subcutaneous emphysema? Was the subcutaneous air a residual of the original laparotomy or did it represent a localized infection due to gas-forming organisms? Also, we see on the x-ray film an elevation of the right side of the diaphragm and a right pleural effusion, so we can rightly ask if this patient also had a collection of pus in the right subphrenic area following perforation. During his entire hospital stay, treatment with penicillin and streptomycin might have kept his temperature normal in spite of a subphrenic abscess.

In summary, I believe that the patient had cirrhosis with bleeding from esophageal varices and that the duodenal ulcer and the plicated ulcer were not the cause of the bleeding. I suspect that he also had the Schwartzman reaction initially due to an endotoxin with peritonitis and later with a subphrenic abscess, and that his death was due to a bilateral renal cortical necrosis. The electrocardiographic changes showing myocardial ischemia probably were aggravated by the anemia, congestive heart failure, and coronary artery disease. I also suggest the possibility of a pancreatic neoplasm such as we see frequently in people with diabetes, although I really have little evidence of such a neoplasm. I cannot be sure that this man did not have tuberculosis which was responsible in a secondary way for the peculiar hematologic picture, although I feel that more probably an endotoxin was the cause of the peculiar leukopenia and bone marrow findings.

JOHN T. FLYNN, M.D.: Would you tell us what you think would be the pathologic findings at autopsy with a Schwartzman reaction?

DR. ROSENZWEIG: In that situation, we would find widespread intravascular clotting, small infarcts in the kidneys, and renal cortical necrosis.

DR. FLYNN: Can the leukopenia and the presence of blast forms in any way be associated with the chemical peritonitis in this case, or with any other type of severe peritonitis?

DR. ROSENZWEIG: I reviewed the literature in this matter and was not able to find such a connection. The findings of these early forms and of leukopenia is reported in the experimental study of endotoxin, and that is why I was favorably disposed toward the presence of such an agent.

DR. FLYNN: The serious clinical problem with this patient was the question of submitting him to another laparotomy, which our surgical consultants were extremely reluctant to do. In view of your diagnosis I gather that you would have agreed with them?

DR. ROSENZWEIG: I doubt that I would have permitted the patient to undergo a surgical procedure because there was not enough information to localize the bleeding. Early in the course of his bleeding, even though it occurred in the first week after his laparotomy, I would have tried to localize the source of bleeding by more intensive workup, by use of the esophagoscope and the gastroscope. Then, I probably would have been able to give a better answer.

HUGO PAGANELLI, M.D.: Do you feel that repeated transfusions in a short period of time tend to aggravate the bleeding because of the anticoagulant in the preserved blood?

CHARLES M. KARPAS, M.D.: Multiple transfusions do present a problem but not necessarily one which is related to the anticoagulant in the donor blood. During massive hemorrhage, there is a marked protein depletion in the patient, and this involves a decrease in the clotting factors. Most of the factors can be replaced by ordinary stored donor's blood; however, the labile factors such as factors V and VIII can be effectively replaced only by fresh whole blood or fresh frozen plasma. If hemorrhage persists when many transfusions are being given, every seventh or eighth unit should be either freshly drawn blood or fresh frozen plasma.

The Schwartzman phenomenon is thought to result in an excess of fibrinogen leading to extensive clotting.[5] Such diffuse intravascular clotting differs little from consumptive coagulopathy, in which there appears to be an initial excessive utilization of platelets and coagulation factors, especially of those which are produced by the liver, that is, prothrombin, factor V, and factor X.[6] I concur with Dr. Rosenzweig that there was probably a generalized thrombosis in this patient with organ infarction, and, finally, hemorrhage. In my experience with this type of phenomenon blood transfusion does not help and in fact may aggravate diffuse clotting and, hence, the bleeding. Most authorities believe that the administration of heparin is the only way to stop the hemorrhagic tendency.

DR. ROSENZWEIG: I think that consumption coagulopathy can be one of the results of the Schwartzman phenomenon. There are other causes of consumption coagulopathy as well, but the Schwartzman phenomenon is one such cause.

GEORGE SCHREIBER, M.D.: In cases which require multiple blood transfusions, the suggestion has been made that intravenous calcium should be used after every fourth or fifth unit to counteract some of the calcium-binding effects of the citrate anticoagulant in the transfusion itself.[7]

DR. KARPAS: The calcium in the patient's serum may be bound to a considerable extent by the citrate in the donor's blood and, therefore, should be replaced. However, this binding of calcium per se does not interfere with normal clotting processes, although it can lead to neurologic symptoms, myocardial effects, and changes on electrocardiogram. These effects are the reason for the periodic administration of calcium.

AARON D. SPIELMAN, M.D.: Could Dr. Rosenzweig explain the hematologic findings on the basis of a primary hematologic disorder?

DR. ROSENZWEIG: In the presence of the normal bone marrow, I doubt that this patient had leukemia. A hypocellular marrow frequently results when active tuberculosis remains undiagnosed or in the presence of an endotoxin or of sepsis. I do not think that there was any primary hematologic abnormality in this particular instance.

DR. KARPAS: There was a rather conspicuous decrease in the lymphocytes on the differential count. There was a 10,000 count with only 10 per cent lymphocytes; this is not an unusual finding in lymphomas, especially in Hodgkin's disease. What are your thoughts about these findings?

Dr. Rosenzweig: Because of the other clinical considerations, I did not seriously entertain this possibility, but what you say is true.

Clinical diagnoses

1. *Acute perforated gastric ulcer*
2. *Recurrent gastrointestinal bleeding, site undetermined*
3. *Arteriosclerotic heart disease*
4. *Nephrosclerosis with uremia*

Dr. Rosenzweig's diagnoses

1. *Gastric ulcers with perforation*
2. *Cirrhosis with esophageal varices and hemorrhage*
3. *Schwartzman phenomenon, secondary to endotoxin with peritonitis and probable subphrenic abscess*
4. *Terminal bilateral renal cortical necrosis*

Pathologic discussion

Basil Moumgis, M.D.: At autopsy we were unable to ascertain any appreciable evidence of subcutaneous emphysema. There were bilateral pleural effusions, 800 ml. on the left side and 350 ml. on the right side, associated with an extensive confluent bronchopneumonia. The most pertinent findings, however, were those found in the abdomen. There was a chronic peritonitis, as evidenced by fibrous adhesions. Although approximately 1,000 ml. of peritoneal fluid were measured, we did not find purulent material or other indications of an acute inflammation. The only remnants of the acute peritonitis were a perisplenic abscess measuring 4 cm. in diameter and irregular foci of necrosis involving the anterior aspect of the pancreas. The stomach anteriorly was firmly adherent to the right lobe of the liver. There was no evidence of active hemorrhage within the lumen of the gastrointestinal tract. Five centimeters beyond the gastroesophageal junction, we found the area of the perforated ulcer on the anterior wall of the fundus; there were 2 intact black sutures in the base of the ulcer. A second ulcer was found 3 cm. distal to the sutured ulcer, and a third one was seen in the prepyloric area. Both of these latter ulcerative lesions average 1.5 cm. in diameter and were characterized by a smooth granular base. The serosal aspect of the prepyloric ulcer was irregular and fibrotic as had been noted by the surgeon at laparotomy. Another interesting finding was irregular areas of ulceration in the rectum and sigmoid colon. There was some tarry appearing material in the lumen of the sigmoid, but this was the only evidence of previous intestinal bleeding.

Microscopically, sections of the previously perforated ulcer showed all the characteristic findings of an active peptic ulcer, which was slightly altered by a granulomatous reaction around the sutures. There was no appreciable re-epithelialization even though it was several weeks after the surgical procedure was done. The second ulcer, immediately distal to the perforated one, also was typical of a benign peptic ulcer. This ulcer had penetrated extensively through the gastric wall completely destroying the muscularis (Fig. 2A). Small thrombosed blood vessels were demonstrated in the bed of the ulcer, and although we can only speculate as to their importance, they may have represented the site of active hemorrhage from time to time. The prepyloric ulcer which macroscopically appeared similar to the other two contained an infiltrating adenocarcinoma characterized by numerous signet ring cells (Figs. 2 B and C). Malignant cells extended through the muscularis and into the serosa. We were unable to demonstrate either regional or distant metastases. At this stage of its growth this malignant lesion, therefore, would have to be considered an incidental but a most interesting finding.

Microscopic sections of the rectum and sigmoid colon revealed a superficial ischemic necrosis involving mucosa and submucosa (Fig. 3). The necrotic areas were intimately associated with thrombosed vessels. The majority of these venous thrombi appeared to be recent although there was evidence of early organization.

The kidneys showed a moderate amount of nephrosclerosis and some chronic pyelonephritis but no acute tubular necrosis. In the liver, we demonstrated marked congestion with slight central lobular necrosis and an occasional area of mid-zonal

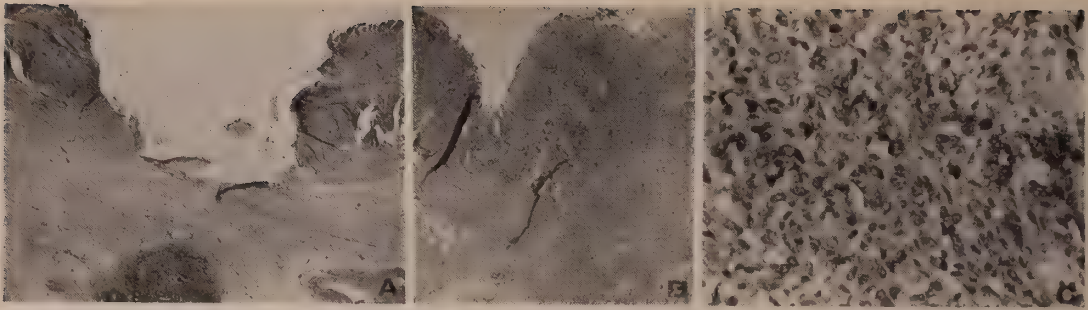

FIGURE 2. Microscopic sections showing (A) benign gastric ulcer with penetration through muscularis; (B) infiltrating adenocarcinoma in prepyloric ulcer; and (C) poorly differentiated malignant cells extending from ulcerative area.

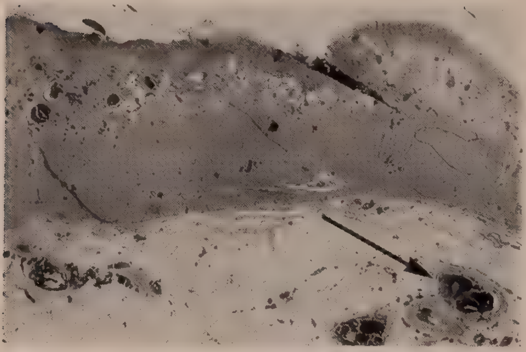

FIGURE 3. Microscopic section showing ischemic necrosis of rectal mucosa and submucosa with thrombotic vessels within serosa (arrow).

necrosis. These small necrotic areas are most likely a reflection of shock. Histologically, the lung showed a marked and diffuse bronchopneumonia. The severity of the inflammation was reflected by distinct and widely scattered microabscesses.

Dr. Flynn: Are there any other major sites of thromboses or evidence of a Schwartzman reaction?

Dr. Moumgis: No, the sigmoid colon and rectum were the only areas involved in the thrombotic process. As I said, we found a thrombosed artery in one of the active peptic ulcers, but this could be interpreted as secondary to inflammation.

Seymour Fink, M.D.: As I indicated earlier in one of these conferences, we are recognizing more frequently the involvement of the colon by ischemia due to thrombosed vessels.[8]

Dr. Schreiber: In a seventy-nine-year-old patient, one must consider the possibility of stercoral ulcers. The patient may not have defecated properly, except during the last two weeks of his life, when he had massive bowel movements. Before that, he may have had coprostasis and ulceration of the lower sigmoid and upper rectum.

Dr. Fink: Stercoral ulcers are commonly found in people who have had impactions; such ulcers occur usually proximal to an area where there is or has been obstruction, with retention of stool over a long period of time. But we have no evidence of such retention in this case.

Dr. Paganelli: Before we leave the subject of gastrointestinal infarction, I would like to refer to a recently reported case in which massive gastrointestinal hemorrhage occurred only after the discontinuance of anticoagulant therapy.[9] After the anticoagulant therapy was stopped, the patient developed extensive thromboses in the submucosal vessels of the stomach, with widespread infarction of the mucosa and submucosa.

Dr. Flynn: It has been reported that only 3 to 4 per cent of patients with a well-documented history of benign gastric ulcer will develop a separate gastric carcinoma over a five- to ten-year follow-up period. In a group of 278 cases of benign gastric ulcers, only 11 patients were found at some later time to have gastric carcinoma.[10] In 9 of these 11 cases, free acid was noted on gastric analysis, whereas in 60 per cent of ordinary gastric carcinoma, you will find no free acid.

Dr. Fink: The commonest kind of multiple ulcers of the stomach is of the benign variety. The next most common type is that associated with lymphomas, lymphosarcoma being the second most common cause of multiple gastric ulcers. Of course, in this connection, we should also mention the Zollinger-Ellison syndrome. As far as the gastric carcinoma in this case is concerned, when a surgeon at laparotomy sees a perforation in need of plication, I think I could forgive him if he overlooked a gastric carcinoma of such limited extent as this one. The patient's condition did not permit a gastric resection at that time, but the location of this neoplasm close to the pylorus would have permitted its complete, if inadvertent, removal by gastric resection, even if the true nature of the lesion was not recognized by the surgeon.

Final anatomic diagnoses

1. *Recently sutured perforated gastric ulcer with perisplenic abscess, focal pancreatic necrosis and chronic peritonitis* (*ascites*)
2. *Penetrating benign gastric ulcer, ?site of gastrointestinal hemorrhage*
3. *Adenocarcinoma of stomach* (*prepyloric*) *with ulceration*
4. *Ischemic ulcerations of rectosigmoid, with venous thromboses*
5. *Bronchopneumonia, extensive, bilateral*

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Longevity in married couples

Because of the great improvement in longevity prospects over the past fifty years, more married couples now reach older ages together, according to the Metropolitan Life Insurance Company.

This improvement has made it necessary to reconsider what constitutes a distinctly favorable family history of longevity. For example, a husband, twenty-five, and a wife, twenty-two, can currently look forward to reaching the wife's sixtieth birthday in two out of three cases. The probability is more than one out of two that the couple will survive to the wife's attaining age sixty-five, and nearly two out of five that the couple will live to see the wife's seventieth birthday. Almost one of four couples will be alive when the wife celebrates her seventy-fifth birthday.

Fifty years ago, the corresponding chances were only about one out of two that the husband would survive to the wife's attaining age sixty, and only about two out of five that he would be alive when the wife was sixty-five. The chances were approximately three out of ten that both would survive to the wife's attaining age seventy, and only one in six that they would reach her seventy-fifth birthday.

It is also significant to look at the changes in the chances of both spouses not living to an older age. The probability that a husband, twenty-five, and a wife, twenty-two, would die before each has attained age sixty was only 2 per cent in 1967 against 5 per cent in 1917. The corresponding probabilities for both dying before reaching age sixty-five are estimated at 4 and 10 per cent, respectively. Prospects for not attaining age seventy are estimated at 9 and 17 per cent, respectively, and for age seventy-five, the corresponding figures become 18 and 28 per cent.

These probabilities of survival have been calculated by tracing the longevity of males born in the United States in 1942 and 1892, and in 1945 and 1895 in the case of females. This reflects the historic effects of epidemics, changes in the pattern of disease, and of medical advances throughout the lifetime of persons born at the same time.

Male mortality rates are likely to remain at current levels in the years to come, but female mortality rates will continue to decrease, although at a slower pace than in the past.

Correlation Conferences in Radiology and Pathology

State University of New York
Upstate Medical Center
Syracuse, New York

Editors
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Pain in Right Hip

Case history

JOSEPH MARTINO, M.D.*: This sixteen-year-old girl gave a one-month history of pain in her right hip which later seemed to involve her right knee. This pain became progressively worse until she could no longer bear weight on her right leg. At this time, she was treated with penicillin and steroids, apparently for rheumatic fever. Her condition did not change during the next two weeks. The pain in her right leg then became much worse and she was admitted to the hospital.

On admission, she was found to have a loud machinery-type murmur over the left second intercostal space. Multiple tender, mobile nodules were palpable in her abdominal wall and were thought to represent neurofibromas. Scattered café au lait spots were noted over her trunk. There was an area of painful swelling without warmth or redness over the right hip; the pain became worse whenever the leg was moved. She was afebrile.

THEODORE PERL, M.D.†: Radiographs of the pelvis and both hips show a striking difference in appearance of the hips. There is marked osteoporosis of the bones about the hip and of the femur. I suspect that there is some disruption in the continuity of the articular surface of the femoral head, but I think that more studies would be necessary to confirm this. I really see no evidence of narrowing of the joint space. Another questionable radiolucency is seen in the lower end of the right femur. I am not certain at this time whether this represents a significant abnormality. The left hip is normal.

At the time of hospital admission, about twenty-five days after the initial examination, additional films were made. There has been a striking progression of the lesion with destruction of the femoral neck, particularly along the medial aspect. There is a pathologic fracture with considerable absorption of bone and destruction of bone on both sides of the fracture (Fig. 1). The articular surface is intact. No periosteal new bone is evident. There is a large soft-tissue density projecting medially and perhaps also laterally. I think that there is also a bulging of the capsule of the joint as compared with the other side (Fig. 1). Distally, along the medial shaft, the questionable radiolucency previously described has enlarged; it is intramedullary and represents a coalescence of several small radiolucent areas.

There is the possibility that this is not neoplastic which, of course, is the first thing that would come into one's mind. Could this be the result of overwhelming sepsis with a very virulent organism? Did she have fever at this time?

DR. MARTINO: At the time of the first film she had a low-grade fever, but at present she is afebrile.

DR. PERL: I would certainly think that the absence of high fever and the failure of the bone to respond with new bone forma-

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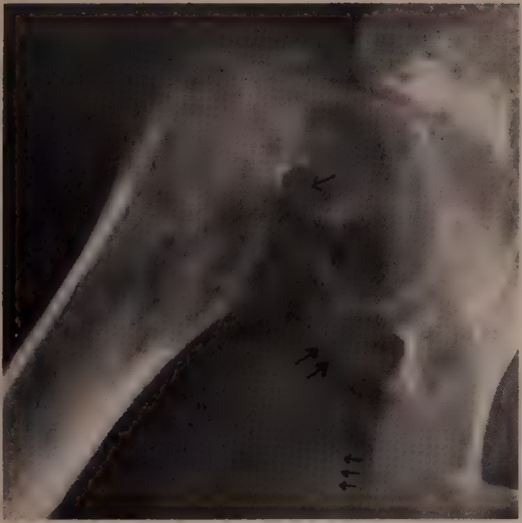

FIGURE 1. Anteroposterior radiograph of right hip showing extensive area of bone destruction with pathologic fracture. Destruction extends into upper femoral shaft (one arrow) accompanied by distention of joint capsule (two arrows). Soft-tissue mass in upper medial thigh (three arrows).

tion would make osteomyelitis unlikely. The process could not be any of the more chronic forms of osteomyelitis, such as tuberculosis, because it is progressing too rapidly. We are left with neoplasm as the most likely diagnosis. Since there are two areas of destruction, one must consider metastases or a multicentric primary lesion. Since she is rather old to have neuroblastoma or Wilm's tumor and since other tumors metastasizing to bone would be unusual at this age, I would prefer to consider multicentric primary bone tumors, such as reticulum cell sarcoma or Ewing's sarcoma. Both may be very destructive and can be multicentric in origin. Perhaps the whole bone is involved with tumor, and we are just seeing the top of the iceberg at two points.

E. ROBERT HEITZMAN, M.D.*: Do you think that her neurofibromatosis can be related in any way to her hip disease?

DR. PERL: I presume that neurofibrosarcoma could arise within the bone itself; however, I do not believe that this lesion is usually as aggressive as the process with which we are dealing.

Dr. Perl's diagnosis

Ewing's sarcoma of the right femur; rule out reticulum cell sarcoma of the right femur

ROBERT ROHNER, M.D.†: The gross specimen consisted of several small, pale, firm pieces of tissue, which on palpation contained gritty hard punctate foci. Microscopically, the tumor is composed of masses of spindle cells in a connective tissue matrix, showing no distinct pattern of orientation. The tumor invades and destroys bone (Fig. 2A). Cytologically, the tumor has considerable cellularity and pleomorphism. There is at least one mitosis per high-power field (Fig. 2B). No giant cells nor osteoid elements are identified.

The microscopic examination of the bi-

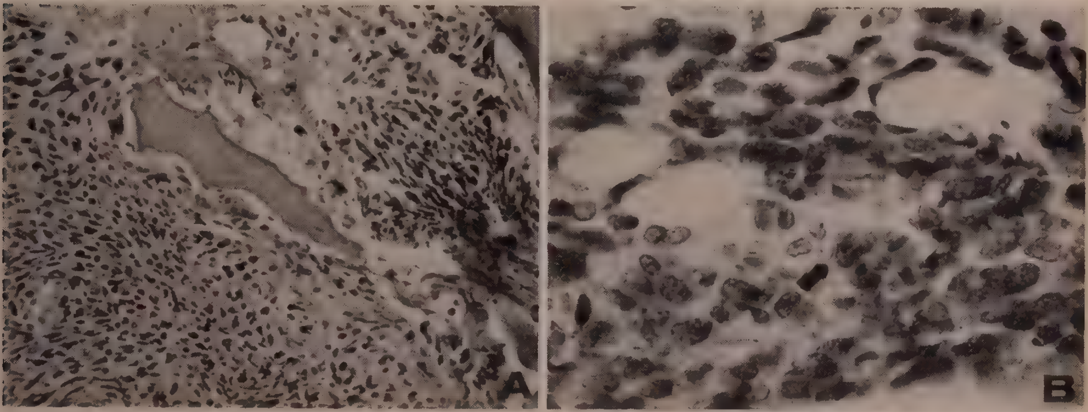

FIGURE 2. (A) Photomicrograph demonstrates spindle cells in connective tissue matrix invading and destroying bone. (B) Photomicrograph shows tumor to be highly cellular. Pleomorphism and mitotic activity are evident (× 365).

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opsy specimen reveals a moderately undifferentiated sarcoma. Because of the lack of differentiation along specific lines, this most probably represents a fibrosarcoma arising in the medullary cavity of the bone.

Dr. Heitzman: The literature is replete with tumor associations in neurofibromatosis. Probably the most well-known is optic glioma, but meningiomas and certain other tumors are also known to occur.[1] In a brief search of the literature, I was unable to find any reports of malignant degeneration of neurofibromas, nor was I able to find an association between medullary fibrosarcoma and neurofibromatosis.[2]

Final diagnosis

Medullary fibrosarcoma of right femur

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Spurious heart disease in athletic children

A syndrome which may be mistaken for organic heart disease occurs in some individuals, especially males in the adolescent group, who participate in strenuous sports. Usually occurring in muscular boys, the symptom complex consists of bradycardia, a high-pitched systolic ejection murmur along the left sternal border, and electrocardiographic evidence of left ventricular hypertrophy. Also, there may be radiographic signs of heart enlargement. B. A. Marcano, M.D., and A. J. Moss, M.D., writing in *Journal of Pediatrics* **72:** 664 (May) 1968, present 3 cases to illustrate this, and suggest that since the condition may be increasing in incidence because of the recent emphasis on physical conditioning in the United States, pediatricians should be alerted to the existence of the syndrome. In all 3 patients reported, relevant studies, including cardiac catheterization, revealed essentially normal hemodynamics.

The 3 boys were of the large, muscular type, aged fourteen, fifteen, and sixteen respectively, who engaged in track sports and swimming. In addition to the signs previously noted, one boy also had systemic hypertension. In addition to physical examination, the patients underwent electrocardiographic studies, and teleroentgenograms were taken. Cardiac outputs were obtained by the dye dilution method, with the patient at rest, during exercise, and during intravenous infusion of isoproterenol.

Bradycardia associated with a high systolic arterial blood pressure in a strong, physically conditioned young male should suggest the presence of spurious heart disease. That the manifestations of this syndrome are caused by physical conditioning is supported by the evidence. In athletes, additional oxygen needs are met by an increase in heart rate and in stroke volume to boost cardiac output. In athletes, however, the output tends to be increased mainly by stroke volume, whereas in the untrained individual it tends to be accomplished chiefly by increase in the heart rate. The stronger ventricular contractions and greater stroke volume in the athlete eventually lead to hypertrophy and lengthening of the myocardial fibers, reflected in roentgenographic or electrocardiographic evidence of cardiomegaly. Since the spurious heart disease syndrome is easily confused with organic cardiovascular disease, prolonged observation or even cardiac catheterization may be necessary to establish the definitive diagnosis in some cases.

Clinical Anesthesia Conference

A series of conferences on medical emergencies in the operating and recovery rooms including causes of death during anesthesia

Prepared by the Anesthesia Study Committee of the New York State Society of Anesthesiologists

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Fat Embolism During Orthopedic Operation

FAT EMBOLISM IS a frequent complication of fractures of the long bones and ribs. Characteristically, there is a latent period of from a few hours to four days between the time of trauma and the onset of symptoms. Clinical signs associated with fat embolism result from impaired blood flow to vital organs, mainly the lungs, cerebral cortex, and kidneys. The diagnosis is usually based on sudden development of fever, cyanosis, tachypnea, and dyspnea in conjunction with mental changes such as disorientation, delirium, or coma.[1,2] Most of these characteristic signs are masked in the patient under general anesthesia. Therefore, a high degree of suspicion is necessary to consider the diagnosis in the anesthetized patient as illustrated in the following case report.

Case report

A sixty-five-year-old woman sustained injuries to the lower extremities in a vehicular accident; there was no unconsciousness or amnesia. Physical examination revealed an obese elderly patient with fractures of the distal end of the right femur and of the left ankle. Blood pressure was 118/80, pulse rate 96 and regular, and temperature 98 F. Examination of heart and lungs gave negative findings as did a chest radiogram and electrocardiogram. Laboratory data showed a hematocrit of 41, hemoglobin 13.6 Gm. per 100 ml., and electrolyte values and urinary findings were normal. Tests on preoperative blood gases disclosed arterial oxygen tension of 82 mm. Hg, carbon dioxide tension of 28 mm. Hg, pH of 7.50, and base change of plus 1 mEq. per liter.

On the day following the accident, the patient underwent open reduction and internal fixation of the femoral fracture and closed reduction of the ankle fracture under endotracheal nitrous oxide-oxygen-halothane anesthesia. Respirations were controlled manually, and the electrocardiogram was monitored on an oscilloscope. During the first hour of surgery, she received 500 ml. of blood and 1,000 ml. of lactated Ringer's solution with dextrose by intravenous infusion, and her vital signs remained stable, blood pressure 120/80 to 100/70 and pulse 80 to 92. During the second hour of operation, while the screw-holes were being drilled, the blood pressure suddenly dropped to 50/30, and the pulse rate rose to 126. Anesthetic agents were discontinued, 100 per cent oxygen was administered, and 1,000 ml. of blood was transfused rapidly, followed by 500 ml. of dextran. Despite the expansion of the circulatory volume, blood pressure did not rise above 70/40, and pulse rate remained at 116. Ephedrine, 50 mg., in divided doses and methylprednisolone (Solu-Medrol), 80 mg. given intravenously, were without effect. Electrocardiogram showed sinus tachycardia but not arrhythmia. Blood gas analysis revealed an arterial oxygen tension of 70 mm. Hg during ven-

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Presented and discussed at a conference held at the Hospital of the Albert Einstein College of Medicine, The Bronx, New York, March 25, 1968. Clinical Anesthesia Conferences are held on the fourth Monday of each month.

tilation with 100 per cent oxygen; pH was 7.34. The marked hypoxemia with persistent hypotension and tachycardia, developing twenty-four hours after trauma and during manipulation of the femur, raised a suspicion of fat embolism. Consequently, another arterial blood sample was drawn which disclosed evidence of fat globules. Surgery was completed under light halothane-oxygen anesthesia. Fifty minutes after the onset of hypotension, the blood pressure began to rise and gradually reached preoperative levels.

In the recovery room, oxygen was administered by nasopharyngeal catheter, 6 L. per minute, and heparin therapy 25 mg. every six hours was started. Two additional units of blood were transfused slowly. A few maculopapillary eruptions developed on the chest and neck but disappeared rapidly. A chest radiogram revealed bilateral plate-like atelectases in both bases; electrocardiogram showed nonspecific T-wave changes; and arterial blood gases were: arterial oxygen pressure 110 mm. Hg, arterial carbon dioxide pressure 28 mm. Hg, pH 7.36, and base change 0. Urinalysis result was negative for fat.

On the first postoperative day, a sputum smear showed sudanophilic globules. Electrocardiogram findings were interpreted as compatible with pulmonary embolism, but results of tests on arterial blood gases were within normal range. The patient recovered without any further incident.

Comment

The pathogenesis of fat embolism remains a controversial subject. There are two principal theories regarding the source of the embolized fat; a "mechanical" theory wherein free fat is liberated into tissue spaces by disruption of the cellular membranes of fat cells and forced into veins ruptured by the increase of interstitial pressure from hemorrhage and exudation secondary to the injury, and a "physiochemical" theory which shows stress-induced disturbances in fat metabolism with coalescence of intravascular chylomicrons into macroglobules and droplets of fat.[1-3] Whatever the origin of the fat, there seems no doubt that the emboli enter or develop in the systemic venous circulation, pass the right side of the heart, and become lodged in the pulmonary capillary bed.[1] Thus, fat embolism is primarily a pulmonary disease, and hypoxia is the basic problem. Mechanical obstruction of the pulmonary vascular bed leads to increased pulmonary artery pressure and dilatation and/or failure of the right side of the heart. In turn, blood flow to the left side of the heart is decreased, left ventricular output diminishes, and arterial pressure falls. As the pressure in the pulmonary artery rises, fat is forced through the pulmonary capillary bed into the pulmonary vein and systemic circulation.[1,3] In addition, fat is hydrolyzed by the lipase present in the lung parenchyma, and free fatty acids, known to to be toxic, are liberated into the circulation. A precipitous drop in hemoglobin often occurs; this may be due to sequestration of blood in the lungs and/or hemolysis by the free fatty acids.[3]

Laboratory aids in the diagnosis of fat embolism include the demonstration of fat in the urine or sputum. Serum lipase is elevated relatively late in the syndrome. Funduscopic examination may reveal fat emboli in the retinal vessels, and the chest radiogram may show diffuse scattered densities.[3]

Petechiae are characteristically seen on the chest, neck, shoulders, and conjunctivas. However, they appear after the passage of fat through the lung filter and often fade rapidly. They seem to be a manifestation of increased capillary fragility.[4]

The anesthesiologist plays an important role in the treatment of fat embolism since maintenance of tissue perfusion and oxygenation are the prime aspects of therapy. Blood volume and hemoglobin must be corrected to approach optimal levels. Dextran 40, 500 ml. every twelve hours, has been recommended to improve microcirculatory flow.[2] Oxygen must be administered in high concentration; in the anesthetized patient, as in this case, the administration of nitrous oxide should be discontinued. Endotracheal intubation or tracheostomy may be required to permit mechanical assistance of respiration.[5] Heparin in small doses, 25 mg. given intramuscularly every six hours, has a lipolytic effect on the serum and increases serum lipase activity without demonstrable action on clotting time.[2,3] Digitalis is indicated in case of incipient or actual cardiac failure. Daily intravenous infusion of 2 to 3 L. of 5 per cent alcohol in 5 per cent dextrose in water has been advocated on the basis that alcohol is a lipase inhibitor and, in addition, has a dilatory effect on the pulmonary capillaries.[3] Corticosteroids may be helpful; their anti-inflammatory effect may reduce interstitial pulmonary edema so that capillary blood flow improves.[5,6] Hypothermia has been used in patients who showed symptoms in the central nervous system of severe coma, spasticity, or decerebrate rigidity.[3,7]

It is believed that the incidence and severity of fat embolism can be reduced by preventive measures, such as "gentle treatment with elimination of unnecessary manipulation by means of proper splintage and the use of a tourniquet at the time of surgery."[3]

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Number one hundred and eighty-five in a series of Clinical Anesthesia Conferences

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Ampicillin in septic abortion

Results of a comparative study of two groups of 50 patients each, one group given penicillin and the other ampicillin, indicate that ampicillin is a suitable antibiotic for the early initiation of therapy in septic abortion or threatened septic abortion. R. Sivasamboo, M.B., T. H. Lean, and S. M. Goon, M.B., writing in the *Journal of Obstetrics and Gynaecology of the British Commonwealth* **75:** 264 (March) 1968, state that ampicillin was found effective in arresting the infection soon after the start of treatment, with quick recovery of the patient and reduced incidence of complications of chronic pelvic inflammatory disease. Intravenous administration for the first twenty-four hours apparently controlled the infection with maintenance after that by oral therapy. Although massive destruction of infecting organisms may predispose the patient to endotoxic shock, this was not observed in this series.

Patients in group A were given 1 million units of sodium penicillin G every six hours and streptomycin sulfate, 1 Gm., every twelve hours, both intramuscularly. Those in group B were given 500 mg. ampicillin initially and then 250 mg. every hour. From blood samples and from swabs taken from the cervical canal, bacterial sensitivity to antibiotics was tested by disk sensitivity. If, at the end of three days the patient's condition had not improved, the antibiotic was changed according to bacterial sensitivity findings. In patients whose condition was improved, antibiotic therapy was continued for at least two more days. When the antibiotic was changed, fresh blood and swab specimens were taken for culture, as well as pus drained surgically.

By number of days and groups, duration of fever was as follows: four days or less, A 17, B 39; five to seven days, A 24, B 10; over seven days, A 9, B 1. Eight patients in the group given penicillin developed complications as against only 1 in the ampicillin group. The complications consisted of pelvic peritonitis, pelvic abscess, general peritonitis, oliguria, and anemia with jaundice. The antibiotic was changed in 19 of group A but in none of group B. No side-effects of therapy were noted, and there were no deaths in either group.

Nutrition
Reports

*Prepared under the auspices of the faculty
of the Graduate School of Nutrition,
Cornell University, Ithaca, New York*

DAPHINE A. ROE, M.D., M.R.C.P., Editor

Dermatogenic Enteropathy

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THE FIRST RECORDED association between malabsorption and skin disease was in 1759 when William Hillary[1] described cold, dry, rough skin in tropical sprue. This relationship has been reviewed many times in recent years (Manson-Bahr and Willoughby, 1930[2]; Bennett, Hunter, and Vaughan, 1932[3]; Thaysen, 1935[4]; Konstam and Gordon, 1936[5]; Lightwood and Smallpiece, 1937[6]; Snell, 1939[7]; Kaufman and Smith, 1943[8]; Gethin-Jones and Wigley, 1949[9]; Cooke, Peeney, and Hawkins, 1953[10]; Badenoch, 1960[11]; and Wells, 1962[12]). At the beginning of the present decade, therefore, it seemed possible that we were treating patients with eczema and psoriasiform dermatoses in whom this was merely the presenting symptom of an undetected intestinal malabsorption. Our first studies were, therefore, an examination of this possibility. A group of patients admitted to the hospital for a variety of dermatoses was screened for folic acid deficiency by Knowles, Shuster, and Wells, in 1963,[13] and about one-third had an abnormality of urinary formiminoglutamic acid excretion after an oral dose of l-histidine. More recently we have shown that this is caused by a true deficiency of folic acid which may occasionally produce megaloblastic anemia (Fig. 1).[14] This folic acid deficiency was shown to be due to malabsorption in only some patients, and in the others it was considered to be caused by an increased metabolic need because of the increased rate of epidermal cell replacement, analogous to the folic acid deficiency of pregnancy.

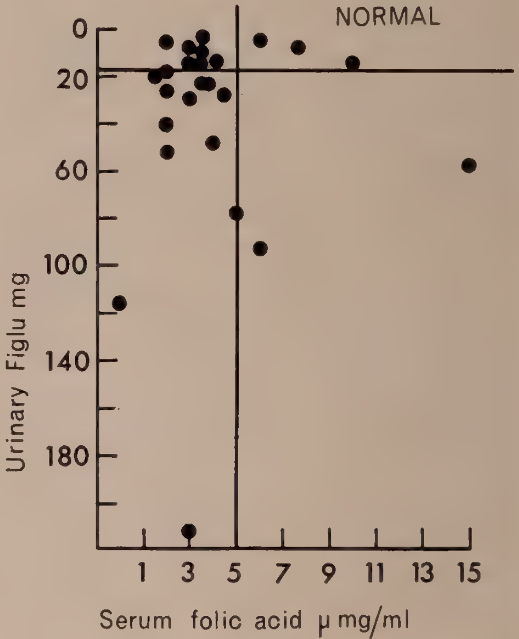


FIGURE 1. Serum folic acid and urinary formiminoglutamic acid in patients with skin disease.

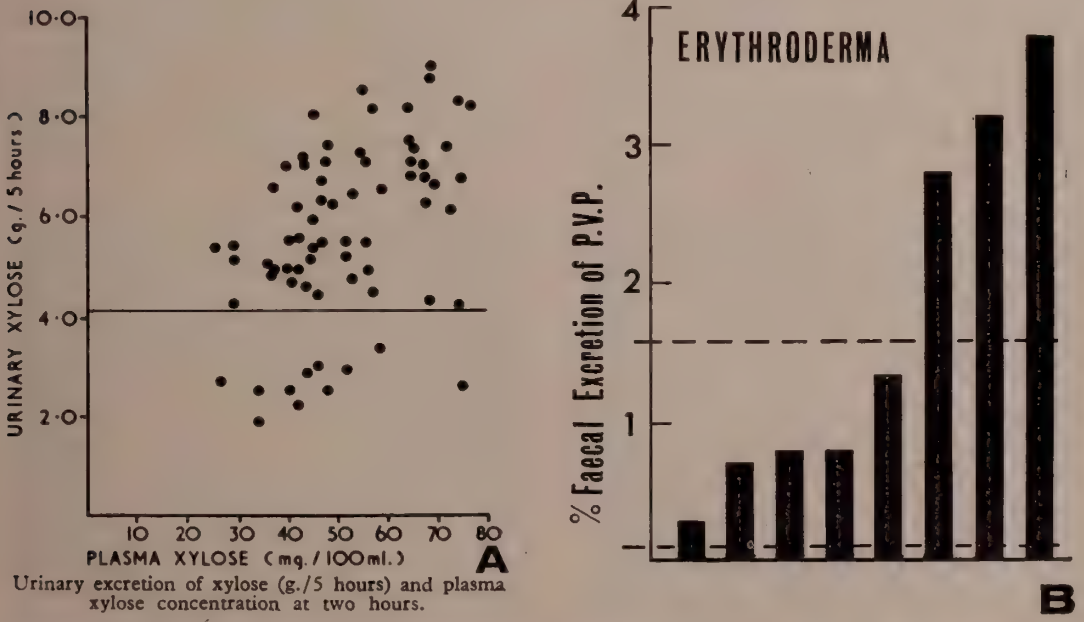
History

We next studied d-xylose excretion in a group of 70 patients admitted consecutively for eczema (Fig. 2A). A number of these were indeed found to excrete d-xylose abnormally,[15] but this is caused by an abnormality of renal handling as well as to malabsorption.[16] Nevertheless, this study clearly showed we were not missing large numbers of patients with the celiac syndrome who were masquerading in skin clinics with the label of eczema.

TABLE I. Fecal fat excretion in patients with extensive eczema or psoriasis before and after treatment

Case Number	Diagnosis	Treatment (Per Cent)	Fecal Fat Excretion (Grams per Day) On Admission	Fecal Fat Excretion (Grams per Day) After Treatment	Condition of Skin After Treatment	Time Interval Between Admission and Treatment (Weeks)
1	Eczema	Betamethasone valerate (0.025)	14.8	5.4	No rash	6
2	Psoriasis	Betamethasone valerate (0.1)	10.6	3.0	No rash	3
3	Psoriasis	dioxyanthranol (0.2)	10.1	3.3	No rash	5
4	Psoriasis	Betamethasone valerate (0.01)	10.1	5.8	No rash	1
5	Eczema	Betamethasone valerate (0.01)	8.1	3.3	No rash	8
6	Eczema	Gluten-free diet Hydrocortisone (1)	10.0	4.2	No rash	26
7	Eczema	Hydrocortisone (1)	7.2	4.2	No rash	2
8	Eczema	Hydrocortisone (1)	6.7	5.5	No rash	1
9	Eczema	Fluocinolone acetonide (0.0025)	5.6	3.5	No rash	1
10	Eczema	Betamethasone valerate (0.1)	13.3	14.1	Extensive rash	1
11	Eczema	Betamethasone valerate (0.025)	11.3	11.3	Extensive rash	3
12	Psoriasis	Betamethasone valerate (0.01)	9.6	9.8	Extensive rash	4

At this time several of the studies of our group were pointing to the possibility that skin disease might induce considerable systemic disorders.[16] This work is discussed in detail by Shuster, Watson, and Marks.[17] In the course of this work it was noted, in particular, that there might be a protein-losing enteropathy in the course of



Urinary excretion of xylose (g./5 hours) and plasma xylose concentration at two hours.

FIGURE 2. (A) Urinary d-xylose and plasma d-xylose excretion in 70 consecutive patients with eczema. (B) Gastrointestinal loss of iodine-131 polyvinyl pyrrolidone in patients with erythroderma.

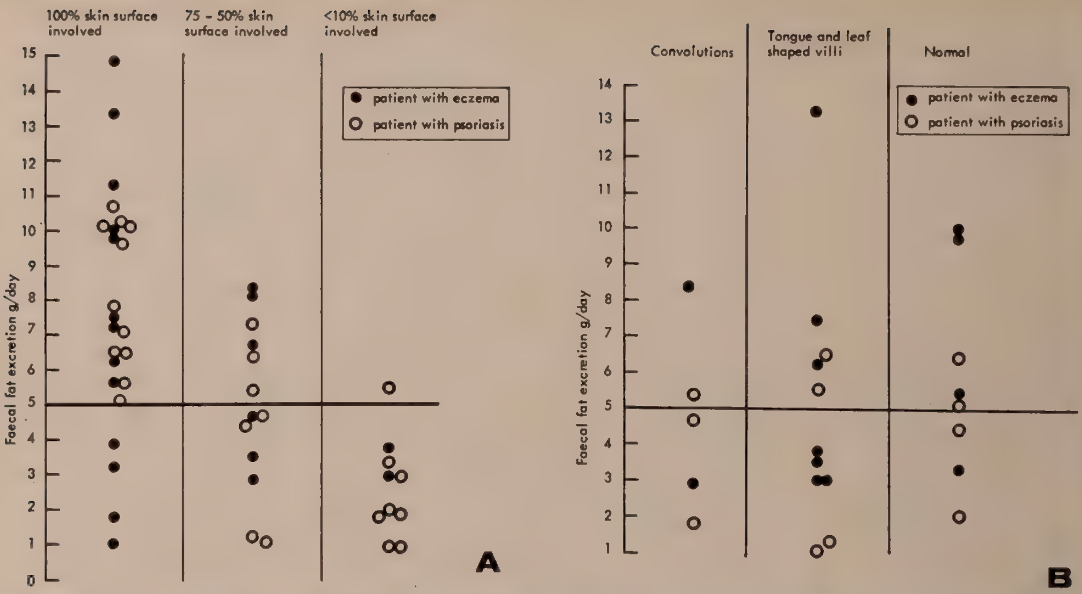


FIGURE 3. (A) Correlation between fecal fat excretion and proportion of skin surface involved in patients with eczema and psoriasis. (B) Lack of relationship between steatorrhea and structural change in jejunal mucosa in dermatogenic enteropathy.

erythroderma (Fig. 2B).[18] This led us to the hypothesis that skin disease might by itself produce malabsorption, and formal proof of the existence of a true dermatogenic enteropathy was first found by Shuster and Marks in 1965.[19] The following year Marks, Shuster, and Watson[20] discovered a somewhat different enteropathy in patients with dermatitis herpetiformis, and they showed that this was not causally related to the skin disease in the same way as dermatogenic enteropathy. This led to a reclassification of the relationship between malabsorption and skin disease. It is now clear that malabsorption and skin disease are related in the following four ways: (1) Malabsorption causes skin disease as in the celiac syndrome and sprue; (2) skin disease causes malabsorption as in dermatogenic enteropathy; (3) the skin and the gut may be affected by the same pathologic process in polysystem diseases such as the collagenoses; and (4) disease of the skin and bowel may be indirectly related; that is, the relationship is not through 1, 2, or 3. This relationship may be genetic as in the case of dermatitis herpetiformis.

DERMATOGENIC ENTEROPATHY. The existence of the true dermatogenic enteropathy was demonstrated by Shuster and Marks in 1965.[19] This was done by: (1) finding a high incidence of steatorrhea in unselected patients with exfoliative dermatitis and erythrodermic psoriasis (Table I); (2) showing that the steatorrhea responded to treatment of the skin alone (Table I); and (3) the direct relationship of the frequency and degree of steatorrhea and degree of skin involvement in psoriasis and eczema (Fig. 3A). There is no such relationship between the degree of structural change in the jejunal mucosa (Fig. 3B).

From these three facts it is beyond dispute that the steatorrhea often occurs in the course of an extensive dermatitis and this malabsorption is caused by the skin disease and not the converse as has been thought in the past. It must be pointed out that while the treatment in most of these patients is with a topical corticosteroid, the amount of these corticosteroids absorbed through the skin is small, relative to the doses required to treat malabsorption. Moreover, a number of patients were treated either with dioxyanthranol (Dithranol) or with topical hydrocortisone, percutaneous absorption of which has negligible systemic effects. The prime role of the skin has been observed on a number of occasions since our original study, and in several patients we have found a recur-

TABLE II. Fecal fat excretion on 2 admissions in patients with extensive eczema or psoriasis

Case Number	Fecal Fat Excretion (Grams per Day)			
	Attack	Remission	Attack	Remission
1	14.8	5.4	9.8	3.3
4	5.6	4.2	10.1	5.2

rence of the steatorrhea with each relapse of the skin disease (Table II). Because this enteropathy is clearly caused by the skin disease, we have called it dermatogenic enteropathy.[19]

What are the other features of dermatogenic enteropathy? In addition to steatorrhea we have found malabsorption of d-xylose, folic acid, and iron, although the low serum folate and iron concentrations cannot be entirely explained in this way.[14,21,22] Serum B_{12} concentrations are normal, but we have now found several patients in whom B_{12} absorption was decreased in the course of dermatogenic enteropathy. There is often a low serum calcium concentration, but this is usually associated with a dilution hypoalbuminemia[17,18] and we have never found radiologic evidence of osteomalacia. We have found a few patients with protein-losing enteropathy (Fig. 2B). In contrast to the enteropathy of dermatitis herpetiformis, we have not found lactose intolerance in dermatogenic enteropathy.[23]

JEJUNAL BIOPSY APPEARANCE IN DERMATOGENIC ENTEROPATHY. In both eczema and psoriasis we have found an increased frequency of broad leaves, joined leaves, ridges, and convolutions on stereomicroscopy of the jejunal mucosa (Fig. 4). In a Caucasian population in the United Kingdom, it is generally accepted that convolutions are abnormal.[24] It is now clear that the incidence of broad and joined leaves is extremely low in this population.[25] Our findings in dermatogenic enteropathy are of an increased incidence of abnormal villi with partial villose atrophy on microscopy. It must be stressed, however, that in individual biopsies the villose appearance may be entirely normal with fingers and tongue-shaped villi, and it is perhaps not surprising therefore that the steatorrhea does not correlate with the degree of abnormality on stereomicroscopy. In this respect and in the degree of villose atrophy, dermatogenic enteropathy resembles sprue rather than the celiac syndrome. This is a very important diagnostic point. The histochemical changes which we observed at the tips of the villi in psoriasis, we have found, occur in disorders other than dermatogenic enteropathy and are probably an artifact related to composition of the gut contents.[23]

Cause of dermatogenic enteropathy

The way in which dermatoses such as psoriasis and eczema cause an enteropathy is unknown. We can, of course, exclude the possibility that the skin disease directly affected the bowel. We have considered folate deficiency and iron deficiency, and we have excluded an increased

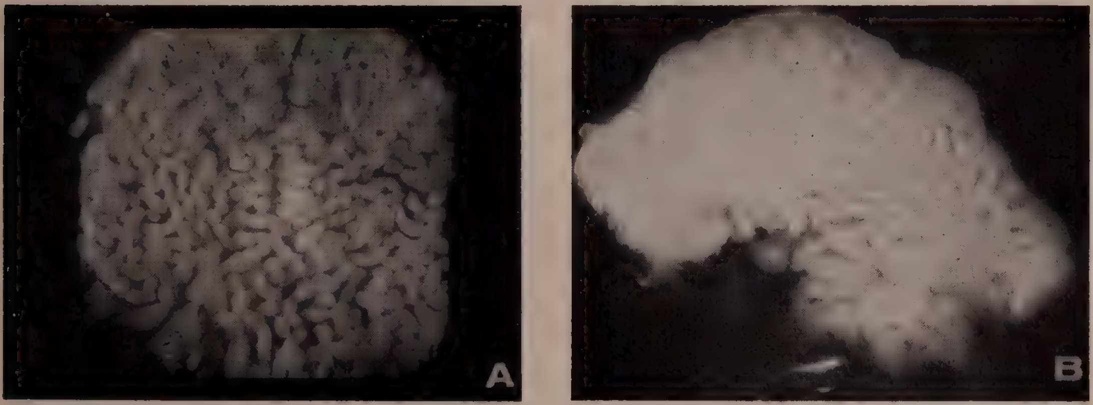


FIGURE 4. Jejunal biopsy appearances in dermatogenic enteropathy. (A) Fingers and leaves. (B) Convolutions from patient with psoriasis.

bacterial colonization and pancreatic insufficiency.[22] A decrease in bowel blood flow is a possible factor as a consequence of the hemodynamic effects of skin disease.[16] Gluten sensitivity does not appear to be necessary for its development.[22] The possibility of a humorally-induced change in the dynamics of the gut epithelium is an interesting speculation. Changes in bowel structure and function have been observed in patients with other diseases such as carcinomatoses.[26] These patients are cachectic unlike our patients in whom, moreover, the enteropathy is easily reversible and probably more frequent.

The cause of dermatogenic enteropathy remains unknown.

CLINICAL FEATURES, DIAGNOSIS, AND TREATMENT. The clinical features of dermatogenic enteropathy are dominated by the rash. The steatorrhea is virtually symptom free. Weight loss and anemia may be found and should lead to investigation of the gut, but regardless of symptoms the clinical diagnosis should always be suspected in patients with an extensive dermatosis. Screening tests such as d-xylose excretion or folate deficiency are not helpful because they may show abnormal results for other reasons in patients with skin disease.[16] Full studies of small-bowel structure and function are therefore required.

Having found malabsorption and defined the extent of the various deficiencies, the cause must be ascertained, and in patients with skin disease this means any of the groups mentioned earlier. In practice, groups 1 and 2 are the most important to differentiate, and as a rule this is not difficult.

The following are the most useful points of difference: (1) Patients with a widespread eruption, particularly eczema and psoriasis, are likely to have dermatogenic enteropathy; (2) dermatogenic enteropathy responds to treatment of the skin alone; and (3) the jejunal biopsy changes are minimal in dermatogenic enteropathy in contrast to the celiac syndrome where they may be subtotal villose atrophy..

It is important not to undertake a therapeutic trial of a gluten-free diet in dermatogenic enteropathy because improvement of the rash and hence the malabsorption may be wrongly attributed to the diet. It is probable that a number of patients with a dermatogenic enteropathy are receiving a gluten-free diet quite unnecessarily.

Summary

Dermatogenic enteropathy is a disorder of the small bowel which has been found in patients with eczema and psoriasis. The frequency and severity of the enteropathy is related to the extent of the rash, and it responds to treatment of the skin alone. The structural changes in the small bowel are slight; there may be normal villi, but over-all there is a trend to partial villose atrophy. It is important to distinguish this from other enteropathies because no special treatment is required other than of the skin disease and occasional deficiencies. Dermatogenic enteropathy is one of the many systemic effects of skin disease which have recently come to light.

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ACKNOWLEDGMENTS. I am grateful to Janet Marks, M.D., who has collaborated with me in the studies from which these ideas have evolved. The present account is based on a chapter in a monograph on the *Systemic Effects of Skin Disease* by Shuster, S., and Marks, J., London, William Heineman Medical Books, Ltd., 1969. I am grateful also to the Medical Research Council for their generous support.

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Early thrombectomy in phlebothrombosis

Although most angiologists still prefer medical management to surgical treatment of deep phlebothrombosis, E. C. Palma, writing in *Journal of Cardiovascular Surgery* **9:** 161 (March-April) 1968, maintains that medical treatment itself presents serious disadvantages: the slow course of the disease; the possibility that it may worsen to venous gangrene; the possibility also of embolism, sometimes fatal; and the threat of post-thrombotic edema, trophic changes, and functional claudication. He presents 19 cases of deep lower-extremity phlebothrombosis treated by early thrombectomy. In 79 per cent, both immediate and long-term results were evaluated as very good and in 15 per cent as good.

In 8 patients the diagnosis was based on both clinical and phlebographic evidence, but 13 were operated on urgently after clinical diagnosis alone, without preliminary phlebography. In 11 of these, the venous thrombosis was confirmed; in 2 there was only deep, perivenous lymphangitis. Clinically, the diagnosis is based on four signs: pain, functional impairment, edema, and localized tenderness. In treatment, local anesthesia was used. Before the operation, the patient was given oral anticoagulant (Tromexan) 0.3 Gm. After operation, oral anticoagulant was administered for four weeks, with the prothrombin time test at 15 to 25 per cent. Active and passive movements were begun immediately after operation. An elastic bandage was applied to the limb to collapse the superficial veins. The patients were up and around twenty-four to thirty-six hours postoperatively, walking unaided from the second day.

There was one death from embolism. In all other patients, the immediate effects of surgery were pain relief, increase in functional capacity, and rapid decrease of edema. There were four minor complications: hematoma because of anticoagulant overdosage in 2 patients and infection in 2 others. In long-term effects, 4 patients were symptom-free, and 11 were cured without developing the postphlebotic syndrome, with only moderate edema in the evening. Three developed chronic edema of the foot and lower leg, moderate varicose veins, and trophic disorders which benefited from the use of elastic bandages.

Mark Akenside, M.D. (1721–1770)

Physician and Philosophic Poet

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During the fifty years between the publication of Pope's *Dunciad* in 1742 and Wordsworth's *Lyrical Ballads* in 1792 the everflowing stream of English poetry narrowed to a tiny trickle. Restoration wit and Augustan satire yielded to an age of prose. Richardson, Fielding, and Smollett explored narrative fiction, and belle-lettres were dominated by Samuel Johnson, Horace Walpole, and Edward Gibbon. The usual survey course in English literature nods briefly in the direction of James Thomson's "The Seasons" as a trend in the poetry derived from nature and pays due homage to Thomas Gray's "Elegy Written in a Country Churchyard." If the lecturer is compulsively inclusive, he will mumble a line or two about Edward Young (1681–1765), John Dyer (1700–1758), William Shenstone (1714–1763), William Collins (1720–1759), and Mark Akenside (1721–1770).

Few men have achieved such a distinguished reputation in both medicine and letters during their lifetime as did Mark Akenside. Yet within a few years of his death his reputation had declined, and today he is unknown to any save the medical historian and the literary scholar. Along with Sir Samuel Garth and Sir Richard Blackmore who preceded him, Akenside is one of the three physicians included in Johnson's *Lives of the Poets*, yet he escapes the withering laurels of Lewis and Lee's *The Stuffed Owl* wherein tribute is paid to the stannic otology of Blackmore, Grainger, Armstrong, and Erasmus Darwin.

Early life and career

Akenside was born at Newcastle-on-Tyne, the sixth of nine children, four of whom died in infancy. His father was a respectable butcher, and the family lived in rooms above the shop in what is euphemistically glossed over as a lower middle-class background. In those days the street was called Butcher Bank, later All Hallows Bank, and more recently Akenside Hill. At the age of seven, one of his legs was injured when a cleaver in his father's shop fell from a rack upon his foot. He walked with a limp the rest of his life, as the injured leg was somewhat shorter than the other, remedied to some extent by the use of a false heel. The Akensides were Nonconformists (Dissenters) and attended chapel regularly. As a schoolboy young Akenside was able and industrious, sufficiently promising as a student so that in 1739 he was sent to the University of Edinburgh to study for the ministry. His expenses were subvented by a subscription raised among the congregation of Dissenters. At the age of eighteen, he had already had a few poems published in the *Gentleman's Magazine* under such pseudonyms as Marcus, Britannicus, and Northumbrius, and no doubt his father's friends and coreligionists looked on him with pride.

Debarred by his physical handicap from the rough and tumble of a back street adolescence, he had applied himself to his books and writing and had achieved a measure of recognition. Edinburgh was Akenside's first view of a life beyond the drabness of Newcastle and the low status of being merely the son of a Nonconformist butcher, a talented youth with no background. He began to realize that the pursuit of theologic studies would lead to nothing more than becoming a Nonconformist minister and tract writer, a low station, and a meager living. Accordingly, he abandoned theology and began to study medicine. On taking this step he planned to repay the money raised for him by the Dissenters of Newcastle. However, his application to medical studies did not cause him to forsake literature. While a student he continued to work on the poem for which he is best known, *The Pleasures of Imagination*, which he had begun in 1738. In 1740 he printed privately a pamphlet containing an ode "On the Winter Solstice" and an elegy titled "Love."

Documentation of Akenside's movements is sketchy after he joined the Royal Medical Society of Edinburgh on December 30, 1740. Dugald Steward informs us that "when a student . . . (he) was eminently distinguished by the eloquence which he displayed in the course of debates," but that "he was generally considered by his fellow students as far inferior in medical science to several of his companions." This may not have been a false verdict; verbal facility is more highly prized by faculty members than fellow medical students who tend to judge by practical performance. Samuel Johnson tells us that Akenside went to Leyden in 1741 to continue his medical studies, but both Houpt[1] and Charles[2] state that he returned to Newcastle-on-Tyne to practice medicine at the end of 1741 or the beginning of 1742. If so, whether he practiced from his father's house in Butcher Bank (an ironic address) or set up elsewhere is not known. At any rate, it was at this time that he had enough money on hand to repay the sum advanced him by the Dissenters. Three important events are certain. Some time between 1740 and 1742 he made the acquaintance of Jeremiah Dyson who was later to become his patron, and their acquaintance soon grew into friendship. In 1743 he went to London and sold his long poem, *The Pleasures of Imagination*, to Dodsley the publisher at Tully's Head in Pall Mall, who paid him £120 for it, acting on Pope's advice that "this is no everyday writer." It was published with a dedication to Dyson.

In April, 1744, Akenside sailed for Leyden where he received an M.D. degree on May 16, 1744, for his dissertation, *De Ortu et Incremento Foetus Humani* (The Origin and Growth of the Human Fetus), which he dedicated to Richard Mead, M.D., the leading London physician of the day, a holder of the gold-headed cane. Leyden was a natural choice for a Northumbrian who was partly trained at Edinburgh. Many Scottish physicians had received their medical training there under Boerhaave. Although Boerhaave had been dead for six years when Akenside went to Leyden, the didactic tradition continued, and it was one of the most influential medical centers of its day. Possibly Akenside's choice was influenced by the fact that in the previous year Dyson had gone to Leyden to study civil law. However, just how much medicine Akenside learned in his stay of less than six weeks is debatable.

Friendship with Dyson

Akenside's friendship with Jeremiah Dyson was so decisive for the shape and direction of his later career that some account of Dyson's role is indicated. Two years Akenside's junior, he had been left a considerable fortune by his father, which enabled him to study with ease at Edinburgh, where he and Akenside first met, and in Leyden in 1742. From his youth he was strongly interested in politics and espoused the cause of liberty, libertarianism or "advanced whiggery," with such fervor that he was often accused of being a republican. Akenside probably had such sentiments, too, when he matriculated at Edinburgh, and it is not unlikely that the two young men reinforced each other's arguments in long and serious discussions.

When Akenside returned to Newcastle early in 1741, their collegiate acquaintanceship lapsed but was renewed at Akenside's prompting by a letter dated August 18, 1742, in which he styles himself "Surgeon, in Newcastle-on-Tyne." Further correspondence ensued, and there is no doubt that it was Dyson's favorable report on

Leyden that decided Akenside to go there in 1744. In fact, during Akenside's six busy weeks in Leyden he found time to write no fewer than three long letters to Dyson. These letters also serve to dispel the old notion that both Akenside and Dyson were in Leyden studying together, each in his own field. To what extent Dyson had committed himself to support his friend, impecunious but quite well known because of *The Pleasures of Imagination*, is not certain, but on Akenside's return to England Dyson furnished him with the capital to set up practice in Northampton. However, in a letter from Leyden dated April 21, 1744, the matter seems to have been fairly well settled:

> ...I hope to be in London, at least in England, within a month at the latest. I have long indulged myself in an agreeable prospect of settling at S., chiefly because of my opportunity of seeing you frequently, and next to that . . . in making such acquaintances during the summer seasons, as might put it sooner in my power to spend the remainder of my life without interruption beside you. But since the expectation was ill founded, we must make ourselves easy, and look out in Northampton, or any other place tolerably near home. For of this one thing I am certain; never to be far from you.

Akenside did start medical practice at Northampton some time after June, 1744, but was not successful in attracting patients. A competent physician, Dr. Stonehouse, was already well established there, and his patients remained loyal to him. The only productive result of Akenside's year or eighteen months in Northampton was his satire titled *An Epistle to Curio*, an attack on William Pulteney who had forsaken the Whig cause, deserting his party in exchange for the title of the Earl of Bath. One wonders how Akenside managed to reconcile his position on Pulteney in 1744 with his own in 1761 when he and Dyson both deserted their party for even less distinguished preferment than a peerage.

Lack of success coupled with the distance of Northampton from London led to a removal to Hampstead in 1745 where Dyson took a house and introduced Akenside to the socially prominent residents. At that time Hampstead was rural and remained so until after Keats's day some seven or eight decades later, quite different from the fine residential district within metropolitan limits that it is today. The two bachelors led an active social life, "frequenting the long room and all clubs and assemblies of the inhabitants." Akenside's literary reputation and productiveness were then at their peak. Not only was *The Pleasures of Imagination* much lauded, but in 1745 Dodsley published *The Odes on Several Subjects* containing ten odes quite different in form and style from any published in English before. However, Akenside was no more successful in attracting patients in Hampstead than he had been in Northampton. Sir John Hawkins informs us that:

> At the meetings just mentioned, which were attended by wealthy persons of ordinary endowments, who could only talk of the occurrences of the day, he made an ostentatious display of that talent for conversation which had distinguished him in a more enlightened society, became involved in disputes that betrayed him into a contempt of those who differed from his opinions, was tauntingly reminded of his low birth and dependency on Mr. Dyson, and was reduced to the necessity of asserting in plain terms that he was a gentleman.

Dyson, who was a perceptive politician, could not have misconstrued the causes for Akenside's lack of personal success, and it is also possible that the libertarian principles which they both espoused were not congenial to the purse-proud exurbanites. With great generosity he purchased a house for Akenside in Bloomsbury Square from which he practiced, gave him a carriage, and settled an income of at least £300 a year on him. In all probability, Akenside began practice in London during the winter of 1747–1748.

A signal event occurred in Dyson's career at this time. Nicholas Hardinge, clerk to the House of Commons, resigned his post in February, 1748, and a few days later Dyson purchased it for £6,000. The consideration was high; but as the clerk had the right to appoint a deputy, an assistant clerk, and several junior clerks, it had been customary for the chief clerk to recoup by selling off these subordinate posts. Dyson thought this practice invidious and appointed his staff on the basis of merit alone without any recompense to himself, thereby establishing a fine precedent. However, we cannot value Dyson merely as a wealthy amateur of politics. His successor, Hatsell, in dedicating *Cases of Privilege in Parliament* (1776) to Dyson, wrote of his "universal knowledge upon all subjects which relate to the history of parliament." Knowledgeable and shrewd, Dyson was an important behind-the-scenes figure in Parliament from 1748 to 1774.

Although Akenside and Dyson now maintained separate establishments, their friendship continued uninterrupted. Akenside addressed himself to advancing his career in medicine and Dyson in politics. In 1758, the year of Dyson's marriage to a cousin of his, Akenside spent several weeks at Dyson's suburban retreat while recuperating from an illness. When George III ascended the throne in 1760, Dyson became a Tory and a supporter of Lord Bute; Akenside also switched sides and through Dyson's influence was appointed one of the physicians to the Queen the following year. The two friends dined together frequently and moved in the same social circle. Dyson's final service to Akenside was to act as his literary executor, collecting all his poems which had been published in diverse places, and putting the body of his work before the public as a unit for the first time in 1772, two years after the poet's death.

Although their eighteenth century contemporaries did not raise the question and the literary critics of the nineteenth century may have been too inhibited to suggest it, the mid-twentieth century reader, sensitized by a literature replete with sexual deviation, both explicit and by innuendo, will be tempted to inquire whether or not there was an element of homosexuality in the relationship between Dyson and Akenside. Overt homosexual acts are difficult to prove after a lapse of two centuries, and latent homosexuality is so common a trait that it fails to characterize. Even Byron, whose devotion to the role of Don Juan was not only evidenced by his poem but acted out in his daily life, does not escape the charge of using his heterosexual promiscuity as a mask and a defense against latent sexual inversion. The fact that Akenside never married and that Dyson married at the age of thirty-six and became the father of three children neither affirms nor negates the possibility. Certainly the tone of Akenside's letter from Leyden suggests an uncommon degree of affection. However, it is doubtful that were Dyson his lover he would have abetted him to settle in Northampton. Dyson's generosity may have been greater than that of the usual patron of the arts; but we must remember that Akenside was his only protégé, and Dyson's generous, public-spirited conduct in the matter of his parliamentary clerkship seems to indicate not only the possession of great wealth but the ability to disburse it liberally in matters of conscience. None of the other facts known about either of them suggests a propensity for impropriety.

It seems more reasonable to believe that Akenside took the initiative in renewing their college acquaintance because, when he found himself back in Newcastle with only a smattering of medical training, he soon realized that he would never get out of there unless he had some backing. Dyson was probably one of the few people of his acquaintance at that time who had any extra money at all and entree into social circles of any consequence. Whatever need each served for the other, it was a friendship that lasted until death.

Medical practice in London

In writing of Akenside's career as a physician in London, Samuel Johnson was moved to compose the following, often quoted line:

> A physician in a great city seems to be the mere plaything of fortune; his degree of reputation is, for the most part, totally casual. They that employ him know not his excellence; they that reject him know not his deficience. By any acute observer who had looked on the transactions of the medical world for half a century, a very curious book might be written on the "Fortune of Physicians."

However, with Dyson's backing Akenside was able to maintain himself in good style and to make all the right moves. On paper, at least, he was a success; whether he was as good a doctor as the record shows is another matter. One may scan the curriculum vitae of many doctors and see a list of impressive credentials, but it is often necessary to work with these men to assess their worth.

Akenside began practice in London in 1748, about four years after *The Pleasures of Imagination* had brought him fame. During the first few years of practice he had time to devote to further literary pursuits, writing occasional odes and essays. Some of the latter appeared in *The Museum* which he edited for his publisher, Dodsley. Through this work and at Dodsley's bookshop he met many important writers of the day such as Chesterfield, Lyttleton, Shenstone, Young, Gray, Walpole, Burke, Garrick, Johnson, and Goldsmith, but there is no record of close association with any of them. To his early London years belong such poems as the two odes to the Hon. Charles Townshend, the one to the Earl of Huntingdon, published in 1748, and the one to Caleb Hardinge, M.D. Most of Akenside's social life was bound up with Dyson and the political scene.

In 1751 Tobias Smollett saw fit to caricature Akenside as the doctor in *Peregrine Pickle*. The episode in which Pickle meets the doctor and his friend Mr. Pallet, the painter, is droll both for the exposition of the painter's ignorance of art and the doctor's pompous pedantry and spouting of the classics. In the next chapter the doctor gives an uproarious and calamitous banquet for his Parisian friends in the spirit but not the substance of the ancient Romans; in ensuing chapters the doctor becomes the butt of various picaresque adventures. Akenside had almost no sense of humor, and his vanity rendered him vulnerable to satire. There is no record of his reaction to Smollett's lampoon, but noticeably from this time he moved less and less in literary circles and wrote very few new poems. As he withdrew from letters, the pace of his medical duties and honors accelerated.

Actually after the high-water mark of 1744 and 1745 Akenside's published poems were few and far between. The ode to the Earl of Huntingdon was published separately in 1748, but no further poems were printed until 1758 when the fifth and sixth of Dodsleys' *Collection of Poems* appeared containing the "Hymn to the Naiads" which had been written in 1746, the ode to Huntingdon reprinted, an "Ode to Benjamin, Bishop of Winchester," a short untitled ode ("If rightly tuneful bards decide"), and six short pieces called "Inscriptions." Also in 1758 appeared "An Ode to the Country Gentlemen of England," a patriotic poem engendered by the Seven Years' War. The last poem Akenside had published during his lifetime was the "Ode to Thomas Edwards, Esq." Written in 1751, it was published in 1766, nine years after the death of Edwards, a sonneteer and author of *The Canons of Criticism*.

A reasonable amount of attention to the profession of medicine brought its rewards. In 1751 Akenside was admitted a Licentiate of the Royal College of Physicians. He received a degree of doctor of medicine from Cambridge by mandamus in 1753. In that year he was elected a Fellow of the Royal Society and in 1754 a Fellow of the Royal College of Physicians. He devoted himself assiduously to the College, serving as Censor in 1755 and 1760, was Gulstonian Lecturer in 1755, Croonian Lecturer in 1756, and Harveian Orator in 1759. The Gulstonian lectures bore the title, *Opinions on the Lymphatic Vessels*. Their publication two years later led to a bitter controversy among Akenside, William Hunter, and Alexander Monro, Jr., concerning priority. The subject of the Croonian lectures was "The Revival of Learning." The topic was not suited to its audience, and they were never published. However, the selection of this topic probably reflects Akenside's sincere belief that a physician's horizon should not be limited to medicine and that doctors belittle themselves when they disregard the humanities. Also, it probably gave him a chance to show off his somewhat superior knowledge of the classics. Akenside was a regular attendant at the quarterly meetings of the comitia of the College, and his literary gifts were at its disposal. In 1766 he supplied the preface to the College's edition of Harvey and saw the volume through the press.

Advancement soon came in hospital circles. In 1759 he was given the appointment of assistant physician at both St. Thomas's Hospital and Christ's Hospital; two months later he became principal physician at St. Thomas's. In 1761, following his and Dyson's apostasy to the Tory cause, he was appointed physician to the Queen. About this time he moved to Old Burlington Street, then the equivalent of Harley Street. He made rounds every Tuesday, Thursday, and Saturday at St. Thomas's (then located in Southwark on Borough High Street), and his opinion as a consultant was much sought after by the students although many were not attracted to him personally. Statements vary regarding the nature of his private practice, whether it was large or small, successful or unsuccessful. The consensus seems to be that it was limited in volume and select in quality, whether from Akenside's choice or the consequence of his character one may only conjecture.

Many of his contemporaries have left unflattering remarks about his character and personality. According to Sir John Hawkins, Akenside's efforts to achieve popularity were defeated by the unconcealed high opinion he had of himself, his condescension toward those of lesser status, and his love of political controversy. Bucke[3] tells us that his manner was excessively stiff and formal, that his conduct in a sickroom was unsmiling, and his manner grave. Mr. Justice Hardinge, nephew of Caleb Hardinge, M.D., to whom Akenside had dedicated an ode, knew the poet from his early childhood. Although he pays tribute to Akenside's taste, judgment, and honor, the distinguished jurist records that Akenside kept strangers at a distance, that he had no sense of humor and took a jest ill, and that he had "a pomp and stiffness of manner, not of expression, in which last he was no less chaste than flowing and correct." The famous Dr. Lettsom, who was a student under Akenside at St. Thomas's has probably left the most stinging portrait. Lettsom had been fond of poetry as a youth. Having read *The Pleasures of Imagination*, he looked forward to meeting the literary doctor and coming under his notice. He then recounts that Akenside was the most supercilious and unfeeling physician he had ever met. Akenside's misogyny repelled him: "He evinced a particular disgust to females, and treated them generally with harshness. . . hapless must have been that female who should have been placed under his tyranny." Lettsom's recollections are filled with unpleasant anecdotes, all of which, however, bear the stamp of veracity. He tells us that when Akenside made rounds at the hospital, he was preceded by a man with a broom to clear the way and prevent the patients from coming too close to him.

Akenside was meticulous about his personal appearance. Although not good looking, having a pale, strumous complexion, and walking with a noticeable limp, he wore a large white tiewig and carried a sword. Mr. Hardinge informs us that "he looked as if he could never be undressed." Concerned as he was with outward form in his person, the same trait is reflected in his poems, often at the expense of their substance. We have the perfect picture of a narcissist—vain, conceited, misogynistic, unable to establish rapport with any but a small circle of friends who admired him. If Justice Hardinge could not imagine Akenside undressed in life, the reader cannot see him "unbuttoned" in verse. The tiewig symbolizes the fact that "he never let his hair down." Having come from a lower middle-class background, indeed having escaped from it, Akenside was deeply concerned about being "correct." Suffering from the added disadvantage of an injured leg and a permanent limp, he overcompensated for it as a youth by application to his studies and as an adult by trying to garner as many of the external marks of society's approval and respect as he could. In so doing, he erected a barrier between himself and his fellow men; and although he accepted the values of his society, he was, to use a word now fashionable, alienated from it. Although it may be argued that the decline in his poetic productivity was the price he paid for a successful medical practice, it is equally plausible to advance the idea that his inspiration failed because of the constant drain on his psychic energies to maintain the façade he had erected.

Akenside passed through the 1760's in a comfortably appointed routine: rounds at St. Thomas's, attendance at the Comitia of the College, some private practice, dining with political figures, visiting with the Dysons (Dyson resigned his clerkship in 1762, entering active politics and becoming a lord of the Treasury in 1768, a privy councillor in 1774), and making regular visits to the coffeehouses in the

Strand. His chief literary occupation seems to have been a revised version of *The Pleasures of Imagination* with which he won his reputation as a young man. He began the revision in 1757, and it occupied him intermittently until his death. In the closing year of his life he even began a fourth book for this philosophic poem but completed only 30 lines. During this last decade of his life he did more medical writing than ever before. A massive treatise titled *De Dysenteria Commentarius* was published by Dodsley in 1764; it is a model of Latinity and one of the last examples of its kind to be turned out. A tierce of clinical papers were published in the *Medical Transactions* of the College in 1768. Akenside died after a brief febrile illness in 1770, singularly in the bed in which John Milton had died, the gift of an admirer. His will left his entire estate to Dyson, and it is due to Dyson's efforts that his friend's works were collected and published in 1772. He is buried in St. James's Church, diagonally across Piccadilly from Burlington House, which houses both the Royal Academy and the Royal Society, just down the street from Fortnum & Mason.

Poems

In addition to those poems published during his lifetime, Dyson's edition of 1772 added a considerable body of unpublished material, and all subsequent editors and critics, including Samuel Johnson, Alexander Chalmers, Alexander Dyce, George Gilfillan, and Charles Bucke, have based their texts on Dyson's. It is convenient to classify Akenside's poems into four groups: the early poems (1737–1744); *The Pleasures of Imagination* (published in 1744); the odes, 10 of which were published in 1745, 3 published separately, and 20 added by Dyson from manuscripts; and miscellaneous poems.

Akenside's first published poem, "The Virtuoso," appeared in the *Gentleman's Magazine* in April, 1737. It is subtitled "in imitation of Spenser's style and stanza," and pokes mild fun at the amateur collector of curiosa, whose home museum contains items of natural history, costumery, medals, antiquities of dubious merit, and so on, and whose phantasy misleads him as he "eagerly pursues imaginary joys." The next month's issue contained "Ambition and Content," subtitled "a fable," and the July issue contained "The Poet, a Rhapsody," a characteristic youthful and romantic view of the poet's life and plight:

Curs'd with dire poverty: poor hungry wretch,
What shall he do for life?
Shall that inspired tongue, which every Muse
Has touch'd divine, . . .
. . . be prostitute
To the vile service of some fool in pow'r,
All his behests submissive to perform,
Howe'er to him ungrateful? Oh! he scorns
Th' ignoble thought with generous disdain;
More eligible deeming it to starve, . . .
Than feed and fatten in obscurity.
—These are his firm resolves, which fate nor time
Nor poverty can shake. Exalted high
In garret vile he lives: . . .

This sort of noble stance is very appealing to boys of seventeen, but their idealism soon proves to be a veneer when confronted with the actuality of an empty cupboard and the "garret vile." Akenside's life was the antithesis of this piece of juvenilia, and Dyson tactfully omitted it from his collected edition.

Akenside's next published poem was "A British Philippic," occasioned by the insults of the Spaniards, and the present preparations for war," close to 200 lines of hortatory blank verse on the theme of Britons never, never shall be slaves. It was signed Britannicus and was popular enough in its choice of subject to be printed separately for propaganda; doubtless the gentlemen who read the *Gentleman's Magazine* of August, 1738, were stirred by such lines as:

Say how ye bow'd th' insulating Spaniards' pride,
Say how ye thunder'd o'er their prostrate heads,
Say how ye broke their lines and fir'd their ports,
Say how not death, in all its frightful shapes,
Could damp your souls, or shake the great resolve
For right and Britain.

The only other early poem of significance was the "Hymn to Science," published in the *Gentleman's Magazine* in October, 1739, clearly the product of his student days at Edinburgh. The influence of Sir Isaac Newton and later scientists on the poetry of the age was considerable. Many of Akenside's immediate predecessors and some of his contemporaries had made their individual adaptation of Newtonian cosmology, but, missing the Miltonian sublimity at which they aimed, merely achieved grandiose invocations of divine glory and goodness, and advice to mankind to conform to the dictates of piety and reason. Akenside's opening three stanzas are representative:

Science! thou fair effusive ray
From the great source of mental day,
   Free, generous, and refin'd!
Descend with all thy treasures fraught,
Illumine each bewilder'd thought,
   And bless my labouring mind.

But first with thy resistless light,
Disperse those phantoms from my sight
   Those mimic shades of thee:
The scholiast's learning, sophist's cant,
The visionary bigot's rant,
   The monk's philosophy.

O! let thy powerful charms impart
The patient head, the candid heart
   Devoted to thy sway;
Which no weak passions e'er mislead,
While still with dauntless steps proceed
   Where reason points the way.

The "Hymn to Science" is as close as Akenside ever came to bringing his professional life into his poetry. One looks in vain for any stanza or even any line in his poems which could have been written only by a physician. He kept the two sides of his life in separate compartments; he found no poetic inspiration from his experiences as a doctor, nor did he endow his medical writings with any poetic flair. In fact, the latter have a clarity and ease of communication which is not always to be found in his poems.

Akenside's fame in the history of English letters rests on *The Pleasures of Imagination,* a poem often referred to but little read. The poem was an immediate success and went through nine editions in Akenside's lifetime. A German translation appeared in 1757, a French one in 1759, and an Italian one in 1764. Apart from a minor literary skirmish with Bishop Warburton, it was accepted as a major poem without much dissent. Diffuse in its impact, it merits Samuel Johnson's judgment that "words are multiplied till the sense is hardly perceived; attention deserts the mind and settles on the ear," a fatal flaw in a poem of ideas. Johnson's criticism continues, "The reader wanders through the gay diffusion, sometimes amazed and sometimes delighted; but, after many turnings in the flowery labyrinth, comes out as he went in. He remarked little and laid hold on nothing." Johnson's essay on Akenside, written in 1780–1781 as one of the *Lives of the Poets*, did much to diminish Akenside's reputation barely more than a decade after his death. However, even a twentieth century apologist such as the bibliographer, Iolo Williams, who praised the odes, admitted freely that he could not read *The Pleasures of Imagination* all the way through.

The intellectual background for this deliberately didactic, philosophic poem derives from the ideas of Shaftesbury and his disciple Frances Hutcheson. Anthony Ashley Cooper, third Earl of Shaftesbury (1671–1713), published his *Characteristics of Men, Manners, Opinions, and Times* in 1711, developing the so-called "benevolent" philosophy on the deistic idea that God is adequately revealed through nature and that human reason, unaided by revelation or scripture, could construct a satisfactory concept of God. Shaftesbury considered that the study of the harmony and regularity of the universe would lead to the worship of a deity embodying all virtue, especially truth, beauty, and goodness, a deity who had, therefore, placed mankind in "the best of all possible worlds." Comforting as such a philosophy might have been in the age of reason to those who were content with the established order, it was vulnerable to Shaftesbury's own maxim that ridicule is the test of truth when Voltaire satirized "the best of all possible worlds" in *Candide* (1759). In addition to Shaftesbury's thought, Akenside also drew freely on Hutcheson's *Inquiry into the Original of Our Ideas of Beauty and Virtue,* adopting much of its esthetic theory. Akenside was conversant with the writings of classical philosophers—Plato, Aristotle, Lucretius, Epictetus, Longinus, Cicero, Tacitus, and Strabo—as well as with the more recent philosophic thought of Spinoza, Leibniz, and Huygens. Well read, Akenside could take just pride in his familiarity with the classics. His notes to *The Pleasures of Imagination* attest to the breadth of his learning, albeit his attitude of moral elevation is somewhat self-conscious.

The original version of *The Pleasures of Imagination* (1744) is in three books; Akenside revised Book I about 1757, Book II about 1765, and Book III in 1770, the year of his death. He even began a fourth book, indicating that his revision of the first three was substantially complete. To the revised version he prefaced a general argument which will serve as an explanation of the content:

> The pleasures of the imagination proceed either from natural objects, as from a flourishing grove, a clear and murmuring fountain, a calm sea by moonlight; or from works of art, such as a noble edifice, a musical tune, a statue, a picture, a poem. In treating of these pleasures we must begin with the former class . . . nothing being more necessary, in order to explain them, than a view of our natural inclination toward greatness and beauty . . .
>
> But the pleasures which we receive from the elegant arts, from music, sculpture, painting and poetry are much more various and complicated. In them . . . we find interwoven frequent representations of truth, of virtue and vice, of circumstances proper to move us with laughter, or to excite in us pity, fear, and other passions . . . Hitherto the pleasures of the imagination belong to the human species in general. But there are certain particular men, whose imagination is endowed with powers, and susceptibilities of pleasure (in) which the generality of mankind never participate. These are the men of genius, destined by nature to excel in one or (an)other of the arts . . . It is proposed . . . to delineate that genius which in some degree appears common to them all; yet with a more peculiar consideration of poetry, inasmuch as poetry is the most extensive of those arts, the most philosophical, and the most useful.

One passage, central to Akenside's esthetic theory, merits quotation, as it anticipates Keats's well-known ideas expressed in the "Ode on a Grecian Urn." The text is taken from the revision of 1757, Book I, lines 432 to 443:

> Thus then at first was Beauty sent from Heaven,
> The lovely ministress of Truth and Good
> In this dark world; for Truth and Good are one;
> And Beauty dwells in them, and they in her,
> With like participation. Wherefore, then,
> O sons of earth, would ye dissolve the tie?
> O! wherefore with a rash and greedy aim
> Seek ye to rove through every flattering scene
> Which Beauty seeks to deck, nor once inquire
> Where is the suffrage of eternal Truth,
> Or where the seal of undeceitful good,
> To save your search from folly?

Akenside wrote the poem in blank verse, as heroic couplets might have been restricting when it came to expressing his ideas. The risk in using unrhymed iambic pentameter in a poem dealing with abstract ideas is that it all too easily degenerates into prose, a somewhat poetic prose, not necessarily a model of lucidity. This fault is evident in many passages. However, for a young man in his twenties *The Pleasures of Imagination* was a considerable achievement. It happened to coincide with what the intelligentsia of the day were thinking and talking about; so Akenside was numbered among them.

Critical opinion is divided regarding Akenside's lyric odes. Among his contemporaries only Thomas Gray still used with any success the triadic Pindaric ode with its strophe, antistrophe, and epode, as adapted for English usage by Cowley and Dryden. Akenside followed the traditional Marvell's "An Horation Ode upon Cromwell's Return from Ireland," employing a regular stanza pattern. His sense of meter and rhythm enabled him to achieve an ordered regularity in the ode form, and in this respect his improvements antedate the odes written by Collins. Credit must be given for this achievement, all the more since it was Akenside's odes which Keats and his contemporaries found so attractive.

Actually, Akenside experimented considerably with stanza form, and no single pattern prevails. Although Horace used a four-line unit of expression, Akenside's stanzas range from six to ten lines usually embodying two separate thoughts. However, in a few odes Akenside used stanzas which varied in length of rhyme scheme, namely, *On Lyric Poetry*, the odes to Huntingdon, Townshend, and the Bishop of Winchester. One of his frequent metrical devices was to have the last line of a stanza a foot shorter or a foot longer than the others; in general he favored the alexandrine close. Would it be too great an extension of the mind-body relationship to suggest that the unequal length of Akenside's legs had some influence on his tendency to add or subtract a foot of meter?

One of the most characteristic stanzas in Akenside's odes is found in "On Leaving

Holland," written in 1744 just after taking his degree. The fourth stanza is evidence of his patriotism:

> O my lov'd England, when with thee
> Shall I sit down to part no more?
> Far from this pale, discolour'd sea,
> That sleeps upon the reedy shore:
> When shall I plough thy azure tide?
> When on thy hills the flocks admire,
> Like mountain snows; till down their side
> I trace the village and the sacred spire,
> While bowers and copses green the golden slope divide?

The ode "To the Evening Star" anticipates Keats's "Ode to a Nightingale" in subject matter. Its evocative power has been praised, and it will serve as an example of Akenside's experiments with amputating a foot here and there. It opens with:

> To-night retir'd the queen of heaven
> With young Endymion stays:
> And now to Hesper it is given
> Awhile to rule the vacant sky,
> Till she shall to her lamp supply
> A stream of brighter rays.

In the tenth stanza he describes the nightingale's song:

> Hark how through many a melting note
> She now prolongs her lays:
> How sweetly down the void they float!
> The breeze their magic path attends;
> The stars shine out; the forest bends;
> The wakeful heifers gaze.

And he concludes with a message that is direct and simple:

> O sacred bird, let me at eve,
> Thus wandering all alone,
> Thy tender counsel oft receive,
> Bear witness to thy pensive airs,
> And pity Nature's common cares
> Till I forget my own.

Even Samuel Johnson had kind words for Akenside's technical gifts: "To his versification justice requires that praise should not be denied. In the general fabrication of his lines he is perhaps superior to any other writer . . . ; his flow is smooth, and his pauses are musical; . . ." His ear for scansion was impeccably metronomic. Stanza after stanza of his odes flow so smoothly that the reader may be lulled into overlooking the sense. His concern for the outward form of his lyrics matched the narcissistic concern he had for the outward appearances of his person. Critics are almost unanimous in finding his odes somewhat lacking in substance; his mind was moved by abstract ideas and intellectual passions, but he was afraid of human emotions or even closeness to an emotional situation. He mistrusted love as a passion which might upset the formal balance of his life and disturb his classic-oriented intellection. Possibly he had some intimation of this when he concluded his "Ode at Study" with the following lines:

> Though the day have smoothly gone,
> Or to letter'd leisure known,
> Or in social duty spent;
> Yet at eve my lonely breast
> Seeks in vain for perfect rest;
> Languishes for true content.

Iolo Williams attributes Akenside's limitation as a lyric poet to a quality of mental arrogance which with his interest in abstract problems prevented his odes from attaining wide popularity: "He gives the ordinary, modest, friendly, emotional, human being so very few concessions, that it is, perhaps, not astonishing that the ordinary húman being has left him almost alone in his glory." It is true that the thermal range of passion in Akenside ranges from tepid to lukewarm. The epithet "a frozen Keats" has been applied to him, and not without justice.

Among Akenside's miscellaneous poems three merit special mention. "The Hymn to the Naiads" (1746) seems to be a blank verse catalogue of his readings in classical mythology. No poet since has managed to pack more classical allusions to demigods, nymphs, and minor mythical figures into a mere 330 lines. It reads like a perpetual frieze by Flaxman embossed by Wedgwood, running endlessly around the wall of a large public room in a draughty Palladian country seat. "The Remonstrance of Shakespeare" (1749) is printed with the odes, but it is a dramatic soliloquy not an ode. Akenside puts the words into the mouth of Shakespeare redivivus in lines purported to be spoken by the bard at the Theater Royal while the French comedians were acting. Apparently Akenside was not taken with the French style of acting Shakespeare and used the occasion to write a somewhat jingoistic poem in the vein of "A British Philippic" of a decade earlier and not unlike the "Ode to the Country Gentlemen of England" a decade later. Akenside did admire Shakespeare despite his nonclassical approach to drama and poetry:

That though the footsteps of my devious Muse
The measured walks of Grecian art refuse?
Or though the frankness of my hardy style
Mock the nice touches of the critic's file?
Yet, what my age and climate held to view,
Impartial I survey'd, and fearless drew.

Probably Akenside's most successful poem, if we consider success as the fulfillment of the poet's aim, the balance of form and content, is his "Epistle to Curio." It should be highly rated in the annals of English political poetry, and its tone is not unlike Browning's "The Lost Leader" written under similar circumstances almost a century later. The attack on Pulteney is veiled under the figure of Curio, a young Roman senator of a patrician house who, early in his career, had been an adherent of the republican Cicero, but who, under economic pressure, deserted to the cause of Augustus Caesar when the civil war of the second triumvirate broke out; Cicero was an early victim in this struggle for power. The "Epistle" is in rhymed couplets, the ideal form for political satire. Akenside's couplets run smoothly and have a precision of diction rarely found outside Pope and Dryden; yet his righteous indignation lacks the envenomed touch which readers of Pope and Swift admire. Among the more incisive lines in the "Epistle to Curio" are:

Spite of the learned in the ways of vice,
And all who prove that "each man has his price,"
I still believed thy end was just and free;
And yet, even yet believe it—spite of thee.

Here Akenside neatly states the leader's betrayal of and his own loyalty to the liberal cause, and the following lines state the feeling of the common man:

Do robes of state the guarded heart enclose
From each fair feeling human nature knows?
Can pompous titles stun the enchanted ear
To all that reason, all that sense would hear?

Gray's echo of the last line is too familiar to require quotation.

When Dyson's edition of the *Collected Poems* appeared, the *Monthly Review* carried a notice which read in part,

> We find in it a brightness and a brilliancy of imagination, and a certain degree of enthusiasm, which the Doctor doth not seem to have possessed in equal vigour, in the latter part of his life. Years, and a close application to scientific studies, appear, in some measure, to have turned his mind from sound to things, from fancy to the understanding.

This seems to have been the verdict of his own age, and critical opinion has not altered significantly over the two centuries which have passed. Most critics pay due tribute to his poetic ability but regret his taste for philosophic poetry, which led to dullness, and suggest that he would have been better advised to compose more lyric odes. Whatever success he had as a poet was the product of his intellect and imagination, whatever failure the product of his character.

Yet Akenside was not wholly without influence in the years after his death. The early romantic poets admired his sense of measured form although they placed less of a value on his Olympian airs. Possibly Akenside's greatest influence was not on the world of letters but on the nonliterary reader who pursued his own private ends. For example, the painter, J. M. W. Turner (1775–1851), often quoted in the course of his lectures at the Royal Academy the lines from *The Pleasures of Imagination* describing how man guided by truth discerns

In matter's mouldering structures, the pure forms
Of Triangle, or Circle, Cube, or Cone.

The "mouldering structures" suggest the etchings of Piranesi with their romantic decay of classical architectural forms. The triangle, circle, cube, or cone suggest Cézanne's dictum about the three basic forms, taken over as the first axiom of analytic cubism in the first decade of our own century. To be sure one can always trace the origins of what is modern back to a sentence or two in an old book or a canvas or two by a painter long dead. It might be salutary to point out that Grant's tomb with its idiom of Federalese architecture, the official stance of 1892, is composed of a cube, a cylinder, and a cone. It is not always illuminating to see how far a line of verse can be extended.

Medical writings

Akenside the poet belongs to the minor recesses of literary history; Akenside the medical writer has been almost forgotten. The achievement for which he is most remembered is his editing the works of Harvey for publication by the College of Physicians in 1766. It was well done, one of the monuments of English medicine, yet Akenside's name appears nowhere in it. His own contributions to medical literature were ephemera but none the less not without historical interest. The Croonian lectures on "The Revival of Learning" were never published, and the "Harveian Oration" was merely an example of florid Latin rhetoric extolling the name of the College of Physicians and the names of its more distinguished members of the recent past and present, chiefly Linacre, Harvey, and Sydenham, a nod to Caius, Glisson, Wharton, and Willis and a few gracious words about Morton, Radcliffe, and Mead.

Akenside's monograph on dysentery, *De Dysenteria Commentarius* (1764), is scarcely memorable; he recapitulates the history of the ailment, restates the cardinal signs, symptoms, and clinical course, and recommends ipecacuanha as a sovereign remedy. He goes on at such length about ipecacuanha that it soon becomes apparent that this drug is his King Charles's head. The monograph was translated rather badly into English in 1767, but not even a good translation would command attention. Akenside's paper, "Of the Use of Ipecacuanha in Asthmas," was read at the College of Physicians in July, 1767, and published in the *Medical Transactions* the following year. McHenry[4] has recorded that Samuel Johnson was willing to try it but that his physician, Richard Brocklesby, would not hear of it and recommended squill, a cardiac glycoside, as being appropriate for cardiac asthma.

One short communication merits comment, the account "Of a Blow on the Heart and of Its Effects"[5] in which he describes a contusion of the heart followed by adhesive pericarditis producing death six months after the injury. It is a model of terse medical reporting, straightforward and to the point with scarcely a wasted word, quite a contrast to Akenside's style when he was being self-conscious and pretentious. If brevity is a virtue, it merits quotation in full:

> September 11, 1762 Richard Bennet, a lad about 14 years of age, was brought to a consultation at St. Thomas's Hospital. His disorder was a palpitation of the heart, so very violent to the touch, that they all concluded it would be an aneurysm, and without remedy. He had a frequent cough. His pulse was quick, weak, and uneven, but not properly intermitting. It was apparent that nothing could be done, further than by letting blood in small quantities; and by the use of emollient pectoral medicines, to lessen every now and then, however inconsiderably, the extreme danger to which he was continually subject. He was taken into the hospital that same day, being Sunday, and treated according to what had been agreed on. But on the Tuesday morning following, he died, without any previous alarm or alteration.
>
> The origin of his complaint was a blow, which he had received 6 months before, from the master whom he served as a waiter in a public house. The master had owned that he pushed him slightly on the left side with his hand. The boy informed them that he was carrying a plate under his arm; and that the blow or push from his master drove the edge of the plate forcibly between 2 of his ribs. He was immediately ill of the hurt, sick, and in great pain. His mother also informed them, that she thought the palpitation was more violent about a fortnight after the accident than when they examined him. The day after the blow, they took 8 oz. blood from his arm; about three weeks after, they let him blood the last time, to the amount of 8 oz. He began to have a cough soon after the hurt, with frequent spittings of blood in very large quantities; and had nocturnal sweats almost the whole 6 months, during which he survived the blow. About 4 months after it, there came over the umbilical region of the abdomen a livid appearance like a mortification; but it went off gradually, and at length vanished. He has nothing in particular in his habit of body, or state of health; save that, about a year before his accident, he had been crippled with the rheumatism. He was, when they saw him, a good deal reduced, but had not a hectic nor consumptive look.
>
> On the day of his death, Mr. Cowell opened him; when to their great surprise, they found no aneurysm, nor the least extravasation of blood, either from the cavities of the heart or the large vessels. But on the left ventricle of the heart near its apex, there was a livid spot, almost as large as a half-crown piece, bruised and jelly-like; the part underneath being mortified quite to the cavity of the ventricle. Thence upwards, towards the auricle, there went several livid specks and traces of inflammation, tending in like manner to gangrene. The heart also, throughout its whole surface, adhered very closely to the pericardium; and the whole outer surface of the pericardium, as closely to the lungs. The other viscera were quite sound. So that the mischief here was properly a contusion of the heart; the edge of the plate having struck it, probably at the instant of its great diastole. This produced an inflammation on its surface, followed by a gangrene, and terminating in that double adhesion, by which the whole heart was fast tied up, till on this account, as well as by reason of the mortification, it was no longer able to circulate the blood.

Another one of Akenside's separate communications is his "Observations on Cancers."[6] His use of corrosive sublimate to treat certain superficial tumors need not detain us, but his first anecdotal case report is surely an early description of familial neurofibromatosis or von Recklinghausen's disease:

> . . . a man about three score years of age came to St. Thomas's Hospital . . . not with any intention of being admitted . . . but . . . to obtain some present assistance for an uncommon disorder. He was in general healthy. . . but had been accustomed, during the greater part of his life, to a constant succession of wens, that shot out in several places; on his head, trunk, arms, and legs; which indisposition he inherited from his father. As often as these wens became inconvenient from their size, his method was to cut them off with a razor; at which times, he constantly found that they grew upon the part by five or six suckers, as he called them. He had not much trouble in extirpating them, except when the razor passed through those suckers; at each of which he felt on the instant a most acute pain . . . When I saw him he had three such wens . . . the third on the greater extremity of the os ulna of the right arm, somewhat less than a common nutmeg. This last was the occasion of his applying to me; for, as it advanced in size, a numbness was produced in the forearm and hand; so that the use of them had been much impaired, as with a palsy . . .

Akenside conjectured that such tumors arose from the subcutaneous glands and that the pain experienced, when the pedunculated masses were cut through, was due to the fact that the distended vessels of the gland had acquired a preternatural sensibility. Needless to say, this was before the science of histopathology had reared its scientific head to contradict such vaticinations.

Akenside's most controversial publication was his synopsis of the Gulstonian lectures, read before the College of Physicians in 1755 and published two years later.[7] They dealt with "The Origin and Use of Lymphatic Vessels of Animals." Although Akenside does not appear to have conducted any experiments himself, he was familiar with the literature dealing with the question and preferred to argue from analogy. He had a clear grasp of the origin of minute lymphatic vessels:

> . . . among the little cavities of the cellular substance of the muscles, among the mucous folliculi of the tendons, or the membranous receptacles and ducts of the larger glands . . . that their extremities . . . imbibe the moisture exhaled there from the ultimate arterial tubes, just as the lacteals (the lymphatics of the mesentery) do on the concave surface of the intestines: and that the minute imbibing vessels, by gradually opening one into another, form at length a lymphatic trunk, furnished with valves to prevent the return of its fluid . . . tending uniformly . . . to reconvey to the blood that lymph . . . with which they are kept in perpetual moisture; a circumstance indispensably necessary to life and motion . . .

This publication led to a triangular controversy with both William Hunter and Alexander Monro, Jr., of Edinburgh, each claiming priority for the ideas. Articles in the *Critical Review*, possibly written by or inspired by Smollett, favored Monro, but Akenside was sharp in his rebuttal, and Monro half apologized for implying that Akenside had plagiarized his notions. It soon appeared that each of the three had been studying the same problem independently, but that Akenside had published first.

If any of Akenside's medical writings merits attention two centuries later, it is his doctoral thesis, *De Ortu et Incremento Foetus Humani* (The Origin and Growth of the Human Fetus),[8] not only for what it says but for what it doesn't say. It reveals not only the limitations of the methodology and ratiocination of its period but also the limited value to be gained from theses in natural science which are a gloss of previous writings, as contrasted with those based on direct observation and experimentation. It was inherent in Akenside's character to choose the former course.

Embryology in the first part of the eighteenth century was limited by the lack of adequate microscopes and by the lack of human material. Although Reinier de Graaf had described ovarian follicles in 1672 and had used the term ova, he did not actually see the ovum as such, nor did he appreciate it as a germ cell. Likewise, although van Leeuwenhoek had described "animalcules" in seminal fluid, he did not recognize them as spermatozooa nor did he or anyone else consider them as germ cells. Although the relationship of coitus to conception was understood, the nature of the conceptus as a fusion of two germ cells was not known. The controversy between the "ovists" and the "animalculists" had been decided in favor of the former, but the "ovists" were divided in two opposing camps. One, following Haller, accepted the theory of palingenesis of preformation, according to which all the organs were already preformed in the egg, while the other adhered to the theory of epigenesis, the gradual and continuous new formation of organs in the developing fetus. It remained for Spallanzani in 1780 to demonstrate that direct contact between the ovum and spermatozoon was necessary for fertilization and for a whole generation of embryologists, equipped with better microscopes and supplied with chronologically dated specimens, to demonstrate the details of epigenesis.

Akenside readily disposes of van Leeuwenhoek's idea that the animalcules in seminal fluid contain the essential parts of the fetus in parvo, stating:

> The argument based on the reproduction of frogs is not valid, because the incomplete frog has already left the maternal womb and is living in the open air, yet its resemblance to the animalcules in human semen is emphasized. Nevertheless, as van Leeuwenhoek himself testifies, the latter are totally different in form from the animalcules found in the semen of the male frog.

When it comes to the question of fertilizing the ovum, Akenside has some difficulty in perceiving how the "double membrane" surrounding the ovum can be breached by elements in the seminal fluid. He treats at length some observations on chick embryos, asks a multitude of irrelevant questions, but in the long run takes a strong position against palingenesis. In the light of later observations his criticism of van Leeuwenhoek and Malpighi appears justified, yet the convolutions of his argument involve one in so much unnecessary and windy rhetoric that the basis of his disagreement never seems completely clear. He is both specific and vague in the same breath:

> Let it be granted that conception has taken place upon the entrance of the seminal animalcule into the ovum. The animalcule was either male or female."

The first sentence sounds as if he knew what was happening, yet he did not appreciate the ovum as a single germ cell, hence the nonsense of the second sentence.

Akenside's real difficulty lay in the fact that he treated the matter as a literary exercise rather than a sequence of events which could be scientifically observed and analyzed into component parts. Therefore, when he had to consider conception itself, he wrote as follows:

> . . . it should be noted that nature performs two operations while accomplishing conception. In the first place, she fashions the seminal corpuscles in such order and produces them in such a variety of shapes that they are better fitted to receive and conserve the constant motion of fluids through the vessels. In the second place, she imparts to the corpuscles thus formed the ability to *feel*, and the ability to *change their own nature* without any outside influence . . . Conception cannot be accomplished by any laws of mechanics. Therefore, it must depend on some definite kind of contraction, such as is found in no other activity of nature . . . If, therefore, we look into the second stage of conception, the stage at which the seminal corpuscle is endowed with the living form of motion. . . the most realistic theory will be that . . . we must look for the origin of all life to an Omnipotent God, Who is the Author of the various forms and the stages of the seminal origin . . . Harvey, the discoverer of facts . . . by teaching that the male semen contributes to generation by no physical power, seems to acknowledge that it is due to the efficacy of a nonphysical cause. Thus it is that by a comparison of all his statements on this point . . . there is no element in the male semen by which, merely through contact with the female ovum, it can produce a living body.

Not only did Akenside come up with the wrong answer, a pardonable mistake for his day and age, but his reasoning was superficial and his observations derivative. It is probably unfair to single him out for obloquy on this ground, as the same judgment can be leveled against the great majority of doctoral theses even to the present day. All we can really charge him with is being an opportunist. He wanted to get an M.D. degree; a thesis in Latin was required; he read the relevant literature, cited the available authorities, criticized a few obvious weaknesses in then current theories, advanced an eclectic theory of his own, vague and harmless enough, and turned the piece out in reasonably good form.

It would be uncharitable to expect more since originality or experimentation was not required, and his own powers of scientific analysis were limited. He followed a pattern that was not unique to Akenside or his times.

The concluding lines of Samuel Johnson's essay on Akenside in the *Lives of the Poets* seem applicable equally to his medical writings as to his poetry:

> To examine such compositions singly, cannot be required; they have doubtless brighter and darker parts; but when they are once found to be generally dull, all further labour may be spared; for to what use can the work be criticised that will not be read?

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Perforation of duodenal diverticulum

H. S. Waters, M.D., and E. D. Pfefferkorn, M.D., writing in *Wisconsin Medical Journal* **67:** 294 (June) 1968, report a case of perforation of a duodenal diverticulum with acute symptoms. The patient made a remarkable recovery after excision of the diverticulum and provision of a bypass in the form of an anterior medium-loop gastrojejunostomy. In this instance, the patient was probably fortunate that the diverticulum was on the free lateral surface of the descending portion of the duodenum and ruptured into the peritoneal cavity, rather than on the inner side of the C loop, where rupture produces a retroperitoneal peripancreatic abscess, more difficult to repair. Early surgical intervention probably contributed to this patient's smooth postoperative course.

The patient was a man fifty-six years old, the operator of a mechanical shovel, who denied having had any previous pain or digestive difficulty. He had put in his usual working day and, after his evening meal, 9:30 P.M., he suffered severe pain spreading rapidly over the entire abdomen. There was no vomiting, but he was nauseated. The pain was so severe that he was unable to get out of bed. He was taken to the hospital by ambulance about an hour and a half after the onset of the pain.

His temperature, pulse, respiration, and blood pressure were all within normal limits. The abdomen showed a board-like rigidity through out; the upper half was extremely tender. No masses were palpated. Bowel sounds were silent. An abdominal x-ray showed no free air under the diaphragm, but despite this the previous provisional diagnosis of perforated peptic ulcer was adhered to. A Levin tube was inserted, gastric suction begun, and intravenous dextrose in lactated Ringer's solution started. During the operation, on the convex side of the descending portion of the duodenum, an area of fibrinous exudate with the omentum adherent over it was found. The tip of the omentum showed a brownish-green discoloration and appearance of fat necrosis. Blunt separation of it from the duodenal wall revealed a blister-like protrusion 2 cm. in diameter and 1.5 cm. high. There was an 0.8-cm. hole in the apex, with gas bubbles and food particles escaping.

Oral feeding began three days postoperatively. This was well tolerated. The patient was out of bed the second day, at which time spontaneous bowel movements started. X-ray films on the ninth day showed narrowing of the second portion of the duodenum, with contrast medium passing through it and through both arms of the gastrojejunostomy. The patient was discharged on the tenth hospital day. In four weeks he had, against advice, resumed working and eating everything.

Special Article

Teach a Man How to Fish*

Training Unemployables

VIRGIL E. BOYD
Detroit, Michigan

President, Chrysler Corporation

STUDIES FOLLOWING THE RIOTS in Detroit last summer concluded that unemployment and underemployment demanded immediate attention if we were going to resolve the urban crisis. Each of the automobile companies quickly opened employment centers in the inner city. So far they have found jobs for some 12,000 people from that area. But there were some who simply could not be put to work.

I thought I knew what "hard core" meant, until we became involved in this area. I was wrong. Hard core refers not to those without steady jobs but to those who are not equipped for any job; it refers not to the unemployed but to the unemployable, those who are unable to fill out even a simple job application.

So Chrysler, working with the Federal government, recently launched a two-year experimental program in Detroit to take some 750 of these people and to give them whatever training is required to make them able to work. This does not mean instruction in operating a lathe or a drilling tool. These people who have been pushed into the backwaters of our society cannot read simple words such as "in" and "out" signs on a door. It comes right down to blackboard drills, teaching the letters that spell common colors, so these people can read the instruction card that tells them to put a blue or green seat belt or steering wheel on a car as it comes down the assembly line. It entails teaching simple addition, so that they can count boxes of parts they take off a supplier's truck.

It goes much deeper than that. For example, some of these people signed on for job training—with an "X" of course—failed to show up, and many of those who did report were very late. As we registered those who did report, we found that many of them had no social security number, had never been counted in a census, had never registered to vote, or belonged to no organization of any kind. In most of the accepted senses, they really did not exist.

Naturally, a lot of people in my company, just as in many other companies, quietly nodded their heads and reaffirmed everything that they had always known to be true. They were more than ever convinced that all the people who are not working just do not want to work. Given the evidence available, this was a reasonable conclusion. These people were not only offered jobs, but the offers were made right on their own blocks, at their favorite corners, in the church basement, or in the poolroom. So if they did not show up, they did not really want work. It would have been, as it always has been, very easy and very defensible to let it go at that.

But those of us who reacted to the demands for help from industry had made a commitment and an agreement with the government, and we intended to meet it. So we set out to find what really was wrong. Some of what we discovered might well be no surprise. It is one thing to report facts and another to be confronted with them in the course of work, and that is what happened to us.

Presented at a meeting of The Bureau of Advertising, The American Newspaper Publishers Association, Detroit, Michigan, June 11, 1968.

* Reprinted by permission from *Outlook* **3**: 1 (Oct.) 1968.

Findings of investigators

We started by sending people out to discover why all those "X's" never showed up for work. The answer, in many cases, was childishly simple. If you cannot read, how do you know what it says on the destination signs of the many buses that go by on a given busy street? A grown man is not going to get on and off the wrong bus very many times before he stops getting on buses at all. So we showed those people, one by one, how to recognize the right bus to take and in some cases how and when to transfer to another necessary route.

At this point they all knew how to get there, but a significant number of them continued to be late. It did not take long to establish another fact, namely, only 1 in 5 owned an alarm clock. Why? Because they had never had to be any particular place at any particular time before. So we took them into the plants and showed them men, just like themselves, who owned cars, clothes, and houses, and explained that they owned them because these men lived within the rules of an industrial society and showed up for work on time every day.

This is the point at which some of our established, competent people began to revise those things which they knew to be true. They changed their thinking because once these hard-core people knew how and why to come to work, their attendance and tardiness record was 500 per cent better than the average of all our employees.

Our people began to re-examine the facts, and then they became as much learners as teachers. They found out that 1 of 5 hard-core job applicants was rejected for physical reasons, and that 40 per cent of these were rejected because of poor vision. After these rejects were sent to the proper agencies, were tested, and fitted for glasses, our people found that many of them could very quickly pick up the elementary reading skills required for simple jobs.

Further, we found that while the majority of the hard-core people had only a third- to fourth-grade reading ability, they also fell within a very acceptable I.Q. range. Given sufficient motivation and direction, they performed at the average level within a relatively few weeks. Bluntly, our people found far fewer "hopeless cases" than they had expected. The nonperformers are now performing, and performing well. They are devoting hours of their own time to company-conducted sessions after work on things like personal hygiene and the efficient management of the money they earn. Some of those people, who only a few weeks ago could not take the right bus to work, are staying after their shift is over to take lessons in driving, from volunteer Detroit policemen whose shifts also are over, in cars provided by the company.

We are allotted twenty-three weeks to train these hard-core people for useful work. It has not been an easy job. In addition to bus routes and alarm clocks, we have had to overcome fear, resentment, hostility, and a history of failure. But the first group was ready for regular employment in only eight weeks. In the next four weeks a total of 44 were on the job. We have lost only 1 of that number, and that beats our walk-in employment record by a wide margin.

Conclusion

Perhaps the possibility of these results with the unemployables should have been obvious to us all along. But it was not, and we have made an important discovery and a change in attitude that is critically important to the resolution of the urban crisis. We have recognized that it is not only possible but definitely to our advantage to help the chronically unemployed, and that with a lot of help and some patience, they will help themselves.

I know that the data available so far are limited. I am fully aware that when I talk about those two or three dozen unemployables who responded so well to opportunity, there are many who will say that the numbers are too small to be of any help. The fact that we may have hired as many as 8,000 more by this time next year could well evoke the same response. That may be true, but I doubt it. When you add what my company is doing to what hundreds of other companies are doing, it seems to me that nothing more vital is happening in the search for answers to our country's most pressing domestic problem.

It is here and it is now. It is changing a steadily increasing number of lives for the better, and it is destroying many of the myths that have lived for so long in the establishment. To those who would say it is too slow and too limited, I can answer only that I know of nothing that works better. I do not know any overnight solutions.

Perhaps it is best summed up in a very old proverb of the East:

> *Give a man a fish, and he will eat for a day. Teach him how to fish, and he will eat for the rest of his life.*

CHRYSLER CORPORATION
DETROIT, MICHIGAN 48231

Aneurysms of abdominal aorta

After an analysis of the records of 201 consecutive patients undergoing surgery for aneurysm of the abdominal aorta, it was concluded that the chance for survival and recovery is good in those patients with unruptured aneurysms. F. Robicsek, M.D., *et al.*, writing in the *North Carolina Medical Journal* **29:** 92 (March) 1968, feel that with good preparation and surgical technic, this is true regardless of advanced age, associated heart disease, or disseminated arteriosclerosis. On the other hand, where the aneurysm is ruptured, the mortality rate in resections is high, and where advanced heart disease or disseminated arteriosclerosis are the complications, the prognosis is pessimistic.

The risk of surgical mortality by types of abdominal aortic aneurysms is as follows: asymptomatic 4.3 per cent, symptomatic but not ruptured 12.5 per cent, retroperitoneal rupture 50 per cent, and intraperitoneal rupture 60 per cent.

Over a fourteen-year period, 214 cases of abdominal aortic aneurysm were investigated. Of these, operation was refused in 6 and not recommended in 7 because of advanced disease and complications. Diagnostically, the remaining 201 were diagnosed as follows: Unruptured (150): without renal artery involvement, asymptomatic, 70; same, but symptomatic, 71; with renal artery involvement, 9. Ruptured (51): retroperitoneal hematoma, 21; intraperitoneal rupture, 30. During the past seven years, woven Dacron prostheses were used exclusively. "Straight" grafts were inserted in 59 patients. "Bifurcated" were necessary in 128 patients because of iliac or femoral arteries or both. The aorta plus the renal arteries were replaced with "side-arm" prostheses in 8 patients. In the earlier procedures, Dacron-Orlon and Teflon grafts were used.

Of the total 201 patients, 40 died. Four died at operation; 33 in the immediate postoperative period; and 3 died three months or more after the operation from causes related to surgery, directly or indirectly. Of the 150 with unruptured aneurysms, 13 died; of the 50 with ruptured aneurysms, 27 died. An analysis of mortality rates as related to age, hypertension, coronary heart disease and other cardiac conditions, renal insufficiency, diabetes mellitus, and cerebrovascular disease, showed that in the patient with unruptured aneurysm these associated conditions hardly affected the outcome, whereas the number of deaths was significantly increased in the group whose aneurysms had ruptured. Renal shutdown accounted for 11 of the deaths in the latter group (41 per cent) and shock another 7 (26 per cent). These caused 4 and 1 deaths, respectively, in the unruptured group. Both groups had 2 deaths attributed to thrombosis of the graft and 2 attributed to cardiac disease. Only 1 died of shock in the unruptured group, in which there were no deaths due to hemorrhage. In the ruptured group, 3 died of shock.

Letters to the Editor

Medical and social consequences of mass protein deprivation

To the Editor: Death by famine is grimly familiar to us all. However, we are now beginning also to recognize the permanent mental retardation that afflicts babies who managed to survive protein calorie malnutrition.

Malignant marasmus, the kwashiorkor of the Africans, apparently has been with mankind since prehistory. As late as the beginning of the nineteenth century, London mothers were anesthetizing their whimpering babies with gin from a nursing bottle: they had no milk! Lack of food, especially the vital proteins, has been, and still is, a major cause of mass deaths. For the dozen children an average mother could birth, maybe a pair could survive to adulthood. The theories of Malthus operated with relentless efficiency. Also, X/Y = Population/optimum living space: This expressed the inexorable facts of existence for all living creatures including man. Mortality and natality rates were almost in balance. The grand total of living human beings grew at an almost imperceptible pace.

Less than two hundred years ago the industrial revolution, beginning in England, started to produce an ever-accelerating change. It was the direct reason for the globe-girdling hegemony of the British Empire; it was the central fact of the nineteenth century. As factories burgeoned over the landscapes of Northern Europe and the United States, there arose the cleavage between the powerful "have" countries and the colonized "have-not" countries. Only incidentally did this become a race and color problem. At an accelerating pace, machines replaced muscle power; today the emphasis is shifting to brains, not brawn. Technologic know-how is a present-day must!

At the beginning of the twentieth century, there occurred still another revolution: the revolution in medicine. Since Pasteur and Lister, we have been learning how to master infections and plagues. As a corollary, bioscientists are acquiring research tools to study pathology in depth.

An unexpected side-effect of this newer knowledge has been the rapidly decreasing, over-all mortality rate. The yearly number of babies born has also been diminishing but at laggard pace. This imbalance between natality and mortality rates has produced a veritable population explosion.[1,2] A horrible omen of today's world is the fact that the most abysmally backward nations are being swamped by the multiplying people they are unable to feed. Today, in the industrialized nations, kwashiorkor is merely a spotty, subclinical problem. In the same way malignant marasmus is the growing hurricane which threatens to destroy the recently colonial peoples who are barely subsisting on inadequate charity in the entire Near, Middle, and Far East; in African lands, such as Biafra; in Central and South America; in Indonesia; and others. Western doctors have the gruesome "privilege" of studying this disease which is caused by protein starvation in all these lands. Our literature on this topic is proliferating at a dizzying pace.

Mental effects of protein calorie malnutrition

Lest we forget, the important feature of this affliction, in those who do not die, is permanent mental dullness. Let us recall our generally accepted, rather rough gauge of the human intellect: the intelligence quotient (I.Q.). The average number is presumed to be from 90 to 100. Noyes and Kolb[3] state that a number between 85 to 100 presupposes a person to have full, intellectual capacity. Grinker[4] classifies more than 100 causes of mental retardation and also presents the Kuhlman I.Q. scale: Less than 25 classifies a person as an idiot; up to 50 classifies him an imbecile; and up to 75 classifies him as a moron. Leaving aside genetic, traumatic, and infectious causes, we can concentrate on mental retardation due to protein calorie malnutrition. Brock discussed protein calorie malnutrition in some detail and their conclusion was that "The problem of the complex relationship of poverty, malnutrition, and infection remains unresolved."[5]

It is grim to hear Bagchi of India stating officially that "intellectual dwarfism" resulting from protein calorie malnutrition is the bleak future facing increasing numbers of India's children and adults.[6]

A newborn baby tends to have a brain weighing about 400 Gm. By age two, the weight quadruples to from 1,300 to 1,500 Gm. At the second Western Hemisphere Nutrition Congress held in Puerto Rico in September, 1968, Münckeburg of Chile presented a detailed analysis of the consequences of protein calorie malnutrition in starved infants. The child may survive to become an adult. The brain may weigh 1,000 Gm. or less; 800 Gm. is still compatible with survival. Cerebrospinal fluid takes the place of the never-formed brain tissue. From 25 to 60 per cent of the usual complement of neutrons are just not there! It is no wonder that the results of the I.Q. tests showed these adults to be in the moronic and imbecilic classes. The nutritional defects had been overcome, but too late! In this context, let us recall that an I.Q. of 45 signifies that this unfortunate person is incapable of comprehending anything beyond second-grade level.

HUNGRY INFANTS→STARVED BRAINS→OBTUNDED MINDS

Winick[7] of Cornell stated that protein calorie malnutrition is the fate of 300 million children of the world who are now starving. Biafra is only a current example of a country being so crucified. Within a week after Rusk's[8] article was published a spate of reports from various African countries appeared which were critical of American intervention in favor of Biafra! Starvation is an everyday fact of life in their lands. By deliberate intent, the youngest are the first to die during famines. To them, our humanitarianism is only imperialistic meddling against Nigerian rule: Oh, tempore! Oh, mores.

What is the social implication of a study made of a group of Chilean children who, after recovery from overt marasmus, showed their I.Q.'s ranged from 35 to 76, with a mean of 62? Need we belabor the obvious answer?

Observations

As a doctor starting the practice medicine during the economic depression of the 1930's, I learned only too well about malignant marasmus. During World War II, I became an internist; this malady receded from my ken. In the fall of 1968, I revisited Israel and was given the opportunity of exploring such occupied Arab territories as the Golan Heights, the west bank of the Jordan, and the Gaza strip. Of course, since I was just a tourist, I caught only fleeting glimpses of the numerous, starved, Arab babies in various stages of recovery from overt kwashiorkor. The adults were, obviously, mentally retarded fellaheen staring vacuously into space. I had the privilege of being guided through the Hadassah hospital in Jerusalem. At present, some 75 per cent of their patients come from the former Jordanian sector. It was most obvious that I was staring at the same nutritional impasse!

I asked my hosts at the hospital what possible help was available to these wretches. Almost invariably they would answer, with a resigned shrug of the shoulders: "The dead you do not see. The mentally retarded adults are, at best, hopeless morons. At worst, they are mere custodial-care idiots. Our only hope is with the new crop of babies. Maybe, with regular visits here and with adequate home care (that we are trying to set up)—in twenty years—who knows?"

After four decades of seeing all types of patients, in all kinds of unpleasant situations, I thought that I had become hardened. However, I must confess that, both as a doctor and a concerned citizen, I was profoundly distressed. To my knowledge, no one has made bald statements on this aspect of the Arab-Israeli confrontation.

The Israelis inherited only a tiny segment of the world-wide chasm dividing the haves from the have-nots. The doctors study the medical aspects of the problem; the sociologists study the behavioral results; the politicians do not seem to care who is saying what. Should not the entire catastrophe be studied in depth by the most intelligent persons available? Can anything be done to remedy or, at least, ameliorate this situation?

Summary

The medical revolution has made possible the survival of hundreds of millions of babies who, in previous centuries, would have died of famine. As a direct consequence, we have had a population explosion producing ghetto implosions, with all the attendant crowding and aberrant social behavior. The industrial revolution has not been quite able to feed all the multiplying population especially in the most backward regions. Malignant marasmus no longer kills en masse. Instead, the babies do survive and live to have permanent mental retardation. The appalling dimensions of this world-wide problem are just beginning to be delineated. Solution of this problem has first priority on the agenda of the next decade.

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Congenital megacolon and protein-losing enteropathy

To the Editor: I was startled and dismayed to read about a case of undiagnosed and mismanaged enterocolitis secondary to Hirschsprung's disease labeled "protein-losing enteropathy."*

In the case presented, the discussion of all the details of immunoelectrophoresis appear to be totally irrelevant. The significant fact is that a diagnosis of congenital megacolon was made when the baby was moribund. The literature abounds in case documentation of diarrhea as a manifestation of Hirschsprung's disease in the neonate. The causes of the severe enterocolitis associated with congenital megacolon have not yet been found; however, the mortality rate from this condition approaches 50 per cent when it occurs in the first year of life. The reason the baby was passing protein in his stool was because he was sloughing his bowel mucosa! Thus, this is not a case of "protein-losing enteropathy" in the idiopathic sense. If Hirschsprung's disease had been suspected earlier in his course and confirmed by rectal biopsy, a colostomy might have saved the infant's life.

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To the Editor: We are pleased to have this opportunity to amend the discussion in our article. Dr. Shaw's comments about this patient, while emotional in nature, nevertheless permit us to refer the reader to recent representative articles concerning diarrhea as a serious complication of Hirschsprung's disease in infancy.[1,2]

The treatment of this complication consists of (1) adequate parenteral hydration, (2) rectal irrigations to decompress the distended colon, and (3) rectal biopsy to confirm the diagnosis and to determine the proper level for colostomy. Because of the religious objections to the autopsy, we were not able to obtain histologic proof of the diagnosis in this case. Therefore, we cannot be certain this patient had Hirschsprung's disease or some other disease associated with toxic megacolon.[3]

Diarrhea since birth, hypoproteinemia during the first two weeks of life, and finally death in the neonatal period make this case similar to the 20 cases recently reported by Avery *et al.*[4] where 9 of the 20 died. One of these 20 cases was proved to have Hirschsprung's disease, and he survived following surgical intervention.

The point of our article, though, was to present a new and relatively simple method for detecting serum protein in stools. Nearly every hospital has immunoelectrophoresis available as a diagnostic test. The data in our article suggest that serum proteins can be detected and probably can be quantitated in stools by using this method. The information provided to the doctor is not only how much but which serum proteins are present in the stools. Another article which appeared recently indicated that the meconium in patients with cystic fibrosis contains increased amounts of serum albumin.[5]

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Radioiodine therapy following hypothyroidism

To the Editor: The report on the "Low Incidence of Hypothyroidism Following Radioiodine Therapy" which appeared in the August 15, 1968, issue of the NEW YORK STATE JOURNAL OF MEDICINE concludes that: "The use of I^{131} for the treatment of hyperthyroidism should not be abandoned." I do not think that the issue is one of abandoning the use of I^{131} for the treatment of hyperthyroidism, in particular, or any disease in general. If a modality of therapy can help in the eradication of disease, either in whole or in part, it should not be abandoned.

However, the choice of which therapeutic agent is to be employed in a disease should be individualized for each patient and should not be a general therapeutic procedure for all patients with the same pathologic process. It is at this stage of pretreatment choice that differences of opinion may arise as to the efficacy of radioactive iodine in the treatment of hyperthyroidism and the subsequent incidence of hypothyroidism.

My own experience in the follow-up study of hyperthyroid patients treated by radioactive iodine convinces me that there is a higher incidence of hypothyroidism following radioiodine therapy than in the surgical treatment of hyperthyroidism. Furthermore, when hypothyroidism does occur in the post-thyroidectomy patient, it is controlled with smaller doses of thyroid extract than in patients developing postradioiodine hypothyroidism. In addition, I have observed that exophthalmia has increased more in patients following treatment with radioiodine than in those who received surgical treatment. The presence or absence of severe pretherapy exophthalmia is another factor to be considered in the selection of radioactive iodine as a therapeutic agent.

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* Collipp, P. J., and Dragusky, D.: Serum proteins in infant stools; another test for protein-losing enteropathy, NEW YORK STATE J. MED. **68:** 1965 (July 15) 1968.

Influenza epidemic of 1918

To the Editor: In the July 1, 1968, issue of the JOURNAL there appeared a laudatory article, really a eulogy, on a fellow member.*

Unfortunately, the writer stretched the truth a bit in respect to the influenza epidemic of 1918. When this epidemic started, the medical practitioner quit his draft board, his desk, and his home to treat these cases. He soon learned that the skin covering the bodies of the patients with influenza was as leaky as an old tin roof; the patients drowned in their own secretions. Medicines were a waste. Mayor Hylan's idea of delivering food (liquid) was a real help. As one of the old nuns told me, "I wrapped them up warm and gave them warm milk."

I wish some one would write up a history of this epidemic.

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* Rosner, F.: Samuel Friedman, M.D. (1874–1947), NEW YORK STATE J. MED. 68: 1864 (July 1) 1968.

Necrology

Richard Birnie, M.D., of Brooklyn, died on November 5 at the age of eighty-seven. Dr. Birnie graduated in 1911 from Harvard University Medical School.

Frederic James Farnell, M.D., of New York City, died on November 4 at the age of eighty-three. Dr. Farnell graduated in 1908 from Cornell University Medical College. He was a clinical professor of psychiatry at New York Medical College. Dr. Farnell was a Diplomate of the American Board of Psychiatry and Neurology, a Fellow of the American College of Physicians, and a member of the American Psychiatric Association, the American Neurological Association, the Association for Research in Nervous and Mental Disease, the New York Academy of Medicine, and the New York Neurological Society.

Meyer Golob, M.D., of Miami Beach, Florida, formerly of New York City, died on November 1 at the age of eighty-nine. Dr. Golob graduated in 1908 from the Medico-Chirurgical College of Philadelphia. He was a Diplomate of the American Board of Internal Medicine and a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Kent Wood Jarvis, M.D., of Oswego, died on September 27 at the age of seventy-three. Dr. Jarvis graduated in 1917 from Albany Medical College. He was a senior attending surgeon at Oswego Hospital. Dr. Jarvis was a member of the Oswego Academy of Medicine, the Syracuse Academy of Medicine, the Oswego County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Robert Karpat, M.D., of Queens Village, died on April 24 at the age of seventy. Dr. Karpat received his medical degree from the University of Vienna in 1923. He was a member of the American Psychiatric Association, the American Academy of General Practice, the Medical Society of the County of Queens, the Medical Society of the State of New York, and the American Medical Association.

Benno Liegner, M.D., of New York City, died on September 30 at the age of seventy-nine. Dr. Liegner received his medical degree from the University of Breslau in 1914. He was a consulting obstetrician and gynecologist at Morrisania City Hospital. Dr. Liegner was a Diplomate of the American Board of Obstetrics and Gynecology and a Fellow of the American College of Obstetricians and Gynecologists.

Joseph Solomon Mansker, M.D., of New York City and The Bronx, died on August 26 at the age of sixty-one. Dr. Mansker graduated in 1935 from Jefferson Medical College of Philadelphia. He was an assistant attending urologist at Queens Hospital Center and a senior clinical assistant attending urologist at The Mount Sinai Hospital. Dr. Mansker was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Walter D. McKenna, M.D., of Troy, died on March 16 at the age of eighty. Dr. McKenna graduated in 1911 from Albany Medical College.

Lester Robert Mellor, M.D., of Syracuse, died on October 31 at the age of eighty-three. Dr. Mellor graduated in 1906 from Syracuse University College of Medicine. He was a member of the Syracuse Academy of Medicine, the Onondaga County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis Nathanson, M.D., Brooklyn, died on October 26 at the age sixty-six. Dr. Nathanson graduated in 1926 from McGill University Faculty of Medicine. He was an attending radiologist at Jewish Chronic Disease Hospital, Maimonides Hospital of Brooklyn, and an associate attending radiologist at Bronx Municipal Hospital Center. Dr. Nathanson was a Diplomate of the American Board of Radiology, a Fellow of the American College of Radiology, a Fellow of the American College of Physicians, and a member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., the New York Roentgen Society, the Medical Society of the County of Kings, the Medical Society of the State of New York, and the American Medical Association.

Homer L. Nelms, M.D., of Albany, died on October 28 at the age of seventy-five. Dr. Nelms graduated in 1923 from Jefferson Medical College of Philadelphia. He was an honorary physician at Memorial Hospital. Dr. Nelms was a member of the New York Academy of Medicine, the Albany County Medical Society (and a past president), the Medical Society of the State of New York, and the American Medical Association.

Morris M. Rubinstein, M.D., of New York City, died on May 7 at the age of seventy-two. Dr. Rubinstein graduated in 1922 from University and Bellevue Hospital Medical College. He was a member of the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Louis Safran, M.D., of New York City, died on August 12 at the age of sixty-four. Dr. Safran graduated in 1929 from George Washington University School of Medicine. He was a clinical assistant attending physician at Bellevue Hospital. Dr. Safran was a member of the American Academy of Allergy, the New York County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Henry J. Siedler, M.D., of Buffalo, died on March 30 at the age of ninety-four. Dr. Siedler graduated in 1899 from the University of Buffalo School of Medicine.

Samuel Simon, M.D., of Poughkeepsie, died on October 30 at the age of fifty-five. Dr. Simon graduated in 1938 from Albany Medical College. He was an attending urologist at Vassar Brothers Hospital (where he was president-elect of the medical staff), Harlem Valley State (Wingdale) Hospital, a consulting genitourinary surgeon at North Dutchess Health Service Center (Rhinebeck), and a consulting urologist at Highland (Beacon) and Hudson River State Hospitals. Dr. Simon was a Diplomate of the American Board of Urology, a Fellow of the American College of Surgeons, a Fellow of the International College of Surgeons, and a member of the American Urological Association, the Dutchess County Medical Society, the Medical Society of the State of New York, and the American Medical Association.

Benjamin Zucker, M.D., of Brooklyn, died on May 9 at the age of sixty-six. Dr. Zucker graduated in 1925 from Long Island College Hospital.

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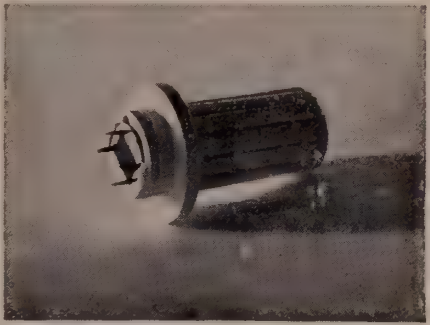

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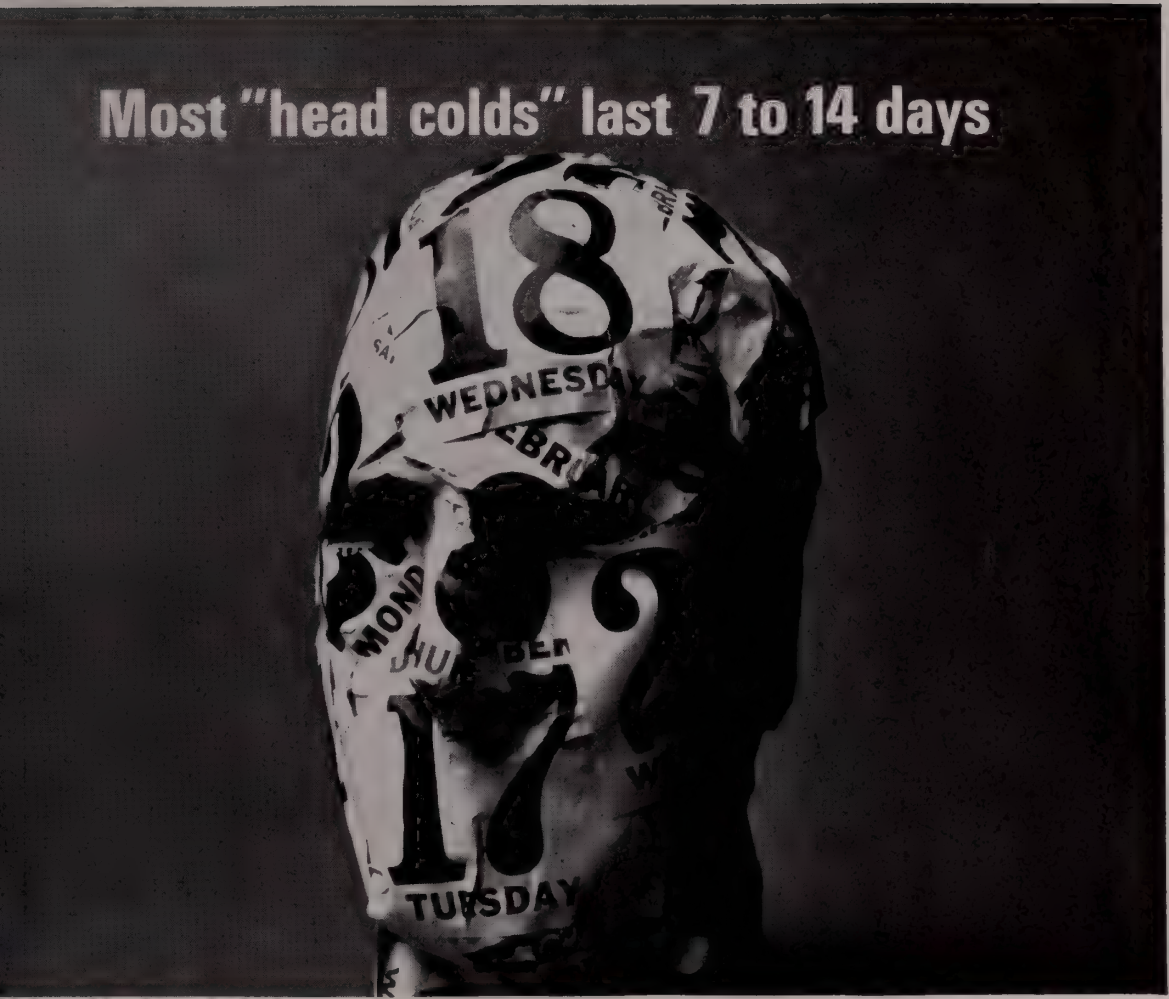

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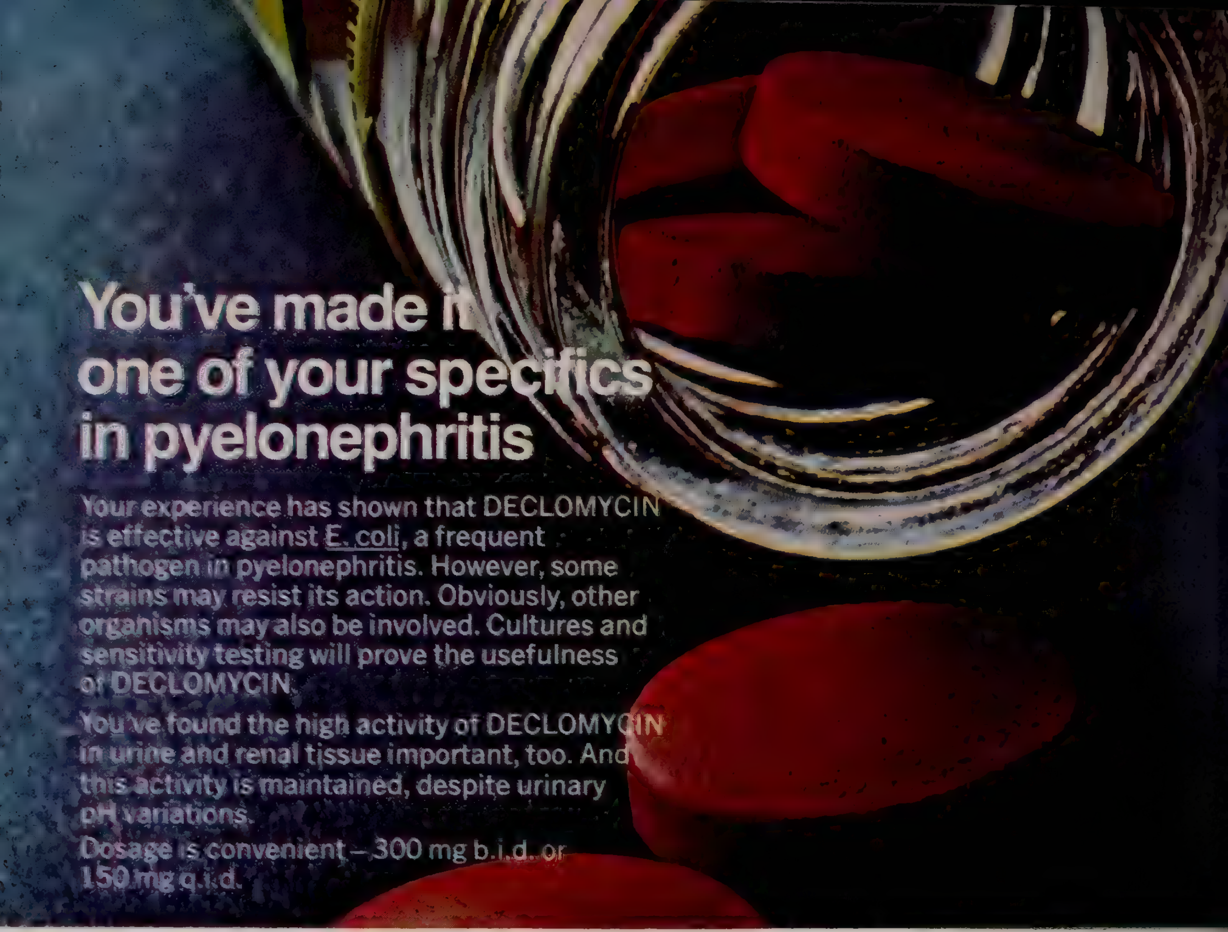

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